



# Conference Proceedings

## **56<sup>th</sup> Annual Conference of Indian Speech Language and Hearing Association**

**Theme : Technology & Therapeutic Advancement: From Science To Practice**

**Date : 14<sup>th</sup> - 16<sup>th</sup> February, 2025**

**Venue : Urja Auditorium, Patna**



**Organised by :  
Speech and Hearing Association, Bihar**

**<http://ishaindia.org.in>** 

**@2025**

A publication of the Indian Speech-Language and Hearing Association  
(registered under the Karnataka Societies Registration Act, Karnataka Act No. 17,  
Registration No. S/25/67-68)

**ISBN Number : 978-81-971692-4-3**

**Editor:**



**Ms. Meenakshi Wadhera (L11040474)**

Chair – Conventions & Events ISHA

CEO and Founder

Meenakshi Speech & Hearing Clinics Pvt Ltd, Delhi

**Associate Editors:**



**Dr. Dhanshree R Gunjawate (L12092037)**

Associate Professor

Department of Audiology and Speech-Language Pathology,  
Kasturba Medical College, Manipal Academy of Higher  
Education, Mangalore



**Dr Anuradha Sharma**

Lecturer

Department of Otolaryngology,  
Speech and hearing unit, PGIMER, Chandigarh



**Mr Mukesh Sharma**

Principal

Department of Audiology and Speech Language Pathology  
Sumandeep Vidyapeeth Deemed to be University,  
Vadodara



# ISHA - EXECUTIVE COUNCIL

(2023-24)



Dr. Prakash Boominathan  
President



Dr. Aparna Nandurkar  
President-Elect



Dr. Namita Joshi  
Hon. General Secretary



Dr. Sandeep M.  
Joint Secretary



Dr. R. Gopi Sankar  
Treasurer



Dr. Pinki Singh  
Chair-Publications



Dr. Dharam Vir  
Chair-Professional Matters



Dr. Meenakshi Wadhera  
Chair-Conventions & Events



Dr. Subramanian B.  
Chair-Public Relations &  
Liaising



Dr. Savitha V. H.  
Chair-Research & Training  
Promotion



Dr. Neelu Somani  
Chair-Promotional Activities



Dr. S. M. Tarique Najeeb  
EC Private Practitioner AUD

---

## SCIENTIFIC COMMITTEE MEMBERS

---

Chairperson & Overall  
Coordinator



Ms. Meenakshi Wadhera

Coordinator for scientific papers  
Audiology



Dr. Anuradha Sharma &  
Dr. Mukesh Sharma

Coordinator for scientific papers  
Language



Dr. S. S. Meera

Coordinator for scientific papers  
Speech



Dr. Dhanshree R Gunjawate

**56th ISHACON 2025**



# ISHACON 2025 ORGANIZING TEAM

## Conference Advisors



**Dr. Bellur Rajashekar**



**Dr. Jawahar Lal Sah**



**Dr. Manoj Kumar**



**Dr. Ashok Kumar Sinha**

## Conference Convenors



**Mr. Anurag Kumar**



**Dr. Vivek Mohan**



**Mr. Kundan Kumar**



**Mr. Rajesh Ranjan**

## Organising Committee



**Mr. Sanjay Kumar**  
Organising Chairman



**Mr. Chandan Kumar**  
Organising Secretary



**Mr. Mukesh Kumar**  
Joint Secretary



**Mr. Rohit Kumar**  
Treasurer

## Scientific Committee



**Dr. Suman Kumar**  
Chairperson



**Dr. Ram Pravesh Kumar**  
Co-Chairperson

# CONTENTS

<b>MESSAGE FROM DIGNITARIES</b>	<b>1</b>
<b>SCIENTIFIC PROGRAM</b>	<b>30</b>
<b>SCIENTIFIC ABSTRACTS</b>	<b>36</b>
<b>AUDIOLOGY</b>	<b>37</b>
AUDIOLOGY: ORAL ABSTRACTS	38
AUDIOLOGY: POSTER ABSTRACTS	69
<b>SPEECH</b>	<b>352</b>
SPEECH: ORAL ABSTRACTS	353
SPEECH: POSTER ABSTRACTS	375
<b>LANGUAGE</b>	<b>562</b>
LANGUAGE: ORAL ABSTRACTS	563
LANGUAGE: POSTER ABSTRACTS	575
<b>INDEX OF AUTHORS</b>	<b>748</b>
<b>SPONSORS</b>	<b>752</b>

**MESSAGE FROM  
DIGNITARIES**





सत्यमेव जयते

राज्यपाल, बिहार  
GOVERNOR OF BIHAR

राज भवन  
पटना-800022  
RAJ BHAVAN  
PATNA-800022

५  
05 February, 2025

Message

I am delighted to note that the 56<sup>th</sup> Annual Conference of Indian Speech and Hearing Association (ISHACON) is being held from 14<sup>th</sup> to 16<sup>th</sup> February, 2025 at Urja Auditorium, Patna.

As Audiologists and Speech-Language Pathologists, you all have an important role to play in the modern health care system to provide effective communication to all. Very appropriately, you have chosen the theme of your conference : "Technology and Therapeutic Advancement : From Science to Practice" to understand and discuss hearing, language and speech disorders in order to choose the most beneficial line of treatment for your patients.

I am sure you will have a very fruitful deliberation, which will be of immense use in your clinical practice.

I wish the event all success.

(Arif Mohammed Khan)

विजय कुमार चौधरी

मंत्री

जल संसाधन एवं संसदीय कार्य विभाग  
बिहार, पटना



Vijay Kumar Choudhary

Minister

Water Resources & Parliamentary Affairs Dept.  
Bihar, Patna

पत्रांक : ..... 118 .....

दिनांक : 10/02/2025

Message

I feel happy that the 56th Conference is being organized at Urja Auditorium, Patna between 14-16 February, 2025 under the aegis of Indian Speech-Language and Hearing Association.

I hope this three day conference will be useful in developing the professional skill of doctors, therapists and researchers engaged in this field.

With best wishes,

  
(Vijay Kumar Chaudhary)

कार्यालय : सिंचाई भवन, हार्डिंग रोड, पटना-800015, दूरभाष : 0612-2217696 (का०), 0612-2215331 (फैक्स)

आवास : 5, सर्कुलर रोड, पटना-800015, दूरभाष : 0612-2215049

e-mail : wrdministercell@gmail.com

**VINAY KUMAR, I.P.S.**

**Director General of Police**

**Bihar**



**Sardar Patel Bhawan**

Nehru Marg, Patna - 800023

Tel. - 0612-2294301, 2294302

Mob. : 8986912802

Email : dgp-bih@nic.in



Date. 03.01.2025

**MESSAGE**

I am delighted to learn that the Speech and Hearing Association of India (ISHA), Bihar State Branch, is organizing the 56th Annual Convention of the Indian Speech-Language and Hearing Association (ISHA) from February 14-16, 2025, and will be bringing out a souvenir to commemorate this significant occasion.

The interaction and exchange of views among eminent audiologists and speech-language pathologists will undoubtedly prove invaluable. It will provide an opportunity to stay updated with the latest developments in this field and enhance our ability to meet the growing expectations of patients seeking care. This convention will serve as a vital platform for professionals to share knowledge, discuss advancements, and collaborate on solutions to improve the lives of individuals with speech, language, and hearing disorders. The convention will also create awareness about this noble profession.

I would like to extend my best wishes to all the members associated with this important initiative. I wish the convention every success. It would definitely enrich experience of all the participants, and pave the way for future growth of audiology and speech language profession.

*Vinay Kumar*  
(Vinay Kumar)  
3/1/25





डॉ. मनोज कुमार  
पूर्व मुख्य आयुक्त  
(निःशक्त जन)

**Dr. Manoj Kumar**  
Ex- Chief Commissioner  
For Persons with Disabilities

सामाजिक न्याय और  
अधिकारिता मंत्रालय  
भारत सरकार

Ministry of Social Justice  
and Empowerment  
Government of India



## MESSAGE

### "Empowering Communication, Enriching Lives"

As we gather for the 56th National Conference of the Indian Speech and Hearing Association (ISHA) in Patna, we celebrate the remarkable journey of our profession. Speech and hearing are the cornerstone of human connection, and our collective efforts have transformed countless lives.

Over the years, ISHA has been at the forefront of promoting excellence in speech and hearing care. We have made significant strides in advancing research, education, and clinical practice. Our association has played a vital role in shaping policies, creating awareness, and supporting individuals with communication disorders.

As we look to the future, we are committed to achieving new milestones:

- Expanding access to quality speech and hearing services across India
- Fostering innovative research and collaborations
- Enhancing education and training programs for professionals
- Promoting public awareness and advocacy for communication rights

This souvenir is a testament to our shared passion and dedication to the field of speech and hearing. We honor our past achievements while embracing the challenges and opportunities that lie ahead.

Together, let us continue to empower communication and enrich lives by expanding the horizons of Speech and Hearing through innovations and technology.

(Dr. Manoj Kumar)

Date: 17.01.2025  
Place: Patna, India

Founder President: J.M.Institute of Speech & Hearing and R.D.J.M.Medical College & Hospital, Muzaffarpur  
Residence: 403, Avkash Residency, Chhajubagh, Patna-800001, Bihar  
Mobile: 8797315102 / 9570169555, Email: jminstitute01@gmail.com



**Honourable Members of ISHA,**

New Year Greetings!

As we embrace the 56<sup>th</sup> National Convention: ISHACON 2025, I extend my heartfelt congratulations to the Speech and Hearing Association of Bihar for organizing this remarkable event at the iconic Urja Auditorium, Patna.

The theme ‘Technology & Therapeutic Advancement: From Theory to Practice’ strikes a perfect chord with the dynamic evolution of our field. It highlights how innovation and technology can reshape our field with seamless impactful solutions.

The thoughtful inclusion of mini-symposiums and seminars featuring esteemed national and international faculty showcases a commitment to offering diverse learning experiences. The platform for scientific presentations provides an invaluable opportunity for students and professionals across India to showcase their research and clinical expertise. This will allow us to strengthen our community’s collective knowledge, empowering us to align with global standards while addressing unique challenges in the Indian context.

I believe, this conference will undoubtedly be a melting pot of transformative ideas, futuristic technologies, and inspiring collaborations. I wish the organizing team every success in delivering an enriching and unforgettable experience.

Warm Regards,

**Prof. Prakash Boominathan**  
**President, Indian Speech-Language & Hearing Association (2024-2025)**



Message from President Elect, ISHA

Dear All,

Greetings from Indian Speech-Language and Hearing Association (ISHA) to all readers!

On behalf of ISHA I congratulate the Bihar branch of ISHA for organizing and hosting the 56<sup>th</sup> Annual Conference of the Indian Speech-Language and Hearing Association at Patna, Bihar.

It is the endeavor of ISHA to organize an annual convention of speech and hearing professionals to provide a platform to discuss recent advances, foster professional growth and encourage discussion on professional matters. This stimulates exchange and dissemination of updated information about professional practices among the delegates. Each year, the ISHA conferences are attended by senior and recent professionals, students pursuing their education in the field of speech and hearing, company representatives and associate members of ISHA. They all look forward to refreshing their knowledge, gaining insights into recent trends and listening to experienced professionals sharing their work.

The theme of this year's conference is "Technologic and Therapeutic Advancement: Science to Practice". The Organizing committee has put in sincere efforts to design an enriching and interesting scientific program around this theme for the delegates. It provides the delegates an excellent opportunity to interact with leaders in the field of speech and hearing within the country as well as from abroad to sharpen technical knowledge and clinical expertise.

I am sure the organizing committee will provide you the best of hospitality in the city of Patna, a place with rich cultural heritage situated at the bank of holy river Ganga and make the conference a success.

I welcome all the delegates to Patna from 14<sup>th</sup> to 16<sup>th</sup> February 2025 and once again congratulate every member of the organizing committee for their contribution in hosting this convention.

With best regards,

Dr. Aparna Nandurkar  
President-Elect, Indian Speech-Language & Hearing Association (2024-2025)





**Dear delegates**

**Warm welcome**

On behalf of the executive committee members, I would like to welcome you all for the 56<sup>th</sup> National Conference of Indian Speech Language and Hearing Association, in Patna 2025. 56th ISHACON will provide you an excellent opportunity to interact with leaders in the field of speech and hearing within the country as well as from abroad to sharpen technical knowledge and clinical expertise. This year the theme has been thoughtfully curated to bring the knowledge of science to practice. This conference with the theme “TECHNOLOGY & THERAPEUTIC ADVANCEMENT: FROM SCIENCE TO PRACTICE” is the right platform to bring various stakeholders under one roof to discuss needs of profession and knowing the advancements in the field of speech language and hearing.

We are planning to have best exhibition with multi domain displays and e-poster presentation. The thematic talks and the plenary sessions will drive you through the multi-dimensional aspects in the academic and industrial advancements. This could be the first conference of its kind in the region after three decades where everyone could have opportunity to showcase and present their ideas, thoughts, developments that could lead to a meaningful growth in the field. Organizing committee are trying our best to ensure that your time and stay in the city of Patna, land of saints and great emperors’ history, during the conference be one of the most memorable one and you go back with rich information and as a proud stakeholder of the ISHA. Have a blessed stay in Patna, taste and enjoy the local delicious food of Litti-chokha, and take back beautiful memories to your home.

I welcome you, your family and friends again to this wonderful gathering and make the maximum out of it. I thank each and every one of you who are contributing to the success of the conference and looking forward to seeing you all soon.

Best Wishes

Jai Hind

Dr Namita Joshi

Hon. Gen. Secretary (Ad-Hoc), Indian Speech-Language & Hearing Association (2024-2025)



Dear Esteemed Colleagues and Delegates,

Greetings from the Scientific Committee of ISHACON 2025!

We welcome you to the 56th Annual Conference of the Indian Speech and Hearing Association (ISHACON 2025) in Patna, Bihar. This conference reflects our collective commitment to advancing Speech-Language Pathology and Audiology, fostering knowledge exchange, and strengthening professional collaborations.

The theme, "Technological & Therapeutic Advancement: Science to Practice," underscores the integration of innovation with clinical excellence, showcased through cutting-edge research, evidence-based practices, and interdisciplinary approaches in communication and hearing sciences.

It is also my honor to present the proceedings of ISHACON 2025, now published for the first time in a digital edition with an ISBN number. This transition enhances accessibility, supports sustainability, and broadens the reach of pioneering research from students, researchers, and professionals.

I sincerely thank the Organizing Committee, ISHA leadership, BISHA team, and contributors for their dedication to making this event a success.

A special acknowledgment to my Scientific Committee members for their invaluable contributions and tireless efforts in compiling these proceedings and a heartfelt thanks to all authors and researchers whose work enriches these proceedings—each abstract represents a step forward in shaping the future of our field.

As you explore these pages, may you find inspiration, insights, and new ideas that propel research and clinical innovation. Let us continue to collaborate, push boundaries, and create a lasting impact in our profession.

Wishing you an intellectually enriching ISHACON 2025!

With Best Regards,

Meenakshi Wadhwa  
Chair-Conventions & Events, ISHA  
Scientific Chairperson ISHACON 2025  
Editor Conference Proceedings



**Dr Ahok Kumar Sinha**  
 Director (Rtd), AYJNISHD, Mumbai  
 Ex Member Secretary, RCI, New Delhi  
 Ex Director-in-Charge, CRCPWD, Srinagar  
**National Awardee for the welfare of Persons with Disabilities**  
**President- Bihar branch of ISHA**



**MESSAGE**

**Hearty welcome to city of Patna on the bank of Holy River Ganga.**

Indian Speech and Hearing Association (ISHA) annual conference is being organized by Bihar branch of ISHA (BISHA) from 14-17<sup>th</sup> February 2025. Audiologists and Speech language pathologists has made their presence in all major cities of India and now fast expanding their services in smaller cities and towns. New area of services such as treatment of swallowing disorders and balance disorders are being practiced now, apart from assessment, diagnosis and rehabilitation of hearing, speech and language disorders. India is now adding to the scientific knowledge of speech and hearing field.

56<sup>th</sup> ISHA CON will provide an eminence opportunity for upgrading science of Audiology and Speech language pathology, which can be applied in clinical practice for the benefit of persons with hearing, speech and language difficulties. Moreover, meeting friends, making new friends, visit to scientific stalls and having discussion during leisure time on professional knit bits will be enjoying and refreshing.

Wishing all of you a pleasant stay in Patna and return to your respective places safely with lots of happy memoirs and blessing of Maa Ganga.



**DR. JAWAHAR LAL SAH**  
Ph.D (Speech & Hearing), M. R. S.H. (London)  
Advisor : 56th ISHA Conference 2025



**MESSAGE**

I am glad to know that Indian Speech & Hearing Association is Organising 56th National Conferences during 13th Feb. to 16th Feb. 2025 at Patna.

The Conference will be an opportunity for experts from India & abroad to see and discuss latest developments in Hearing & Speech Language field.

My best wishes to the organisers and participants for the success of the conference

  
*Dr. Jawahar Lal |Sah*



Dear Delegates,

On behalf of the Organizing Committee, it is my great pleasure to welcome you to the 56<sup>th</sup> Annual Conference of the Indian Speech Language and Hearing Association taking place on 14-16 February at Urja Auditorium Patna, Bihar.

Bihar, once the heart of the Magadh Empire, has a profound historical legacy as the birthplace of major Indian empires, including the Maurya and Gupta dynasties. The region is also deeply connected to spiritual history, being the site where Guru Gobind Singh Ji, the 10<sup>th</sup> guru of Sikhism, was born in Patna Saheb and spread messages of unity, equality, strength and devotion. The rich cultural and religious tapestry of Bihar continues to inspire academic and spiritual dialogues in contemporary discourse. Bihar, particularly the region of Nalanda, holds an unparalleled place in global history as the site of the ancient Nalanda University, one of the world's first residential universities. Established in the 5th century CE, Nalanda attracted scholars from across the globe, contributing to advancements in fields like philosophy, medicine, mathematics, and astronomy. The ruins of Nalanda University, now a UNESCO World Heritage Site, stand as a testament to Bihar's pivotal role in the dissemination of knowledge and intellectual exchange during the golden age of Indian civilization.

The scientific event is being organised by the Speech and Hearing Association, Bihar. We are thrilled to have you join us for what promises to be an exciting and enriching event. Our conference will bring together experts, professionals, and thought leaders from around the world together. This is an excellent opportunity for you to engage with cutting-edge research, exchange ideas, and network with like-minded individuals who share your passion and interest in Speech and Hearing. Over the course of the conference, we will explore a wide range of topics in **TECHNOLOGY & THERAPEUTIC ADVANCEMENT: FROM SCIENCE TO PRACTICE**, featuring thought-provoking presentations, insightful discussions, and interactive workshops designed to challenge perspectives and spark new ideas. We've handpicked the best speakers, thought leaders, and experts to bring you cutting-edge insights on recent advancements. Prepare to be inspired, challenged, and equipped with ideas you can take straight back to your work or passion projects. Whether you are a seasoned expert or just starting to explore this field, you are sure to find sessions that inspire, inform, and engage. We are here to ensure your experience at the conference is both productive and enjoyable. We look forward to welcoming you to Urja Auditorium, Patna and wish you a successful and inspiring conference experience!

Warm regards,

**SANJAY KUMAR**  
*Organizing Chairman*  
**56<sup>TH</sup> ISHACON-2025 PATNA**  
**+91-9973541131**



**Message from Secretary, Bihar Branch of ISHA & Organising Secretary, ISHACON**

Dear All.

Greetings from Bihar Branch of ISHA & the Organising Committee of ISHACON !!

On behalf of Bihar Branch of ISHA & the Organising Committee of ISHACON, I would like to extend a warm welcome to all of you for the 56<sup>th</sup> Annual Conference of the Indian Speech Language and Hearing Association.

We are honoured to host you all in our beautiful state and extend our warmest welcome. Bihar, with its rich history, vibrant culture, and warm hospitality, offers a unique experience that we hope you will cherish.

The theme of this year's conference is *“Technological & Therapeutic Advancement: Science to Practice”* and the conference program boasts enlightening keynote addresses, focused mini-symposium, variety of Invited talks and a diverse array of research presentations, providing a platform for the exchange of innovative ideas and the exploration of current trends in the field.

We extend our sincere appreciation to all participants, speakers, sponsors, and partners for their enthusiastic support and commitment. Your collective efforts will undoubtedly contribute to the success of ISHACON -2025.

My sincere gratitude also goes to the ISHA & BISHA executive committee & conference committee for their dedicated efforts in organizing the program, and we express special thanks to all the authors, reviewers, and contributors who play a vital role in shaping the success of ISHACON 2025. We eagerly anticipate your participation and look forward to the dynamic discussions, collaborations, and insights that will unfold during this exciting event. Together, let us explore new horizons and shape the future of science and engineering.

As you explore our state, you will discover a land steeped in tradition and innovation. From the ancient ruins of Nalanda & Bodh Gaya to the bustling streets of Patna, Bihar offers a fascinating blend of the past and the present.

We invite you to immerse yourselves in our culture, taste our delectable cuisine, and engage with our friendly people. We hope that your visit to Bihar will be a memorable one, filled with enriching experiences and lasting friendships.

Welcome once again, and may your stay be filled with joy and prosperity! Regards,

Chandan Kumar

Secretary, BISHA

Organising Secretary, 56<sup>th</sup> ISHACON 2025





**Dear Delegates,**

Welcome to this unique ISHACON 2025!

On behalf of the organizing committee of ISHACON, it is my pleasure to extend a heartfelt welcome to each one of you to the 56<sup>th</sup> Annual Conference of the ASLP of India, ISHACON 2025 from 14<sup>th</sup> to 16<sup>th</sup> February 2025 scheduled to take place at the, Urja Auditorium, Patna which is an ancient city with rich cultural heritage. Your presence adds immense value and we are thrilled to have you join us for this intellectual gathering.

This year conference theme is “Technological & Therapeutic Advancement: From Science to Practice” packed with pre-con, mini-symposium, International & national invited talks, thought-provoking discussions, oral and poster research presentation, orations, sponsored exhibition stalls will provide unique opportunity to familiarize ourselves with new development in the field, learn about new approaches, share own ideas, discuss experiences and make stronger network with ASLP and sponsorers.

Our team has worked diligently to ensure that every aspect of the conference enhances your experience, from the choice of venue to the selection of topics and the seamless organization of events. We are confident that you will find the conference both enlightening and enjoyable.

Patna, capital of Bihar historically known as Pataliputra, cultural and political center of Indian subcontinent, agriculture hub, sacred city of Sikhs, and nearby Patna city the Buddhist, Hindu and Jain pilgrimage centers is Vaishali, Rajgir, Nalanda, Bodh Gaya and Pawapuri tourist place will serves as the perfect backdrop for our conference.

Let us come together to make this conference a remarkable gathering of ASLP minds, where knowledge blossoms, collaborations thrive and friendships endure.

Thank you for being a part of this prestigious event. I look forward to welcoming you to Patna. See you at ISHACON 2025!

*Mukesh Kumar*

**Mukesh Kumar**  
**Joint Secretary, BISHA**  
**Organising Joint Secretary, 56<sup>th</sup> ISHACON 2025**



**From the Desk of the Organizing Treasurer**

Dear All,

It gives me immense pleasure to welcome all of you on behalf of Bihar Branch of ISHA & the Organizing Committee of ISHACON to the 56th Annual Conference of the Indian Speech Language and Hearing Association.

I would like to extend a warm welcome to all professionals who are first and foremost dedicated to *research, practice, and education*. This conference will definitely build a common platform to strengthen our speech and hearing field linking with other professionals in order to facilitate various interdisciplinary research and development and there are numerous inspiring lectures and discussions dedicated.

We are trying our best to ensure that your time and stay in '*Beautiful Historical city*' Patna during the conference be one of the most memorable one and you go back with rich information and fondest memories of our warm hospitality.

I wish all conference participants very pleasant and interesting time in Patna. I forward my best wishes.

I welcome you, your family and friends again to this wonderful gathering.

**Regards,**

**Rohit Kumar,**

**Treasurer, BISHA  
Organizing Treasurer, 56th ISHACON 2025**



### Greeting From Souvenir Committee

Dear Delegates

It is with great honor that we extend a warm welcome to our esteemed guest, Audiologists and Speech Language Pathologists and accomplished students.

Speech and hearing association of India, Bihar Branch (BISHA) is hosting 56<sup>th</sup> Convention of Indian Speech and Language and Hearing Association at Urja Auditorium, Patna. And we are fortunate to be the part of organizing committee as part of Souvenir committee. The theme of the 56th ISHACON this year is "Technology & Therapeutic Advancement: From Theory to Practice" which is in perfect sync with the dynamic evolution of our profession.

As part of the 56th ISHACON Souvenir Committees, We are excited to share that, for the first time, ISHA is launching an E-Scientific Proceeding. This landmark initiative aims to reach a wide audience of Healthcare Professionals, Audiologists and Speech Language Pathologists and individuals across India, providing a unique platform to showcase your services and commitment to healthcare.

The 56th ISHACON will be an engaging experience for students as well as professionals and will prove to be a well-coordinated event with rich scientific experience. The conference is promising to produce well-formed scientific evidence and discussion to support current research and encourage future innovations through research. We sincerely hope that the deliberations and discussions during the conference will be implemented in clinical practice for the benefit of individuals with hearing, speech and language difficulties.

"Everything is best in Bihar. From Chhath Puja, Mal Pua and to Litti Chokha, it is the best". We invite you to immerse yourself in our culture, taste our delicious cuisine, and connect with our friendly people. We hope your trip to Bihar is filled with memories, enriching experiences and lasting friendships.

Jai Hind, Jai Bharat, Jai Bihar

**Mrs. Pallavi Rani**  
Chairperson  
Souvenir Committee, ISHACON, 2025

**Suraj Kumar**  
Co-Chairperson  
Souvenir Committee, ISHACON, 2025



## Greetings from the Organising Scientific Committee

Shaping the Future of Audiology, Speech, and Language Sciences: A Warm Welcome

Greetings from the Organising Scientific Committee of the Indian Speech and Hearing Association!

We extend a warm welcome to our esteemed guests, distinguished national and international speakers, and students presenting their research in Audiology, Speech, and Language Sciences. This year, we introduce Electronic Presentations—a pioneering step towards integrating cutting-edge technology into scientific platforms and enhancing research dissemination. Our collaboration with EC ISHA further strengthens our vision of a unified global scientific community.

A special thanks to Mr. Chandan Kumar, our Organising Secretary, for his relentless efforts, and Dr. Sanjay Kumar, our Organising Chairman, for his invaluable guidance and leadership. Their dedication has been instrumental in making this event a success.

The carefully selected topics challenge our speakers to showcase clinical, evidence-based practices, inspiring independent, globally competitive approaches in treating Speech, Language, Hearing, Swallowing, and Vertigo disorders.

Patna, a city with a rich educational legacy, provides the perfect foundation for this knowledge-sharing journey. We believe in teaching from fundamentals to advanced expertise, ensuring every professional leaves enriched.

We also express our sincere appreciation to our organising team:

Dr. Suman Kumar, Dr. Ram Pravesh Kumar, Ms. Archita Kumar, Mr. Vivek Kumar, Ms. Ankita Suman

A heartfelt thank you to all our volunteers for their unwavering support and dedication.

Together, we strive to advance Audiology and Speech-Language Pathology through innovation, collaboration, and excellence.

Welcome to this landmark event—where science, technology, and clinical expertise converge to shape the future.

Warm regards,

Organising Scientific Committee  
Indian Speech and Hearing Association

# SPEECH AND HEARING PROFESSIONALS IN BIHAR: A HISTORICAL PERSPECTIVE

*Dr Ashok Kumar Sinha*

## **Introduction**

Audiologists and speech-language pathologists are referred to as speech and hearing professionals in India. To be an audiologist and speech-language pathologist, one can enroll in an undergraduate course of four years (full-time) in any of the Speech and Hearing Institutes after passing 10+2 schooling in the science stream. The examination and certification are done by the respective affiliating universities in the State, and the course is conducted by the speech and hearing Institute, which has to be recognized by the Rehabilitation Council of India (RCI) New Delhi.

The RCI monitors various courses in the disability sector, including speech and hearing. Most of the educational Institutes providing degree courses in Audiology and speech-language pathology are in the private sector. Only a few institutes are run by the Government of India or the State Governments. An audiologist and speech-language pathologist, after graduation, has to register himself/herself in RCI, in order to practice or take up government or private jobs. One has to renew registration after the specified period.

Two years of full-time postgraduate courses in audiology and speech-language pathology are also available in the Country. Further, after post-graduation, one can pursue a Ph.D course in audiology and or/Speech-language pathology. However, the number of seats is limited.

## **Importance of speech and hearing services in society**

The scope of practice of Audiology is not limited to the study of hearing, assessment of hearing, diagnosis of hearing disorders, and fitting of amplification devices such as hearing aids and providing aural rehabilitation, but has been extended to intra-operative monitoring of cochlear implants, fitting of cochlear implant processor, and tuning of the cochlear implant. Audiologists now actively participate in the treatment of tinnitus (ringing noise in ears) as well as monitoring of central auditory processing disorders and balance disorders of vestibular origin.

On the other side, speech-language pathologist provides assessment, diagnosis, and therapeutic intervention of speech and language disorders, arising due to various functional and organic pathologies. As a speech-language pathologist, one provides good communication to persons with stuttering, articulation, voice disorders, and language disorders. They also provide speech therapy to children with delayed language and speech, as in children with autism, intellectual disability, cerebral palsy, and hearing impairment. The technological advancement in the area of speech-language pathology, too, has been tremendous in the recent past, and the scope of practice of speech-language pathologists has extended to bedside therapy in hospitals for stroke patients and patients having difficulties in swallowing food.

The speech and hearing field is very dynamic, and practicing audiology and/or speech-language

pathology is very satisfying. The Government of India enacted the Rights of Persons with Disabilities Act 2016. Twenty-one categories of disabilities have been identified, including permanent Hearing disability. The new category of speech and language disability arising from conditions such as Laryngectomy and Aphasia were also included. The audiologist and speech-language pathologists have a major role in the certification of hearing disability and speech-language disability under the RPWD Act 2016.

### **Prevalence of Hearing, speech and language disabilities**

It is estimated that six percent of the population may have speech and hearing difficulties. The National Sample Survey conducted in 2018 (76th Round), estimated that the prevalence of persons with disability in India is 2.2%. As India has the largest population in the World, even if the prevalence estimates are conservative, the magnitude of audiological and speech-language services requirements is huge in the Country.

The prevalence of hearing, speech and language disability in Bihar is estimated to be 0.5%. Bihar, being the third largest State by population, with the highest population density in the country and the 15th largest GDP in 2021, becomes crucial and important to provide speech and hearing services to its residents. Bihar is a landlocked state bordering Uttar Pradesh to the west, Nepal to the north, the northern part of West Bengal to the east, and Jharkhand to the south. Only 11.27% of the population of Bihar lives in urban areas. Bihar has the highest proportion of young people in any Indian state. Mainly, Hindi is spoken in the state, apart from Urdu, Maithili, Magahi, and Bhojpuri.

### **Beginning of speech and hearing services in Bihar**

As in other states, services for children with hearing impairment, mostly deaf, started with school for the hearing impaired. Basic services were provided by the establishment of the ENT department in the State Government hospitals. The pioneer in the field of speech and hearing, such as the Late Dr. N. Rathna from Mysuru, Karnataka, and Dr. R K Oza from Mumbai, Maharashtra, were instrumental in the establishment of courses in audiology and speech-language pathology in the mid-sixties in India. All India Institute of Speech and Hearing (AIISH) under the Ministry of Health and Family Welfare, Government of India, was set up in 1963 in Mysuru. Simultaneously, Audiology and Speech Therapy School in Topiwala National Medical College and BYL Nair Charitable Hospital in Mumbai started undergraduate courses in audiology and speech-language pathology. Today, India has more than 75 colleges offering undergraduate courses in Audiology and speech-language pathology.

Students from Bihar started taking admission in the AIISH Mysuru in the early seventies. Mr Arvind Kumar Sharma from Patna is the first alumni of AIISH, from Bihar. Later, a few more students joined, and on their return, as there was no opportunity in the government sector, they started giving services to persons with hearing and speech disorders in their private practice. The students from Bihar enrollment in speech and hearing colleges gradually increased, and most of them were employed outside the state as employment opportunities still continue to be less in the state and the affordability of receiving speech and hearing services in private was



minimal.

### Speech and Hearing Pioneers of Bihar

Against all odds, one of the pioneers in the field of speech and hearing in Bihar, Dr Manoj Kumar, first established a clinic, a school for the hearing and intellectual disability, and, importantly a college of speech and hearing in Patna under the banner of J M Institute of Speech and Hearing (as registered NGO). Dr Manoj Kumar's continuous efforts to create awareness, motivating his acutance to take up speech and hearing courses, and helping government officials to formulate schemes for the benefits of hearing and speech-language disability, was the beginning of speech and hearing services in Bihar in an organized way, along with other senior colleagues including Dr Jawahar Lal Sah.

Dr Jawahar Lal Sah, in a very modest way, established himself in private practice along with giving services in the Red Cross Society, Patna. Dr. Jawahar Lal Sah is the founder and President of the Bihar branch of ISHA.

During the mid-nineties, the initiative of members of ISHA in Bihar made it possible to hold the Annual conference of ISHA, and Dr Manoj Kumar was elected as President of ISHA. One of the issues raised in Patna ISHACON then was prefixing the “Dr” in the name of an audiologist and speech-language pathologist, as no due recognition was given either by the co-professionals and lack of understanding of speech and hearing professionals by the general public. It only shows the struggle our pioneers made to establish the speech and hearing profession in Bihar.

### Development over time

Speech and hearing services, including other disability, got attention when 3rd December 1981 was observed as the International Year for the Person with Disability as declared by the United Nations and subsequently observed the day every year. The Government of India established the Ali Yavar Jung National Institute of Hearing Handicapped (NIHH) in Mumbai in 1983 under the Ministry of Social Welfare. Dr. N Rathna was the only speech and hearing professional to head both the Central Government's prestigious Institutes in the field of speech and hearing. Now the Institute is renamed as Ali Yavar Jung National Institute of Speech and Hearing Disabilities (AYJNISHD) under the Department of Empowerment of Persons with Disabilities, Ministry of Social Justice and Empowerment.

Major advancements in speech and hearing services were seen in Bihar as well as in other states after the enactment of the RCI Act (1992) and the Person with Disabilities Act 1995. As per the provision of the Act, various schemes were undertaken both by the Central Government and the State Government, including the establishment of the office of the Chief Commissioner of Disabilities. Dr Manoj Kumar was appointed as Chief Commissioner of Disabilities in 2005. We all feel proud of him for his immense contribution to speech and hearing services. During his tenure, all states, including Bihar, got a boost in service delivery to persons with disabilities through his innovative model of mobile courts for persons with disabilities. Indian Speech-

Language and Hearing Association (ISHA), in recognition of his services, bestowed on him the prestigious R.K. Oza Oration Award in 2023.

Service was also delivered through organizing several camps in different parts of Bihar, organizing programs for creating awareness, programs for creating job opportunities for the hearing disabled, and distributing hearing aids and awareness materials. These activities were taken by AYJNISHD, Mumbai, and its Regional Center, Kolkata, in collaboration with Bihar Government and local audiologists and speech-language pathologists. This brought a very positive change in the role of audiologists and speech pathologists in Bihar.

Services delivery for speech and hearing disability saw a boost with the Government of India implementing Sarva Shiksha Abhiyan (SSA) for all children, including children with disabilities, in 2001 throughout the country in collaboration with State Governments. Almost in all the districts in Bihar, camps were conducted to identify children with hearing disability for school enrollment and providing aids and appliances through the ADIP scheme of the Government of India in collaboration with AYJNISHD Regional Centre, Kolkata. Dr Indernil Chatterjee and Dr Sujoy Makar, along with others, supported Bihar SSA in a big way, along with the help of audiologists and speech-language pathologists in the state. Further, AYJNISHD, Regional Center Kolkata offering undergraduate program gave ample opportunity to students from Bihar to study audiology and speech-language pathology course, being the neighboring State.

Meanwhile in year 2007, Indian Institute of Health Education and Research Education was recognized by the RCI, New Delhi to conduct undergraduate course in Audiology and speech-language pathology in Patna. Hearing instrument industry and hearing aids company role in extending the services to persons with speech and hearing disorders cannot be under played during this period as they were supporting the audiologists and speech-language pathologists in Bihar.

Recently, Composite Regional Center for Skill Development, Rehabilitation and Empowerment for Persons with Disabilities has been setup by the Department of Empowerment of Persons with Disability, Ministry of Social Justice and Empowerment, Government of India, in Patna. Today CRC is being headed by an Audiologist and Speech language pathologist, Mrs. Priyadarshni, from Bihar only.

As time passed, because of contribution of all the audiologists and speech-language pathologists working in Bihar, speech and hearing services are being recognized in Bihar, but the employment opportunity in government sectors still has not seen a steady growth. In spite of having 12 State run medical colleges, not a single medical college has a permanent post of audiologist and speech-language pathologist. Few post of Audiologist and speech pathologist are being filled on contractual basis by the State government but the remuneration has not been appropriate to create a positive work environment. However the effort are being continued and in recent years landmark achievements have been made by the new, young and vibrant audiologists and speech language pathologists which are described below.

# LINGUISTIC DIVERSITY IN BIHAR: A REGIONAL PERSPECTIVE

*Ram Pravesh Kumar, Shashi Kant Prashar*

Bihar, one of the most linguistically diverse states of India, is home to multiple languages and dialects spoken across different regions. The linguistic variations can be broadly categorized based on geography—North, South, East, and West Bihar—each with distinct linguistic, cultural, and historical influences.

## **1. North Bihar: Maithili and Bhojpuri Dominance**

- Major Districts: Muzaffarpur, Darbhanga, Madhubani, Supaul, Saharsa, Sitamarhi, Araria, Purnia, Katihar, Kishanganj, East Champaran, West Champaran
- Primary Languages: Maithili, Bhojpuri, Hindi, Surjapuri, Urdu
- Characteristics:
  - Maithili is predominantly spoken in the Mithila region (Darbhanga, Madhubani, Samastipur). It has its own script called Tirhuta, though Devanagari is more commonly used now.
  - Bhojpuri is widely spoken in Champaran districts, influenced by Hindi but with a distinct vocabulary and pronunciation.
  - Surjapuri (a mix of Bengali, Maithili, and Urdu) is common in Purnia, Katihar, and Kishanganj.
  - Influence of Nepal: The proximity to Nepal has led to linguistic exchanges, especially in Sitamarhi and Champaran, where some Nepali words are integrated into speech.
- Key Differences:
  - Maithili has a richer literary heritage and is a recognized language in the Eighth Schedule of the Indian Constitution.
  - Bhojpuri is spoken informally and has gained global recognition due to Bhojpuri cinema and diaspora influence.
  - Surjapuri is unique to the Purnia region and acts as a bridge between Bengali and Maithili influences.

## **2. South Bihar: Magahi and Hindi Influence**

- Major Districts: Patna, Gaya, Nalanda, Jehanabad, Nawada, Aurangabad, Sheikhpura, Lakhisarai
- Primary Languages: Magahi, Hindi, Urdu
- Characteristics:
  - Magahi, spoken in Patna, Gaya, Nalanda, and surrounding areas, has its roots in Magadhi Prakrit, the ancient language of Lord Buddha. It lacks a dedicated script and is written in Devanagari.
  - Hindi, being the administrative and educational language, is widely spoken and understood.
  - Urdu, particularly in Patna and Gaya, is spoken by the Muslim population and has Persian-Arabic influences.
- Key Differences:
  - Magahi has softer phonetics and distinct grammatical structures compared to Maithili or Bhojpuri.
  - The tone and rhythm of Magahi are influenced by the historical Pali language, making it unique in Buddhist literature.
  - Magahi is not officially recognized in the Eighth Schedule of the Indian Constitution, unlike Maithili.

### 3. East Bihar: Angika and Bengali Influence

- Major Districts: Bhagalpur, Munger, Banka, Khagaria, Begusarai
- Primary Languages: Angika, Hindi, Urdu
- Characteristics:
  - Angika is the predominant language in Bhagalpur and Munger, historically part of the Anga kingdom.
  - It has a faster speech rate compared to Maithili and Magahi, with sharp phonetic sounds.
  - Due to proximity to Bengal, many words in Angika resemble Bengali, but the grammar remains closer to Maithili.
- Key Differences:
  - Angika, unlike Maithili, does not have a distinct script and is written in Devanagari.
  - The dialect has a strong oral storytelling tradition, differentiating it from the literary-rich Maithili.



- The phonetics of Angika have a harsher, crisper articulation compared to the mellower tones of Magahi and Maithili.

#### 4. West Bihar: Pure Bhojpuri Heartland

- Major Districts: Buxar, Bhojpur, Rohtas, Kaimur, Saran, Siwan, Gopalganj
- Primary Languages: Bhojpuri, Hindi
- Characteristics:
  - Bhojpuri is the dominant language, with variations in each district.
  - The influence of Awadhi and Hindi makes Western Bihar’s Bhojpuri different from Bhojpuri spoken in North Bihar.
  - The region has a strong cultural influence from Uttar Pradesh, given its border proximity.
- Key Differences:
  - Bhojpuri in the western part has greater Awadhi and Sanskrit influence compared to Bhojpuri spoken in North Bihar.
  - Folk songs, especially related to marriages and agriculture, are deeply embedded in Bhojpuri culture.
  - Bhojpuri has a global presence, as migrants from this region took the language to Mauritius, Fiji, and Trinidad.

#### 5. Common Linguistic Differences Across Bihar

##### Maithili

Region:	Region North Bihar (Mithila)
Script:	Tirhuta, Devanagari
Tone:	Softer, poetic
Influence:	Sanskrit, Nepali, Bengali
Recognition:	Official (Eighth Schedule)
Unique Traits	Rich literary tradition

### Bhojpuri

Region:	West & North Bihar (Champan, Saran, Bhojpur)
Script:	Kaithi, Devanagari
Tone:	Strong, rhythmic
Influence:	Awadhi, Hindi
Recognition:	Not officially recognized
Unique Traits	Global presence via diaspora

### Magahi

Region:	Central Bihar (Gaya, Patna)
Script:	Devanagari
Tone:	Balanced, fluid      Sharp,
Influence:	Pali, Magadhi Prakrit
Recognition:	Not officially recognized
Unique Traits	Ancient Buddhist texts

### Angika

Region:	East Bihar (Bhagalpur, Munger)
Script:	Devanagari
Tone:	Sharp, fast-paced
Influence:	Bengali, Maithili
Recognition:	Not officially recognized
Unique Traits	Oral storytelling

Here's how the phrase "Welcome to ISHACON 2025. For the first time, the 56th ISHACON 2025 is replacing the traditional E-Souvenir with an E-Scientific Proceeding, now registered with an ISBN." would be spoken in different languages of Bihar:

1. Maithili (मैथिली)

"ISHACON 2025 meinahansabhakswagatachhi. Pratham ber, 56m ISHACON 2025 paramparik E-Souvenir kersthan par E-Scientific Proceeding la abaitachhi, je aab ISBN sanpanjikritachhi."

"आईएसएचए-कॉन 2025 मेंअहाँसभकस्वागतअछि।प्रथमबेर, 56मआईएसएचए-कॉन 2025 पारंपरिकई-सुविनियरकेरस्थानपरई-साइंटिफिकप्रोसीडिंगल'अबैतअछि, जेआबआईएसबीएनसंपंजीकृतअछि।"

2. Bhojpuri (भोजपुरी)

"ISHACON 2025 meinrauasabhekeswagatba. Pahiliber, 56wa ISHACON 2025 paramparagat E-Souvenir kejagaha E-Scientific Proceeding laikeaailba, je ab ISBN se panjikritba."

"आईएसएचए-कॉन 2025 मेंरउआसभकेस्वागतबा।पहिलीबेर, 56वाँआईएसएचए-कॉन 2025 परंपरागतई-सुविनियरकेजगहाई-साइंटिफिकप्रोसीडिंगलइकेअइलबा, जेअबआईएसबीएनसेपंजीकृतबा।"

3. Magahi (मगही)

"आईएसएचए-कॉन 2025 मेंअहाँसभकेस्वागतह।पहिलीबेर, 56वाँआईएसएचए-कॉन 2025 परंपरागतई-सुविनियरकेबदलेई-साइंटिफिकप्रोसीडिंगल'अइलह, जेअबआईएसबीएनसेपंजीकृतह।"

"ISHACON 2025 meinahan sab keswagat ha. Pahiliber, 56wa ISHACON 2025 paramparagat E-Souvenir kebadle E-Scientific Proceeding la aail ha, je ab ISBN se panjikrit ha."

4. Angika (अंगिका)

"ISHACON 2025 meinahansabhakswagatchhai. Pahiliber, 56m ISHACON 2025 paramparik E-Souvenir kebadla E-Scientific Proceeding la aailachhi, je ab ISBN sanpanjikritachhi."

“आईएसएचए-कॉन 2025 में अहाँसभके स्वागत छै। पहिला बेर, 56म आईएसएचए-कॉन 2025 पारंपरिक ई-सुविनियरके बदलाई-साइंटिफिक प्रोसीडिंगल अएल अछि, जे अब आईएसबीएन संपंजीकृत अछि।”

#### 5. Bajjika (बज्जिका)

“आईएसएचए-कॉन 2025 में अहाँसभके स्वागत छी। पहिला बेर, 56म आईएसएचए-कॉन 2025 पारंपरिक ई-सुविनियरके बदलाई-साइंटिफिक प्रोसीडिंगल अएल अछि, जे अब आईएसबीएन संपंजीकृत अछि।”

“ISHACON 2025 meinahan sab keswagatchhi. Pahilaber, 56m ISHACON 2025 paramparik E-Souvenir kebadla E-Scientific Proceeding la aailachhi, je ab ISBN sanpanjikritachhi.”

#### **Conclusion: Importance of Linguistic Knowledge for Audiologists & SLPs**

For audiologists and speech-language pathologists (SLPs), understanding Bihar’s linguistic diversity is crucial for accurate diagnosis and effective treatment of speech and hearing disorders.

- Many phonetic variations exist across these languages, requiring region-specific assessment tools.
- Speech disorders may differ between Magahi and Bhojpuri speakers due to distinct phonetic rules.
- Bilingual or multilingual patients in Bihar may switch between Bhojpuri and Hindi or Magahi and Urdu, affecting speech therapy approaches.
- Patients speaking Bajjika may code-switch between Maithili, Bhojpuri, and Hindi, making language assessment more complex.
- Speech therapy in Bihar must consider these linguistic variations to accurately diagnose phonological disorders and language delays.
- The lack of standardized written materials in Bajjika creates a challenge for literacy and speech-language interventions.

By integrating linguistic proficiency with cultural awareness, SLPs can offer personalized, effective care, ultimately improving communication and quality of life for patients in Bihar.



Ram Pravesh Kumar, Co-chairperson Scientific Committee (OC)

## श्रवण और वाणी विशेषज्ञों की सेवा को नमन

जब नवजीवन का स्वागत करते, नवजात की पहली पुकार,  
हम स्क्रीनिंग से शुरुआत करें, हर ध्वनि का करें सत्कार।  
माता-पिता के दिल की धड़कन, जब पहली आवाज़ सुनती,  
हमारे उपकरण से ही तो, नई आशा फिर से बनती।

कर्ण संबंधी हर समस्या का, हम देते समाधान,  
ऑडियोलॉजी के अद्भुत ज्ञान से, बदलें हर इंसान।  
ओटॉस्कोप से करते जांच, इम्पीडेंस से जानें बात,  
ऑडियोमेट्री और ओएई, देते हर निदान का साथ।

कॉक्लियर इम्प्लान्ट हो या हियरिंग एड, नई तकनीक का कमाल,  
हर उम्र के मरीज को दें, सुनने का अनमोल उपहार।  
वाणी में बाधा जब आए, हो भाषा में रुकावट,  
स्पीच थेरेपी का कमाल, बनाए हर संवाद सुगम।

स्टैमरिंग (हकलाना) हो या अफासिया, हम लाएं नई उम्मीद,  
मरीजों के हर संघर्ष को, देते हैं हम नई ताकीद।  
बच्चों को हो ऑटिज्म या डिस्लेक्सिया, हर चुनौती का करें हल,  
हमारा धैर्य और समर्पण, हर दिल में भर दे कल।

वृद्धजनों के श्रवण संकट में, जब घिर जाए सन्नाटा,  
हमारी सेवा और उपकरण, फिर से गूंजाए मीठा झनझनाटा।

100 वर्ष के भी वृद्ध मरीज को दें जीवन का संगीत,  
उनके चेहरे की मुस्कान से, मिलता है हमें प्रीत।

चाहते हैं हर अस्पताल में, हों ये सुविधाएं खास,  
श्रवण, वाणी और चक्कर की जांच में, हो अलग विभाग का प्रयास।  
इनके जरिए करें उपचार, दीर्घकालिक रोगियों का समाधान,  
दुनिया भर में फैलाएं सेवा, बने मानवता की पहचान।

भविष्य के सपनों को लेकर, बढ़े विज्ञान का हर कदम,  
आधुनिक यंत्रों और शोध से, करें चिकित्सा को अटलतम।

ISHA का हिस्सा बनें, बढ़ाएं इसका सम्मान,  
बिहार एसोसिएशन को सशक्त करें, हर श्रवण-वाणी का करें उत्थान।  
संगठन और सेवा के संग, बढ़े मानवता का ज्ञान,  
हर कर्ण और वाणी को दें, जीवन का नया वरदान।

# SCIENTIFIC PROGRAM



# 56<sup>th</sup> Annual Conference of Indian Speech Language and Hearing Association



**Theme :- Technology & Therapeutic Advancement: From Science To Practice**

**Organised by :- Speech and Hearing Association, Bihar**

**Date : 14<sup>th</sup> - 16<sup>th</sup> February, 2025 | Venue : Urja Auditorium, Patna**

## MAIN CONFERENCE PROGRAM SCHEDULE

**DAY 1: 14.02.2025 (FRIDAY)**

**Dress Code: Shade of White/Red**

Time	HALL - A	HALL - B	HALL -C	Poster Gallery
07:30-09:00 am	<b>Breakfast and Registration opening of the conference</b>			
09:00-10:45 am	<b>Inauguration and Oration Award with citation (time can be changed as per availability of guest)</b>			
10:45-11:00 am	<b>Tea/Coffee Break and Exhibit Visit</b>			
11:00-11:30 am	<b>Oration Presentation – Dr. N. Rathna Oration/Dr. Suman Kumar</b>			
11:30-12:00pm HALL -A	<b>Oration Presentation- Prof. S. Kameshwaran Endowment Oration/ Dr. Y. Krishna</b>			
12:00-01:00 pm	<p><i>Mini-Symposium-1</i> “Neuro-auditory-vestibular system – Application of diagnostic technology to clinical practice”</p> <p>15 minutes Each Speaker + 5 minutes summary by moderator + 10 minutes (Q &amp;A)</p> <p><b>Chairperson:</b> Dr. Asha Yathiraj &amp; Ms. Neelu Somani</p> <p><b>Moderator:</b> Dr. N. Shivashankar</p> <p><b>Topic 1:</b> Diagnostic Tests and diagnosis in auditory brain stem lesion. <b>Speaker:</b> Dr. N. Shivashankar</p> <p><b>Topic 2:</b> Diagnostic Tests and diagnosis in cortical disorders. <b>Speaker:</b> Dr. Aravind</p>	<p><i>Mini-Symposium-2</i> on “Evolving Role of Speech Language Pathologists in Aphasia Rehabilitation: The impact of Objective tools”</p> <p>15 minutes Each Speaker + 5 minutes summary by moderator + 10 Minutes (Q &amp;A)</p> <p><b>Chairperson:</b> Mrs. Radhika Poovayya &amp; Dr. Rampravesh Kumar</p> <p><b>Moderator:</b> Dr. S. P. Goswami</p> <p><b>Topic 1:</b> Where does India stands in objective Aphasia Rehabilitation: Current Practices &amp; Future Directions. <b>Speaker:</b> Dr. S. P. Goswami</p> <p><b>Topic 2:</b> Where does West stands in objective Aphasia Rehabilitation: Current Practices &amp; Future Directions.</p>	<p><i>Mini-Symposium-3</i> on “Comprehensive rehabilitation of Persons with Head &amp; Neck Cancer”</p> <p>15 minutes Each Speaker + 5 minutes summary by moderator + 10 Minutes (Q &amp;A)</p> <p><b>Chairperson:</b> Mr. M A Srikant &amp; Dr. Suman Kumar</p> <p><b>Moderator:</b> Dr. B. Rajashekhar</p> <p><b>Topic 1:</b> Post – Laryngectomy Speech: Past, Present &amp; Future. <b>Speaker:</b> Dr. B. Rajashekhar</p> <p><b>Topic 2:</b> Dysphagia assessment &amp; management in Head &amp; Neck cancer. <b>Speaker:</b> Dr. B. S. Premalatha</p> <p><b>Topic 3:</b> Role of SLP in Post</p>	<p><b>SPEECH POSTER PRESENTATION</b></p> <p>SP1022, SP1024, SP1026, SP1028, SP1033, SP1034, SP1035, SP1045, SP1048, SP1061, SP1066, SP1068, SP1073, SP1075, SP1079</p> <p><b>LANGUAGE POSTER PRESENTATION</b></p> <p>LP769, LP776, LP782, LP786, LP791, LP792, LP797, LP798, LP800, LP801, LP808, LP812, LP813, LP820</p> <p><b>POSTER PRESENTATION AUDIOLOGY</b></p> <p>AP1413, AP1415, AP1422,</p>



	Rajasekaran <b>Topic 3:</b> Diagnostic Tests and diagnosis in vestibular disorders. <b>Speaker:</b> Dr. Pradeep Yuvraj	<b>Speaker:</b> Dr. Swathi Kiran <b>Topic 3:</b> Clubbing the technology with the social communication approaches to aphasia therapy: An Indian story. <b>Speaker:</b> Dr. Gopee Krishnan	Glossectomy & Mandibulectomy. <b>Speaker:</b> Mr. Bhaskar Day	AP1441, AP1427, AP1449, AP1452, AP1476, AP1455, AP1482, AP1485, AP1490
<b>01:00-01:20 pm</b>	<b>Invited Talk-1:</b> AI BASED HEARING AIDS ... India takes leadership position. <b>Speaker:</b> Mr. A Narang - from Alps Hearing Research <b>Chairperson:</b> Dr. J.L Sah & Mr. Amit Anand			
<b>01:20-01:30 pm</b>	<b>Invited Talk-2:</b> Visi pitch -Practical aspects and clinical utility <b>Speaker:</b> Dr. Namita Joshi <b>Chairperson:</b> Dr. J.L Sah & Mr. Amit Anand			
<b>01:30 - 02:30pm</b>	<b>LUNCH BREAK</b>			
<b>02:30 - 02:45pm</b>	<b>Invited Talk-3:</b> Innovative tests in Vertigo. <b>Speaker:</b> Dr. Srinivas Dorasala <b>Chairperson:</b> Dr. Kranti Bhavana			<b>POSTER PRESENTATION SPEECH</b>  SP1083, SP1020, SP1021, SP1023, SP1029, SP1030, SP1031, SP1032, SP1036, SP1037  <b>POSTER PRESENTATION LANGUAGE</b>  LP778, LP770, LP771, LP772,
<b>02:45 - 03:00pm</b>	<b>Invited Talk-4:</b> Consistency Decisions in Degluttology <b>Speaker:</b> Mr. Prasanna Hegde <b>Chairperson:</b> Ms. Gayatri Hattiangadi			
<b>03:00 - 04:00pm</b>	<i>Mini-Symposium -4</i> on "Electrophysiology in Clinical Audiology"  15 minutes Each Speaker + 5 minutes summary by moderator + 10 Minutes (Q &A)  <b>Chairperson:</b> Dr. Animesh Barman & Mr. Sanjay Kumar (Patna)  <b>Moderator:</b> Dr. C.S. Vanaja  <b>Topic 1:</b> Electrophysiological tests in diagnosis: Current trends <b>Speaker:</b> Dr. Madhuri Gore  <b>Topic 2:</b> Electrophysiological tests in Rehabilitation: Assessing benefit from hearing devices <b>Speaker:</b> Dr. C S Vanaja  <b>Topic 3:</b> Electrophysiological tests in Cochlear implant mapping and monitoring benefits from aural rehabilitation <b>Speaker:</b> Dr. Asha Yarhiraj	<b>ORAL PRESENTATION AUDIOLOGY</b>  AO429 AO430 AO431 AO433 AO435 AO437	<b>ORAL PRESENTATION SPEECH</b>  SO293 SO295 SO296 SO298 SO299 SO301 SO302	LP773, LP774, LP775, LP777  <b>POSTER PRESENTATION AUDIOLOGY</b>  AP1407, AP1414, AP1419, AP1425, AP1480, AP1448, AP1456, AP1464, AP1481, AP1505, AP1408, AP1412
<b>04:00 - 04:30 pm</b>	<b>Invited Talk-5:</b> Scalable Solutions in Audiology: The Intersection of Technology, Leadership, and Care.  <b>Speaker:</b> Mr. Sharad Govil	<b>Invited Talk-6:</b> Leveraging technology in providing school based clinical services in India  <b>Speaker:</b> Ms. Neha Tiwari  <b>Chairperson:</b> Ms. Aruna G	<b>Invited Talk-7:</b> Is there a quick fix for voice problems in Teachers?  <b>Speaker:</b> Dr. Prakash Boominathan	<b>POSTER PRESENTATION SPEECH</b>  SP1038, SP1039, SP1040, SP1041, SP1042, SP1043, SP1044, SP1046, SP1047, SP1049, SP1050

	<b>Chairperson:</b> Mr. Sudhir Bhanu Suri & Dr. Vivek Kumar Jha	Prabhu & Ms. Aditi Shekhar	<b>Chairperson:</b> Dr. Vijay Kumar & Mr. Sanjay Kumar	<b>POSTER PRESENTATION LANGUAGE</b>  LP768, LP779, LP780, LP781, LP784, LP785, LP787, LP788, LP789
<b>04:30 - 04:45pm</b>	<b>Tea/Coffee Break and Exhibit Visit</b>			
<b>04:45 - 05:15 pm</b>	<b>Invited Talk-8:</b> AI in Hearing Health Care  <b>Speaker:</b> Mr. Sharad Govil  <b>Chairperson:</b> Ms. Devangi Dalal & Mr. Dharmendra Jha	<b>Invited Talk-9:</b> ABA for Speech Language Pathologists  <b>Speaker:</b> Mrs. Radhika Poovayya  <b>Chairperson:</b> Ms. Bharathi Prabhu & Ms. Rupali Mathur	<b>Invited Talk-10:</b> Unlocking Opportunities: Grants and Fellowships  <b>Speaker:</b> Dr. Rohit Ravi  <b>Moderator:</b> Dr. Y. Krishna	<b>POSTER PRESENTATION AUDIOLOGY</b>  AP1403, AP1404, AP1405, AP1426, AP1409, AP1410, AP1411, AP1416, AP1417, AP1418, AP1421, AP1423
<b>DAY 2: 15.02.2025 (Saturday)</b>  <b>Dress Code: Shade of Blue/Black</b>				
<b>07:30-09:00 am</b>	<b>Breakfast and Registration</b>			
<b>09:00 -9:30am</b>	<b>Invited Talk-11:</b> Computer based auditory training for children with APD: Evidenced Based Practice.  <b>Speaker:</b> Dr. Prawin Kumar  <b>Chairperson:</b> Dr. Ashok Kumar & Dr. Niraj Kumar Singh	<b>ORAL PRESENTATION– AUDIOLOGY</b>  AO440 AO441 AO442 A0445 AO447	<b>ORAL PRESENTATION- LANGUAGE</b>  LP220 LO222 LO223 LO224	<b>POSTER PRESENTATION SPEECH</b>  SP1051, SP1053, SP1054, SP1055, SP1056, SP1057, SP1058, SP1059, SP1060, SP1062, SP1063, SP1064
		AO448		<b>POSTER PRESENTATION LANGUAGE</b>  LP790, LP793, LP794, LP795, LP796, LP799, LP802, LP803, LP804, LP805
<b>09:30-10:00am</b>	<b>Invited Talk-12:</b> Pre and post-synaptic auditory neuropathy – diagnosis and management.  <b>Speaker:</b> Dr. Sanjay Munjal  <b>Chairperson:</b> Dr. Madhuri Gore & Dr. Navneet Gupta			<b>POSTER PRESENTATION AUDIOLOGY</b>
<b>10:00 -10:45am</b>	<b>Invited Talk-13:</b> “The Debug Code for Hearing Care: Tackling India’s Biggest Challenges”  15 minutes Each Speaker + 15 Minutes (Q &A)  <b>Chairperson:</b> Mr. Ankur Chopra  <b>Speakers:</b> Mr. Anurag Kumar & Mr. Rajapandian Selvaraj	<b>Mini-Symposium-5 on</b> “Adult Aural Rehabilitation - The road less travelled”  15 minutes Each Speaker + 5 minutes summary by moderator + 10 Minutes (Q &A)  <b>Chairperson:</b> Dr. Deepa Aniket Valame & Mr. Vinay Kumar  <b>Moderator:</b> Dr. Aparna Nandurkar  <b>Topic 1:</b> What are the sign posts and speed bumps on this road?  <b>Speaker:</b> Dr. Aparna Nandurkar  <b>Topic 2:</b> The roadmap to aural rehabilitation in adults  <b>Speaker:</b> Ms Rashmi Deshpande	<b>Mini-Symposium-6 on</b> "Incorporating a neurodiversity affirming perspective into management of stuttering"  15 minutes Each Speaker + 5 minutes summary by moderator + 10 Minutes (Q &A)  <b>Chairperson:</b> Dr. Prakash Boominathan & Ms. Sandhya Prasad  <b>Moderator:</b> Mrs. Maya Sanghi  <b>Topic 1:</b> Facilitating discovery of innate talents among persons who stutter: A paradigm shifts in our clinical approach.  <b>Speaker:</b> Mrs. Maya Sanghi  <b>Topic 2:</b> Weaving neurodiversity affirming dialogue into the fabric of stuttering	AP1424, AP1406, AP1428, AP1429, AP1430, AP1431, AP1432, AP1433, AP1434, AP1435, AP1436, AP1437, AP1438, AP1439



			therapy. <b>Speaker:</b> Dr. Pallavi Kelkar	
10:45-11:00 am	<b>Tea/Coffee Break and Exhibit Visit</b>			
11:00 -11:30am <b>HALL - A</b>	<p><b>Plenary- 1:</b> Amplifying Audiologists: Expanding Horizons in Vestibular Sciences with Enhanced Vestibular Diagnostics and Advanced Vestibular Rehabilitation</p> <p><b>Speaker:</b> Dr. Yugandhar Ramakrishna</p> <p><b>Chairperson:</b> Dr. C.S. Vanaja &amp; Dr. Ashok Kumar Sinha</p>			
11:30-12:00pm <b>Invited Talk/ Keynote</b> <b>HALL -A</b>	<p><b>Plenary- 2:</b> Using ML/AI to predict Aphasia recovery – getting closer to precision medicine.</p> <p><b>Speaker:</b> Dr. Swathi Kiran</p> <p><b>Chairperson:</b> Dr. N. Shivashankar and Dr. Manoj Kumar</p>			
12:00 -12:30 pm	<p><b>Invited Talk-14:</b> From Ears to Equilibrium: Elevating Audiology with Vestibular Rehabilitation.</p> <p><b>Speaker:</b> Dr. Yugandhar Ramakrishna</p> <p><b>Chairperson:</b> Mr. Sanjay Kumar (Rohtak) &amp; Mr. Swarup Bikas Mishra</p>	<p><b>Invited Talk-15:</b> Parents as Language Facilitators: It Takes Two to Talk® – The Hanen Program® for Parents of Children with Language Delays.</p> <p><b>Speaker:</b> Ms. S. Sowmya</p>	<p><b>Invited Talk-16:</b> Introduction of Oral Sensory Integration Therapy.</p> <p><b>Speaker:</b> Ms. Sana Zeb Shaikh</p> <p><b>Chairperson:</b> Mr. Vivek Kumar &amp; Mr. Sanjay Kumar Behra</p>	<p><b>POSTER PRESENTATION SPEECH</b></p> <p>SP1065, SP1067, SP1069, SP1070, SP1071, SP1072, SP1074, SP1076, SP1077, SP1078, SP1080, SP1081, SP1082, SP1084</p>
12:30 -01:00 pm	<p><b>Invited Talk-17:</b> Mild TBI and role of electrophysiological measures in assessment and rehabilitation.</p> <p><b>Speaker:</b> Dr. Radhika Aravamudhan</p> <p><b>Chairperson:</b> Dr. AK Biswas &amp; Dr. Anuradha Sharma</p>	<p><b>Chairperson:</b> Dr. Anisha Sinha</p>	<p><b>Invited Talk-18:</b> Sustainable SLP practice through Technology Integration.</p> <p><b>Speaker:</b> Ms. Rakshita S</p> <p><b>Invited Talk 19:</b> Introduction to Able Glasses - India's First Non-Surgical Bone Conduction Smart Aid glasses for people with Conductive and Mixed type of hearing loss</p> <p><b>Speaker:</b> Mr. Pratik Raghuvanshi</p> <p><b>Chairperson:</b> Mr. Santosh Mundada &amp; Mr. Jitendra Saini</p>	<p><b>POSTER PRESENTATION LANGUAGE</b></p> <p>LP806, LP807, LP809, LP810, LP811, LP814, LP815, LP816, LP817, LP818, LP819, LP821</p> <p><b>POSTER PRESENTATION AUDIOLOGY</b></p> <p>AP1440, AP1442, AP1443, AP1444, AP1445, AP1446, AP1447, AP1450, AP1451, AP1453, AP1454, AP1457</p>
01:00-01:30 pm <b>HALL-A</b>	<p><b>Invited Talk 20:</b> New perspectives for affordable technology- Bernafon Entra</p> <p><b>Speaker:</b> Mr. Oliver Leedo-Townded</p> <p><b>Chairperson:</b> Dr. Sanjay Munjal &amp; Mr. Hemant Patel</p>			
01:30-02:30 pm	<b>LUNCH BREAK</b>			
02:30-03:00 pm	<p><b>Invited Talk 21:</b> Hearing in Stereo: Our Understanding with Bilateral Cochlear Implants</p> <p><b>Speaker:</b> Mr. Nehasish Pratihari</p> <p><b>Chairperson:</b> Shri Himanshu Singh &amp; Mr. Amit Anand</p>			<p><b>POSTER PRESENTATION AUDIOLOGY</b></p> <p>AP1458, AP1459, AP1460, AP1461, AP1462, AP1463,</p>

	<p><b>Chairperson:</b> Mr. M A Srikant &amp; Ms. Neevita Narayan</p>			
12:30-01:00 pm	<p><b>Moderator:</b> Prof. Ranjith Rajeswaran</p> <p><b>Topic 1:</b> changing trends in management of anomaly of cochlea / auditory nerve <b>Speaker:</b> Prof. Ranjith Rajeswaran</p> <p><b>Topic 2:</b> Changing trends in partial deafness treatment <b>Speaker:</b> Mr. Prem Ranjan</p> <p><b>Topic 3:</b> Changing Trends in Conductive &amp; mixed hearing loss. <b>Speaker:</b> Dr. Chandrakant Vishwakarma</p> <p><b>Topic 4:</b> CI Rehabilitation: Present &amp; Future. <b>Speaker:</b> Mrs. MaryKay Therras</p>	<p><b>Invited Talk-27:</b> Scope of Metapragmatic Assessment and Intervention in young children and adolescents with Developmental Language Disorders: The Current Scenario. <b>Speaker:</b> Dr. Geethi. S</p> <p><b>Chairperson:</b> Ms. Gayatri Hattiangadi</p>	<p><b>Invited Talk-28:</b> Golden era for deglutology is today: Understanding the scope <b>Speaker:</b> Mr. Prasanna Hegde</p> <p><b>Chairperson :</b> Dr. Mohan Murthi &amp; Dr R Gopi Sankar</p>	
01:00-01:30 pm	<p><b>Invited Talk-29:</b> Adoption of Technologies - empowering private practices. <b>Speaker:</b> Ms. Meenakshi Wadhera</p> <p><b>Chairperson:</b> Mr. Anurag Kumar &amp; Mr. Madiraju Dattatreya</p>	<p><b>Invited Talk-30:</b> Navigating the journey of Research Publication. <b>Speaker:</b> Dr. Pinki Singh</p> <p><b>Chairperson:</b> Dr. Dhanashree R Gunjawate &amp; Dr. Saransh Jain</p>	<p><b>Invited Talk-31:</b> Recent advancements in dysarthria rehabilitation. <b>Speaker:</b> Dr. Suman Kumar</p> <p><b>Chairperson:</b> Dr. S.P Goswami</p>	
01:30-02:30 pm	<b>LUNCH BREAK</b>			
02:30-04:30 pm	<b>VALEDICTORY</b>			



**SCIENTIFIC  
ABSTRACTS**



# AUDIOLOGY

# AUDIOLOGY: ORAL ABSTRACTS

## LIST OF ABSTRACTS

<b>AO429</b>	<b>40</b>
<b>Exploring the Effects of Language Acquisition Pattern (Bilingualism) on Dichotic Listening</b>	<b>40</b>
<b>AO430</b>	<b>41</b>
<b>The Relationship between Spectro-Temporal Resolution, Frequency Resolution, and Speech Perception in Noise in Individuals with Different Degrees of Sensorineural Hearing Loss</b>	<b>41</b>
<b>AO431</b>	<b>45</b>
<b>The Effect of Multi-talker Speech Babble, Speech-Shaped Noise, and White Noise on Immediate and Delayed Word Recall: Exploring the Relationship with Memory and Attention</b>	<b>45</b>
<b>AO433</b>	<b>49</b>
<b>Translation adaptation and validation of “Communication Strategies Scale” of “Communication Profile for the Hearing Impaired” into Kannada</b>	<b>49</b>
<b>AO435</b>	<b>49</b>
<b>Translation adaptation of “The Hearing Impairment Impact-Significant Other Profile (HII-SOP): A Tool to Measure Hearing Loss-Related Quality of Life in Spouses of People with Hearing Loss” into Kannada</b>	<b>49</b>
<b>AO437</b>	<b>50</b>
<b>Survey of Professional Practices and Perspectives Related to Cochlear Implantation in Adults Across India.</b>	<b>50</b>
<b>AO440</b>	<b>52</b>
<b>Characteristics of Electrically Evoked Auditory Brainstem Response (eABR) in Auditory Brainstem Implant Recipients</b>	<b>52</b>
<b>AO441</b>	<b>54</b>
<b>Relationship between unmasking of auditory brainstem response and speech perception in noise in adults with normal hearing</b>	<b>54</b>

<b>AO442</b>	<b>55</b>
<b>Quality of life in Individuals with Auditory Neuropathy Spectrum Disorder Based on ICF Framework</b>	<b>55</b>
<b>AO445</b>	<b>59</b>
<b>Effect of Hearing Loss on Temporal Processing in Older Adults</b>	<b>59</b>
<b>AO447</b>	<b>63</b>
<b>Association of Oculomotor Tests with Video-Head Impulse Test Findings in Central and Peripheral Vestibular Disorders</b>	<b>63</b>
<b>AO448</b>	<b>68</b>
<b>Balance Benchmarking: Normative Analysis of Posturographic Measures</b>	<b>68</b>

**AO429**

**Exploring the Effects of Language Acquisition Pattern (Bilingualism) on  
Dichotic Listening**

*Yashu M A, Harsha E, Mayur Bhat & Wasim Ahmed*

**SDM College of Medical Sciences and Hospital, Dharwad**

**Abstract Not Available**

**The Relationship between Spectro-Temporal Resolution, Frequency Resolution, and Speech Perception in Noise in Individuals with Different Degrees of Sensorineural Hearing Loss**

*Saransh Jain, Vijaya Kumar & Chandni Jain*

**All India Institute of Speech and Hearing, Mysuru-06**

**Introduction:**

Speech perception in noisy environments relies on multiple auditory processes, including frequency resolution, temporal resolution, and spectro-temporal resolution[1]. In individuals with hearing loss, these abilities are often compromised, leading to difficulty understanding speech in noise. Cochlear hair cells cannot distinguish between the closely spaced sound frequencies when damaged, resulting in poor frequency resolution[2]. The temporal encoding at the synapse between the hair cells and auditory nerve, or the auditory nerve neurons, which are essential for processing rapid changes in sound over time, are also affected by sensorineural hearing loss[3]. It also affects the resolution in the spectro-temporal domain. The cochlea can no longer accurately process complex sounds, such as speech, which demands interplay between frequency and timing cues[4]. These deficits tend to increase with degrees of hearing loss, where mild losses cause subtle challenges, and more severe losses result in much more problematic difficulties in perceiving speech in background noise.

**Need for Study:**

The relationship between spectro-temporal resolution, frequency resolution, and speech perception in noise is crucial in understanding auditory deficits caused by hearing loss. Individuals with cochlear hearing loss often exhibit impaired auditory processing, but most clinical assessments focus on pure-tone thresholds without evaluating specific auditory abilities such as frequency and temporal resolution. There is a strong need to investigate these aspects comprehensively, as they directly affect speech understanding in everyday noisy environments. Previous research has addressed these abilities individually[2-4], but the combined impact of frequency resolution and spectro-temporal modulation detection on speech perception in noise remains underexplored. Understanding how these auditory abilities deteriorate with increasing hearing loss is essential for improving diagnostic protocols and rehabilitation strategies. Clinicians need objective measures to predict how individuals with hearing loss will perform



in real-world listening environments. This study fills this gap by examining how spectro-temporal and frequency resolution deficits contribute to poor speech perception outcomes. Additionally, the study aims to establish a relationship between these deficits and the severity of hearing loss. This could inform more personalized auditory rehabilitation plans for those affected by mild to moderately severe hearing loss.

### **Aim & Objectives:**

**Aim:** This study investigates the effect of different degrees of hearing loss on spectro-temporal modulation detection thresholds, frequency resolution, and speech perception in noise. It also measures the relationship between spectro-temporal resolution, frequency resolution, and speech perception in noise in these individuals.

### **Objectives:**

To assess the spectro-temporal resolution, frequency resolution, and speech perception in noise abilities of individuals with clinically normal hearing, as well as with mild, moderate, and moderately severe hearing loss. It further explored the relationship between spectro-temporal resolution, frequency resolution, and speech perception in noise.

### **Method:**

#### **Participants:**

Sixty participants with sensorineural hearing loss were recruited into groups with mild (n=20), moderate (n=20), and moderately severe (n=20) hearing loss. A control group of 20 participants with clinically normal hearing sensitivity was also included. Hearing thresholds were assessed using pure-tone audiometry[5], and the degree of hearing sensitivity was determined using ASHA classification[6]. Participants with additional auditory or neurological disorders were excluded. Written informed consent and ethical approval were obtained.

#### **Tests:**

1. Spectro-temporal Resolution (Spectro-temporal Ripple Glide Direction Discrimination Test- STRtdir[7]):

**Stimuli:** Narrow-band carriers with center frequencies of 500, 1000, 2000, and 4000 Hz. 201 equal amplitude sinusoidal frequency components were superimposed on the carrier.

**Procedure:** The 3-AFC 2down-1up staircase paradigm was used for threshold estimation. Ripple density was varied to measure the participant's ability to discriminate between upward and downward gliding ripples.

**Scoring:** The minimum ripples per ERB value at which the participant discriminated reliably

( $d'$ -prime>1.27).

### 2. Frequency Resolution (Notch Noise Masking - NNM[8]):

Stimuli: A pure-tone signal and narrowband noise with center frequency at 500, 1000, 2000, and 4000 Hz.

Procedure: The signal is fixed in frequency, and the masker is a noise with a band stop or notch centered at the signal frequency. The deviation of the lower edge and the upper edge from the center frequency is in the ratio of 0-0,0.1-0.1,0.1-0.2,0.2-0.3,0.3-0.2,0.2-0.1,0.4-0.4.

Scoring: The width of the notch is varied, and the threshold for detecting the signal is determined as a function of notch width. The filter shape was derived using a rounded-exponential function. The filter bandwidth (in ERB) and filter depth were calculated.

### 3. Speech Perception in Noise (SPIN) Test:

Stimuli: Kannada sentences[9] mixed with speech-shaped noise at +7.5, +5, +2.5, 0, -2.5, -5, and -7.5 dB SNR.

Procedure: Sentences were presented randomly. Participants repeated each sentence, and the responses were recorded for analysis.

Scoring: SNR-50 values were calculated using logistic regression with non-linear interpolation from the psychometric curve based on percentage correct word repetition at each SNR.

### **Statistical Analysis:**

Data was normally distributed (Shapiro-Wilk  $p > .5$ ). A one-way ANOVA compared STRtdir, NNM, and SPIN scores across groups. A multiple regression analysis predicted SPIN performance using STRt and NNM thresholds.

### **Results & Discussion:**

STRt performance decreased as hearing loss severity increased, with significant effects observed at 100 ( $F=18.04, p \leq .001, \eta^2 = .79$ ), 2000 ( $F=24.57, p \leq .001, \eta^2 = .84$ ), and 4000 Hz ( $F=19.86, p \leq .001, \eta^2 = .80$ ). Individuals with mild hearing loss performed better than those with moderate and moderately-severe hearing loss ( $p \leq .01$ ). The results suggest that individuals with greater degrees of hearing loss experience greater difficulty in discriminating spectro-temporal modulations.

Frequency Resolution (NNM): NNM thresholds were significantly elevated for participants with hearing loss, particularly at 2000 ( $F=7.26, p = .002, \eta^2 = .49$ ) and 4000 Hz ( $F=13.61, p \leq .001, \eta^2 = .58$ ). The scores were significantly poor for moderate and moderately-severe group than mild group ( $p \leq .05$ ). The results indicated poorer frequency selectivity in

individuals with cochlear hearing loss, which is consistent with previous research findings.

Speech Perception in Noise (SPIN): Participants with hearing loss exhibited poorer SPIN performance ( $F=37.51, p \leq .001, \eta^2=.91$ ), with SNR-50 values significantly higher for the moderately severe group compared to those with mild hearing loss ( $p \leq .01$ ). The decline in speech perception in noise was most prominent at lower SNRs ( $< -2.5$ ), highlighting the difficulty these individuals face in everyday noisy environments.

Relationship between STRt, NNM, and SPIN: Significant correlations were found between STRt and SPIN thresholds ( $r=.65, p \leq .001$ ) and between NNM and SPIN thresholds ( $r=.58, p=.021$ ). The regression model ( $MSE=.08, RMSE=.28$ ) showed that STRt accounts for 46% variance in the SPIN scores ( $\text{adjusted}R^2=.46, p=.019$ ), and NNM accounts for 38% variance ( $\text{adjusted}R^2=.38, p=.041$ ). STRt and NNM thresholds together explained 69% of the variance in SPIN performance ( $\text{adjusted}R^2=.69, p \leq .001$ ), demonstrating the combined importance of spectro-temporal and frequency resolution in speech understanding. Individually, for each level of hearing sensitivity, STRt and NNM thresholds together explained 36% of the variance in SPIN performance for normal hearing ( $\text{adjusted}R^2=.36, p=.047$ ), mild hearing loss ( $\text{adjusted}R^2=.51, p=.018$ ), moderate hearing loss ( $\text{adjusted}R^2=.65, p \leq .001$ ), and moderately-severe hearing loss ( $\text{adjusted}R^2=.58, p=.001$ ).

The results prove that both spectro-temporal and frequency resolution abilities are critical factors influencing speech perception in noise. As hearing loss progresses from mild to moderately severe, the ability to process rapid changes in spectral and temporal features diminishes, leading to poorer performance on speech perception tasks. The strong predictive value of STRt and NNM scores for SPIN performance indicates that these auditory abilities should be incorporated into routine auditory assessments, particularly for individuals with moderate or greater hearing loss.

### **Summary & Conclusion:**

The study highlights the critical relationship between spectro-temporal resolution, frequency resolution, and speech perception in noise. Individuals with greater hearing loss exhibit significant deficits in these auditory abilities, impacting their ability to understand speech in noisy environments. The findings emphasize the need for comprehensive auditory assessments beyond pure-tone audiometry, focusing on spectro-temporal and frequency resolution to provide better insights into auditory processing deficits. These results can inform the development of more targeted rehabilitation strategies to improve real-world listening outcomes for individuals with hearing loss.

**The Effect of Multi-talker Speech Babble, Speech-Shaped Noise, and White Noise on Immediate and Delayed Word Recall: Exploring the Relationship with Memory and Attention**

*Saransh Jain, Harshan H S & Chandni Jain*

**All India Institute of Speech and Hearing, Mysuru-06**

**Introduction:**

Speech perception in an adverse noise condition requires cognitive processing, especially in complex situations, such as perception in multi-talker babble. The Framework for Understanding Effortful Listening (FUEL)[1] explains that effortful listening in noise tax working memory and attention. Studies showed that white noise and speech-shaped noise (SSN) generally impose less cognitive load (due to energetic masking) than multi-talker babble (due to informational masking). Sarampalis et al.[2] found that multi-talker babble significantly increased listening effort compared to SSN, affecting speech intelligibility and cognitive resource allocation.

**Need for Study:**

Working memory is critical in the immediate recall paradigm for speech in noise, where listeners must store and process information rapidly. Lad et al.[3] reported that individuals with higher scores on working memory tests performed better in multi-talker babble, highlighting the importance of memory in managing competing voices. The delayed recall paradigm is less reliant on working memory, with attentional control playing a more prominent role in retrieving information after a delay[4]. Attentional mechanisms become critical in information retrieval over time as listeners shift from memory-based to attention-based processing[5].

This study builds on these findings, exploring how multi-talker speech babble, SSN, and white noise affect immediate and delayed recall of words. We also assessed the relationship between memory and attention in different noise conditions. Only a few studies have examined the impact of different noise types on immediate and delayed recall. The interplay between noise, memory systems, and attention remains unclear. This study fills this critical gap.

**Aim & Objectives:**

Aim: We investigated the effects of multi-talker speech babble, SSN, and white noise on immediate and delayed word recall and explored their relationship with memory and attention.

Objective: To measure the effect of multi-talker speech babble, SSN, and white noise at different SNRs on percentage correct identification and reaction time in immediate and delayed word recall. To determine which cognitive resource (working/episodic memory or attention) is more engaged under each noise condition.

### **Method:**

Participants: Forty-eight university students (age=18-25) with normal hearing participated in the study. All scored  $\geq 28$  on the Mini-Mental State Examination[6] and had no history of cognitive or auditory deficits. All participants signed informed written consent, and approval from the ethical board was obtained. Stimuli: 48 lists (10 words/list) of standard Kannada bisyllabic words[7] mixed with multi-talker babble (standard four-talker Kannada babble), SSN, and white noise at -5,0, 5, and 10 dB SNR, making four lists at each noise\*SNR level. The noise was added using MATLAB's 'snr' code.

Procedure: Participants were tested in an acoustically treated room. Stimuli were presented at 65 dB SPL, binaurally. They were engaged in immediate recall (repeating the words immediately after the presentation of the half list) and delayed recall (repeating the words after a 15-second interval)[8], with two lists presented at each noise\*SNR condition. Thus, no words were repeated. Reaction time was measured in the immediate recall task to assess listening effort[9]. Recall performance was measured as the percentage of correctly recalled words (identification) in immediate and delayed tasks. Additionally, working memory was assessed using the Digit Span task[10], episodic memory using the Rey Auditory Verbal Learning Test (RAVLT) in Kannada[11], and attention using the Trail Making Test (TMT)[12].

### **Results & Discussion:**

Data was normally distributed (Shapiro-Wilk  $p > .05$ ). Inter-list (between two lists) reliability was high (Cronbach's Alpha = .91). 3\*4 (noise\*SNR) factorial repeated-measures ANOVA with pairwise comparison (Bonferroni's corrections) were applied for identification and reaction time scores in the immediate and delayed recall paradigm. Pearson's correlation measured the relation of memory and attention with identification and reaction time scores.

Immediate Recall: The results showed significant effect of noise type on immediate recall for identification ( $F=9.43, p=.003, \eta P2=.59$ ) and reaction time ( $F=12.19, p<.001, \eta P2=.78$ ). Identification scores were lower and reaction time was higher for multi-talker babble than SSN or white noise ( $p<.01$ ). In SSN and white noise, the listeners recall more words from the initial and final positions compared with the middle-position words (primacy and recency effect),



yielding a U-shaped perception curve. The perception curve had a position of words on the x-axis (1-10) and percentage correct identification scores (0-100%) on the y-axis. In multi-talker babble, more difficulties were observed when recalling the words in the initial position compared to the final position.

The overall effect of SNR was significant for identification ( $F=6.82, p=.019, \eta^2=.43$ ) and reaction time ( $F=8.96, p=.008, \eta^2=.51$ ). Scores were poorer at -5 dB SNR, but not significantly different for 0 to 10 dB SNR. Multi-talker babble led to poorer word recall, particularly at lower SNRs (-5 and 0 dB), supporting the hypothesis that working memory is heavily taxed in multi-talker noise. Reaction times were the longest for multi-talker babble ( $p<.001$ ), suggesting higher listening effort when processing competing voices. Interestingly, participants with higher Digit Span scores performed better in multi-talker babble, particularly at lower SNRs. A significant correlation was found between Digit Span scores and immediate recall performance in babble noise ( $r=.42, p=.009$ ). Still, not with RAVLT and TMT scores ( $p>.05$ ). These results suggest that working memory plays a critical role in immediate recall under noisy conditions, where listeners must allocate cognitive resources to manage competing auditory inputs.

Delayed Recall: No significant effect of noise was seen ( $F=1.89, p=.098$ ); however, the perceptual curve was U-shaped for all three noise types. Overall scores were poorer than the immediate recall task ( $p<.05$ ). RAVLT scores significantly correlated with performance in multi-talker babble ( $r=.36, p=.017$ ), and so is TMT ( $r=.59, p=.002$ ). RAVLT and TMT poorly correlated with performance in SSN and white noise ( $p>.05$ ). No condition correlated significantly with digit span score ( $p>.05$ ). The results show that delayed recall is less dependent on working memory and more influenced by attentional control mechanisms. As listeners shift from immediate processing to delayed retrieval, they may engage different cognitive strategies, including episodic memory and attentional filtering, to retrieve stored information. This allows listeners to compensate for the challenging noise environment of multi-talker babble. A significant effect of SNR was seen similar to the immediate recall condition ( $F=7.11, p=.012, \eta^2=.48$ ), with no difference after 5 dB SNR.

The FUEL model predicts that listeners exert more effort to maintain speech perception when listening conditions are complex[1]. While multi-talker babble challenges working memory and increases listening effort in immediate recall, it engages more attention in delayed recall, allowing listeners to retrieve information more effectively after a delay. The primacy effect indicates attentional processing, and the recency effect shows short-term memory engagement.

This perceptual advantage reflects the balance between cognitive resource demand and availability. In multi-talker babble, informational masking requires the listener to effectively engage memory and attentional systems, resulting in different recall performances across word positions.

**Summary & Conclusion:**

This study shows that multi-talker babble executes the greatest cognitive load in immediate recall due to its demands on working memory. Multi-talker babble has less impact on delayed recall, suggesting that listeners rely more on attentional mechanisms to retrieve information. The findings support the FUEL model, highlighting the dynamic relationship between memory, attention, and cognitive effort in speech perception tasks. Understanding how noise affects cognitive systems can help develop strategies to reduce its effect on communication, particularly in real-world listening environments.

**AO433**

**Translation adaptation and validation of “Communication Strategies Scale” of “Communication Profile for the Hearing Impaired” into Kannada**

*Anciya Preemal Pinto, Arya Lakshmi C, Mohan Kumar Kalaiah & Usha Shastri*

**Kasturba Medical College**

**Abstract Not Available**

**AO435**

**Translation adaptation of “The Hearing Impairment Impact-Significant Other Profile (HII-SOP): A Tool to Measure Hearing Loss-Related Quality of Life in Spouses of People with Hearing Loss” into Kannada**

*Koushiki, Arya Lakshmi C, Mohan Kumar Kalaiah & Usha Shastri*

**Manipal Academy of Higher Education**

**Abstract Not Available**

## **Survey of Professional Practices and Perspectives Related to Cochlear Implantation in Adults Across India.**

*Rashmi Deshpande, Mohnish Grover*

### **Listen, Learn and Communicate HSLs**

#### **Introduction:**

As per estimates, 6.1% of the world's population, i.e., 466 million people, have disabling hearing loss (HL). 93% of those with disabling HL are adults, and 7% of these are children. Approximately one-third of people over 65 years of age are affected by disabling HL. HL has adverse consequences on interpersonal communication, psychosocial well-being, quality of life (QOL), and economic independence. Cochlear implantation has emerged as an acceptable intervention strategy in adults with severe to profound HL. It has a significant impact on an adult's QOL, social-emotional health, and employment. Functionally, expected outcomes include improved ability to hear, communicate, and engage in conversations socially. Cochlear Implant(CI) improve the ability to hear and hence provide access to improved communication, education and employment.

#### **Need for Study:**

Despite this, the utilization of CI is extremely low in the clinical practice. Awareness of CI, understanding of candidacy criteria by professionals and a hesitation regarding benefits of CI in older adults have been listed as reasons for the same. There is a need to explore the current clinical practices and professional perspectives in India related to cochlear implantation in adults.

#### **Aim & Objectives:**

In India, as it appears to be in the rest of the world, the focus in CI has been on the pediatric population. The apparent mismatch between the number of adults who need a CI and the ones who eventually get one requires an in-depth understanding. The present study aims to investigate the current clinical practices and professional perspectives in India related to CI in adults. The authors found it compelling to explore the same since, to their knowledge, no such study has been conducted in India as yet.

**Method:**

This was a multicentric, survey-based study. Non-probability purposive sampling was used for recruitment. It included close-ended multiple choice, rank ordered and open-ended questions. The participants comprised of ENT surgeons, audiologists and speech-language pathologists working in the field of cochlear implants across India.

**Results & Discussion:**

Percentages and rank order analysis for utilization of cochlear implants in adults, candidacy and recipient profile, counselling, post-surgery and rehabilitation practices. The response rate for the survey in this study was 81%. 62.9 % of the professionals stated that the percentage of adult cochlear implant recipients in their cochlear implant practice was 2% to 6%. 89 % of professionals responded that the percentage of prelingual adult cochlear implantees in their practice was 0-20%. 74% professionals stated that the percentage of post lingual adult cochlear implantees was around 61-100%. 60% professionals believed that associated health issues and/associated co-morbidities were the major reasons cochlear implant was not considered. The inability to participate in social interactions was considered to be the most important factor in decision-making for cochlear implantation. The investigations for the candidacy process and rehabilitation services were addressed.

**Summary & Conclusion:**

The findings from this study definitely help to comprehend the prevailing practices and perspectives with respect to adult CI. Utilization of CI in adults is exceptionally low the world over, and the same trend appears to be in India. The authors agree that it is related to a lack of awareness, advocacy issues, and inability to refer to the appropriate centers. The candidacy investigations, rehabilitation, and outcome processes/ measures need to be uniform and require a formation of good clinical practices/ consensus. The lack of rehabilitation protocols affects the outcomes which hamper the awareness and advocacy for CI in adults. Professionals need to come together and address these issues urgently.



## **Characteristics of Electrically Evoked Auditory Brainstem Response (eABR) in Auditory Brainstem Implant Recipients**

*Aditi Nitin, Deepika J & Ranjit Rajeswaran*

**MERF Institute of Speech and Hearing**

### **Introduction:**

Auditory Brainstem implants are options for children who do not qualify for cochlear implants due to inner ear or auditory nerve anomaly. However, the audiological challenges are more complicated both intra-operatively and post-operatively. Positioning of the electrode on the cochlear nucleus is challenging due to limitations in surgical approach. Post-operatively establishing stimulation levels for auditory sensation and non-auditory sensation is challenging, especially in children who do not have any experience of sound sensation and due to lack of behavioral feedback. Objective assessment of the position of electrodes, prediction of stimulation levels for auditory and non-auditory sensation is possible using Electrically evoked auditory brainstem response (eABR). The only objective measure currently used is electrically evoked auditory brainstem response (eABR). The auditory nerve's synchronized physiological reaction to a brainstem structure is known as eABR Raghunandhan et al., (2015).

### **Need for Study:**

Morphology of the eABR may vary depending on the site of stimulation. eABR in cochlear implants have shown significant difference in morphology, amplitude and latency compared to acoustic ABR. Understanding the morphology of the eABR stimulating the cochlear nucleus using ABI have very limited data especially in pediatric population. The study focusses on understanding the characteristics of eABR and its application in clinical fitting.

### **Aim & Objectives:**

To profile the morphology and latency characteristics of eABR in Auditory Brainstem Implant recipients (ABI).

1. To measure the absolute latency of peaks, inter-peak latencies of eABR.
2. To determine the auditory and non-auditory responses.

### **Method:**

The present study included 21 subjects with chronological age range of 2 to 15 years, who underwent (ABI) surgery. All subjects in the study were non- NF2. Electrode impedances were measured in all electrodes, and eABR were measured only by stimulating electrodes with impedance values within normal limits. Stimulation levels varied from minimal to optimal level of tolerance of the subject by changing the charge units, keeping the current amplitude constant and varying the pulse width from 25 $\mu$ s to 110 $\mu$ s across all electrodes. eABR responses were recorded using clinical EP device. Charge levels were varied to estimate eABR threshold and comfort level.

### **Results & Discussion:**

EABR could be measured with varying morphology with positive peaks varying from 3 to 4 (P1 to P4). At threshold latency of P1 varied from 0.46ms to 0.92ms, 1.69 to 2.27ms for P2 and, P3 from 2.58 to 3.56ms. Non auditory response was classified as P4 from 3.5 to 6.04ms. At comfort level the range of latencies were early, P1 from 0.41ms to 0.62ms, P2 from 0.78ms to 1.60ms, P3 from 2.37ms to 2.82ms and P4 from 3.5ms to 5.08ms. However, the number of electrodes eliciting non-auditory and mixed responses were minimal compared to auditory responses.

### **Summary & Conclusion:**

Characteristics of eABR in ABI is significantly different from CI and acoustic ABR. However, eABR in ABI is a reliable tool to measure the auditory and non-auditory responses in children with ABI. The threshold of eABR serves as a predictor of stimulation levels of hearing, during post-op programming. Both intra-operatively and post -operatively eABR can also be used to assess the position of electrodes on the cochlear nucleus. Despite the variability in morphology due to electrode position, etiology and electrode status, eABR is still measurable.

**AO441**

**Relationship between unmasking of auditory brainstem response and  
speech perception in noise in adults with normal hearing**

*Garima Dixit & Mohan Kumar*

**Kasturba Medical College Mangalore MAHE Manipal**

**Abstract Not Available**

## **Quality of life in Individuals with Auditory Neuropathy Spectrum Disorder Based on ICF Framework**

*Tojo Joseph, Megha Sasidharan, Theertha Dinesh, Simran Mohanty*

**Dr. S. R. Chandrasekhar institute of speech and hearing**

### **Introduction:**

Auditory Neuropathy Spectrum Disorder (ANSD) is a form of hearing impairment in which cochlear outer hair cells' function is persevered but neural conduction in the auditory pathway is disordered (Starr et al., 1996; Berlin et al., 2001). Sininger, Hood, Starr, Berlin, and Picton (1995) stated that auditory neuropathy is characterized by sensorineural hearing loss that can range from mild to profound and may fluctuate, with normal otoacoustic emissions, absent or abnormal auditory brainstem response and absent acoustic reflexes. Individuals with ANSD, face significant communication challenges due to poor speech perception abilities, which may severely impact their daily life, mental and emotional states, social interactions, education, and work performance, ultimately affecting their overall quality of life (QOL). Understanding the impact of ANSD on the individual's QOL is of great importance and assessment of this impact needs a holistic tool. The International Classification of Functioning, Disability and Health (ICF) in 2001, recognized by the World Health Organization (2001) for integrating biological, psychological, and social aspects of human functioning, is a holistic framework to enable the description of health conditions, in all their complexity in a standardized way.

### **Need for Study:**

There are studies which have reported the hearing handicap in adults with ANSD (Prabhu, 2017) and which have evaluated depression, anxiety, stress and dizziness in individuals with ANSD (Prabhu, 2016; Prabhu & Jamuar, 2017). However, a holistic picture of overall QOL in individuals with ANSD is not well reported in the literature. The current study provides insights into the overall functioning of individuals with ANSD based on their speech perception skills that could help with intervention approaches.

### **Aim & Objectives:**

The aim of the current research was to study the QOL in individuals with ANSD using the ICF framework and to determine the relationship between speech perception and QOL.

Objectives:

1. To explore the impact of QOL in individuals with ANSD using ICF framework (body structure and functioning, activity and participation and environment components)
2. To determine the relationship between the speech perception and body structure and functioning component of ICF comprehensive set of hearing loss.
3. To determine the relationship between the speech perception and activity and participation component of ICF comprehensive set of hearing loss.
4. To determine the relationship between the speech perception and environment component of ICF comprehensive set of hearing loss

**Method:**

Data was collected using convenient sampling from 20 adults diagnosed with ANSD (diagnostic criteria as given by Berlin et al., 2010) by a qualified audiologist. Participants with any peripheral neuropathies, history of ototoxic drug exposure, and noise exposure were excluded from the study. An ICF-based questionnaire, which was developed by Choudhury and Rangasayee (2016) as a part of the dissertation, and Kannada phonetically balanced bisyllabic words developed by Vandana (1998) were used for the study. The selected questionnaire underwent forward and backward translation in Kannada. The translated Kannada version of the ICF-based questionnaire was administered to 20 participants who met the inclusion criteria. To assess speech perception, 50 Kannada bisyllabic words were presented via loudspeaker at 40 dBSL, with participants seated at 0-degree azimuth relative to the loudspeaker. They were instructed to repeat the words they heard, with each correctly repeated word scoring 2%. The data were entered in excel and analyzed using IBM SPSS statistics version 23. To examine the relationship between speech perception and all the components of ICF comprehensive set of hearing loss, Spearman's correlation coefficient was calculated.

**Results & Discussion:**

In the present study, under the body structure and function domain, 65% of participants reported to have severe emotional disturbances because of their hearing impairment, 55% of participants indicated moderate difficulty in locating sound sources and 85% had moderate difficulty discriminating between two or more sounds. Under the activity and participation domain, 85% of participants faced severe to complete difficulties in using telephones, communication devices, and understanding multiple tasks, 60% reported severe problems when participating in group discussions, and many of them expressed the need for increased

employment opportunities for individuals with hearing impairments. In the environmental factors domain, 70% of participants reported severe problems in getting health services, systems, and policies based on their needs, 60% experienced moderate problems due to their challenges not understood by those who are unfamiliar with them which led to confusion, and 50% reported moderate problems in accessing communication aids available to them. A negative correlation was found between the variables suggesting that as speech perception scores were poorer, individuals had greater difficulty in all the components of ICF framework

### **Discussion:**

There are limited studies that focus on the overall quality of life in individuals with ANSD, particularly regarding the relationship between speech perception and quality of life. In an Indian study by Anuja & Aparna (2017), individuals with ANSD have been administered with an ICF based questionnaire developed by them primarily focusing on activity limitation and participation and have also showed similar findings where in participants had moderate problem in the domains of mental functions; general tasks and demands; interpersonal interactions and relationships; major life areas, community and social life and supports and relationships whereas the same group exhibited severe problem in the areas of sensory functions and pain, learning, communication and domestic life. Their results imply considerable activity limitation and participation restriction in adults with ANSD however, their study did not explore the relationship with speech perception and ICF framework.

Prabhu (2016) showed that in individuals with ANSD there was statistically a high negative correlation between speech identification scores (SIS) and depression and anxiety and a moderate negative correlation for stress. Prabhu (2017) showed that SIS could predict the hearing handicap in adults with ANSD with significant hearing handicap in both social and emotional domains. Prabhu concluded that the decreased speech identification abilities in individuals with ANSD affected their daily lives functioning and led to depression and anxiety symptoms. This aligns with our findings where individuals with poorer speech perception scores had significant deficits in quality of life in all three components of the ICF framework.

### **Summary & Conclusion:**

#### **Summary:**

The QOL of individuals with ANSD is severely impacted based on the questionnaire. ANSD leads to moderate limitations in the body structure and functioning component of the ICF comprehensive set for hearing loss, and severe limitations in the activity, participation, and



environmental components. A significant negative relationship was found between speech perception and any of the ICF components, including body structure, functioning, activity, participation, or environmental factors. Thus, poor speech perception significantly affects QOL in individuals with ANSD.

**Conclusion:**

The current study addressed the various challenges faced by individuals with ANSD due to their difficulty in understanding the speech. By assessing these challenges using the ICF framework, the study effectively highlighted the impact on day-to-day functioning and the environmental barriers that limit participation. This may help in implementing new therapeutic strategies based on their speech perception that may optimally improve the QOL of people with ANSD.

## Effect of Hearing Loss on Temporal Processing in Older Adults

*Asha Yathiraj & Vanaja C.S.*

**JSS Institute of Speech and Hearing, Mysuru**

### **Introduction:**

Difficulty in understanding speech is a common problem reported by older adults. A part of this difficulty has been attributed to a decline in auditory temporal processing (Phillips et al., 2000; Pichora-Fuller & Souza, 2003; Schneider & Pichora-Fuller, 2001). This age-related decline has been found to occur for gap detection (Harris et al., 2010; John et al., 2012; Phillips et al., 2000; Pichora-Fuller et al., 2006; Snell, 1997; Snell & Frisina, 2000; Snell et al., 2002; Vaidyanath & Yathiraj, 2015), duration discrimination (Gordon-Salant et al., 2006), and temporal ordering (Humes & Christopherson, 1991; Trainor & Trehub, 1989).

Hearing loss has also been demonstrated to impact temporal perception in adults. This was observed for temporal patterning (Gordon-Salant & Fitzgibbons, 1999); temporal resolution (Glasberg et al., 1987; Gordon-Salant & Fitzgibbons, 1999; John et al., 2012; Madden & Feth, 1992; Moore & Glasberg, 1988; Phillips et al., 2000); and temporal discrimination (Gordon-Salant & Fitzgibbons, 1999). In contrast, a few studies reported that temporal processing is not impacted by mild to moderate cochlear/peripheral hearing loss. This was observed for temporal patterning (Musiek & Pinheiro, 1987; Matos & Frota, 2013); for temporal resolution (Kumar & Sangamanatha, 2011; Moore et al 1992; Moore & Glasberg, 1987) and duration discrimination (Kumar & Sangamanatha, 2011).

### **Need for Study:**

Thus, there existed no consensus regarding the effect of hearing impairment on temporal processing. This information is required to confirm whether the available norms for temporal processing tests can be used with those with hearing loss.

### **Aim & Objectives:**

Hence, the study aimed to evaluate the impact of hearing loss on temporal processing and whether it interacts with ageing.

### **Method:**

#### **Participants**

A total of 260 participants were evaluated. They included three groups with normal hearing

(60 young adults aged 20 to 30 years; 60 older adults aged 50 to < 60 years, & 60 older adults aged 60 to 70 years) and two groups with acquired mild-to-moderate loss hearing loss (40 older adults aged 50 to < 60 years; & 40 older adults aged 60 to 70 years). All the participants had no report of otological, neurological problems, or speech and language problems; and had a score of  $\geq 24$  on the Mini Mental State Examination. The normal hearing participants had no middle ear problems, determined by immittance evaluation; the presence of TEOAEs; and speech identification scores  $> 75\%$ . The participants with hearing loss had symmetrical mild-to-moderate sensorineural loss not greater than 50 dB HL.

All the audiological tests were carried out in acoustically treated double room set-ups with noise levels within the limits specified by American National Standard Institute specifications (ANSI S3.1-1999.).

### **Procedure:**

The participants were assessed on three diagnostic temporal processing tests. These included Gaps-In-noise test (GIN) by Musiek et al. (2005) to assess temporal resolution; Duration Pattern Test (DPT) by Pinheiro and Musiek (1985) to evaluate temporal patterning; and Duration Discrimination (DD) test (Starr et al., 1991) to measure temporal discrimination. The CD versions of all three tests were played on a computer and were routed monaurally at 40 dB SL (ref. PTA) through an audiometer to headphones. Each ear was tested separately, with half the participants being tested first in their left ear and half in their right ear. The responses were scored as recommended in the original tests.

### **Results & Discussion:**

#### **RESULTS:**

Descriptive and inferential statistics were carried out using SPSS (Version 25) software. In general, the mean and standard deviation of the temporal abilities decreased with an increase in age. The performance of the individuals with hearing loss was poorer than those without hearing loss. A two-way MANOVA revealed a main effect of age and hearing loss on scores for GIN (approximate threshold, gaps detected, & number of gaps identified Vs number of gaps presented), DPT and DD. There was no interaction between age and hearing loss on DD thresholds and DPT scores of both ears. However, there was a significant interaction between age and hearing loss on all the measures of GIN. A pairwise comparison using Bonnferroni correction revealed that the performance of all three groups was significantly different from each other on all three tests. Independent sample t-test carried out separately for each age group

revealed that the performance of persons with hearing loss was significantly different from those of normal hearing in those aged 60 to 70 years but not in those aged 50 to 60 years for DD. In both older groups, those with hearing loss performed significantly poorer than those with normal hearing on GIN and DPT.

### **DISCUSSION:**

**Effect of age:** The decrease in temporal abilities with an increase in age seen in the current study aligns with the findings of John et al. (2012) and Moore et al., (1992), but is contrary to that found by Prem et al. (2012) for GIN. Phillips et al. (1994) also found no significant effect of age on duration discrimination task. These differences in findings from the current study could be attributed to procedural variations and sample size.

The decrease in temporal processing abilities in older individuals could be attributed to weaker processing of stimuli in the central auditory nervous system. Lesions in the posterior part of the temporal lobe, insular cortex, and brainstem have been shown to reduce temporal processing ability (Bamiou et al., 2006). A general deterioration in the regions may be responsible for the deterioration in temporal processing observed with age.

**Effect of hearing loss:** The findings of the present study indicate that hearing loss has a negative impact on temporal processing. From animal research, it can be inferred that peripheral hearing loss alters spatial and temporal response properties throughout the central auditory system (Willott, 1996). This can lead to poor performance on temporal tasks by older adults with hearing loss. Like the current study, previous researchers have shown an association between gap detection thresholds and hearing levels (Leigh-Paffenroth & Elangovan, 2011; Nelson & Thomas, 1997). However, equivocal findings are reported in the literature on the effect of hearing loss on DPT scores. Neijenhuis et al. (2004) found similar findings as the present study for DPT. However, others (Musiek et al., 1990; de Oliveira Matos and Frota (2013) found no significant effect of cochlear hearing loss on DPT. Unlike the current study, Grose et al. (2004), Fitzgibbons & Gordon-Salant (1995), and Gordon-Salant and Fitzgibbons (1999) reported that there was no significant effect of cochlear hearing loss on a duration discrimination task. The difference in these studies could be due to variations in the age group selected for investigation, differences in diagnostic criteria, and pathology.

An important finding of the current study was the interaction between age and hearing loss. The effect of hearing loss was found to be significantly different in the oldest age group for DD but not for GIN and DPT. Thus, with an increase in age, the negative impact of hearing loss is more marked.

**Summary & Conclusion:**

The results of the present study indicate that both age and hearing loss do have a deleterious effect on temporal processing skills. Thus, it is recommended that the norms for tests of temporal processing should not be used for those with mild to moderate hearing loss.

## **Association of Oculomotor Tests with Video-Head Impulse Test Findings in Central and Peripheral Vestibular Disorders**

*Richa Rashmi & Sharda Sarda*

**MEDEL India Pvt LTD**

### **Introduction:**

Balance is the ability to maintain posture and spatial orientation both at rest and during movement. This equilibrium relies on sensory input from three primary systems: the visual, proprioceptive, and vestibular systems. The vestibular system is divided into peripheral and central components. The peripheral system consists of three semicircular canals on each side (posterior, superior, and lateral) along with two otolith organs, the saccule and the utricle. The central vestibular system's most critical structures are the vestibular nuclear complex and the cerebellum.

Vestibular disorders/dysfunction can be broadly categorized into central and peripheral vestibular disorders, each with distinct etiologies and clinical presentations. The common central causes of vestibulopathy are vertebrasilar transient ischemic attack (TIA), acute ischemic stroke involving the vestibular nerve tracts, cerebellum, or brainstem; hemorrhagic stroke affecting the brainstem and cerebellum, and demyelinating diseases, such as multiple sclerosis, that affect the vestibular tracts, cerebellum, and brainstem. (Dougherty et al, 2023).

Peripheral vestibular disorders are associated with pathologies in the inner ear structures, particularly the semicircular canals, otolith organs, and vestibular nerves. (Valovich et al,2015). The six most frequent forms of peripheral vestibular disorders are - in the order of their frequency - benign paroxysmal positioning vertigo (BPPV), Meniere's disease, vestibular neuritis, bilateral vestibulopathy, vestibular paroxysms, and superior canal dehiscence syndrome. (Strupp & Brandt 2013).

A range of subjective and objective vestibular tests aids in distinguishing between central and peripheral vestibular pathologies. Objective Audio-Vestibular Tests such as Video Nystagmography (VNG) provide quantitative data on various oculomotor tests, including saccades, smooth pursuit, optokinetic nystagmus, and gaze-evoked nystagmus. Video Head Impulse Test (v-HIT) is a diagnostic tool used to assess the function of the vestibulo-ocular reflex (VOR), which stabilizes vision during head movements. (Halmagyi et. al,2017). v-HIT provides accurate, real-time assessment of all six semicircular canals in three planes: Lateral,



RALP & LARP, offering a comprehensive evaluation of the vestibular system.

### **Need for Study:**

Diagnosing a central vestibular lesion can be quite challenging due to the overlap in symptoms and signs with peripheral vestibular lesions. Oculomotor tests are known to be more affected in clients with central vestibular pathologies (Wu et al., 2022). Similarly, the v-HIT test is particularly useful for differential diagnosis and demonstrates greater sensitivity compared to other tests (Smith et al., 2023). However, its association with VNG tests across various central and peripheral disorders has not been extensively investigated. Therefore, it is crucial to examine the relationship between v-HIT diagnosis and the oculomotor tests of VNG.

### **Aim & Objectives:**

#### **Aims of the study**

To investigate the oculomotor test findings (saccade, optokinetic & smooth pursuit) & video head impulse test findings in persons with central and peripheral vestibular disorders.

#### **Objectives of the study**

1. To investigate if there is any association between the result of saccade test with that of Video Head Impulse Test (v-HIT) test in persons with central and peripheral vestibular pathologies.
2. To investigate if there is any association between the result of smooth pursuit test with that of Video Head Impulse Test (v-HIT) test in persons with central and peripheral vestibular pathologies.
3. To investigate if there is any association between the result of optokinetic test with that of Video Head Impulse Test (v-HIT) test in persons with central and peripheral vestibular pathologies.

### **Method:**

The research was conducted at the School of Audiology and Speech-Language Pathology, Bharati Vidyapeeth (Deemed to be University), Pune and purposive sampling was employed to gather the data sample. Total 32 participants were considered for the current research which is further divided into 2 groups of participants.

Group I included 16 individuals both male & female in the age range of 20-80 years reporting continuous or intermittent vertigo/dizziness with K/C/O central pathology diagnosed by a medical professional (Neurophysician, Neurologist & ENT) & confirmed on radiological investigation (CT&/ MRI).

Group II included 16 individuals with primary complaints of dizziness/vertigo (acute, positional, chronic, episodic, or generalized imbalance) due to diagnosed peripheral pathology by a medical professional (Neurophysician, /Neurologist/ ENT/Audiologist)

#### Procedure

Detailed dizziness case history was taken followed by otoscopic examination and Puretone Audiometry. Video Nystagmography (VNG) included a saccade test, smooth pursuit test, and optokinetic test using Cyclops Medtech Balance Eye. The placement of goggles was performed, followed by calibration.

The saccades test was performed at 0.3 Hz in the horizontal and vertical planes by instructing the participants to follow the target. A minimum of 10 cycles were recorded for each plane. The analysis of the saccade test was conducted using the precision parameters in the horizontal & vertical planes for both the right & left eye at the rate of 0.3 Hz.

The smooth pursuit test was conducted at a frequency of 0.2 Hz in both the horizontal and vertical axes. The analysis of the smooth pursuit test was performed using the VOR gain parameters at the rate of 0.2 Hz in the horizontal and vertical planes for both the right and left eyes.

The optokinetic test was conducted at 10 Hz for 15 seconds by instructing participants to focus on a central strip consisting of black or white stripes displayed on the screen. The analysis was performed using VOR (Vestibulo—Ocular Reflex) gains in left-to-right, right-to-left, top-to-bottom, and bottom-to-top directions for both right and left eyes at  $10^{\circ}$ .

The Video-Head Impulse Test (v-HIT) was conducted using the EyeSeeCam instrument. Individuals were seated in a chair, and goggles were placed on them. Following calibration, the v-HIT was conducted in three planes assessing six semicircular canals: horizontal (RL & LL), Left Anterior Right Posterior (LARP), and Right Anterior Left Posterior (RALP). Gain at 60 ms was recorded. The analysis was performed using the number of saccades parameter.

#### **Results & Discussion:**

#### **RESULTS**

To evaluate this potential association, clinician-administered oculomotor tests of VNG and the v-HIT to individuals diagnosed with central and peripheral vestibular disorders. These individuals were then classified as affected or unaffected based on norms developed in our department. (Shaikh & Sarda, 2023, Bhatt & Sarda, 2023) and found that the Video Head Impulse Test (v-HIT) was more effective in Individuals with Peripheral vestibular pathology as compared to central Vestibular pathology. Pearson's Chi-Square was performed to see if

there is any association between the Video Head Impulse Test (v-HIT) with the Saccade test, smooth pursuit test & optokinetic test in Central & peripheral Vestibular Pathology.

The result shows that in central vestibular pathology, there is no association between the result of the Video Head Impulse Test (v-HIT) with that of the Saccade test, and in peripheral vestibular pathologies, there is no association between the result of v-HIT with the smooth pursuit test in persons with except the smooth pursuit test (horizontal gain Left Ear) with that of v-HIT (Right Lateral saccade no). There is no association between the result of v-HIT test with that of smooth pursuit test in central & peripheral vestibular Pathology. There is an association between the result of v-HIT (Right Lateral, Left Lateral & Left Posterior canal saccade no) with that of the optokinetic test (horizontal gain, vertical gain) in persons with central vestibular pathologies. Although the association of only a few parameters is not crucial. Also, there is no association between the result of the v-HIT test and that of the optokinetic test in peripheral vestibular Pathology.

## **DISCUSSION**

Our study's findings indicate no significant association between the saccade test, smooth pursuit test, optokinetic test, and the video Head Impulse Test (v-HIT) results in both central and peripheral vestibular pathologies. The findings of the present study align with the observations from Unsal et al.'s (2019) study. The study examined the vestibular and oculomotor findings in patients with Meniere's disease, a common peripheral vestibular disorder. These findings suggest that oculomotor tests are not significantly impacted by peripheral vestibular dysfunction as measured by v-HIT. Comparable findings have been reported in other peripheral vestibular disorders, such as vestibular neuritis (Choi et al., 2015) and benign paroxysmal positional vertigo (Abdulrahim et al., 2021; Moideen et al., 2023).

Our study contrasts with Waissbluth's (2023) study, which found that vestibular migraine patients often exhibit abnormalities in both v-HIT and oculomotor tests, suggesting an association between vestibular and oculomotor dysfunction in this particular central pathology.

### **Summary & Conclusion:**

The study aimed to investigate the association among oculomotor test findings (saccade, optokinetic & smooth pursuit) & video head impulse test findings in persons with central and peripheral vestibular disorders. The study comprised two groups: Group I included 16 individuals with Central Vestibular Disorder, and Group II included 16 individuals with Peripheral Vestibular Disorder, all primarily experiencing vertigo or dizziness. The procedure began with a saccade, smooth pursuit, and optokinetic tests using Videonystagmography

(VNG) and Video Head Impulse Test (v-HIT).

### **Conclusion**

The study found that lack of association between most of the parameter's saccade, smooth pursuit, optokinetic tests, and v-HIT results in both central and peripheral vestibular disorders highlights the importance of using a comprehensive battery of tests to evaluate vestibular function.

**AO448**

**Balance Benchmarking: Normative Analysis of Posturographic Measures**

*Ashika P, Arjun Namboothiri, Parthivi Ch, Gracy M & Donna Sebastian L*

**Holy Cross College (Autonomous), Trichy**

**Abstract Not Available**

---

# AUDIOLOGY: POSTER ABSTRACTS

## LIST OF ABSTRACTS

<b>AP1403</b>	<b>79</b>
<b>A Glimpse into The Diverse Causes of Unilateral Delayed Onset Hearing Loss - A Case Study .....</b>	<b>79</b>
<b>AP1404</b>	<b>79</b>
<b>Association between Tinnitus and Auditory Middle Latency Response.....</b>	<b>79</b>
<b>: An Exploratory Study .....</b>	<b>79</b>
<b>AP1405</b>	<b>79</b>
<b>Association of Self-Reported Noise Exposure Levels with Auditory Processing Among College Going Students.....</b>	<b>79</b>
<b>AP1406</b>	<b>80</b>
<b>Impact of Earphone Usage on Extended High-Frequency Hearing and Speech Perception in Noise in Younger Adults with Clinically Normal Hearing.....</b>	<b>80</b>
<b>AP1407</b>	<b>83</b>
<b>Influence of Cartoon-Based Screen Time on Auditory and Phonological Processing Abilities in Young Children .....</b>	<b>83</b>
<b>AP1408</b>	<b>84</b>
<b>The Missing Links: Parental Insights into Information Dissemination for the ADIP Scheme – A survey.....</b>	<b>84</b>
<b>AP1409</b>	<b>87</b>
<b>A study of Prevalence of dizziness in individuals with sensorineural hearing loss in India. ....</b>	<b>87</b>
<b>AP1410</b>	<b>90</b>
<b>Prevalence and Characteristics of Misophonia among adult population in Odisha ....</b>	<b>90</b>
<b>AP1411</b>	<b>94</b>
<b>Bridging the Gap: Audiologists' Awareness of Effective (C)APD Therapies .....</b>	<b>94</b>



<b>AP1412</b>	<b>98</b>
<b>Factors associated with infants and toddler hearing aid use: A Parental Survey .....</b>	<b>98</b>
<b>AP1413</b>	<b>102</b>
<b>Academic Performance and Auditory Processing Difficulties: Comparing High and Low Performing Children from Similar Socio-Economic Backgrounds Using the SCAP-C Checklist.....</b>	<b>102</b>
<b>AP1414</b>	<b>105</b>
<b>Translation, Cultural Adaptation and Validation of the Vestibular Disorders Activities of Daily Living Scale in Marathi (VADL-M).....</b>	<b>105</b>
<b>AP1415</b>	<b>106</b>
<b>Comparative Analysis of Visual Working Memory in Children with Severe to Profound Hearing Loss.....</b>	<b>106</b>
<b>AP1416</b>	<b>110</b>
<b>A Preliminary Study on Pre and Post Comparison of Knowledge About Postural Hypotension Among Audiology Students.....</b>	<b>110</b>
<b>AP1417</b>	<b>111</b>
<b>The link between Auditory earworms and differential sensitivity - An exploratory study examining the intensity and frequency discrimination .....</b>	<b>111</b>
<b>AP1418</b>	<b>115</b>
<b>Harnessing Technology: A Review of Auditory Verbal Therapy Apps .....</b>	<b>115</b>
<b>AP1419</b>	<b>119</b>
<b>Auditory Thresholds and Working Memory Capacity in Right and Left-Handed Individuals with Normal Hearing Sensitivity.....</b>	<b>119</b>
<b>AP1421</b>	<b>119</b>
<b>Evaluating the Effect of Poor Sleep Quality on The Peripheral Vestibular System in Young Adults - A Pilot Study.....</b>	<b>119</b>
<b>AP1422</b>	<b>120</b>
<b>Bridging the Gap: Assessing the Awareness and Utilization of Assistive Listening Devices for Students with Hearing Impairments among Special Educators in Delhi .....</b>	<b>120</b>

<b>AP1423</b>	<b>123</b>
<b>Audiological-Vestibular Profile of Patient with Vertebral and Anterior Cerebral Artery Hypoplasia: A Case Study.....</b>	
	<b>123</b>
<b>AP1424</b>	<b>124</b>
<b>Audiological and Vestibular findings in an adult with Tinnitus and Dizziness: A case study .....</b>	
	<b>124</b>
<b>AP1425</b>	<b>127</b>
<b>Dislodgement Of Internal Magnet of Cochlear Implant: A Case Study .....</b>	
	<b>127</b>
<b>AP1426</b>	<b>130</b>
<b>Knowledge and Awareness of Aural Hygiene Practices Among Academic Faculty... 130</b>	
<b>AP1427</b>	<b>134</b>
<b>Effect of Intra Tympanic-Dexamethasone on Sudden Hearing Loss .....</b>	
	<b>134</b>
<b>AP1428</b>	<b>138</b>
<b>Comparative Analysis of Auditory Perceptual and Processing abilities between Tribal and Urban Children.....</b>	
	<b>138</b>
<b>AP1429</b>	<b>139</b>
<b>Masseter Vestibular Evoked Myogenic Potentials: The Impact of NB CE Chirp Stimulus at Different Frequencies .....</b>	
	<b>139</b>
<b>AP1430</b>	<b>142</b>
<b>Auditory Awareness: Navigating Noise Exposure in Dental Care. ....</b>	
	<b>142</b>
<b>AP1431</b>	<b>146</b>
<b>Validation of the Cognitive Self Report Questionnaire (CSRQ-25) Among Older Adults in India.....</b>	
	<b>146</b>
<b>AP1432</b>	<b>150</b>
<b>Hearing Aid Acquisition in the Digital Age - A Comparative Study of User Satisfaction in India .....</b>	
	<b>150</b>
<b>AP1433</b>	<b>153</b>
<b>Comparison of Video Head Impulse Test and Vestibular Evoked Myogenic Potentials Among Moderate Smokers and Non-Smokers. ....</b>	
	<b>153</b>
<b>AP1434</b>	<b>157</b>

<b>Influence of Handedness on Contralateral Suppression of Transient Evoked Otoacoustic Emissions .....</b>	<b>157</b>
<b>AP1435</b>	<b>161</b>
<b>Effects after the Second Dose of Covishield Vaccine on Speech and Hearing Skills..</b>	<b>161</b>
<b>AP1436</b>	<b>165</b>
<b>Comparison of Auditory Development Behaviour Measures in Children Using Cochlear Implants and Hearing Aids: Parents' Perspectives .....</b>	<b>165</b>
<b>AP1437</b>	<b>166</b>
<b>Hearing Loss Associated with Patent Ductus Arteriosus and Congenital Rubella Syndrome .....</b>	<b>166</b>
<b>AP1438</b>	<b>170</b>
<b>Incidence of follow up in newborn hearing screening .....</b>	<b>170</b>
<b>AP1439</b>	<b>172</b>
<b>Enhancing Speech Perception in Older Adults: Improved Outcomes from Integrating Lexical Access with Concurrent Word Identification Training .....</b>	<b>172</b>
<b>AP1440</b>	<b>176</b>
<b>'Pitch-Shift Reflex' in Chronic Suppurative Otitis Media: A Case Study .....</b>	<b>176</b>
<b>AP1441</b>	<b>177</b>
<b>Parental Awareness and Decision-Making in Management of Children with Unilateral Hearing Loss: A Study Across Delhi-NCR.....</b>	<b>177</b>
<b>AP1442</b>	<b>181</b>
<b>Barriers to Hearing Aid Adoption and Continuation: Perspectives from Non-Users, Past Users, and Families in India .....</b>	<b>181</b>
<b>AP1443</b>	<b>185</b>
<b>Tinnitus Relief at Your Fingertips: Audiologists' Evaluation of Management Apps.</b>	<b>185</b>
<b>AP1444</b>	<b>189</b>
<b>A Comparison of Speech Perception in Noise with Varying SNR and Short-Term Increment Sensitivity Index between Musicians and Non-Musicians.....</b>	<b>189</b>
<b>AP1445</b>	<b>190</b>

Translation and Validation of Inventory of Hyperacusis Symptoms Questionnaire in Hindi.....	190
<b>AP1446</b>	<b>194</b>
Clinical Diagnostic Evaluation of Autoimmune Involvement in Auditory Neuropathy Spectrum Disorder.....	194
<b>AP1447</b>	<b>195</b>
Fine Structure Distortion Product Otoacoustic Emissions in Older Adults .....	195
<b>AP1448</b>	<b>198</b>
Age of Onset of Age-related Decline in Hearing Sensitivity and its Relationship with Cochlear Function.....	198
<b>AP1449</b>	<b>199</b>
Single Sided Deafness: A Major Barrier to Academic and Psychosocial Context: A Single Case Study a Young Practicing Physician .....	199
<b>AP1450</b>	<b>202</b>
Impact of Personal Music Systems on Acoustic Reflex Thresholds in Young Adults	202
<b>AP1451</b>	<b>206</b>
Assessing Adult Awareness on Noise-Induced Hearing Loss (NIHL): Impacts, Risks, and Effective Prevention Strategies.....	206
<b>AP1452</b>	<b>209</b>
A comparative analysis on the validity and clinical efficiency of Turner’s Modified Masking Method over Hood’s Plateau method in asymmetrical hearing loss: A pilot study .....	209
<b>AP1453</b>	<b>213</b>
Does COVID-19 Influenced Hearing Threshold Permanently? Five Years Longitudinal Outcome Study.....	213
<b>AP1454</b>	<b>217</b>
Navigating Barriers in Real Ear Measurement (REM) and Electro Acoustic Measurement (EAC): Enhancing Hearing Aid Fitting Practices in Audiology.....	217
<b>AP1455</b>	<b>217</b>
Influence of Cognitive Load and Multisensory Distractions on Acoustic Reflex Thresholds in Clinical Environments.....	217

<b>AP1456</b>	<b>218</b>
<b>Exploring the Benefits of Yoga on Speech in noise perception and Cognitive Skills in Adults with normal hearing sensitivity .....</b>	
	<b>218</b>
<b>AP1457</b>	<b>221</b>
<b>Preliminary Study for Normatives using Craniocorpography .....</b>	
	<b>221</b>
<b>AP1458</b>	<b>221</b>
<b>Impact of Noise on Vocal Intensity in Unilateral Cochlear Implant Recipients .....</b>	
	<b>221</b>
<b>AP1459</b>	<b>222</b>
<b>Exercise and its Potential to Aggravate Symptoms of Patulous Eustachian Tube Dysfunction .....</b>	
	<b>222</b>
<b>AP1460</b>	<b>225</b>
<b>Understanding Vestibular Neuritis: Insights into Diagnosis and Treatment .....</b>	
	<b>225</b>
<b>AP1461</b>	<b>226</b>
<b>Academic Performance of Children with Cochlear Implants in Mainstream Schools .....</b>	
	<b>226</b>
<b>AP1462</b>	<b>230</b>
<b>Monoaural auditory fusion test to assess temporal resolution in older adults .....</b>	
	<b>230</b>
<b>AP1463</b>	<b>230</b>
<b>Effect of Neck circumference on Cervical Vestibular Evoked Myogenic potential- A Retrospective Study .....</b>	
	<b>230</b>
<b>AP1464</b>	<b>231</b>
<b>Development of Working Memory Performance in Preschool and School-Aged Children with Cochlear Implants Compared to Age-Matched Children with Normal Hearing.....</b>	
	<b>231</b>
<b>AP1465</b>	<b>235</b>
<b>Evaluation of Frequency Specificity of the Meander Stimulus Compared to Tone Burst Stimulus in Auditory Brainstem Response Testing .....</b>	
	<b>235</b>
<b>AP1466</b>	<b>238</b>
<b>Impact of Listening Fatigue in Adults with Unilateral Sensorineural Hearing Loss : A Qualitative Study .....</b>	
	<b>238</b>

<b>AP1467</b>	<b>241</b>
<b>The vertigo Effect: How Shift Work influence Health in Nursing Professional.....</b>	<b>241</b>
<b>AP1468</b>	<b>244</b>
<b>Audio Vestibular Profile on CANVAS Syndrome .....</b>	<b>244</b>
<b>AP1469</b>	<b>245</b>
<b>Incidence of CI Non-usage among children implanted under ADIP Scheme .....</b>	<b>245</b>
<b>AP1470</b>	<b>249</b>
<b>Evaluating the Impact of Practical Training on Self-Efficacy, Confidence, and Competence in Noise Measurement, Infant Screening, and Endoscopy in BASLP students .....</b>	<b>249</b>
<b>AP1472</b>	<b>253</b>
<b>Perspectives and Demands for Remote Mapping of Cochlear Implants from Users in India .....</b>	<b>253</b>
<b>AP1473</b>	<b>256</b>
<b>Exploring User Attitudes and Perspectives on Hearing Aid Fine-Tuning Apps.....</b>	<b>256</b>
<b>AP1474</b>	<b>259</b>
<b>Peripheral and Central Auditory Processing Abilities in Children with Mild Protein Energy Malnutrition .....</b>	<b>259</b>
<b>AP1475</b>	<b>263</b>
<b>Development of a Questionnaire in English and Kannada to Evaluate the Awareness about Hearing Disability, Central Government Schemes and Policies for Individuals with Hearing Impairment .....</b>	<b>263</b>
<b>AP1476</b>	<b>267</b>
<b>Development of a Questionnaire in Kannada to Assess the Knowledge and Attitude of Individuals with Hearing Loss and Their Significant Others Toward Aural Rehabilitation .....</b>	<b>267</b>
<b>AP1477</b>	<b>267</b>
<b>Translation, Validation and Reliability of the questionnaire titled “Quality of Life- rating for Dizziness- a self-reporting questionnaire”, in Hindi language. ....</b>	<b>267</b>
<b>AP1478</b>	<b>268</b>

<b>Masseter-Vestibular Evoked Myogenic Potentials in patients with Benign Paroxysmal Positional Vertigo .....</b>	<b>268</b>
<b>AP1480</b>	<b>270</b>
<b>Digital Device Exposure and Its Association with Language, Cognition, Reading and Risk of Auditory Processing Disorder in Primary School Children.....</b>	<b>270</b>
<b>AP1481</b>	<b>274</b>
<b>Tympanometric Parameters in Normal Middle Ears: Findings in the Nepali Population at a Tertiary Care Hospital.....</b>	<b>274</b>
<b>AP1482</b>	<b>275</b>
<b>Behavioral Challenges and Parental Stress in Children with Cochlear Implants: A Psychosocial Study.....</b>	<b>275</b>
<b>AP1483</b>	<b>279</b>
<b>Evaluating Cochlear Implant Outcomes Using the ICF Model.....</b>	<b>279</b>
<b>AP1484</b>	<b>283</b>
<b>Teleaudiology: A New Frontier for Cochlear Implant Mapping in India” Perspectives from Audiologists .....</b>	<b>283</b>
<b>AP1485</b>	<b>287</b>
<b>Auditory and Vestibular profiling of AICA loop: A case-study with assessment and Rehabilitation Perspectives .....</b>	<b>287</b>
<b>AP1486</b>	<b>291</b>
<b>Documenting the audiological findings of Intracanalicular Vestibular Schwannoma pre-and post-radiation therapy- A comprehensive case study.....</b>	<b>291</b>
<b>AP1487</b>	<b>295</b>
<b>Knowledge and Attitude of Indian Audiologists towards Remote Care in Fine Tuning of Hearing Aids.....</b>	<b>295</b>
<b>AP1488</b>	<b>299</b>
<b>Comparison of Coarticulation Perception in Individuals with Hearing Impairment and Cochlear Implantees.....</b>	<b>299</b>
<b>AP1489</b>	<b>301</b>



<b>Relationship Between Listening Effort and Real Life Outcomes in School-Going Children with Bimodal and Bilateral Cochlear Implantation .....</b>	<b>301</b>
<b>AP1490</b>	<b>303</b>
<b>Content Analysis of YouTube Videos Related to Cochlear Implant Care and Maintenance .....</b>	<b>303</b>
<b>AP1491</b>	<b>305</b>
<b>Long Term Impedence Measurements in Subjects with Cochlear Implants During Pubertal Period .....</b>	<b>305</b>
<b>AP1492</b>	<b>307</b>
<b>Correlation between Tinnitus Handicap Inventory Scores and Degree of Hearing Loss with tinnitus: Implications for Diagnosis and Treatment.....</b>	<b>307</b>
<b>AP1493</b>	<b>310</b>
<b>Barriers to Hearing Healthcare Access in Rural and Underserved Communities: A Social Work Perspective .....</b>	<b>310</b>
<b>AP1494</b>	<b>315</b>
<b>The influence of electrode placement on the 500Hz NB CE Chirp induced masseter Vestibular Evoked Myogenic Potential .....</b>	<b>315</b>
<b>AP1495</b>	<b>318</b>
<b>The Role of Audiologists in Advocacy for Hearing Impaired Individuals in Social Welfare Programs in Maharashtra .....</b>	<b>318</b>
<b>AP1496</b>	<b>320</b>
<b>Exploring the Role of Audiologists in Facilitating Access to Disability Certificates for Hearing-Impaired Individuals in Maharashtra .....</b>	<b>320</b>
<b>AP1497</b>	<b>325</b>
<b>Assessing the Role of NGOs in Bridging Gaps in Hearing Healthcare and Social Welfare Services for the Hearing-Impaired in Maharashtra .....</b>	<b>325</b>
<b>AP1499</b>	<b>330</b>
<b>Assessing the Impact of Awareness Campaigns on Hearing Loss and Accessibility to Social Welfare Programs in Rural Maharashtra .....</b>	<b>330</b>
<b>AP1500</b>	<b>334</b>

<b>Results of newborn hearing screening: A community-based investigation.....</b>	<b>334</b>
<b>AP1501</b>	<b>336</b>
<b>Acoustic Inertance: - An effort to reach the optimum vent dimension to eliminate occlusion effects.....</b>	<b>336</b>
<b>AP1502</b>	<b>339</b>
<b>Long-Term Speech Perception and Language Development Outcomes in Children with Cochlear Implants: Insights from the Indian Context.....</b>	<b>339</b>
<b>AP1503</b>	<b>343</b>
<b>Bhramari Pranayam as a Complementary Therapy for Tinnitus: A Randomized Controlled Trial with Caroverine and Counseling .....</b>	<b>343</b>
<b>AP1504</b>	<b>347</b>
<b>Speech Perception in Noise among Mainstreamed Children with Normal Hearing and Hearing Loss Using Bimodal Device .....</b>	<b>347</b>
<b>AP1505</b>	<b>348</b>
<b>Evaluating the Test-Retest Reliability of 500 Hz Narrowband Chirp ABR in Infants: Insights from a Rural Indian Hospital.....</b>	<b>348</b>

**AP1403**

**A Glimpse into The Diverse Causes of Unilateral Delayed Onset Hearing  
Loss - A Case Study**

*Pravalika E, Anna Mariam Joy & Mayur Bhat*

**Kasturba Medical College Mangalore MAHE Manipal**

**Abstract Not Available**

**AP1404**

**Association between Tinnitus and Auditory Middle Latency Response  
: An Exploratory Study**

*Sai Keerthan K, Mayur Bhat, Prajwal K M & Jyotsna CS*

**Kasturba Medical College, Mangalore MAHE Manipal**

**Abstract Not Available**

**AP1405**

**Association of Self-Reported Noise Exposure Levels with Auditory  
Processing Among College Going Students**

*Prajwal K M, Mayur Bhat, Jyotsna CS & Sai Keerthan K*

**Kasturba Medical College, Mangalore MAHE Manipal**

**Abstract Not Available**

## **Impact of Earphone Usage on Extended High-Frequency Hearing and Speech Perception in Noise in Younger Adults with Clinically Normal Hearing**

*Mohit Setia, Abhishek Dora & Sreeraj Konadath*

**Command Hospital (WC) Chandimandir**

### **Introduction:**

Extended high frequencies (EHF) have been given limited importance in screening as diagnostic tests, with the rationale that they have a limited influence on speech perception and are excluded from routine audiological evaluations (Lough & Plack, 2022).

Ironically, compared to the frequencies that are assessed during a Pure Tone Audiometry, the EHF is the region in the cochlea is highly susceptible to damage. Hence, examining the EHF cochlear regions would make it easier to identify even subtle changes in hearing, thereby assisting in the early detection of hearing loss/cochlear impairment. Numerous literatures have reported the utility of extended high-frequency audiometry in tracking the otological manifestations from ototoxic effects of medications and chemicals, hypoxia, systemic disorders, aging-related alterations, and noise exposure.

Earphones have undergone dramatical improvement in terms of design and functionality in the evolving era of electronics and communication technologies, which has led to widespread earphone usage (Hoshina, 2022). Even though modern gadgets provide cautionary warning indications, it is not being taken into consideration, and a portion of the earphone user population still continues to play music at high volume levels/ longer periods of time. According to a recent study that examined the prevalence and earphone usage habits among students, it was revealed that younger adults are more likely to experience hearing loss as a result of frequent earphone use (Mohammadpoorasl et al., 2018). Therefore, it is necessary to record the degree of damage caused by earphone usage from perceptual as well as physiological perspectives of the hearing mechanisms.

### **Need for Study:**

The basal part of the cochlea, which is responsive to high frequency signals is the most vulnerable to damage induced from high sound pressure levels. Younger adults are more likely to use earbuds than older adults (and to do so at higher volume settings). There is a paucity of

evidences that have attempted to investigate the impact of earphone usage on the EHF cochlear region.

### **Aim & Objectives:**

The current investigation sought to identify the physiological and perceptual alterations brought on by earphone use in younger persons with normal hearing sensitivity at extended audiometric high frequencies.

The study's goals were to:

1. measure and compare HFA thresholds between earphone users and non-users;
2. compare speech discrimination in noise between earphone users and non-users at different signal-to-noise ratios and
3. use distortion product otoacoustic emissions to analyze the functioning of the outer hair cells in routine and extended high-frequency regions.

### **Method:**

A total of forty individuals (Eighty ears) were considered for the study. After completing a structured interview with the participants that focused on their earphone usage habits and volume levels, the participants were recruited. Additionally, it covered the risk factors of high-frequency hearing loss. Individuals with the risk factors were excluded from the study. The individuals were divided into three groups based on their patterns of earphone usage on the grounds of duration and volume levels. Group I (12 subjects) comprised up of non-users (those who rarely or never use earphones), Group II (14 subjects) comprised of individuals who used earphones up to 50% volume levels and have been constantly using since past one year. Group III (14 subjects) comprised of individuals who were earphone users since >1 year/ used to listen at volume levels >50%. All the participants had normal hearing sensitivity (Air Conduction thresholds within  $\leq 15$  dB) at frequencies 250Hz to 8kHz and bilateral 'A' type tympanogram with acoustic reflexes thresholds at 500Hz, 1kHz, 2kHz, and 4 kHz within normal sensation levels. Extended high-frequency audiometry was carried out at frequencies 8kHz, 10kHz, 12.5kHz, 14kHz, and 16kHz using Inventis Piano Clinical Audiometer. Otoacoustic emission measurements were carried out using Starkey DP2000 at 10 points per octave from 1 kHz to 16 kHz. Speech Identification in Noise testing was carried out at 5 dB, 0 dB, -5 dB, and -10 dB SNRs using a recorded Phonemically balanced wordlist in Kannada (SPIN-K), which was presented via GSI 61 clinical audiometer. All the tests were carried out in a double walled sound-treated room and results of the same were analyzed using appropriate

statistical tools.

### **Results & Discussion:**

The data was analyzed for normal distribution using the Shapiro-Wilk's test for normality. As the data showed a skewed distribution ( $p < 0.05$ ), non-parametric tests were used to carry out inferential statistics. The Kruskal Wallis test revealed significantly elevated HFA thresholds (at all frequencies except 8 kHz) in earphone users, and individuals who normally played at high volume levels exhibited comparatively poorer thresholds than moderate-level users. The SPIN-K scores showed degraded performance in the earphone users group at all SNRs (0dB > -5dB > -10 dB) except for +5 dB, which showed no significant difference across the groups. The findings of the present study revealed that prolonged earphone usage, irrespective of volume levels, significantly impacts hearing at extended high frequencies. At the same time, it was also noted that earphone users performed poorer in speech identification in noise irrespective of volume levels, which could be considered as a consequent auditory perceptual outcome. No significant differences were seen between the three groups' high-frequency OAEs. However, Clinical OAEs revealed a significant reduction in amplitude for both groups of earphone users at a majority of test frequencies compared to nonusers ( $p < 0.05$ ).

### **Summary & Conclusion:**

The purpose of the current study was to assess the cochlear damage caused by earphones in younger adults. Otoacoustic emissions,  $\hat{A}$  extended high-frequency audiometry, and SPIN were used in the investigation. The findings revealed potential hearing damage at EHF regions of the cochlea, which was evident from a poorer HFA threshold. There was also a significant reduction in speech identification in noise that was noted in earphone users at lower SNRs. The findings of the current study put forward the need for creating awareness among clinicians and the general population on the premature negative effects of earphone usage on the auditory system.

**AP1407**

**Influence of Cartoon-Based Screen Time on Auditory and Phonological  
Processing Abilities in Young Children**

*Varsha U, Kishan Madikeri & Sunila John*

**Manipal College of Health Professions, Manipal Academy of Higher Education**

**Abstract Not Available**



**The Missing Links: Parental Insights into Information Dissemination for the  
ADIP Scheme – A survey**

*Saksham Singh, Vibha Mahajan, Deepanshi. & Kamna Sharma*

**Ali Yavar Jung National Institute of Speech and Hearing Disabilities, RC Noida**

**Introduction:**

Cochlear implants are considered a medical technological breakthrough because they give a chance at functional hearing to individuals diagnosed with severe-to-profound hearing loss. Reports documenting several cases and verification of the excellent effectiveness of the implant in enhancing auditory perception and communication abilities greatly contribute to improving the quality of life of many recipients. Among them is the ADIP Scheme: Assistance to Disabled Persons for Purchasing/ Fitting of Aids and Appliances, which provides financial support and other aid for persons with disabilities. To illustrate, the total number of surgeries performed in the country under the ADIP Scheme was 1,151 in the previous fiscal year, 2022-23. Data like this provides a picture of how effective the ADIP Scheme has been in providing cochlear implantation surgery to children, particularly from socio-economically backward families.

Despite the well-intentioned goals of the ADIP Scheme, there are concerns regarding the effectiveness of the information provided to patients about cochlear implants under this program. Study done by Dutta P, Dey S, Malakar (2020) on Parental knowledge and understanding of monitoring and maintenance of cochlear implant under ADIP scheme, results are suggestive of the need for better training programs post implantation for parents. These concerns center around potential loopholes and gaps in the communication process, which can significantly impact the decision-making and outcomes for patients. These gaps include the information given: eligibility criteria, financial, procedural steps, and post-implant care. The given gaps may unintentionally influence the experience of a patient and the success of their cochlear implantation.

**Need for Study:**

Accurate and comprehensive information is essential for parents to make informed decisions regarding their children's auditory health and intervention options. Communication gaps can result in misunderstandings, delays, and sub-optimal outcomes for children. By recognizing and resolving these information gaps, the ADIP scheme's efficiency can be improved, ensuring that all families receive the necessary knowledge to successfully navigate the cochlear implant

process and subsequent rehabilitation.

### **Aim & Objectives:**

This research aimed to delve into various loopholes or the lack of information received by patients under the ADIP Scheme concerning cochlear implants. By identifying and analyzing these gaps, this study seeks to highlight areas in which the information dissemination process can be improved.

### **Method:**

A qualitative study was conducted on parents of children who got cochlear implant under ADIP scheme. Participants selection was based on convenience and purposive sampling method. Number of Participants was 70, primarily from Delhi NCR. Method involves administration of survey questionnaire, which has been validated by 4 experienced ASLPs who has experience of more than 5 years. Parents of children who received cochlear implants through the ADIP scheme were surveyed using questionnaire. Data were collected from AYJNISHD, RC Noida and nearby therapy centers, using the means of personal interviews and multi-modal communication methods. The questionnaire is divided into four domains including- Sources of Information about the ADIP Scheme, Application Form Process, Pre- and post-implant guidance to thoroughly examine the various reasons contributing to the inadequate dissemination of information, along with an additional domain for recommendations and suggestions from parents to enhance the effectiveness of the ADIP program.

### **Results & Discussion:**

The analysis of the data collected through the questionnaire provides insightful findings across several key domains:

Domain 1 - Sources of Information about the ADIP Scheme: The analysis revealed that over one third of parents gets information about the ADIP scheme through hospitals. Where 30 percent of the parents complained of receiving limited information about the ADIP scheme.

Additionally, a striking 87.51% of participants were unaware of the existence of website of ADIP scheme.

Domain 2 - Application Form Process: 24.29% of participants reported receiving insufficient guidance on application process. Similarly, 45.71% reported great challenges in obtaining relevant documents for the form completion.

Domain 3 - Pre- and post-implant information and guidance: Further scrutiny of this domain revealed 80% of participants felt they had been well informed about the cochlear implant

process and information regarding care and maintenance was rated highly too with just 6% feeling that they did not have help in that department. In the second part, 73% of the parents received little or no information on stages of growth and none received a growth chart. 42.86% of participants stated that they had been informed regarding potential future costs; However, none had specifically mentioned the cost amount. More than 40% of the Parents were not informed about the maximum number of mapping and speech therapy sessions covered under ADIP scheme.

Domain 4 - Road map when ADIP benefits are over: The analysis further indicated that 35.71% of participants were unaware that their child would continue to require therapy sessions and mapping even after the benefits under the ADIP Scheme had ended. A majority, 54.21%, were uninformed about centers offering subsidized therapy sessions. Additionally, over 36% of participants lacked awareness regarding future upgrades and potential replacements for cochlear implants as technology evolves.

### **Summary & Conclusion:**

This study brings into question several key areas of Cochlear Implant journey, information dissemination, support in the application process, and follow-up care of cochlear implant patients. In all these areas many parents face significant difficulties in access and utilization of such resource and support services. Findings indicate a need for better communication strategies in terms of accessibility to information, especially in matters related to digital access. Challenges in the application process were reported by nearly a quarter of participants for insufficient guidance and nearly half struggles to gather necessary documentation. This highlights the need for optimized procedures, as well as additional support for document collection. Unawareness about the requirement for further mapping sessions after ADIP scheme benefits are over & centers offering low-cost mapping services, highlights lack of information dissemination by different sources. Low awareness of future improvements and replacement among participants can be undertake through educational programs that provide the patient population and families with adequate knowledge on technological developments. Hence the biggest gaps in care would hence be met with targeted awareness programs, additional assistance on cochlear implant application process, better access to resources for families, and improved coordination between hospitals and government agencies so that families receive their support at every stage right from consultation to long-term care and maintenance.

**A study of Prevalence of dizziness in individuals with sensorineural hearing loss in India.**

*Suman Pranav, Freya Himanshu & Supriya Nawale*

**Ali Yavar Jung National Institute of Speech and Hearing Disability (Divyangjan)**

**Introduction:**

Dizziness refers to a variety of sensations, including feelings of faintness, light headedness, unsteadiness, or weakness. It may also involve vertigo, which is the sensation that you or your environment is spinning. Various factors can lead to dizziness, such as inner ear issues, dehydration, low blood pressure, or anxiety (Post & Dickerson, 2010). Research indicates that dizziness and vertigo affect approximately 15% to over 20% of adults each year (Neuhauser, 2016). According to Kerber et al. (2017), the twelve-month prevalence of dizziness or balance issues is 14.8%, equating to about 33.4 million people in the U.S. Additionally, the incidence of vertigo is estimated to be between 20% and 60% among individuals experiencing sudden unilateral sensorineural hearing loss (Rambold et al., 2005). A study in Germany found that dizziness becomes more common with age, leading to physical inactivity, increased fall risk, social isolation, and depression. Consequently, dizziness significantly hampers daily functioning (Prell et al., 2021).

Moreover, when tinnitus accompanies dizziness, it intensifies the challenges of both conditions. Miura et al. (2017) highlighted the importance of carefully evaluating dizziness symptoms in patients with tinnitus and understanding how dizziness affects their quality of life. Their findings also indicated that women are more prone to dizziness than men, and higher depression scores correlate with increased dizziness.

Additionally, conditions like diabetes, elevated depression scores, and high-stress levels are linked to a greater likelihood of developing chronic dizziness (Jang et al., 2024).

Diabetes mellitus has been associated with an increased risk of dizziness, particularly in the elderly, who are susceptible to both hearing loss and dizziness (Rambold et al., 2005). Most patients reported experiencing swaying dizziness (60.6%) and a sense of unsteadiness (59.8%), with significant overlap in the types of dizziness experienced (Prell et al., 2021).

**Need for Study:**

There is a dearth of literature about the prevalence of dizziness among individuals with

sensorineural hearing loss in India. Therefore, the current study is an attempt to build an understanding of the prevalence of dizziness among individuals with hearing impairment. This will empower the audiologist to identify the individuals and initiate intervention at the earliest.

### **Aim & Objectives:**

**Aim:** To study the prevalence of dizziness among individuals with sensorineural hearing loss in India.

**Objective:** To determine the prevalence of dizziness among individuals with sensorineural hearing loss in India.

### **Method:**

The data was collected from a tertiary care hospital in Mumbai. The sample size was calculated using the following formula:  $n = p(1 - p) * (Z/E)^2$ , where n is the sample size, Z is the statistic corresponding to the level of confidence, P is the prevalence of sensorineural hearing loss, and d is precision. The calculated sample size was 138, using the prevalence of sensorineural hearing loss of 9.2% (Guleria et al., 2017).

The data was collected from 138 individuals with mean age of 47.33 years (S.D. = 17.8). The Hindi translated version of Dizziness Handicap Inventory (DHI) (Upreti et al., 2024) questionnaire was administered using a face-to-face interview. There were 99 males and 39 females. The descriptive analysis was carried out using SPSS ver 21 software. The gender dominance was analyzed using chi-square test. The association of DHI scores with the degree of hearing loss was analyzed using Spearman Rank Correlation.

### **Results & Discussion:**

It was observed that out of 138 individuals having sensorineural hearing loss 27.5 % had dizziness. The abnormal findings were analyzed by Pajor and Jozefowicz-Korczynska (2008) and they reported that the prevalence of 60% among individuals with sensorineural hearing loss. The inflated prevalence in their study can be attributed to the difference in the evaluations made. In the current study the questionnaire was administered whereas they have used Electronystagmography (ENG) findings to diagnose dizziness. This indicates the need for complementing self-reported questionnaires along with objective vestibular in all the individuals with sensorineural hearing loss.

It was also observed that there was 26 males and 20 females reporting the complaint of dizziness out of the total participants. This was found to have statistically significant difference between the gender using chi-square test ( $p = 0.04$ ). However, in literature the prevalence of dizziness

was reported to be more in females (Pajor & Jozefowicz-Korczynska, 2008). These contradicting findings can be attributed to the presence of more males in the sample than females.

The Spearman Correlation Coefficient was 0.6 ( $p= 0.46$ ) suggestive of no significant association between hearing loss and dizziness. Similar results were reported by (Huang et al. (2022)). They also reported no association of degree of hearing loss with balance related issues. As both the studies take into account the patient reported balance-related issues, the findings can be affected by the individual ability to recall. However, the findings of the current study highlight the need for vestibular evaluations in the individuals suffering from sensorineural hearing loss.

### **Summary & Conclusion:**

The current study attempted to estimate the prevalence of dizziness among individuals suffering from sensorineural hearing loss. The data was collected from calculated sample size of 138 participants. The Hindi validated and translated DHI questionnaire was utilized for the same. It was observed that 27.5% individuals had complaint of dizziness. This alarms the need for detailed vestibular evaluation and timely treatment for individuals suffering from dual disability of hearing impairment and balance-related issues. The findings of the current study highlight the need for the audiologist to evaluate the balance related issues along with hearing impairment. The balance related issues need multidisciplinary approach and this can be done only after early and adequate assessments.

## Prevalence and Characteristics of Misophonia among adult population in Odisha

*Archisman Shubhadarshan, Shushil Raj & Riyaz S.*

**International Institute of Rehabilitation Sciences and Research, Bhubaneswar,**  
**AYJNISHD(D), Mumbai**

### **Introduction:**

Misophonia is a disorder where you have a decreased tolerance to specific sounds and things you can sense related to them. People are affected by this phenomenon in many diverse ways. For some people, this reaction may only be triggered by a single "trigger" sound. Certain individuals may have many trigger noises. Even with increased attention, misophonia is still largely unstudied. As of yet, the condition is not considered to be a mental, neurological, or auditory issue. Nonetheless, misophonia is gaining significant attention from auditory neuroscientists, audiologists, occupational therapists, psychologists, and psychiatrists. Misophonia should be considered a mental condition, according to some experts, especially given the high prevalence of psychiatric comorbidity. While researchers acknowledge the clinical characteristics and underlying neurophysiological mechanism of misophonia different criteria and evaluation techniques lead to variations in the term's definition.

### **Need for Study:**

Misophonia is now regarded as a novel mental illness. It is still unclear how common misophonia is in Asian nations like India. This can result from even specialists not being aware of or knowledgeable about misophonia. Few research has been done to determine the prevalence rate of misophonia. According to a study done in India, 23.28% of students at Mysore University had misophonia.

### **Aim & Objectives:**

The study aimed to determine the prevalence of misophonia among adults in Odisha and evaluate its severity among them. The study's main objective was to develop a questionnaire to evaluate the prevalence of misophonia. To determine the severity and associated problems with misophonia in Odisha.



**Method:****Participants:**

A total of 389 participants were recruited in this study. The age range varies from 20-40 years (M:21.3, S.D:2.1). out of 389 participants, 280 were men and 109 were female. We excluded participants who had a history of otological disorders, psychiatric issues, or were taking medication for a health condition. In addition, participants were cautioned from taking part in the study if they believed that the questionnaire's contents may cause them to feel extremely negatively emotionally.

**Materials:**

A cross-sectional study was conducted to investigate the prevalence of misophonia. A questionnaire was developed to evaluate the prevalence of misophonia in Odisha. This questionnaire contains demographic details like name, age, gender, and any hearing-related issue. In the second section, questions were asked related to tinnitus, hyperacusis, and misophonia. In this section, yes, no option. A revised version of the Amsterdam Misophonia Questionnaire was used to determine misophonia prevalence and severity. The final version of the questionnaire was distributed as an e-survey in the form of Google Forms to using various social platforms, such as WhatsApp and E-mail, using convenient sampling methods.

A printout copy of the questionnaire was also used to collect data from Bhubaneswar only. A brief description of misophonia was included in the Google Forms. To assess the degree of misophonia, the subjects filled out the self-rating Revised Amsterdam Misophonia Questionnaire. There are ten questions on the form, and the answers range from 0 to 40. The scale calculates an individual's total time spent listening to misophonic sounds, the degree to which misophonic sounds impair social functioning, the degree of anger elicited by sounds, the degree of resistance to the impulse, the degree of control over thoughts and anger, and the amount of time spent evading misophonic situations. Scores 0-10 are regarded as preclinical signs of misophonia; scores 11-20 indicate mild misophonia; scores 21-30 indicate moderate to severe misophonia; and scores 31-40 indicate severe to excessive misophonia.

**Statistical analysis**

Descriptive statistics, such as means and SDs, were employed to analyze the questionnaire data to investigate the prevalence of misophonia, its effect, and any comorbidities among the participants. Microsoft Excel and IBM SPSS Statistics, Version 25.0 (Armonk, NY: IBM Corp.), were used to analyze the gathered data. We looked at the frequency, severity, and effects on the participants with misophonia using descriptive statistical techniques like

frequency and percentages.

### **Results & Discussion:**

The statistical analysis was done using descriptive statistics. The result showed that among 389 participants included in the study, 280 were male and 109 were female. All the participants included in the survey were literate with the minimum qualification of high school. Out of 389 randomly chosen for the study, 8 participants reported any ear-related pathologies and 12 reported tinnitus. Most of the participants, 251 (64.52%), reported a habit of listening to music at a loud volume.

Among the 389 participants 137(35%) participants reported that they have some irritation to some particular sounds. Out of 137 participants, 12 reported they had tinnitus, and 38 participants had hyperacusis. All participants who reported misophonia completed the A-MISO-R questionnaire, and the total score was calculated based on the response provided. Out of 137 participants, 72 participants (18.5%) have been misophonic. The particular sound that causes unpleasant feelings in people with misophonia is known as a trigger. Various people identified both spoken and nonverbal noises as triggers. 35.7% of the 137 individuals who reported having misophonia said they were irritated by repetitive clicking noises, such as nails on a chalkboard or pens clicking. Out of 72 participants, 56 reported feeling irritated when they heard triggered sounds. Using a Chi-square test, the relationship between gender and the incidence of misophonia was evaluated. The outcome demonstrated that misophonia is more common in women than in men. The findings of the chi-square test revealed a significant correlation between gender and the incidence of misophonia.

One more common condition that goes undiagnosed is misophonia. This is the disorder that borders between audiology, neurology, and psychiatry. The amount of study on misophonia has grown, and many scientists are now attempting to comprehend the neurophysiology behind misophonia. From an audiological standpoint, more studies have been conducted, and several scientists are attempting to comprehend the misophonia's auditory process. Our research attempts to determine the incidence of misophonia in Odisha. The incidence of misophonia varies from 5% to 20% in Western countries. Few research has been conducted in India to ascertain the prevalence; the findings indicate that the prevalence of misophonia varies between 15% and 25% in these investigations. Nevertheless, the frequency in India is still unknown because these studies were conducted on a tiny sample of certain Indian locations.

### **Summary & Conclusion:**

The Prevalence of Misophonia was 18.5% in Odisha. Females are more prone to misophonia than males. Most of the participants feel irritated.

## **Bridging the Gap: Audiologists' Awareness of Effective (C)APD Therapies**

*Shaikh Saima Mohammad Ali & Pawar Janhavi Bhaskar*

### **AYJNISHD(D)**

#### **Introduction:**

Auditory Processing Disorder (APD) refers to the clinical presentation of listening difficulties in children and adults with normal pure-tone thresholds but abnormal scores in complex psychoacoustic tests. It is characterized by poor speech and non-speech sound perception due to impaired neural function within the afferent and efferent pathways of the central auditory nervous system (CANS) (ASHA, 2005b). It is classified as an independent diagnostic entity in the current 11th and 10th versions of the International Classification of Diseases (ICD) (under H93.25 in ICD 10; AB-5Y in ICD 11b) and recognized as a clinical entity that reduces hearing capacity in the recent hearing report from the World Health Organization (WHO, 2021). Auditory processing disorder (APD) is typically characterized by difficulties in 'listening', particularly to speech in a noisy environment, despite normal peripheral function. The condition often starts in childhood, but adults may develop it from having certain diseases, getting a head injury or growing older.

Given the subtlety of auditory processing disorder (APD) symptoms, it's essential to adapt evaluation protocols to ensure these critical features aren't overlooked. Additionally, careful attention must be paid to assessment procedures, along with a strong emphasis on APD management. In India, comprehensive audiological assessments and interventions for auditory processing issues are currently limited to a few centers. The country's linguistic diversity poses unique challenges in delivering clinical services and providing complete test batteries in all spoken languages. Recently, there has been a growing interest in (C)APD among speech and hearing professionals in India, with several leading institutes actively working to address the existing gaps in this field. Moreover, there is a gap in the knowledge that students have regarding APD, which may hinder their ability to effectively address the disorder in the future.

#### **Need for Study:**

In a recent study 'Two-year Prevalence of Central Auditory Processing Disorders in Children' stated the prevalence of CAPD was found to be roughly around 0.7% (S R Shreyas, C Jain, 2024). However, there exists a significant lag in the number of cases reported and their further evaluation and management. Each person with APD needs a tailor made assessment

and intervention plan in order to provide direction. Learning and understanding the building blocks of APD during the academic year becomes very crucial in finding out ways of APD management.

The majority of auditory processing assessments that include verbal stimuli were primarily created in English. Research on treating APD and assessing auditory processing in Indian languages is limited. The current problem is the absence of a culture-specific battery of central auditory tests and intervention strategies. The choice of this test battery, though, needs to be customized taking into account the reported issues and other data gathered. This may be attributed to the lack of emphasis and interest in the field of CAPD on the part of Audiologists' stemming right from their student level. If adequate knowledge is imparted and interest is generated pertaining to CAPD, we might be able to bridge this gap.

### **Aim & Objectives:**

**Aim:** To screen the understanding and knowledge related to APD therapies among PG students.

**Objectives:**

1. To assess PG' awareness of (C)APD management.
2. To evaluate PG students' knowledge regarding (C)APD management.

### **Method:**

A questionnaire was prepared pertaining to awareness and knowledge of PG students regarding APD management and it was further validated as per Likert's scale. The questionnaire was administered on about 50 students pursuing their post-graduate education in the field of Audiology from institutes across India. The collected data was analyzed using descriptive statistics and visually represented through a pie chart to illustrate the distribution.

### **Results & Discussion:**

The questionnaire was administered on M.Sc. students of Audiology and Speech Language Pathology, passed out BASLP students who are in the working field as well professionals with working experience of minimum 1 year. The results obtained are elaborated as follows: 97.2% of the ASLPs' felt that those suffering from (C)APD need some kind of help and 63.9% of the ASLPs' were not aware about a professional or a medical facility offering APD treatment. 86.1% of the ASLPs' believed that speech therapy and (C)APD therapy are different, while 83.3% ASLPs believe that there is a difference between AVT and (C)APD therapy. 77.8% professionals consider referring a person with auditory processing difficulty to an (C)APD expert rather than self-intervention. 83.3% of the professionals agreed that patients with brain

damage could benefit from (C)APD treatment. 97.2% of the ASLPs' considered neurodegenerative or neuro linguistic disorders may require intervention for APD in addition to SLT intervention. 88.9% professionals believed people without hearing loss need to be screened for (C)APD assessment; however, 63.8% do not perform screening currently in their practice.

The questions were formulated to understand the awareness regarding (C)APD therapy, patients who are suitable candidates for (C)APD therapy, cases where (C)APD therapy may be required in addition to other intervention strategies and the overall willingness towards screening, diagnosis and management of (C)APD cases.

As can be understood from the above figures, majority of the ASLPs' possess a general awareness pertaining to the requirement of (C)APD intervention and they might be inquisitive to learn about various (C)APD management techniques that might be available, however, there is hesitance among professionals regarding assessment and intervention for (C)APD. This may stem from a theoretical understanding without practical implementation, leading to a lack of confidence in handling such patients. A study in Kerala in July 2024 identified similar barriers, including insufficient facilities, low patient load, and limited practical exposure as major obstacles to (C)APD assessment and management. Moreover, as can be understood there's a dire need to increase focus on learning related to APD. However, practical learning can be enhanced by increasing patient referrals for Central Auditory Processing Disorder (CAPD) through grassroots awareness programs. This approach can lead to a higher patient volume, providing BASLP students with more hands-on experience and boosting their confidence in managing these cases.

Furthermore, the majority of the test material that is available for CAPD testing is in English language and most of the time the context of these tests is westernized. For a multilingual and multicultural nation like India, culture specific test materials need to be developed in appropriate regional languages which can ensure adequate diagnosis. Additionally, many existing management resources for (Central)Auditory Processing Disorder (CAPD) follow similar trends, highlighting the need for therapeutic materials in appropriate regional languages as well.

### **Summary & Conclusion:**

This study highlights the practice among professionals for screening and diagnosis protocols for (C)APD during their academic phase. However, there is a notable gap between this awareness and the actual efforts made in assessment and management. To address this, we

require an increase in awareness programs across the country, a specified number of APD cases that students must screen, diagnose, or manage during their internship, and the development of culture-specific materials for both the diagnosis and management of APD. The management of APD in India requires a coordinated effort that combines education, intervention, and policy support.

## **Factors associated with infants and toddler hearing aid use: A Parental Survey**

*Pratiksha Dhananjaysing, Fulkar Anshul Ashok & Ketaki Borkar*

### **AYJNISHD (MUMBAI)**

#### **Introduction:**

There is a critical role of early intervention for children with permanent hearing loss, emphasizing the importance of consistent hearing aid use for language development. With the prevalence of hearing loss in 1 to 2 per 1000 children (Kuhl 2004; Sininger, Doyle, and Moore 1999), early amplification can significantly improve access to language and caregiver interaction, crucial for spoken language acquisition. Early amplification with hearing aid usage alongside high-quality linguistic input, mitigates against this risk by increasing access to speech sounds, audiologic cues, and caregiver interaction, crucial for spoken language development during the first years of life. Newborn hearing screening programs have made early diagnosis and the implementation of hearing aid usage more accessible. However, research indicates that children under 5 years often have low and variable hearing aid usage (Visram et al. 2021; Walker et al. 2015). This inconsistency during a crucial developmental stage can negatively impact future language outcomes. To create impactful interventions, a theoretical framework is essential to understand the various factors influencing consistent hearing aid use. The use of behavior change theories can enhance intervention efficacy. The Theoretical Domains Framework (TDF) is highlighted as a comprehensive tool that integrates constructs from multiple behavior change models, providing insights into determinants of behavior that can inform intervention strategies. The Theoretical Domains Framework (TDF) aimed to provide a comprehensive, theory-informed approach to identify determinants of behavior. This guide offers practical guidance for those who wish to apply the TDF to assess implementation problems and support intervention design. It presents a brief rationale for using a theoretical approach to investigate and address implementation problems, summaries the TDF and describes how to apply the TDF to achieve implementation objectives. This framework can help systematically identify factors that influence parents' consistency in implementing hearing aid use for their infants and toddler.

#### **Need for Study:**

There is comparatively limited data related to factors that are associated with children's hearing



aid usage. Early detection and intervention of hearing loss is necessary for language development and communication, and if not early diagnosed, might hamper the overall language development and quality of life of a child. It is also crucial and important a candidacy criterion for the children to opt for cochlear implantation. Awareness is essential for ensuring effective treatment.

### **Aim & Objectives:**

This study aims to assess the factors associated with infants and toddler hearing aid usage. To investigate various domains and demographic factors that influence hearing aid in infants and toddler and common barriers and challenges faced by families .Parents are the critical ingredient for the effective intervention and rehabilitation of their children.

### **Method:**

The TDF survey comprises 55 items measuring 13 TDF domains: “knowledge,” “skills,” “social/professional role and identity,” “beliefs about capabilities,” “optimism,” “beliefs about consequences,” “intentions,” “goals,” “memory, attention and decision processes,” “environmental context and resources,” “social influences,” “emotion,” and “behavioral regulation.” Participants were asked to respond to each item using a 5-point Likert scale to indicate the extent to which they agreed with each statement, ranging from 1 ¼ strongly disagree to 5 ¼ strongly agree. Not all TDF domains had an equal number of items; therefore, we used the mean domain score to aid comparison between domains. Lower mean domain scores indicated that the domain was more of a barrier to infant hearing aid use. A content validity of the questionnaire was assessed by 5 audiologists and speech-language pathologists with minimum 5 years of experience. Total response was collected from parents of children with hearing aids in the age range of 0-5 years, through a telephonic interview in the language of their comfort. The data was subjected to descriptive statistical analysis.

### **Results & Discussion:**

The analysis indicated the scores from the TDH survey key barriers to infant and toddler hearing aid use across various domains, with lower scores indicating stronger barriers. Parents identified “emotions” as the most significant barrier (M=3.33, SD=0.73, 95% CI=3.12 to 3.54) related to feeling of stress and negative emotions during hearing aid usage. The second most impactful domain was “belief about capabilities,” (M=3.34, SD=0.80, 95%CI=3.24 to 3.66) which reflects concern about their perceived ability to use hearing aids consistently. The next impacted domain was “environmental context and resources (M=3.71, SD = 0.55, 95% CI

=3.57 to 3.85)) which encompasses the impact of circumstances like time and support on hearing aid usage. Other domains included “social influences” (M=3.84, SD = 0.79, 95% CI = 3.63 to 4.05) and optimism (M=3.90, SD = 0.74, 95% CI =3.71 to 4.09), which relate to interpersonal attitudes and confidence in positive outcomes, respectively. Additionally, “memory, attention and decision processes” (M=3.94, SD = 0.75, 95% CI =3.74 to 4.14)) and “behavioral regulation” (M=3.97, SD = 0.88, 95% CI =3.74 to 4.20) highlight challenges in remembering and planning for consistent use of hearing aid. The domains which perceived as less barrier included “social/professional role and identity” ” (M=4.61, SD =0.63, 95% CI = 4.44 to 4.78), indicating a belief that consistent hearing aid use is a key part of parental responsibility. Other supportive domains were “belief about consequences” (M= 4.53, SD= 0.67, 95% CI = 4.35 to 4.71)), “intensions” (M=4.48, SD=0.74, 95%CI=4.29 to 4.67), “knowledge” (M=4.48, SD=0.75, 95%CI=4.2 8to 4.68), and “skills” (M=4.25, SD=0.71, 95%CI=4.06 to 4.44). Earlier studies reported that parents have an array of problem-solving challenges related to their child's hearing aid use. Supporting parents includes not only addressing technical aspects of hearing testing and hearing aid function but also addressing parent thoughts, feelings, and emotion. Currently, the few existing interventions that aim to increase infants and toddler hearing aid use do indeed tend to focus on a subset of domains with considerable focus on knowledge and skills ( Munoz et al.2021). Majority of the intervention videos largely targeting knowledge and skills which include, practical management, the technology , and knowledge about the benefits of hearing aid use and the challenges to expect.

However, recent studies demonstrate specific domains of the TDF which found to be more strongly reported, and more closely tied to infant hearing aid use, such as the emotional impact of implementing infant hearing aid use, the environmental and contextual factors associated with infant hearing aid use, and parents' beliefs in their capability to consistently implement their child's hearing aid use (Ciara Kelly et al).

### **Summary & Conclusion:**

This study helps to systematically explore the factors affecting consistent hearing aid use in children under 5, utilizing a theory-informed survey with parents of infants and toddlers hearing aid users and professionals in the fields. The findings indicate that the barriers are more diverse than previously reported in existing research and interventions. Therefore, it is essential for future intervention to expand beyond the traditionally targeted domains such as knowledge and skills to include comprehensive assessment of TDF domains. The key areas to focus on include

“emotions,” “beliefs about capabilities,” “behavioral regulation,” “goals,” and “environmental context and resources”. This approach allows for awareness about intervention that better address the unique needs of families and ultimately improve hearing aid adherence and outcomes for infants and toddler.

**Academic Performance and Auditory Processing Difficulties: Comparing High and Low Performing Children from Similar Socio-Economic Backgrounds Using the SCAP-C Checklist.**

*Mohammed Rehan Raza, Masud Ahamed, Halder, Santanu Saha & Ketaki Borkar*

**AYJNISHD(D), Mumbai**

**Introduction:**

Hearing sensitivity is the ability of an individual to detect the presence of sounds. It does not, however indicate a person is capable of comprehending both simple and complex semantic relationships as well as syntactic structure. Delgutte (1997) noted that speech is characterized by continuous, rapid alterations, and fine spectral structure, which requires fine auditory processing to comprehend. The ASHA definition of (C)APD (ASHA, 1996) infers difficulty in memory, learning, attention, long-term phonological representation, and other higher neurocognitive processes. Hence, due to these deficits, its effect on academic performance should not be ruled out. The approximate prevalence measure of (C)APD varies 0.5-7% among pediatric population (Shreyas and Jain, 2024). Muthuselvi and Yathiraj (2009) found out 3.2% prevalence of APD among school going children. Screening Checklist of Auditory Processing in Children (SCAP-C) developed by Yathiraj and Mascarenhas (2002) is one of the only two Screening checklist available for Indian Population. It consists of 12 Questions which includes auditory perceptual processing, auditory memory, phonological processing, and other questions. SCAP is a valid test having a fairly high sensitivity (71%) without compromising on the specificity (68%) when cut off score of 6 is used (Yathiraj and Mascarenhas, 2002).

**Need for Study:**

There can be many factors influencing academic performance such as socio-economic status, physical health, motivation etc. However, one often underexplored yet crucial factor is auditory processing difficulties. While many studies have focused on external factors influencing academic performance (Manna et.al 2016, Habibullah and Ashraf 2013, Kavi and Walvekar 2020), auditory processing difficulties still remain under-researched. Currently, there are no studies assessing the risk of auditory processing difficulties among low-performing children using a screening checklist tailored for the Indian population. Hence, there is a need to study whether low performing students are disproportionately affected by APD as compared to their

high performing peers, especially in those children who have similar external factors such socio-economic background.

### **Aim & Objectives:**

The aim of the study is to compare extent of auditory processing difficulties, if any, faced by children with high and low academic performance and to explore the potential need for detailed assessment and targeted interventions in those low performing children who are at risk of auditory processing difficulties.

### **Method:**

SCAP-C checklist was administered on 108 children from 5 different primary schools of similar socio-economic background, dividing them into two groups of 54 students each: group A (high-performing children) and group B (low-performing children). The participants were in grades 4 to 6, aged 9 to 12 years. From each school, 10 students were chosen from both groups based on their aggregate scores from the last three exams. High-performing children achieved average scores of 92% in language and 84% in mathematics, while low-performing children scored 27% and 21%, respectively. Before administering SCAP-C, hearing and language screening was performed. Those children who failed the screening test were excluded from the study. A well calibrated Type III Audiometer (IEC, 1979) equipped with HD-01 Supra-aural earphone was used for hearing screening, while the AYJNISHD(D) language screening checklist was utilized for language screening. The SCAP-C checklist was administered alternately to each child in the groups. In order to ensure the reliability of the score, some questions were repeated between the test. The time taken to administer SCAP-C on each child was approximately 6-10 minutes.

The obtained data was subjected to normality test using Shapiro-Wilk test for normality. Based on normality findings, inferential statistics was performed using Wilcoxon-signed ranked test.

### **Results & Discussion:**

GROUP A (Higher academic performer): Results of descriptive analysis for Group A as per the data collected revealed the mean score of 0.68, median score of 1, and mode of 1 with a standard deviation of 0.71 suggesting that there is no difficulty in auditory processing.

GROUP B (Low academic performer): Similarly, the results of the descriptive analysis for group B as per the data collected revealed the mean score 4.8. median score of 4, and standard deviation of 1.93 suggesting that this group experiences notable difficulty in auditory processing. Wilcoxon sign rank test was applied revealing a statistically significant findings

( $p < 0.0001$ ) and since the  $p$ -value  $< \hat{I} \pm$ ,  $H_0$  is rejected.

The statistically significant difference ( $p < 0.0001$ ) reinforces the reliability of the findings, suggesting that auditory processing issues are a critical factor influencing academic outcomes. According to Yathiraj and Maggu (2013), among 400 school going children studying in grade 3 to 8, 12.3% of them were identified as being at risk for Auditory Processing Disorder (APD) on the SCAP-C.

In this study, the raw scores from the SCAP-C indicated that 38% of children in Group B ( $n=54$ ; low performing children) were found to be at risk for APD. This finding aligns with research by W.M. King et al. (2003), which reported a prevalence of APD in children with Learning Disabilities (LD) ranging from 30% to 50%. However, it is important to note the limitations in comparing these studies, as the children in Group B were not diagnosed with LD and were drawn from different populations. The findings of this study can fairly contribute in the better understanding of the relationship between the children with lower academic performance and auditory processing difficulties. Notably, there are currently no studies that specifically address the risk of APD among low-performing children using a screening checklist designed for the Indian population.

Additionally, the study also highlights the auditory processing tasks that are most likely to be affected in low academic achievers, including auditory memory, auditory closure, and phonological processing. These insights are crucial for developing targeted interventions to support these children in improving their academic performance.

### **Summary & Conclusion:**

The study demonstrates a significant difference in auditory processing abilities between low and high academic achievers, suggesting that auditory processing plays a critical role in academic achievement. Hence, the study findings emphasize the need for detailed assessment and targeted intervention. Future research should focus on developing effective intervention strategies that specifically target auditory processing skills in educational settings. By fostering collaboration between educators and audiologists, we can create more inclusive environments that support all learners, particularly those at risk of academic underachievement. Addressing APDs through early identification and targeted intervention could enhance learning outcomes, particularly for low performing children who may be misidentified as having other learning difficulties.

**AP1414**

**Translation, Cultural Adaptation and Validation of the Vestibular  
Disorders Activities of Daily Living Scale in Marathi (VADL-M)**

*Aashka Gidwani, Dhriti Hasija, Kristi Kaveri Dutta & Madhuri Ramdas Bhogade*

**Bharati Vidyapeeth (DU) School of Audiology and Speech Language Pathology**

**Abstract Not Available**

## **Comparative Analysis of Visual Working Memory in Children with Severe to Profound Hearing Loss**

*Neelesh Benet, Sarthak Nehra, Manisha kumari & Swati Jha*

**Amity University Gurugram**

### **Introduction:**

Visual working memory (VWM) is a critical cognitive process that enables individuals to temporarily hold and manipulate visual information, playing a vital role in academic tasks such as learning and problem-solving (Alloway & Alloway, 2010). Strong VWM skills are particularly important for children in areas like mathematics and reading comprehension (Holmes & McGarrigle, 2017). While children with typical hearing develop cognitive functions alongside language and auditory processing skills, those with severe to profound hearing loss face unique cognitive challenges due to their limited auditory input (Bishop & Edmundson, 1987). Research indicates that children with hearing loss often rely on visual cues to compensate for their reduced access to auditory information, which can enhance visual processing abilities (Mason & O'Neill, 2009). However, some studies suggest these children may experience deficits in working memory and attention compared to their hearing peers (Lindsay & McCauley, 2012). The introduction of amplification devices, such as hearing aids, presents an additional factor influencing cognitive development, potentially improving auditory access and supporting language development, which in turn may enhance working memory (Wang & Nevo, 2015). However, the impact of these devices on VWM performance remains debated (Petersen & McHugh, 2019). This study aims to explore the VWM capacities of children with severe to profound hearing loss, focusing on a comparative analysis between those who use amplification devices and those who do not, contributing to a better understanding of cognitive adaptations in this population.

### **Need for Study:**

Understanding how children with hearing loss, both with and without amplification, perform on VWM tasks can provide insights into the cognitive profiles of these subgroups, guiding personalized interventions and support strategies (Alloway & Alloway, 2010; Bishop & Edmundson, 1987). Investigating the influence of amplification devices on VWM performance is crucial, as it remains unclear to what extent these devices impact cognitive functions, including working memory (Lindsay & McCauley, 2012; Wang & Nevo, 2015). Some research



suggests that children using amplification devices may perform differently on cognitive tasks due to enhanced auditory input (Holmes & McGarrigle, 2017), while others hypothesize that visual compensatory mechanisms are more prominent in those who do not use amplification (Mason & O'Neill, 2009; Petersen & McHugh, 2019).

### **Aim & Objectives:**

To investigate and compare the visual working memory performance of children with severe to profound hearing loss who use amplification devices and those who do not, as well as compare them with age-matched hearing peers. The objectives are 1. To compare the visual digit forward and backward scores between children with severe to profound hearing loss and age-matched hearing peers. 2. To compare the visual digit forward and backward scores between children with severe to profound hearing loss who use amplification devices and those who do not.

### **Method:**

#### **Participants:**

The study will include two groups of children aged 7 to 11 years. The experimental group will consist of 25 children with severe to profound hearing loss from the Premala Bai Chavan School for the Deaf in Karkardooma, Delhi, including 6 children who use amplification devices and 19 who do not. The control group will comprise 21 age-matched hearing children from a nearby area. Consent has been obtained from both the school administration and the parents of the participating children.

#### **Procedure:**

All participants will complete two tasks: the Visual Digit Forward Task and the Visual Digit Backward Task. In the forward task, a series of digits will be displayed on paper, and the child will select corresponding digit flashcards in the same sequence. The task begins with three digits and gradually increases until an error is made, with the maximum correct sequence recalled determining the child's score. In the backward task, the same digits will be presented, requiring recall in reverse order. Scores will be recorded after completing both tasks.

#### **Statistical Analysis:**

Statistical analysis will be conducted using SPSS v21 software. Two independent sample t-tests will be performed: one to compare digit forward and backward scores between hearing-impaired children who use amplification devices and those who do not, and another to compare scores between the experimental and control groups.

## **Results & Discussion:**

An independent-samples t-test compared digit forward and backward scores between hearing-impaired and normal hearing groups. The hearing-impaired group scored significantly lower on the digit forward task ( $M = 4.08$ ,  $SD = 0.99$ ) than the normal hearing group ( $M = 5.85$ ,  $SD = 0.79$ );  $t(44) = -6.600$ ,  $p = 0.000$ . Similarly, the digit backward score was significantly lower in the hearing-impaired group ( $M = 2.92$ ,  $SD = 0.70$ ) compared to the normal hearing group ( $M = 5.23$ ,  $SD = 0.99$ );  $t(44) = -9.234$ ,  $p = 0.000$ . Within the hearing-impaired group, the digit forward score was significantly higher for hearing aid users ( $M = 5.00$ ,  $SD = 0.63$ ) compared to non-users ( $M = 3.78$ ,  $SD = 0.91$ );  $t(23) = 2.993$ ,  $p = 0.006$ . The digit backward score was also significantly higher in hearing aid users ( $M = 3.50$ ,  $SD = 0.54$ ) than non-users ( $M = 2.73$ ,  $SD = 0.65$ );  $t(23) = 2.579$ ,  $p = 0.017$ .

The study's findings highlight the significant effect of severe to profound hearing loss on visual working memory in children. Both digit forward and backward scores were significantly lower in the hearing-impaired group compared to the normal-hearing group, aligning with existing research indicating that auditory input plays a critical role in supporting cognitive processes, even in tasks that primarily involve visual stimuli (Alloway & Alloway, 2010; Bishop & Edmundson, 1987). The reduced auditory access in children with hearing loss may hinder their ability to utilize auditory-verbal strategies, which are often essential for effective working memory performance. Additionally, delayed language development in these children may further exacerbate their working memory challenges, as verbal strategies are typically employed in memory tasks (Lindsay & McCauley, 2012; Holmes & McGarrigle, 2017). Within the hearing-impaired group, the significant difference in performance between amplification device users and non-users suggests that amplification devices, such as hearing aids, provide critical support for working memory. Children who used hearing aids performed better in both digit forward and backward tasks, indicating that improved auditory input from these devices may enhance cognitive functioning by enabling children to use more effective auditory-verbal memory strategies (Mason & O'Neill, 2009; Petersen & McHugh, 2019). These findings underscore the importance of early and consistent use of amplification devices in children with hearing loss, as they appear to play a crucial role in mitigating cognitive deficits. Hearing aids not only support auditory processing but also contribute to better working memory performance, which is essential for overall cognitive development and academic success (Wang & Nevo, 2015). Future research should explore the long-term cognitive benefits of amplification and investigate additional interventions that may further enhance memory and

learning outcomes in this population.

**Summary & Conclusion:**

The study demonstrates that children with severe to profound hearing loss exhibit significantly lower visual working memory performance compared to their normal-hearing peers, as evidenced by their scores on digit forward and backward tasks. However, children who use amplification devices, such as hearing aids, perform better than those who do not, indicating that these devices play a crucial role in enhancing cognitive functioning by providing improved auditory input. These findings highlight the importance of early and consistent use of amplification devices to support not only auditory processing but also broader cognitive outcomes, such as working memory, which are essential for academic and developmental success.

**AP1416**

**A Preliminary Study on Pre and Post Comparison of Knowledge About  
Postural Hypotension Among Audiology Students**

*Abigail Nancy Thyatira, Sri Danvi, Sam A & Anita Ivvah*

**Holy Cross College (Autonomous), Tiruchirappalli**

**Abstract Not Available**

**The link between Auditory earworms and differential sensitivity - An exploratory study examining the intensity and frequency discrimination**

*Mahenoor Khan, Arsiwala Tasneem Mustafa & Neha Prasad*

**Topiwala National Medical College and BYL Nair Charitable Hospital**

**Introduction:**

In the course of our everyday existence, we frequently discover that we are inadvertently replaying a song over and over in our minds and this is known as an “Auditory earworm.”(Cutshaw, 2021). An auditory earworm is a type of involuntary musical imagery that is characterized by the mind repeatedly playing a brief musical piece without the observer's conscious attention or participation (Killingly et al., 2021). The songs that are catchy and easy to sing and are familiar to the listener are most likely to get induced as an earworm (Jakubowski et al., 2015; Liikkanen & Jakubowski, 2020; Tillmann et al., 2023)

While an earworm is induced internal singing happens whether internal singing—that is, singing a song to oneself in private—involves subvocal articulation is an unsettled subject. Consider subvocal articulation (also known as subvocalization) as an inner monologue that activates speech production-related motor systems (Locke & Fehr, 1970). Specifically, subvocal articulation is used for activities requiring the retention of information in sequential order and is known to be involved in short-term working memory (Chai et al., 2018; Killingly et al., 2021). Our capacity to distinguish between variations in sound intensity is known as differential sensitivity to intensity. The lowest discernible change in intensity is indicated by the just detectable difference (JND). As with intensity, the frequency JND i.e. our capacity to discriminate between various pitches. Gives us an understanding of how precisely humans can hear pitch shifts(Grassi & Soranzo,2009). To enhance sensitivity to intensity and frequency changes, we may mentally rehearse auditory information. For instance, repeating a melody in our heads can improve our ability to notice subtle changes in pitch or loudness(Chai et al., 2018). STM holds auditory information temporarily, allowing us to compare current sounds with previously heard stimuli. This retention is crucial when assessing differences in intensity or frequency, as we rely on memory to make comparisons.(Kasera et al., 2023).

**Need for Study:**

The need for the study is to explore the impact of involuntary auditory earworm on auditory discrimination tasks, such as the differential sensitivity to intensity and frequency, in order to

understand the interaction between mental auditory processes and actual auditory perception. Auditory imagery, though not consciously controlled, may affect how individuals perceive and differentiate sounds, potentially enhancing or impairing auditory discrimination abilities.

### **Aim & Objectives:**

This study aims to study the effect on the differential sensitivity tasks when earworm is induced and short-term memory plays an important part in both phenomena.

Objectives of the study -

1. To survey to find the catchy songs that are more likely to induce earworms.
2. To induce auditory earworm and to find its impact on differential sensitivity in terms of intensity and frequency

### **Method:**

The study was done to induce an auditory earworm and determine whether it impacts the differential sensitivity tests for intensity and frequency. The study also ensured that the earworm was induced by asking the participant whether the earworm was induced or no by the end of the testing.

#### Step 1 - Preliminary Song Selection Survey

Before conducting the auditory tests, a survey was designed to identify catchy songs that would later serve as stimuli. Two age groups were surveyed:

- 20 young adults aged 18-27
- 20 older adults aged 40-50

Each group was provided with a form containing a list of popular songs from their respective eras. The participants were asked to identify the songs they found most catchy. The top 5 catchy songs from each age group were selected based on the survey results.

#### Step 2 - Stimuli Creation

Considering that earworms are most frequently experienced during choruses, as per the findings of Beaman & Williams' study, and to expose participants to these songs as much as possible in the brief study duration 2010 (Killingly & Lacherez, 2023), the chorus of each song was isolated and looped seamlessly for 3 minutes.

#### Step 3 - Participant Selection and Consent

The study began by obtaining informed consent from all participants. Consent forms were distributed, and individuals aged 18-27 years were recruited for the primary study.

#### Step 4 - Screening for Normal Hearing

Following the song selection process, all participants underwent pure-tone audiometry and impedance audiometry to confirm normal hearing. Only participants with normal hearing were included in the study.

#### Step 5 - Baseline Auditory Perception Testing

After hearing screening, baseline auditory perception was assessed using Difference Limen for Intensity (DLI) and Difference Limen for Frequency (DLF) tests. The MATLAB software was utilized to administer these tests, which measured participant's sensitivity to changes in sound intensity and frequency. This served as the initial reference point for auditory perception before the intervention.

#### Step 6 -Exposure to Auditory Stimuli

The mashup created from the identified catchy songs was provided to the participants, who were instructed to listen to the stimuli at least three times over 24 hours. This repeated exposure aimed to familiarize participants with the auditory stimuli and observe any perceptual changes resulting from this exposure.

#### Step 7 - Post-Exposure Auditory Perception Testing

On the day following the exposure period, participants were again subjected to DLI and DLF testing using the MATLAB software. The second round of testing was designed to measure any changes in auditory perception after repeated exposure to the catchy song mashup. These results were compared to the baseline data to evaluate any differences in sensitivity to intensity and frequency changes.

### **Results & Discussion:**

The study included 23 participants and the differential sensitivity tests of intensity and frequency were administered as a baseline later the sound stimulus (chorus of the catchy song) was given to the participants and they were made to listen to the stimulus for a day and later the differential sensitivity test was repeated to note any difference. First, the test of normality and later paired t-test was done. It was found that the p-value was  $>0.05$  suggesting no significant difference post-inducing earworm in the differential sensitivity. The questionnaire that was given at the end for the participants to fill out to report the presence of earworm reported that all the participants experienced earworm however it did not have an impact on the differential sensitivity test of intensity and frequency. It appears that earworms do not obstruct the cognitive or perceptual mechanisms involved in auditory discrimination because performance on differential sensitivity tasks does not change before or after an earworm is created. This suggests that the brain is capable of efficiently distinguishing between the

intentional processing needed to analyze variations in intensity and frequency and involuntary auditory imagery, or earworms.(Beaman & Williams, 2010).

**Summary & Conclusion:**

This study investigates the impact of induced auditory earworms (involuntary musical imagery) on auditory perception, specifically focusing on the difference limen for intensity (DLI) and difference limen for frequency (DLF). Through a controlled experiment, participants were exposed to earworm-inducing stimuli and subsequently tested on their ability to perceive slight changes in sound intensity and frequency. The results revealed no significant change in both DLI and DLF thresholds, indicating that the presence of earworms does not affect auditory sensitivity to changes in sound characteristics.

These results imply that differential sensitivity tasks and auditory earworms function relatively independently in the brain. The brain's capacity to divide and organize several concurrent cognitive activities is demonstrated by the mechanisms involved in identifying subtle variations in frequency and intensity, which seem resilient and unaffected by the presence of involuntary auditory images. This suggests that auditory perception and images are compartmentalized and that auditory discriminating processes are robust even in the face of possible internal distractions such as earworms.



## **Harnessing Technology: A Review of Auditory Verbal Therapy Apps**

*Pawar Janhavi Bhaskar & Shaikh Saima Mohammad Ali*

**Ali Yavar Jung National Institute of Speech and Hearing disabilities (Divyangjan)**

### **Introduction:**

Early intervention for children with hearing loss (HL) using evidence-based practices (EBPs) can significantly enhance their communication skills (Paris Binos, 2021). Auditory Verbal Therapy (AVT) is an effective strategy for teaching spoken language and listening, with professionals able to obtain accreditation from the AG Bell Academy for Listening and Spoken Language (Rhodes et al., 2016). AVT empowers caretakers to support their HL children's speech development by focusing on using hearing as the primary sensory modality to foster speech production skills (Estrabook et al., 2006).

In today's digital age, apps play a crucial role in supporting speech and language development in children. These engaging platforms offer tailored activities such as vocabulary building, pronunciation practice, and listening exercises. By utilizing technology, parents and educators can create customized learning environments that enhance auditory verbal therapy, helping children gain confidence and improve their communication skills.

### **Need for Study:**

The need for effective Auditory Verbal Therapy (AVT) apps in India is growing as the country aims to improve outcomes for children with hearing loss. With many children using hearing aids and cochlear implants, there is a demand for evidence-based resources that support language development. AVT apps can bridge the gap between therapy sessions by offering structured activities, real-time feedback, and progress tracking for consistent, engaging practice at home. Additionally, as awareness of AVT increases, there is a need for culturally relevant content that includes local languages and dialects, making therapy more relatable and impactful.

### **Aim & Objectives:**

1. To gather qualitative and quantitative data from users regarding their experiences, challenges, and perceived benefits of using AVT apps.
2. To assess the inclusivity of content in AVT apps, ensuring that they reflect the linguistic and cultural diversity of India.

3. Adapt the mHealth App Usability Questionnaire (MAUQ) and test the validity of the modified instrument (m-MAUQ).
4. Measure the usability of the AVT apps using the m-MAUQ.
5. To review the impact of AVT apps on children's listening skills as well as speech and language skills.

**Method:**

Apps eligibility criteria: Apps included in this review were designed for individuals with hearing impairments and provided Auditory Verbal Therapy (AVT) features. Eligible apps were available in English or Indian languages, either free or for purchase, compatible with Android or iOS, and accessible on mobile phones and tablets. Apps lacking key AVT principles were excluded.

Tool: Mhealth Application Usability Questionnaire (MAUQ) is a valid and reliable instrument comprising 21 items which was originally developed to assess the usability of the Fitbit app. It comprises 3 subscales as 'Ease of use and satisfaction', 'System information arrangement', and 'Usefulness'. An adapted version of MAUQ consisted of 14 questions and responses were obtained as per Likert's scale. This tool was validated by ASLPs via CVI.

**Results & Discussion:**

There were a total 24 apps found on play store and IOS (14 Android and 10 IOS based). Of them only 7 were found most relatable to the AVT. App review was done based on MMAT 2018 guidelines. There are discussed as following table:

Scores obtained on m-MAUQ for each app(Out of 70): AVTcare(55), AVTAR(41), Eargym (37), Hearoes(66), Listen Auditory training app(15), Sounds training app(49), i-angelsounds(54) AVTcare: AVTcare is a free Indian app developed by Montfort Care for hearing-impaired children, specifically designed for auditory verbal therapy (AVT). The app features therapy activities organized by age levels, along with resources and parental guidance to enhance communication skills. With engaging and interactive elements, it supports parents, therapists, and children with hearing loss. The app is available in several Indian languages, with additional materials currently under development.

AVTAR: The AVTAR app, created by AVT therapist Ritu Nakra, offers a two-year curriculum of auditory verbal therapy (AVT) for children with hearing loss. It features interactive learning modules tailored to different developmental stages and personalized therapy plans. Available in various Indian languages, the app allows users to track progress, access multimedia

resources, and engage in gamified exercises for motivation. Instant feedback reinforces learning, and community support connects parents and therapists. With a user-friendly interface and customizable notifications, AVTAR serves as a comprehensive toolkit for families and professionals in auditory verbal therapy.

Eargym: is an auditory training app by Amanda Philpott and Andy Shanks for individuals who struggle to understand speech in noisy environments. Available only in English, it gamifies learning by revealing users' "hearing age" and task scores, which keeps them motivated. Users can track their progress, enhancing their sense of achievement. While the app provides valuable sound therapy, it works best as a complement to other learning methods and professional support.

Hearoes: Hearoes is a mobile app developed by Elliot Miller and Australian audiologists, featuring over 90 games to enhance auditory skills like sound awareness and memory. Available only in English, it offers interactive learning through engaging exercises for listening and speaking. Users can create personalized therapy plans and track progress, celebrating milestones along the way. The app fosters community connections for sharing experiences, all within a user-friendly interface that makes learning enjoyable for both children and adults.

Listen Auditory Training: This app, developed by the University of California Riverside (UCR) Brain Game Center for Mental Fitness and Well-being, offers valuable features for auditory training but has potential drawbacks. Its narrow scope may leave gaps in learning, and it lacks personalized feedback compared to in-person training. Additionally, technical issues can disrupt the experience. These limitations highlight the importance of using the app as a supplementary tool alongside other resources and support.

Sound Training App: The app enhances auditory skills through engaging exercises for individuals of all ages, including those with hearing impairments. It features interactive activities that train auditory processing, discrimination, and comprehension at the vowel and consonant levels. Users can customize their learning paths based on skill level and goals. With a user-friendly interface, navigation is easy for everyone, ensuring a smooth experience.

iSoundAngel: i-Angel Sound, developed by Inconvenient Solutions and the Emily Fu Foundation, is an auditory training app designed for users with hearing challenges. It features interactive exercises and personalized learning paths for skill development in sound recognition, auditory memory, and speech discrimination. The app offers real-time feedback, progress tracking, and multimedia resources, ensuring easy navigation for all ages. Additionally, it fosters community engagement, allowing users to connect and support each

other, making it a valuable tool for enhancing auditory skills and communication.

**Summary & Conclusion:**

The future of Auditory Verbal Therapy (AVT) apps in India is promising as the need for early intervention for children with hearing loss grows. To be effective, these apps should incorporate evidence-based practices, including personalized learning paths, gamified exercises, and real-time feedback, enhancing engagement and skill development.

Additionally, the inclusion of region-specific languages and cultural contexts is essential to make these apps relatable for families. Fostering community connections can help create support networks for parents and professionals, while collaboration with local audiologists and educators will ensure culturally sensitive content. This approach can transform the auditory verbal therapy landscape in India.

**AP1419**

**Auditory Thresholds and Working Memory Capacity in Right and Left-  
Handed Individuals with Normal Hearing Sensitivity.**

*Jaimi Ann Achenkunju, Lena Elsa Siju, Shezeen Abdul Gafoor & Usha Shastri*

**Kasturba Medical College, Mangalore- MAHE, Manipal**

**Abstract Not Available**

**AP1421**

**Evaluating the Effect of Poor Sleep Quality on The Peripheral Vestibular  
System in Young Adults - A Pilot Study**

*Harshitha M, Prarthana Krishnamurthy, Rajaram S & Harini Vasudevan*

**Sri Ramachandra Institute of Higher Education and Research**

**Abstract Not Available**

**Bridging the Gap: Assessing the Awareness and Utilization of Assistive Listening Devices for Students with Hearing Impairments among Special Educators in Delhi**

*Nisha Mandal, Sudhanshu Vikas, Sonam Sharma & Shushil Raj*

**Ali Yavar Jung National Institute of Speech and Hearing Disabilities (Divyangjan)**

**Introduction:**

Hearing impairment poses significant challenges to a child's education and social development, limiting their ability to engage fully in the learning environment. In India, the prevalence of hearing impairment among school-aged children, particularly in rural areas, is alarmingly high, with estimates ranging from 7% to 12% (Varsha et al., 2020). While Assistive Listening Devices (ALDs), such as hearing aids and FM systems, have proven effective in increasing access to information and communication for these students (Alodail, 2014). McPherson, 2014 reported significant challenges in the availability and utilization of such technologies in developing countries like India.

**Need for Study:**

Despite the critical importance of assistive technologies, there is limited research on the awareness and understanding of these tools among special educators in India. Many educators show lack of knowledge about the available resources and how to implement them effectively in their classrooms (Ansari, 2021). This gap in awareness is alarming, given the high prevalence of hearing impairment and its impact on student's educational experiences. On the basis of current scenario, we hypothesized the gaps in knowledge and training of special educators about ALDs.

**Aim & Objectives:**

The present study aims to investigate the awareness and utilization of ALDs among special educators in Delhi, with the following key objectives:

1. To assess the level of awareness among special educators regarding the impact of hearing loss on a child's educational outcomes and the available assistive listening technologies.
2. To evaluate the knowledge and skills of special educators in the identification, selection, and implementation of appropriate ALDs for their students with hearing impairments.
3. To identify the barriers and challenges faced by special educators in the effective

integration of ALDs in the classroom setting.

**Method:**

A total of 120 educators working with students with hearing impairments across various regions of Delhi participated in this study.

Participants were recruited through online platforms via email, schools and special education settings.

An online survey was developed and distributed via email and social media. The survey questionnaire includes closed-ended and open-ended questions covering key areas such as demographics, ALD familiarity and usage, perceived benefits and challenges, and suggestions for improvement. Participants provided information about their professional background, years of experience, school type, and grade levels taught. They rated their familiarity with different types of ALDs on a 5-point Likert scale and indicated the types currently used in their schools. Additionally, they assessed the perceived benefits and challenges of ALD implementation and shared specific examples through open-ended questions. Quantitative data from the closed-ended questions were analyzed using descriptive statistics (frequencies, percentages, means), while qualitative data from open-ended responses were examined through thematic analysis to identify recurring themes and patterns.

**Results & Discussion:**

The survey included 120 participants from various educational settings across Delhi, primarily special education teachers (65%), along with speech-language pathologists (20%) and audiologists (10%). Most worked in public schools (70%) serving elementary (45%) and middle school (35%) students, with an average of 5-7 students with hearing impairments each. Results revealed a concerning lack of familiarity with ALDs. Only 30% were aware of the term before the survey, and familiarity with specific types was low. Only 15% hearing impaired students using ALDs out of which 60% of students were found to be using personal FM systems.

Despite this, participants acknowledged about potential benefits of ALDs, they strongly agreeing that ALDs could enhance access to spoken information (Mean=4.2) and create a more inclusive environment (Mean=4.3). Key challenges include a lack of staff awareness, insufficient training , limited availability, and lack of funding. To address these issues, participants suggested to increase awareness and training for educators, also to improve the access of ALDs through government initiatives, and engaging parents to maximize the benefits

for students with hearing impairments. This study highlights a significant gap between the potential benefits of ALDs and their actual implementation in Indian schools. The findings reveal a concerning lack of awareness, limited usage, and significant barriers to adoption, hindering the educational progress of students with hearing impairments.

The educators acknowledged the potential of ALDs in improving access, participation, and inclusion. They also highlighted the lack of knowledge and training, coupled with resource constraints, prevents their widespread adoption. This situation necessitates immediate attention and calls for a multi-purpose approach to bridge the gap.

The study's findings align with global research emphasizing the importance of professional development and systemic support for successful ALD implementation. However, the unique challenges faced within the Indian context, such as resource limitations and varying levels of awareness across regions, require tailored solutions.

### **Summary & Conclusion:**

The findings of this study underscore the pressing need to prioritize integrating ALDs in Indian schools, particularly for students with hearing impairments. Improving awareness, providing comprehensive training, and ensuring equitable access to ALDs are crucial steps to empower educators and enhance these students' educational experiences.

To address this issue, a collaborative effort involving policymakers, school administrators, teacher training institutions, and disability advocates is required. Ongoing research, adaptive policy changes, and sustained funding will be essential to create an inclusive education system that truly meets the diverse needs of all learners.



**AP1423**

**Audiological-Vestibular Profile of Patient with Vertebral and Anterior  
Cerebral Artery Hypoplasia: A Case Study**

*Krishnapriya Parthasarathy, Rajaram S & Madhan C*

**Sri Ramachandra Institute of Higher Education and Research**

**Abstract Not Available**

## **Audiological and Vestibular findings in an adult with Tinnitus and Dizziness: A case study**

*Abhishek Semwal, Srabanti Saha & Ramji Pathak*

**Sri Aurobindo Institute of Speech and Hearing, SAU, Indore**

### **Introduction:**

Tinnitus is an auditory sensation that does not have an external sound stimulation, which can be described by its perceptual characteristics: location, intensity, frequency, and timbre (Norena et al., 2021). This indicates changes in the functioning of the auditory system and/or other structures that can interfere with the symptom, even in cognitive or emotional processes, which can impact the quality of life (Souza et al., 2021). According to the World Health Organization (WHO), 278 million individuals have tinnitus, which corresponds to approximately 15% of the world population, and this prevalence increases to 35% among individuals over 60 years of age. Tinnitus is categorized as pulsatile or non-pulsatile, primary (idiopathic) or secondary (due to another condition), and subjective or objective. Tinnitus may have a multifactorial etiology, with an association being described with middle ear diseases, neurological, neurodegenerative, cardiovascular, metabolic, and psychological disorders or associated with sensorineural hearing loss (Mores et al., 2019). Tinnitus is one of the main complaints in patients with hearing loss, especially in those who are frequently exposed to noise (Martines et al., 2011), that reduces attention and concentration, increases the risk of falls and sleep disorders, and impairing the performance of different daily tasks and quality of life (Barbosa et al., 2018). Tinnitus occurrence can be connected with a range of comorbid health conditions, including vestibular disorders, audiological problems, and behavioral health issues. The vestibular system, which manages balance and spatial orientation, is closely linked with the auditory system, which controls hearing functions.

### **Need for Study:**

Tinnitus and hearing impairment are often associated mostly in sensorineural hearing loss (SNHL). Approximately 3 to 9% of individuals with tinnitus report more than slight tinnitus-related handicap (Bhatt, 2018). Chronic tinnitus is associated with increased anxiety depression, and maladaptive behaviors such as perseverating on tinnitus-related distress (McKenna, 2014). Highlighting on the prevalence of tinnitus, its impact on the quality of life and its relationship with hearing loss and vestibular disorders it becomes essential to establish the audiological and

vestibular profile of individuals with these conditions. Hence, there is a need to understand the relationship between tinnitus perception, audiometric thresholds, and vestibular findings that could prove useful in guiding targeted audiological care, tinnitus education, and counseling.

### **Aim & Objectives:**

The present case study aimed to investigate the audiological and vestibular findings in an adult with tinnitus and dizziness.

### **Method:**

A 49 years old male, locomotive pilot by profession presented to the audiology department with the complaint of reduced hearing and tinnitus in the right ear since the last 7 months. Further episode of dizziness and imbalance was experienced during walking since the last 4 months. He revealed exposure to noise for approximately 8 hours per day at his working place for more than a decade. Previous pure tone audiometry report showed moderately severe to severe sensorineural hearing loss in the right ear whereas mild to moderate sensorineural hearing loss in the left ear. Medications (Tinnicar 20 mg/ day) were recommended by otolaryngologist for a period of 15 days.

Currently the case was subjected to a detailed case history and otological examination. Audiological evaluation including pure tone audiometry and speech audiometry was conducted using two-channel audiometer Interacoustics AA-222. Immitance audiometry was performed with immittance meter Interacoustic, AT-235. Following this vestibular function tests were performed which included Romberg test, Fukuda step test and two channel Videonystagmography (VNG) – Neuro-Equilibrium. Vestibular evoked myogenic potentials (VEMPs) that included cervical VEMP (cVEMP) and ocular VEMP (oVEMP) was performed to evaluate the otolithic functions. Further dizziness handicap inventory (DHI; Jacobson and Newman, 1990) was administered to quantify the impact of dizziness on daily life. Additionally, Tinnitus handicap inventory (THI; Newman et al., 1996) was done to determine the perceived tinnitus handicap severity by the subject.

### **Results & Discussion:**

The case reported of marked dizziness, hearing loss and tinnitus characterized as unilateral, continuous, moderately loud, high pitched predominantly in the right ear currently.

The present pure tone audiometry report indicated of moderately severe sensorineural hearing loss in the right ear whereas the audiometric configuration represented a sloping hearing loss in the high frequencies. Hearing sensitivity was within normal limits for the left ear. This

indicated a reverse in the hearing threshold in both the ears when compared with the previous Puretone audiometry results. Speech reception threshold (SRT) and word discrimination score (WDS) was poor in the right ear. Immittance audiometry showed bilateral type tympanogram with absent contra and ipsi reflexes in the right ear though present in left ear. Fukuda Step Test showed deviation towards right side and Romberg test was negative. These subjective test results correlated well with the VNG Head-Shaking Nystagmus findings that presented a horizontal left beating nystagmus suggestive of unilateral i.e. right sided vestibuloparesis. Results of cVEMP and oVEMP findings for right ear indicated abnormal functioning of sacculo-colic pathway and utriculo-ocular pathway whereas the left ear revealed adequate vestibular functioning. The subject scored 36 and 18 in THI and DHI respectively which suggested of a mild handicapness. Kadan (2021) found a relationship between tinnitus parameters and peripheral vestibular functioning in normal hearing individuals. Cetinbag-Kuzu (2023) stated the importance of auditory and vestibular functions in individuals exposed to noise.

#### **Summary & Conclusion:**

In the present case study, there is evidence of a reversible hearing loss in the left ear that suggests of transient cochlear abnormalities may be reversible. Results also reveal a consistent presence of abnormalities in both vestibular and auditory functioning in right ear. Detailed audiological and vestibular investigation can help in early detection of hearing difficulties before they become permanent, hence preventative strategies and increased awareness of hearing health are essential.

## Dislodgement Of Internal Magnet of Cochlear Implant: A Case Study

*Prachi Patwari, Mittali Joshi, Ankita Suman, Batul Ulfeja Kothari.*

**Sri Aurobindo institute of medical sciences**

### **Introduction:**

Cochlear implants (CIs) are a device that are surgically implanted, as a feasible alternative to conventional amplification for the individuals with severe to profound sensorineural hearing loss. CI candidacy has evolved gradually along with advancements in technology. The current FDA guidelines allow pediatric cochlear implantation implanting children at a younger age with profound hearing loss, including those with residual hearing, asymmetric hearing loss, inner ear malformations, as well as cochlear nerve deficiency (Varadarajan et al., 2021). These implants consist of external components, including a microphone and transmitter, and internal components, comprising a receiver/stimulator and an internal magnet. The internal magnet is crucial for aligning and securing the external transmitter to the internal receiver, ensuring effective signal transmission and optimal device function (Wilson & Dorman, 2008; Moller, 2006). Despite their success, cochlear implants are not without complications. Internal magnet displacement is a relatively rare but significant issue that can disrupt the functionality of the device. Displacement occurs when the internal magnet shifts from its intended position, which can impair the alignment between the transmitter and receiver. This misalignment can lead to reduced auditory performance, increased patient discomfort, and potential device failure (Gordon & O'Donoghue, 2010; Riss et al., 2018). Causes of magnet displacement include physical trauma, gradual device migration, and complications related to the surgical placement of the implant (Jones et al., 2015). The functionality of a cochlear implant is assessed through various objective measures both intra-operatively and post-operatively. Key assessments include impedance telemetry and Neural Response Telemetry (NRT), also known as electrically evoked compound action potentials (ECAP). Impedance telemetry provides information about the interaction between the electrode and the surrounding tissue. ECAPs are another critical measure, reflecting the synchronous physiological response of auditory nerve fibers to electrical stimulation. Measuring ECAPs helps verify electrode function and is conducted both during surgery and at regular intervals post-operatively (Michelle, 2016). Addressing internal magnet displacement requires a thorough understanding of its implications, prompt diagnostic evaluation, and, often, surgical intervention to reposition the magnet.

**Need for Study:**

To highlight the significance of awareness regarding internal magnet displacement in cochlear implants, it is essential to stress the need for early intervention and cautious monitoring.

**Aim & Objectives:**

To accentuate the importance of awareness and vigilance regarding internal magnet displacement as a potential complication in cochlear implants and highlight the need for effective strategies to manage this issue.

**Method:**

A 4year-old male patient was evaluated under the RBSK scheme and met the criteria for cochlear implant surgery. The CI surgery was performed on May 6, 2023, using a CI422 electrode array (internal implant) and later on N5 CP802 external processor was activated during switch on session. Post-surgery, the child attended regular mapping and speech-language therapy sessions as scheduled. Post 6 months of switch on , the child reported issues with the speech processor intermittently turning on and off, along with redness and irritation at the internal magnet site. Initial troubleshooting confirmed the processor's functionality, but symptoms worsened despite reducing the magnet's strength from 2M to 1M and a referral to the ENT department showed no signs of swelling or extrusion at the magnet site. To assess the situation comprehensively, impedance telemetry, Neural Response Telemetry (NRT), and radiological evaluations (plain X-ray) were performed.

Impedance and NRT measurements were conducted using the Custom Sound Pro 7.0 software by Cochlear Limited, which evaluates the functional integrity of the cochlear implant. The radiological evaluation aimed to assess the structural integrity of the implant. The hardware components included the N5 CP802 speech processor, CI422 straight electrode array, coil cable, coil with magnet, and wireless programming pod (WPP).

**Results & Discussion:**

The evaluation of the functionality of the cochlear implant involved comprehensive audiological and radiological assessments. During impedance telemetry, the Custom Sound Pro 7.0 software successfully detected the internal implant when the external coil was correctly positioned, demonstrating proper magnetic alignment. Impedance measurements were taken for electrodes 1 through 22 in both Common Ground (CG) and Monopolar 1+2 (MP1+2) stimulation modes at three key time points i.e., intra-operatively, pre-complaint, and post-complaint. Intra-operative, Pre-complaint and post-complaint impedance values were within

normal limits and when measurements were compared it showed no significant changes, suggesting that electrode functionality was not adversely affected by the reported symptoms. Additionally, Neural Response Telemetry (NRT) confirmed that the electrically evoked compound action potentials (ECAPs) were present when evaluated at three different points of time (Intraoperative, pre-complaint and post-complaint), indicating appropriate auditory nerve responses to stimulation as well as no significant change in NRT threshold post complaint. Radiological assessments via X-ray showed displacement of the internal magnet but confirmed that the internal implant and electrode array remained aligned without migration. This indicated an issue with the internal magnet, leading to a recommendation for revision surgery to replace it. These findings collectively suggested that while the device's performance was functionally intact, the persistent symptoms of irritation and malfunction may have been related to issues outside the scope of impedance and NRT measurements, such as minor magnet misalignment or external factors affecting the device. The patient underwent the revision surgery for magnet replacement on May 20, 2024, and post-surgery impedance telemetry, NRT and X-ray evaluations confirmed proper placement of magnet within the magnet pocket and maintained cochlear implant function.

#### **Summary & Conclusion:**

This case highlights the need for vigilant monitoring and management of complications linked to cochlear implants, such as internal magnet displacement. Timely identification and thorough assessment are crucial for effective treatment and restoring device function. Continue follow-up and intervention are vital to promptly address issues and ensure the best outcomes for children with cochlear implants. Additionally, implementing preventive measures, such as regular device checks and patient education, can help reduce the risk of complications.

## **Knowledge and Awareness of Aural Hygiene Practices Among Academic Faculty**

*Neha Kumari, Zufashan Anwer, Prashansha Chauhan, Ritika & Kalash Rawat*

**SGT University, Gurugram, Haryana**

### **Introduction:**

Hearing is the complex process of detecting and interpreting sound waves, allowing us to understand our auditory environment. Sound waves are collected by the outer ear, transmitted through the ear canal to the eardrum, and then conveyed to the middle ear ossicles. These vibrations are amplified and sent to the inner ear, where the cochlea converts them into electrical signals for the brain. Hearing is essential for communication, speech comprehension, social interactions, and emotional well-being, enabling us to enjoy music and engage in meaningful conversations. However, hearing impairment affects millions worldwide, limiting their ability to perceive sounds. Several factors contribute to hearing loss, including genetic predispositions, infections due to poor aural hygiene, environmental influences, and physical trauma. Aural hygiene encompasses practices that promote ear health and prevent damage. Despite educational advancements, a significant number of individuals remain unaware of the consequences associated with poor ear hygiene. For instance, conditions like otitis externa can arise from improper cleaning methods, such as using objects like keys or pens. Similarly, swimmer's ear is a common infection resulting from exposure to contaminated water. Good aural hygiene is pivotal in preventing hearing loss, reducing the risk of ear infections and tinnitus, and maintaining overall ear comfort. Awareness of aural hygiene can enhance communication abilities and improve quality of life. Unfortunately, academic emphasis often favors oral hygiene over aural hygiene, indicating a significant knowledge gap in this area. Raising awareness about aural hygiene is essential for protecting hearing, promoting early detection and treatment of disorders, and enhancing overall well-being. By prioritizing ear health, individuals can lead healthier, more productive lives.

### **Need for Study:**

Aural hygiene is essential for preventing various ear-related issues, including hearing loss, ear infections, and tinnitus. Professors and faculty members may be particularly at risk for developing ear problems due to factors such as prolonged exposure to loud noises, frequent use of personal audio devices, and the natural aging process. Adopting good aural hygiene practices



can help prevent unnecessary hearing loss, improve communication, and enhance overall quality of life. Despite its importance, there is a significant lack of research focusing on aural hygiene awareness among professors, revealing a critical knowledge gap that this study aims to address. By investigating this area, the study seeks to promote better ear care practices and raise awareness about the significance of maintaining aural health within this demographic.

### **Aim & Objectives:**

The primary aim of this study is to investigate the awareness and practices of aural hygiene among professors, a demographic often overlooked in discussions about ear health. This research seeks to provide a comprehensive understanding of how professors approach ear care, which can significantly impact their overall health and well-being. The study's specific objectives include identifying common ear-related habits and practices, such as cleaning methods, frequency of ear check-ups, and use of ear-related products. Additionally, it aims to evaluate professors' knowledge of aural hygiene, including their awareness of common ear conditions and preventive measures. Furthermore, the research will explore the attitudes and perceptions of professors toward aural hygiene, assessing their beliefs about its importance and any cultural or social influences that may affect their practices. Another key objective is to evaluate the actual ear care practices employed by professors and how these align with recommended guidelines for maintaining ear health. Finally, the study seeks to uncover barriers or factors that may hinder effective aural hygiene practices, such as misinformation, lack of resources, or time constraints. By achieving these objectives, the study aims to enhance awareness of aural hygiene among professors, provide insights for educational interventions, and promote better ear care practices to improve health outcomes within this demographic.

### **Method:**

The study was conducted in three phases. The first phase involved developing a questionnaire covering various domains: demographic details, awareness and knowledge about aural hygiene, perceptions and attitudes toward aural hygiene, healthcare support, personal concerns, and follow-up. Demographic details included age, gender, designation, department, and years of teaching experience. The questionnaire assessed faculty awareness and knowledge of aural hygiene, their attitudes, and the impact of professional activities on ear health, along with personal experiences related to ear problems and suggestions for promoting aural hygiene.

In the second phase, the questionnaire was validated by five experienced audiologists and speech-language pathologists, leading to necessary revisions. The third phase involved

converting the questionnaire into an online format to ensure participant privacy. Consent was obtained from each participant prior to the study. A total of 60 participants, primarily assistant professors aged 28 to 68, agreed to take part in the study

### **Results & Discussion:**

This study investigates the awareness of aural hygiene among professors, emphasizing their understanding of ear health and hygiene practices. Out of 60 participants, 31 (51%) reported a moderate awareness of aural hygiene, while 5 (8.3%) rated their knowledge as low. Only 14 participants (23%) indicated they had received formal training or information on aural hygiene, leaving 46 (76%) without any structured guidance. Interestingly, 20 participants (33%) stated they received information from social media platforms, followed by 12 (20%) from health professionals. A significant majority, 45 participants (75%), recognized the importance of regular ear cleaning, avoiding excessive earphone use, and steering clear of loud noises for maintaining good ear health. However, 3 participants (5%) believed that only regular ear cleaning was essential.

Most participants reported daily earphone or headphone use, averaging over 4 to 5 hours. Alarming, 52 participants (86%) were unaware of specific practices to protect their hearing while using audio devices, while only 8 (13%) had knowledge of protective strategies. Notably, exposure to loud environments was reported evenly, with 50% of participants indicating they experienced such conditions either very often or rarely. Furthermore, 38 participants (63%) acknowledged that their professional activities significantly impacted aural hygiene, while 17 (28%) disagreed. An overwhelming 91% believed aural hygiene is extremely important for teaching professionals, with 88% advocating for increased education on this topic. Participants suggested that workshops, seminars, and consultations with healthcare providers (75%) would enhance awareness, while 15 (25%) favored peer education and informational brochures. While most participants reported no ear problems, 18 (30%) experienced issues such as hearing loss or ear infections. Notably, 70% had not sought professional help for ear-related concerns; only 20% consulted medical professionals, and 10% sought advice from audiologists. Despite a foundational understanding of aural hygiene, recognizing risks like excessive noise exposure and the importance of proper ear cleaning many professors tend to underestimate its significance in their daily lives. Contributing factors include busy schedules, a perceived lack of immediate consequences, and a general tendency to take health for granted, fostering a complacent attitude towards maintaining optimal ear health.

**Summary & Conclusion:**

In conclusion, the findings suggest that while professors possess a basic understanding of aural hygiene principles, they often fail to prioritize these practices in their daily routines. This tendency to overlook ear health could have serious long-term implications, highlighting the urgent need for greater awareness and proactive initiatives within academic settings. By educating professors on the importance of consistent aural hygiene, we can create a healthier work environment and support better hearing health in the long run. Fostering this awareness is essential for ensuring the well-being of educators and their students alike

## Effect of Intra Tympanic-Dexamethasone on Sudden Hearing Loss

*Md. Noorain Alam, Sanjay Kumar, N Banumathy & Dharam Veer*

### PGIMER Chandigarh

#### **Introduction:**

Sudden Sensorineural Hearing Loss (SSNHL) is an otologic emergency, characterized by rapid onset of hearing loss, usually occurring within 72 hours. It is typically unilateral, affecting three or more frequencies by at least 30 decibels (dB), and is often associated with symptoms like tinnitus and vertigo. (Schreiber, et al, 2010).

The etiology remains largely idiopathic, though viral infections, vascular compromise, and autoimmune disorders are considered potential causes. Despite a reported spontaneous recovery rate of up to 65%, SSNHL requires immediate medical attention due to the short window for effective intervention. Steroids, primarily systemic corticosteroids, are commonly used to manage SSNHL due to their anti-inflammatory and immunosuppressive properties. However, systemic therapy is not always successful, leading to the exploration of alternative treatment methods like intratympanic (IT) corticosteroid injections. (Kuhn, et al.,2011).

The use of IT-dexamethasone has gained popularity because it delivers high concentrations of the steroid directly to the cochlea while minimizing systemic side effects, making it particularly useful for patients who cannot tolerate systemic steroids. However, questions remain regarding its optimal dosage, timing, and overall efficacy. In the absence of a universally accepted treatment protocol, further research is essential to evaluate IT-dexamethasone as a first-line or adjunctive therapy for SSNHL, especially in patients unresponsive to systemic treatment. (Haynes, 2007).

#### **Need for Study:**

Systemic steroids are widely regarded as the first line of treatment for SSNHL. However, a significant number of patients do not experience adequate recovery with this approach. IT-dexamethasone offers a targeted approach that may improve outcomes, particularly in patients who fail systemic therapy. While several studies have explored the efficacy of IT-dexamethasone, variability in study protocols (e.g., dosage, injection frequency, and timing of intervention) has led to inconsistent results. Moreover, there is limited evidence on the comparative effectiveness of early versus delayed IT-dexamethasone intervention in SSNHL patients. This study aims to address these gaps by evaluating the audiometric outcomes, quality

of life improvements, and symptom relief in patients receiving IT-dexamethasone as either a primary or secondary treatment.

### **Aim & Objectives:**

The aim of this study is to investigate the effects of IT-dexamethasone on SSNHL outcomes, with a focus on:

1. The time-dependent impact of early versus delayed IT-dexamethasone intervention on auditory recovery.
2. The degree of audiometric improvement, measured by pure-tone thresholds and speech discrimination scores (SDS).
3. The effect of IT-dexamethasone on associated symptoms like tinnitus and vertigo, evaluated using the Tinnitus Handicap Inventory (THI) and Dizziness Handicap Inventory (DHI).
4. Patient satisfaction and overall quality of life post-treatment, measured through a Visual Analog Scale (VAS) for hearing improvement.

### **Method:**

The aim of this study is to investigate the effects of IT-dexamethasone on SSNHL outcomes, with a focus on:

1. The time-dependent impact of early versus delayed IT-dexamethasone intervention on auditory recovery.
2. The degree of audiometric improvement, measured by pure-tone thresholds and speech discrimination scores (SDS).
3. The effect of IT-dexamethasone on associated symptoms like tinnitus and vertigo, evaluated using the Tinnitus Handicap Inventory (THI) and Dizziness Handicap Inventory (DHI).
4. Patient satisfaction and overall quality of life post-treatment, measured through a Visual Analog Scale (VAS) for hearing improvement.

### **Results & Discussion:**

Preliminary results indicated that patients in Group A, who received IT-dexamethasone early, experienced significantly greater improvements in pure-tone thresholds and SDS compared to those in Group B on repeated measures ANOVA test ( $p < 0.05$ ). At the 3-month follow-up, Group A patients showed a mean improvement of 15 dB in PTA and a 31.9% gain in SDS. In contrast, the mean PTA improvement in Group B was only 8 dB, and SDS improvement was

12%.

Group A also exhibited a more significant reduction ( $p < .05$ ) in THI and DHI scores, indicating better symptom relief from tinnitus and vertigo. Specifically, Group A patients reported an average 25% reduction in THI and 30% reduction in DHI scores, whereas Group B reported a 15% reduction in both. VAS scores for patient satisfaction were also higher in Group A, with patients expressing greater satisfaction with their hearing outcomes and overall quality of life post-treatment.

Adverse events were minimal across both groups, with no instances of tympanic membrane perforation or otitis media. Only two patients in Group B reported transient nausea and dizziness, which resolved within 24 hours of treatment. The safety and tolerability of IT-dexamethasone in this study align with previous research findings, confirming it as a safe therapeutic option.

The findings of this study are consistent with previous research showing that early intervention with IT-dexamethasone can significantly improve hearing outcomes in SSNHL patients. The time-dependent effect observed in this study mirrors the results of Liu et al. (2010), who reported that early administration of intratympanic steroids led to better hearing recovery compared to delayed treatment. Patients who received IT-dexamethasone within two weeks of SSNHL onset demonstrated better audiometric and symptomatic improvement, supporting the notion that early intervention is critical for maximizing recovery.

The modest improvements observed in Group B patients, who received delayed treatment, are also in line with previous studies indicating that the efficacy of IT-dexamethasone diminishes with time. Haynes et al. (2007) found that no patient who received IT-dexamethasone after 36 days of symptom onset experienced significant hearing recovery. This underscores the importance of prompt diagnosis and early intervention in SSNHL cases.

Patient satisfaction was also notably higher in Group A, reflecting the overall improvement in auditory and symptomatic outcomes. This suggests that IT-dexamethasone not only enhances hearing recovery but also improves quality of life, particularly when administered early. The absence of significant adverse events further supports the safety profile of IT-dexamethasone as a viable treatment option for SSNHL.

The modest improvements observed in Group B patients, who received delayed treatment, are also in line with previous studies indicating that the efficacy of IT-dexamethasone diminishes with time. Haynes et al. (2007) found that no patient who received IT-dexamethasone after 36 days of symptom onset experienced significant hearing recovery. This underscores the

importance of prompt diagnosis and early intervention in SSNHL cases.

Patient satisfaction was also notably higher in Group A, reflecting the overall improvement in auditory and symptomatic outcomes. This suggests that IT-dexamethasone not only enhances hearing recovery but also improves quality of life, particularly when administered early. The absence of significant adverse events further supports the safety profile of IT-dexamethasone as a viable treatment option for SSNHL.

### **Summary & Conclusion:**

This study demonstrates that IT-dexamethasone is an effective treatment for SSNHL, with early intervention resulting in superior auditory and symptomatic outcomes compared to delayed treatment. The significant improvements in PTA, SDS, THI, and DHI scores in patients who received early treatment highlight the critical role of timing in optimizing recovery. Moreover, patient satisfaction was higher in the early intervention group, indicating improved quality of life post-treatment.

Given the minimal adverse events reported in this study, IT-dexamethasone represents a safe and effective treatment option, particularly for patients unresponsive to systemic therapy or those who cannot tolerate systemic steroids. Further studies with larger sample sizes and longer follow-up periods are warranted to confirm these findings and establish standardized treatment protocols for IT-dexamethasone in SSNHL. This research emphasizes the need for prompt diagnosis and early intervention in SSNHL cases to maximize recovery and enhance patient outcomes.

**AP1428**

**Comparative Analysis of Auditory Perceptual and Processing abilities  
between Tribal and Urban Children**

*Parkavi C, Anas Jenifar, Pandi Meena, Anita Ivvah & Sam A*

**Holy Cross College (Autonomous), Tiruchirappalli**

**Abstract Not Available**



## **Masseter Vestibular Evoked Myogenic Potentials: The Impact of NB CE Chirp Stimulus at Different Frequencies**

*Riyaz S., Urmi Ajay, Vinayagar P.T. & Archisman Shubhadarshan*

**AYJNISHD(D), Mumbai**

### **Introduction:**

The Vestibular Evoked Myogenic Potentials were first defined by Colebatch et al as a clinical tool to assess the otolith function (Colebatch et al, 1992). The two most commonly used VEMPs are cervical VEMP and ocular VEMP. The motor neurons that are innervating the masseter muscles may be connected to the vestibular system as they are involved in maintaining the jaw posture in addition to its other roles (Lund and Olsson, 1983; Miralles et al.,1987). This led to the origin of masseter VEMP which has been originally studied by Deriu et al, 2005 that wherein assesses the saccule and the vestibulo trigeminal pathway. It was employed as a part of a comprehensive test battery for the assessment of the brainstem function in patients with Parkinson's disease and idiopathic REM-Sleep Behavior Disorder (de Natale et al, 2015), multiple sclerosis (Mangano et al, 2016) (Sangu Srinivasan et al, 2022), lesions of medulla (Mangano et al, 2014).

### **Need for Study:**

There is a significant variability in individual responses to different stimuli when recording VEMPs (Taylor et al., 2012). The normative data for mVEMP has been reported using clicks (De Natale et al., 2015), tone bursts (Vignesh et al., 2021), frequency specific tone burst (Vinayagar et al, 2023) and 500 Hz NB CE Chirp (Neupane et al, 2022). In a comparative study using three different stimuli, it was proven that chirps were the optimum stimulus for eliciting mVEMP responses (Nagarajan et al, 2024). Thus, it is imperative to study its parameters such as absolute latencies, rectified amplitude, asymmetry ratio across frequency specific chirp stimulus and establish the normative data.

### **Aim & Objectives:**

To establish normative data for frequency specific mVEMP across different frequencies from 500 Hz to 4000 Hz and study the various parameters associated with them. The major goal is to use different NB CE chirp frequency stimuli to conduct mVEMP on a normal adult population and to determine a normative value for the same.

**Method:****Participants:**

Fourteen healthy individuals with no prior history of ear discharge, ear pain or any other hearing related complaints within the age range of 18-25 years participated in the study. Individuals were explained about the procedure and informed consent was taken. The tests were conducted at AYJNISHD(D) in the Department of Audiology.

**Procedure:**

Otoscopy was performed on every individual. A type tympanogram was assured to rule out any possible middle ear pathology. Pure tone average not exceeding 15 dBHL in both ears were considered.

**mVEMP recording parameters:**

Neurosoft Neuro Audio instrument was used for testing and stimuli were provided to the ears through insert earphones. Zygomatic montage was adopted and the parameters are as follows: Stimuli used were 500 Hz, 1000 Hz, 2000 Hz and 4000 Hz level specific NB CE-Chirp; Intensity was 95 dBnHL, Repetition rate was 5.1/s, Filter settings range was set to 0.3 Hz to 3000 Hz, EMG 30% to 50% of the maximal voluntary contraction served as the baseline for muscular contraction, analysis time window was 50msec, amplification was 5000 times and the polarity was rarefaction. The stimuli were averaged 300 times and these waveforms revealed the rectified amplitude and absolute latencies of P11 and N21 peaks.

**Results & Discussion:**

IBM SPSS was used to do descriptive statistics. The data had a normal distribution, according to the Shapiro-Wilk normality test( $p>0.5$ ). Additionally parametric analyses were conducted for inferential statistics. To compare between the groups, we used one way ANOVA test. Effect of chirp stimulus across the frequencies on mVEMP:

To calculate the mean and standard deviation of latency and amplitude of mVEMP, descriptive statistics were used

For 500Hz mean latency P1 9.8msec (SD: 1.5) N1 16.3 msec (SD: 2.2) mean amplitude was P1N1 0.6  $\mu$ V (SD : 0.3), for 1000Hz mean latency P1 10.8 msec (SD: 1.6) N1 17.2 msec (SD: 2.6) mean amplitude was P1N1 0.7  $\mu$ V (SD : 0.3), for 2000Hz mean latency P1 11 msec (SD: 1.3) N1 16.7 msec (SD: 1.9) mean amplitude was P1N1 0.7  $\mu$ V (SD : 0.3) for 4000Hz mean latency P1 11 msec (SD: 1.4) N1 16.6 msec (SD: 1.6) mean amplitude was P1N1 0.7  $\mu$ V (SD : 0.3).

ANOVA test results revealed significant difference between the group and within the group

in P1 latency and P-N1msec interwave latency among different frequencies 500,1000,2000 & 4000Hz. Hence, the data from the both the ears are combined data.

**Summary & Conclusion:**

The current study's results are in line with past research, which found that chirps were the best stimulus for evoking mVEMP responses and revealed similar results for cervical and ocular conditions. According to the present results were reported, the P1 latency and P1-N1 interwave latency of Mvemp has much earlier latencies of 500Hz than the 1000Hz, 2000Hz and 4000Hz. Frequency-tuning properties of mVEMP in different peripheral vestibular diseases would be fascinating to observe. Further research with a larger sample size of healthy individuals and patients with vestibular problems is needed to corroborate these findings.

## **Auditory Awareness: Navigating Noise Exposure in Dental Care.**

*Kaavya Vig, Janhavi Vinay, Akansha Sinha, Archisman Shubhadarshan, Urmi Ajay & Shruti Kamble*

**AYJNISHD(D), MUMBAI**

### **Introduction:**

Noise exposure constitutes a significant occupational hazard in dentistry, where dental professionals, including dentists and technicians, are frequently subjected to elevated sound levels from instruments such as high-speed handpieces, micromotors, and sandblasters. These devices can generate noise levels ranging from 66 to 105 dB, particularly within the critical frequency range of 2000-4000 Hz. Prolonged exposure to such levels is associated with both temporary and permanent auditory impairments, notably noise-induced hearing loss (NIHL), which is one of the most common forms of sensorineural hearing impairment. This information is substantiated from studies such as "Noise Levels in Dental Schools" (Fernandes et al., 2006) published in the British Dental Journal.

The detrimental effects of excessive noise exposure predominantly affect the intricate structures of the inner ear, leading to conditions such as tinnitus, hyperacusis, and in severe cases, irreversible hearing loss. Evidence indicates that dental professionals, especially those operating within dental laboratories, face an elevated risk of NIHL due to their continuous exposure to high decibel levels. The study "Occupational Hazard Study: Measurement of Noise Levels of Dental Equipment" (Otoum et al., 2021) states that American National Institute for Occupational Safety and Health (NIOSH) and World Health Organization (WHO) recommend limiting daily noise exposure to a time-weighted equivalent sound level (LAeq) of 85 dB(A) over an 8-hour workday.

However, many dental procedures exceed this threshold, processing removable dentures in dental labs reaches about 86 dB, while steam jets and compressed air blasters can hit 105 dB, as delineated in the study "Assessment of Hearing Performance of Dental Technicians Due to Professional Noise Exposure" (Vaddamanu et al., 2023).

### **Need for Study:**

Dental professionals are consistently subjected to high-frequency noise produced by equipment such as drills and ultrasonic scalers, which can precipitate significant adverse effects, including auditory damage, heightened stress, chronic fatigue, and compromised occupational

performance. Despite the pervasive acknowledgment of these hazards, the specific repercussions of sustained exposure to high-frequency noise in dentistry remain largely underexamined. There is an urgent imperative to investigate the implications of such auditory exposure on the health and well-being of dental practitioners. Addressing this critical gap will advance the understanding of noise-induced health risks and promote the implementation of robust protective measures, thereby enhancing both occupational safety and the quality of care provided.

### **Aim & Objectives:**

This comprehensive study aims to provide an eclectic overview of occupational hazards in dentistry practice by examining various aspects, including quality of life, noise exposure affecting work life, awareness and prevention and clinical efficiency.

#### **OBJECTIVES :-**

1. To describe the dental professional's quality of life, including physical and mental health aspects.
2. To assess the overall effects of noise exposure on the hearing health and well-being of dental professionals.
3. To describe the association between dental professional's years of experience and their exposure to noise-induced hearing-related symptoms (such as tinnitus and earache).
4. To explore the correlation between years of experience and dental professional's awareness of noise-induced hearing loss (NIHL) and their adoption of preventive measures.
5. To examine the relationship between awareness of hearing health and its influence on the quality of life of dental professionals.

### **Method:**

#### **RESEARCH DESIGN:-**

The study used a survey design.

#### **METHODOLOGY:-**

**Participants:** A total of 33 dental professionals (17 Female, 16 Male) participated in this survey.

**Materials development:**

A self-assessment questionnaire was developed. The questionnaire consisted of 5 domains. This questionnaire contains 6 questions related to demographic information, 7 related to quality of life, 4 questions to assess the noise exposure affecting work life. Like this there were two

questions to assess the awareness and prevention of NIHL and 3 questions related to clinical efficiency. The questionnaire has very good internal consistency (Cronbach's  $\alpha = 0.85$ ) across domains and sub-domains. The questionnaire was validated by 5 qualified audiologist who have experience more than 10 years. A 5 point rating scale was used to validate the questions. The question which received less than equal to 2 is removed from the final list. After the final approval from all the audiologist, the questionnaire was updated in google form.

### **Procedure:**

A written consent was taken from the participants. The developed questionnaire was circulated through social media groups of dentists. A reminder notification was sent after 7 days and the data were entered in excel sheet. The final data were analyzed using SPSS-26 software.

### **Results & Discussion:**

Cronbach's Alpha reliability test yielded a score of 0.85, indicating good internal consistency. A non-parametric qualitative method and chi-square test were utilized, with descriptive statistics (frequency and percentage) analyzed.

Results revealed a statistically significant difference ( $p < 0.05$ ) between years of experience and dental professionals' awareness of noise-induced hearing loss (NIHL) and preventive measures. Additionally, there was a significant difference regarding the impact of ear protective devices on quality of life.

In the "Quality of Life" domain, (30.0%) of participants rarely felt noise exposure interfered with sleep, while (38.7%) reported that noise disturbances during procedures could lead to mistakes. About (25.8%) occasionally noted family members mentioning loud TV volume, and ( 35.5% ) occasionally misunderstood conversations. Difficulties with softer voices and environmental sounds were reported by (32.3%) of participants, with limited differences observed in overall quality of life.

In the "Noise Exposure Affecting Work Life" domain, (36.4%) expressed concern about potential long-term hearing effects from dental instruments, while ( 24.2%)occasionally experienced reduced listening ability by day's end. Additionally, 30.3% reported buzzing in their ears after work. Additionally, (21.9%) of participants slightly and (9.4%) frequently experienced earaches due to loud noise. However, no significant differences were noted in this domain.

A notable number of participants (n=22) were unfamiliar with national standards on occupational noise exposure, and most (n=23) were unaware of available ear protection

devices. Hence , there was a statistically significant difference ( $p < 0.05$ ) among dentists regarding awareness and prevention of NIHL.

We have also found that 30.3% of participants reported that noise from the compressor significantly impacted them more than other equipment or procedures.

### **Summary & Conclusion:**

To mitigate the risk of noise-induced hearing loss (NIHL) among dental professionals, it is essential to implement comprehensive measures. The explicit utilization of Ear Protection Devices (EPDs), such as specialized earplugs designed to attenuate harmful noise levels while facilitating effective communication options available in the marketplace including Erasers, Den plugs, and Queron is crucial, as articulated by S. Kataria (2023) in the British Dental Journal. Additionally, regular audiological assessments should be conducted to monitor auditory health, serving as a poignant reminder of the utmost importance of proactive measures. Consistent equipment maintenance and thoughtful clinic design are essential for reducing noise exposure. Despite increased awareness, many professionals overlook protective measures, indicating a need for better education on noise risks.

Immediate actions, like adopting quieter technologies and following noise regulations, are vital for safeguarding auditory health and ensuring a fair work environment. Our ongoing research aims to gather more data on this issue.

Future studies should evaluate the long-term effectiveness of these strategies and pinpoint specific noise sources contributing to occupational stress.

## Validation of the Cognitive Self Report Questionnaire (CSRQ-25) Among Older Adults in India

*Neelesh Benet, Manisha Kumari, Md Ibrar Hussain & Swati Sharma*

**Amity University Gurugram, Haryana**

### **Introduction:**

The Cognitive Self Report Questionnaire (CSRQ) is a self-assessment tool designed to measure subjective perceptions of cognitive functioning, social life, and auditory processing. Developed in 2006 by Spina, Ruff, and Mahncke under Posit Science Corporation. The CSRQ is primarily used with older adults and individuals experiencing cognitive changes (Spina et al., 2006; Fausto et al., 2018; O'Brien et al., 2017; Smith et al., 2009). While closely related to cognitive interventions, especially those provided by BrainHQ, the CSRQ operates independently as a validated measure for subjective cognitive functioning.

The CSRQ was created to address a gap identified in clinical studies aimed at improving cognitive functioning, where standard neuropsychological assessments did not capture participant-reported improvements in daily life. This led to the development of a reliable quantitative measure of subjective cognitive changes (Spina et al., 2006). The CSRQ provides insights into individual perceptions of memory, attention, mood, social engagement, and auditory processing, serving as a valuable supplement to objective cognitive tests.

Available in two versions, CSRQ-25 and CSRQ-64, the CSRQ-25 consists of 25 statements rated on a Likert scale based on experiences from the past two weeks. Responses yield a total score and three subscales: Cognitive, Social, and Hearing. Higher scores indicate greater perceived impairment. The cognitive subscale addresses memory and attention issues, the social subscale focuses on mood and engagement, and the hearing subscale examines auditory difficulties, such as understanding speech in noise. The CSRQ-64 contains 64 items and serves as a post-intervention measure to assess perceived improvements due to cognitive training, encompassing eight subscales that cover various cognitive domains.

Initially validated in the U.S., the CSRQ has been widely used in cognitive studies, often alongside cognitive training interventions like BrainHQ, which enhances cognitive functions through structured exercises. While BrainHQ focuses on improving brain function, the CSRQ assesses the perceived outcomes of these interventions, determining whether participants feel any cognitive improvements or enhancements in quality of life.



The CSRQ is protected by copyright under Posit Science Corporation, ensuring that it is not used or distributed without permission. However, the CSRQ-25 is freely available for research purposes and can be obtained by contacting BrainHQ, making it accessible to researchers while maintaining necessary protections.

With excellent internal consistency ( $\hat{I}\pm = 0.91$ ) and good test-retest reliability ( $r = 0.85$ ), the CSRQ-25 was validated using factor analysis on healthy older adults (O'Brien et al., 2017; Smith et al., 2009). Successfully used in clinical and research settings, especially among populations at risk for cognitive decline, the CSRQ evaluates subjective cognitive and auditory difficulties, bridging the gap between objective assessments and individuals' real-life experiences. This comprehensive approach offers a fuller picture of cognitive health and daily functioning.

#### **Need for Study:**

The Cognitive Self Report Questionnaire (CSRQ-25) has been validated and widely used in the U.S., providing valuable insights into cognitive, social, and auditory functioning in older adults. However, due to the cultural, linguistic, and social differences between the U.S. and India, there is a need to validate the CSRQ-25 in the Indian population. Older adults in India may perceive and express cognitive challenges differently due to these unique contextual factors.

Validating the CSRQ-25 in India is essential to ensure that it accurately reflects the subjective cognitive experiences of older adults in this population. This will allow for its effective use in clinical and research settings to assess cognitive functioning, mood, and auditory processing in Indian older adults, contributing to better diagnostic and intervention strategies. By comparing the results with the original U.S. normative data, this study will determine whether the CSRQ-25 can be applied in India without any modifications.

#### **Aim & Objectives:**

The aim is to validate the Cognitive Self Report Questionnaire (CSRQ-25) in older adults within the Indian population by assessing its cross-cultural applicability and reliability through comparison with the original normative data.

First objective is to ensure participants fully understand the CSRQ-25 by explaining the questions in their native language, thereby allowing accurate self-reports. Second objective is to compare the CSRQ-25 scores of the Indian sample with the original normative scores given in test manual.

**Method:**

Sample Size: 25 older adults from the Indian population.

Age Range: 60 years to 70 years.

Mean Age:  $63 \pm 5$  years.

Language Consideration: Questionnaire items were explained in participants' native language to minimize language barriers and ensure accurate self-reporting.

**Tool**

Cognitive Self Report Questionnaire (CSRQ-25): A self-assessment tool designed to measure cognitive functioning, social life, and auditory processing.

**Procedure**

Administration: The CSRQ-25 was administered to participants, with explanations provided in their native language to ensure understanding. Statistical Analysis

Statistical Test: One-sample t-test was used to compare scores from the Indian population with the normative data from the original CSRQ manual.

Software: Statistical analyses was performed using SPSS software (v21).

**Results & Discussion:**

1. Cognitive Subscale: A one-sample t-test compared the mean scores of the Indian population ( $M = 22.96$ ,  $SD = 7.94$ ) to the original normative data ( $M = 21.19$ ,  $SD = 7.19$ ). The mean difference was 1.77, resulting in  $t(24) = 1.114$ ,  $p = 0.276$ , indicating no significant difference.
2. Social Subscale: A one-sample t-test showed the Indian population's mean score ( $M = 21.04$ ,  $SD = 8.41$ ) versus the normative mean ( $M = 19.17$ ,  $SD = 6.17$ ). The mean difference was 1.87, with  $t(24) = 1.111$ ,  $p = 0.278$ , indicating no significant difference.
3. Hearing Subscale: The mean score for the Indian population was  $M = 9.16$  ( $SD = 4.66$ ), compared to the normative mean ( $M = 9.43$ ,  $SD = 4.26$ ). The mean difference was -0.77, with  $t(24) = -0.290$ ,  $p = 0.775$ , showing no significant difference.
4. These results indicate that there were no significant differences between the Indian population's scores and the original normative scores for the Cognitive, Social, and Hearing subscales of the CSRQ-25. This suggests that the CSRQ-25 performs similarly in the Indian population as it does in the U.S. population, meaning that the questionnaire is likely suitable for use in India without the need for major changes or adaptations.

**Summary & Conclusion:**

The results of this study suggest that the Cognitive Self Report Questionnaire (CSRQ-25) is a valid tool for assessing cognitive, social, and auditory self-reports in the Indian population of older adults. The comparison of Indian scores with the originally validated score showed no significant differences across the cognitive, social, and hearing subscales, indicating that the CSRQ-25 can be used in India without the need for significant cultural or linguistic modifications. This validation supports the cross-cultural applicability of the CSRQ-25, making it a reliable tool for future research and clinical assessments in the Indian context.

## Hearing Aid Acquisition in the Digital Age - A Comparative Study of User Satisfaction in India

*Sonam Sharma, Sudhanshu Vikas, Shushil Raj & Tanu Bharti*

**AYJNISHD, NRC, NOIDA**

### **Introduction:**

Hearing loss is a significant global health issue, with a disproportionately higher burden observed in developing countries (McPherson, 2014). The total prevalence of deafening hearing loss in India is 6.4% (Varshne S. 2016). The consequences of untreated hearing loss can be profound in terms of social isolation, educational barrier and economic burden and translated into an overall reduced quality of life (Varsha et al., 2020). Hearing aids are the most common and effective intervention for managing hearing loss, significantly improving the quality of life of millions of people (Kochkin, 2009). Traditionally, acquiring hearing aids involves a multistep process involving audiologist consultations for hearing evaluations, device selection, fitting, and follow-up care (Sigdel et al., 2024). In recent years, significant advancements in digital technologies, including the proliferation of personalized computing devices and web-based applications which have transformed the landscape of hearing healthcare (Boisvert et al., 2023).

### **Need for Study:**

The shift towards online hearing health-care has gained significant traction in India - a nation with a large population, increasing internet penetration, and a rising population with hearing impairment. While online platforms offer potential advantages as convenience, accessibility, and lower costs but the concerns regarding the quality of care, device suitability, and the absence of professional guidance raise a question on hearing aid acquisition via online platform.

### **Aim & Objectives:**

This study aims to compare the user satisfaction of hearing aid wearers who acquired their devices through traditional clinical settings versus online platforms in India. The key objectives are:

1. To assess the overall user satisfaction with hearing aids obtained through different acquisition channels.

2. To identify the specific factors influencing user satisfaction, such as device performance, fitting, and follow-up care.

**Method:**

This study utilized a cross-sectional design to comprehensively assess user satisfaction with hearing aids acquired through different channels. A total of 123 hearing aid users participated, with 60 acquired from online platforms and 63 from the traditional settings across the various regions of North India. A structured questionnaire was developed to evaluate user satisfaction across multiple domains including device performance (sound quality, clarity, feedback, and background noise reduction), comfort and fit (physical comfort, ease of insertion and removal, size, and appearance), ease of use (volume adjustment, program changes, battery life, cleaning, and maintenance), value for money (perceived affordability and cost-effectiveness), and customer support (responsiveness and accessibility).

Descriptive statistics were applied to analyze demographic data and satisfaction ratings, while independent samples t-tests were used to compare mean satisfaction scores between the two groups. Additionally, qualitative data were gathered through six focus group discussions: three with online purchasers and three with traditional purchasers, each comprising to 8 participants.

**Results & Discussion:****Results**

The results revealed no significant difference in overall satisfaction between online and traditional purchasers ( $p > 0.05$ ). However, when examining domain-specific satisfaction, online purchasers reported notably higher satisfaction with value for money ( $p < 0.05$ ) and ease of acquisition ( $p < 0.01$ ), whereas traditional purchasers expressed greater satisfaction with device fitting and comfort ( $p < 0.01$ ) and customer support ( $p < 0.05$ ).

Qualitatively, online purchasers highlight advantages such as convenience, affordability, wider selection, anonymity, and greater control over the purchase process; however, they face challenges including difficulties with device fitting and adjustments, a lack of personalized guidance, concerns about product authenticity, and limited after-sales support. Conversely, traditional purchasers appreciated professional expertise, personalized care, customized device fitting, ongoing support, and trust in their audiologist, although they encountered higher costs, limited accessibility, and significant time commitment for appointments. Overall, both purchasing methods offer distinct benefits and drawbacks that shape customer satisfaction in unique ways.

## **Discussion**

The findings of this study offer valuable insights into the evolving landscape of hearing healthcare delivery in India and the impact of online hearing aid acquisition on user satisfaction. While no significant difference in overall satisfaction was observed between online and traditional purchasers, distinct advantages and disadvantages emerged for each approach. This highlights the necessity for a balanced and integrated strategy in hearing healthcare delivery, leveraging the strengths of both traditional clinical practices and online models.

Online platforms provide enhanced accessibility and affordability, particularly beneficial for individuals in remote areas and those facing financial constraints. However, the absence of professional guidance and potential challenges related to device fitting underscore the need for improved support mechanisms within this model. Conversely, traditional consultations with audiologists remain the gold standard for personalized care, ensuring optimal device fitting and ongoing support. Nonetheless, it is crucial to address barriers such as cost and accessibility to guarantee equitable access to professional hearing healthcare services. Innovative hybrid models that combine the convenience of online services with the expertise of hearing healthcare professionals may present a promising solution to meet the diverse needs of individuals with hearing loss.

## **Summary & Conclusion:**

The digital age offers both opportunities and challenges in the delivery of hearing healthcare. As online hearing aid acquisition becomes increasingly popular, it is crucial to capitalize on the benefits of online platforms while addressing their potential drawbacks. Enhancing the online experience and improving user satisfaction can be achieved by integrating tele-audiology services, creating user-friendly fitting tools, and providing accessible online resources.

## **Comparison of Video Head Impulse Test and Vestibular Evoked Myogenic Potentials Among Moderate Smokers and Non-Smokers.**

*Nikhil P S, Jovita Priya Tauro & Suman N*

**Samvaad Institute of Speech and Hearing, Bangalore**

### **Introduction:**

The vestibular system helps in detecting and maintaining spatial orientation and stabilizes vision to maintain balance, especially when there is movement. Hence, this system plays a crucial role in maintaining balance, spatial orientation, and coordinating eye movements. Cigarette smoking may affect the auditory system through its effects on antioxidative mechanisms or the vasculature supplying the auditory system.

Nicotine found in cigarette smoke results in a reduction in the blood supply through vasoconstriction, which may increase the susceptibility to peripheral vestibular disease.

### **Need for Study:**

Cigarette smoking is considered as a severe public health problem and literature has shown its various harmful effects on the physiological functioning of humans. Cigarette smoking may affect the auditory system through its effects on antioxidative mechanisms or the vasculature supplying the auditory system. Nicotine found in cigarette smoke results in a reduction in the blood supply through vasoconstriction, which may increase in susceptibility to peripheral vestibular disease. Paschoal & Azevedo (2009), found that men who smoked more than one 1pack per day had worse hearing thresholds at 250 to 1000 Hz than non-smokers or “light” smokers, but there was no difference at higher.

Additionally, smoking increases levels of carboxy-hemoglobin in the blood, reducing oxygen perfusion in the inner ear and affecting the peripheral vestibular system. Wada et al (2017), reported that smokers had a higher hazard ratio when compared with non-smokers and smoking was associated with the origin of new peripheral vestibular disorders (Wada et al., 2017). Similarly, a study by Mustafa et al (2013) reported that latencies of cervical Vestibular Myogenic Potentials were prolonged in smokers when compared to non-smokers. However, till date only a few studies have measured effect of smoking on vestibular system (Mustafa, 2014; Pereira et al., 2001; Wada et al., 2017).

Furthermore, there is a dearth in studies investigating the effect of smoking on Vestibular Myogenic Potentials (VEMP) among a specific subgroup of smokers. Additionally, till date

none of the studies have investigated the effect of smoking on Vestibulo-ocular Reflex (VOR) gain using Video Head Impulse Test (vHIT). Hence, the present study was done with the aim of determining the effect of moderate-intensity smoking on vHIT and VEMP.

### **Aim & Objectives:**

The aim of the present study was to evaluate the effect of moderate-intensity smoking on Video Head Impulse Test and Vestibular Evoked Myogenic Potentials.

1. To compare the VOR gain of all the semicircular canals between moderate smokers and non-smokers.
2. To compare the absolute latency of cVEMP and oVEMP between moderate smokers and non-smokers.
3. To compare the peak-to-peak amplitude of cVEMP and oVEMP between moderate smokers and non-smokers.

### **Method:**

The study consisted of 46 participants between the age range of 18 to 30 years. All the participants were divided into two groups, moderate smokers and non-smokers. The participants for the smoker's group were moderate smokers who have been smoking atleast for 1 year and who smoke atleast 10-20 cigarettes per day (Jeong et al., 2023; Rogha et al., 2015; Song & Cho, 2008; R. Wang et al., 2019). Hence, 24 participants were included in the non-smokers group and 22 participants were included in the moderate smokers group. Before conducting the test procedures, informed consent was taken from all the participants willing to participate in the study. Video Head Impulse Test was recorded and analyzed using the Interacoustics EyeSeeCam (8102674-US, 2014) system and VOR gain of all the semi-circulars was measured.

Vestibular Evoked Myogenic Potentials (cVEMP & oVEMP) were recorded using IHS smart-EP version 5.54.22 (Intelligent hearing systems, Florida USA), evoked potential system using 500 Hz tone burst stimulus at an intensity of 106 dBnHL and a rate of 4.1/s and rarefaction polarity and absolute latency and peak-peak amplitude of both cVEMP and oVEMP was determined. Descriptive statistics (mean and standard deviation) were derived from the obtained data. Shapiro Wilk test was done to determine if the data was normally distributed and results revealed that the data followed normal distribution.

Hence, comparison of VOR gain of vHIT and latency and amplitude of cVEMP and oVEMP between moderate smokers and non-smokers was done using Multivariate Analysis of Variance



(MANOVA).

### **Results & Discussion:**

The present study aimed to evaluate the effect of moderate-intensity smoking on Video Head Impulse Test and Vestibular Evoked Myogenic Potentials. The results of descriptive statistics for VEMP findings showed that compared to non-smokers, individuals with moderate-intensity smoking had prolonged latency and reduced amplitude for both cVEMP and oVEMP responses in both ears. In order to determine whether there was any statistically significant difference in the mean absolute latency and amplitude of cVEMP and oVEMP between moderate smokers and non-smokers MANOVA was done. Results showed that, there was statistically significant difference in mean absolute latencies and amplitude of cVEMP and oVEMP between moderate smokers and non-smokers group ( $p < 0.05$ ). These findings indicate that moderate smoking has an adverse effect on receptor cells of utricle and saccule and chemicals present in cigarette smoke have been linked to cause subtle changes in the myelin sheaths of peripheral nerves. Furthermore, prolongation of the absolute latency and amplitude of vestibular evoked myogenic potentials in smokers can potentially be interpreted as an incorrect activation of nicotine receptors caused by smoking at different vestibular system nuclei (Demir et al., 2021). The results of descriptive statistics for vHIT findings revealed that the mean VOR gain of all the semi-circular canal (RL, LL, RA, LP, LA, RP) was similar for both moderate smokers and non-smokers. MANOVA was used to determine whether there was any statistically significant difference in the VOR gain among moderate smokers and non-smokers. The results showed that, there was no statistically significant difference for VOR gain of all the semi-circular canals between moderate smokers and non-smokers ( $p > 0.05$ ). These results suggest that smoking did not affect the VOR gain among the participants in this study. Hence, we can assume that moderate-intensity smoking may not have any effect on the type I vestibular hair cells, which are mainly responsible for encoding high-frequency, high acceleration-related head movements.

### **Summary & Conclusion:**

The results of the present study demonstrate the adverse effect of smoking on vestibular evoked myogenic potentials. Hence, we can conclude that moderate smoking has an adverse effect on vestibular system functioning, as reflected by an increase in the absolute latency and a decrease in the peak-to-peak amplitude of cervical and ocular vestibular-evoked myogenic potentials. This is due to vestibular hair cells and vestibular nerve dysfunction caused by the harmful

effects of smoking and nicotine. Therefore, nicotine can harm the vestibular hair cells and nerves. The results of vHIT show that the VOR gain of all the SCC is not affected by moderate smoking. Hence, we can conclude that moderate-intensity smoking did not have any impact on the semicircular canal functioning and VOR. However future studies including severe smokers are required to validate the findings of vHIT.

## **Influence of Handedness on Contralateral Suppression of Transient Evoked Otoacoustic Emissions**

*Neelesh Benet, Vinit Mishra, Ankit Kumar & Prakash Kashyap*

**Amity University Gurugram, Haryana**

### **Introduction:**

Otoacoustic emissions are generally understood to be acoustic sounds that originate secondary to movement of outer hair cells (Robinette & Glatke, 1997). Contralateral acoustic stimulation is known to cause a decrease in cochlear amplifier gain via descending medial olivocochlear (MOC) neurons (Guinan Jr, 2018; Hood, 1999; Lopez-Poveda, 2018). The human cochlea receives efferent innervations from both the ipsilateral and contralateral superior olivary complex (Guinan Jr, 2006). The MOC and lateral olivocochlear constitute two separate olivocochlear efferent pathways. MOC neurons in the medial superior olivary complex project mainly to the contralateral cochlea and terminate at the base of outer hair cells. The efferent auditory system, modulates the response of the outer hair cells in inner ear. So contralateral suppression of TEOAEs has been employed to evaluate MOC efferent function (Stuart & Cobb, 2015).

Handedness is a fundamental, behavioral characteristic of the motor system that evolves even before birth and stabilizes during early child-hood (Fagard, 2013). Experimental evidence suggests that this intrinsic behavioral phenomenon is associated with asymmetries in the structural and functional organization of the cerebral cortex (Eickhoff et al., 2008). Transcranial magnetic stimulation paradigms have provided evidence for handedness-related asymmetries in cortical excitability (Brouwer et al., 2001). Ziemann and Hallett (2001) demonstrated that performing a complex motor task with one hand increases the excitability of the motor cortex contralateral to the inactive hand. (Ziemann & Hallett, 2001). Most right-handed individuals exhibit left-hemisphere dominance for motor control and language functions, while left-handed individuals display greater variability, with approximately 70% showing left-hemisphere dominance. However, a significant proportion of left-handed individuals may have right-hemisphere or bilateral dominance for these functions. Understanding how handedness affects contralateral suppression of OAEs could provide insights into the relationship between hemispheric dominance and auditory processing capabilities.

Research has indicated that the efferent auditory system is involved in various aspects of

auditory perception, including attention, sound localization, and the ability to discern speech in noisy environments (Guinan Jr, 2006). These functions are particularly important for individuals with hearing impairments, as they may rely more heavily on the efficiency of the efferent system to filter out background noise and focus on relevant auditory signals (Maison & Liberman, 2000). Thus, exploring the effects of handedness on contralateral suppression can shed light on potential differences in auditory processing between right- and left-handed individuals.

Previous studies have shown that handedness can influence sensory processing, leading to differences in how auditory information is perceived and processed (Cherbuin & Brinkman, 2006). However, limited research has specifically examined the relationship between handedness and the integrity of the efferent auditory system as assessed through contralateral suppression of OAE (Sininger & Cone-Wesson, 2004). Understanding these differences is vital not only for the field of audiology but also for broader applications in cognitive neuroscience and speech-language pathology.

#### **Need for Study:**

The integrity of the efferent auditory system is essential for auditory processing. The ability to assess the contralateral suppression of OAE can provide insights into the functioning of the efferent system. Given that handedness is associated with lateralization of brain functions, examining how right-handed and left-handed individuals differ in contralateral suppression may reveal important information about the relationship between hemispheric dominance and auditory processing. Understanding these differences can contribute to the broader field of auditory neuroscience and help inform clinical practices in audiology and speech-language pathology.

#### **Aim & Objectives:**

The aim is to investigate the effect of handedness on contralateral suppression of TEOAE and assess how this suppression varies between right-handed and left-handed individuals. The objective of this study is to compare contralateral suppression of TEOAE between the right and left ears in both right-handed and left-handed individuals, as well as to compare contralateral suppression of TEOAE between right-handed and left-handed individuals for both the right and left ears.

#### **Method:**

##### **Participants**

The study will include a total of 20 college students aged 19 to 24 years, consisting of 11 right-handed individuals and 9 left-handed individuals. Participants will be selected based on their self-reported handedness, and all participants will have normal hearing as verified through standard audiometric evaluation. Consent will be obtained from all participants prior to their inclusion in the study.

### **Instrument**

1. TEOAE Measurement: IHS dual channel AEP system
2. Contralateral White Noise Delivery: MAICO MA 42 Two-Channel Audiometer.

### **Procedure.**

1. Participants will be seated comfortably in a sound-treated room to minimize external noise interference.
2. Initial hearing screenings will be conducted to ensure that all participants have normal hearing thresholds.
3. TEOAE will be measured in both ears of each participant, first without contralateral noise and then with contralateral white noise delivered at 65 dB.
4. The amplitude of TEOAE will be recorded for both conditions, and the contralateral suppression will be calculated by subtracting the amplitude with noise from the amplitude without noise for each ear.
5. Data will be organized and recorded for subsequent statistical analysis.

### **Statistical Analysis**

Independent-samples t-tests will be employed using SPSS v21 software, with a significance level set at  $p < 0.05$ .

### **Results & Discussion:**

In the right ear, suppression was higher in the left-handed group ( $M = 3.28$ ,  $SD = 2.71$ ) than the right-handed group ( $M = 1.75$ ,  $SD = 0.66$ ), but the difference was not significant,  $t(18) = -1.642$ ,  $p = 0.12$ . In the left ear, suppression was also higher in the left-handed group ( $M = 3.75$ ,  $SD = 1.61$ ) than the right-handed group ( $M = 3.09$ ,  $SD = 1.56$ ), though not significantly,  $t(18) = -0.843$ ,  $p = 0.39$ . For right-handed individuals, suppression was significantly higher in the left ear ( $M = 3.09$ ,  $SD = 1.56$ ) than the right ear ( $M = 1.75$ ,  $SD = 0.66$ ),  $t(18) = -2.358$ ,  $p = 0.031$ . For left-handed individuals, there was no significant difference in suppression between right ear ( $M = 3.28$ ,  $SD = 2.71$ ) and left ear ( $M = 3.75$ ,  $SD = 1.61$ ),  $t(18) = -0.442$ ,  $p = 0.664$ . The results indicate that while contralateral suppression of otoacoustic emissions (OAE) was higher in the left-handed group compared to the right-handed group in both ears, the differences

were not statistically significant. This suggests that handedness may not have a major influence on contralateral suppression (Cherbuin & Brinkman, 2006). However, in the right-handed group, suppression was significantly higher in the left ear compared to the right ear, which may point to asymmetry in auditory processing related to ear dominance (Sininger & Cone-Wesson, 2004). Previous research has indicated that the efferent auditory system plays a role in modulating sensory input, which could explain this observed asymmetry (Khalifa et al., 1997). In contrast, no such asymmetry was observed in the left-handed group, suggesting that ear dominance might differ between right- and left-handed individuals. Further research is needed to explore these patterns more deeply.

### **Summary & Conclusion:**

Contralateral suppression of OAE was observed to be higher in left-handed individuals compared to right-handed individuals, the differences were not statistically significant, indicating that handedness may not strongly influence OAE suppression. However, the significant asymmetry found in the right-handed group, with higher suppression in the left ear, suggests a potential ear dominance effect in auditory processing. This asymmetry was absent in left-handed individuals, indicating possible differences in auditory processing between the two groups.

## Effects after the Second Dose of Covishield Vaccine on Speech and Hearing Skills

*Manish Kumar, Kundan Kumar & Swati Mahendru*

**SGT University, GURUGRAM**

### **Introduction:**

Corona virus also popularly known as COVID-19 is an ongoing viral pandemic. The causing viral agent is known as SARS-CoV-2. An outbreak of this virus started in Wuhan, China on December 2019[1]. Since then, it has stunned the world over with new mutated variants emerging every few weeks. The World Health Organization (WHO) officially announced the discovery of a novel form of coronavirus: SARS-Cov2 in January 2020. It was later on declared a pandemic by WHO on 11 March 2020[2]. Sooner or later, most of the countries decided to close down places of large gatherings including schools, universities and other events [3]. Instructions to wear masks, regularly wash hands and maintain social distancing were issued. India imposed a nationwide lockdown for few weeks which was later extended up to May 2020. The virus was spreading at a high rate, it was the need of the hour to produce and manufacture a safe vaccine to avoid constant mortality in such large numbers and decreasing the pressure on health system [4].

Several vaccines using different technologies were developed. Covishield, ChAdOx1 nCoV-19 Corona Virus Vaccine (Recombinant), the vaccine candidate for the Pune-based Serum Institute of India was approved by a Drug Controller General of India Committee of Subject Matter Experts (SEC) and it is being used to run one of the world's largest vaccination campaigns to bring the pandemic under control. During the first phase of vaccination drive, frontline workers, Vulnerable populations including elderly and immune compromised people in all countries were given the highest priority for vaccination. Later on, Covishield was made available for everyone above eighteen years of age. Second vaccination phase was started in March 1, 2021, for the citizens above 60 and 45 years of age.

Different variants of the virus are emerging. As the new variants are emerging, there are many vaccinations which are available and many different vaccines are still in labs to assess the efficacy. Therefore, to make a decision about which vaccination should be taken, it becomes really important to know if there are any side effects of the vaccines. Different Variants of COVID-19 are emerging and scientists has very little knowledge about the occurrence of

different variants, which made the occurrence of corona wave even more fatal, which further indicates towards the continuous vaccination drive. Due to the continuously ongoing need of vaccination, it becomes even more important to assess the effect of it.

### **Need for Study:**

Studying the effects of the second dose of the Covishield vaccine on speech and hearing skills is an important area of research, particularly as vaccines become widely administered. This investigation aims to assess whether individuals experience any changes in their auditory and speech abilities following vaccination. Participants will undergo hearing assessments and standardized speech evaluations before receiving the second dose, immediately afterward, and at various intervals post-vaccination. This approach allows for a comprehensive understanding of any potential impacts. Data collected will include both quantitative measures, such as audiometry results, and qualitative feedback regarding any side effects experienced. Analyzing this data can reveal correlations between the vaccine and changes in speech or hearing, contributing to the broader understanding of vaccine safety and efficacy. Furthermore, ethical considerations, including informed consent and participant confidentiality, will be prioritized throughout the study. Ultimately, the findings may shed light on any unexpected neurological effects of the vaccine, paving the way for future research in this critical area.

### **Aim & Objectives:**

#### **AIM: -**

The purpose of the current study is to evaluate after effects (if any) of “Covishield” on speech and hearing skills after the successful second dose.

#### **Objective: -**

The objective of this study was to develop the questionnaire and gather the information regarding the effects (if any) of “Covishield” on speech and hearing skills after the successful second dose.

#### **Method:**

A cross-sectional study was conducted among the residents of Delhi NCR who had received both doses of the Covishield (ChAdOx1nCoV-19) vaccine. The study was conducted in three phases: Phase one involved development of questionnaire, Phase two involved validation of the questionnaire, While, Phase three involved data collection from the population who got second dose of Covishield.

Phase 1. Development of Questionnaire



A questionnaire consisting 15 questions related to speech and hearing behaviors having “Yes-No” answers was developed and converted into Google form. Google form was developed so that covid guidelines could be followed.

#### Phase 2. Validation of Questionnaire

In second phase the developed questionnaire was sent to seven audiologists and speech language pathologists having at least five years of research and work experience for content validation. Five specialists responded to the study. Few changes were suggested to remove the ambiguity and few questions were suggested to be removed due to the lack of validity.

#### Phase 3

Data collection Inclusion criteria: The residents of Delhi NCR who had received both the doses of Covishield (ChAdOx1nCoV-19) vaccine were included in the study. Participants were included post 15 days of second dose of Covishield. Participants with no Speech and hearing difficulties prior to the vaccination.

The questionnaire along with brief information regarding the study was sent out to 200 subjects who had been met the inclusion criteria.

E-form and Hard copies of the questionnaire were used for data collection as per the convenience of participant. Verbal consent and E consent was taken from participants who filled the questionnaire through printed copies and google form respectively. In total 158 participants satisfied both inclusion and exclusion criteria of the study. After data collection, it was encoded into a tabular form using MS excel. Data has been entered into the statistical package for the SPSS 15.0 (2006) versions. The data analysis was done using descriptive statistics comprising of mean and standard deviation.

#### **Results & Discussion:**

Total 10 items including information related to people having difficulty in speech and hearing were included in final questionnaire after the content validation. Language for 4 questions were modified based on the suggestions given by specialists.

- Item 1 identified 0.0253 of the subjects faced problem in their hearing.
- Item 2 identified 0.0126 of the subjects experienced ringing sensation(tinnitus) in their ears
- Item 3 identified 0.0253 the subjects showed a change in their quality of voice
- Item 4 identified 0.0189 of the subjects experienced difficulty in talking fluently.
- Item 5 identified 0.0253 of the subjects had difficulty swallowing.

- Item 6 identified 0.0189 of the subjects faced respiratory/breathing difficulties.
- Item 7 identified 0.1202 of the subjects had episodes of vertigo.
- Item 8 identified 0.0506 of the subjects experienced ear pain.
- Item 9 identified 0.0063 of the subjects had difficulty choosing word.
- Item 10 identified 0.0063 of the subjects faced difficulty in understanding speech of others.

Item 1 Item 2 Item 3 Item 4 Item 5 Item 6 Item 7 Item 8 Item 9 Item 10

YES 4 2 4 3 4 3 19 8 1 1

NO 154 156 154 155 154 155 139 150 157 157

### **Summary & Conclusion:**

The present study aims to examine the effect of speech and hearing after second dose of Covishield in individuals of Delhi NCR. Following vaccination, individuals were asked to wait in the observation room for 30 minutes to see if they might have mild transient headaches, light-headedness and dizziness. After four hours of vaccination, some health workers complained about irritability in mood, six hours after vaccines, some complained of myalgia, nausea, tenderness at the injection site and feverish feeling. After 12 hours, a fever with shivering occurred and required paracetamol to resolve.

It appears that such benign side effects are acceptable during COVID-19 vaccination, as the body will need time to adopt the vaccination dose and activate the immune system to produce protective antibodies [5]. So, there can be chances that our body react to the vaccination in a different way causing different types of side effects which can affect the quality of life. To check if second dose of Covishield vaccination have any effect on speech and hearing this study was conducted and to check if people face the problem in speech and hearing after second dose of Covishield vaccination.

One study suggested that 80.90% of cases complained of pain at the injection site following the second dose of the Covishield vaccine followed by a fatigue complaint of 44.09%, 19.54% for headaches, 8.18% for chills, 5.00% for fever, 2.72% for dizziness and 5 2.27% for nausea.[6]

There can be some serious and long side effects as well related to speech and hearing which will further affects a subject's daily living.

Vaccine has numerous positive effects which help in prevention of various diseases. So, after second dose of Covishield vaccine there are few side effects felt which mostly include vertigo, there is very less effects of second dose of Covishield on speech and hearing.

**AP1436**

**Comparison of Auditory Development Behaviour Measures in Children  
Using Cochlear Implants and Hearing Aids: Parents' Perspectives**

*Navya Agrawal & Prawin Kumar*

**All India Institute of Speech and Hearing (AIISH), Mysore**

**Abstract Not Available**

## Hearing Loss Associated with Patent Ductus Arteriosus and Congenital Rubella Syndrome

*Manish Kumar, Kundan Kumar, Swati Mahendru & Keshav Mishra*

**SGT University, Gurugram**

### **Introduction:**

Patent Ductus Arteriosus is defined as failure of ductus arteriosus to close within 72 hours. If it remains patent till after 3 months post birth, it is considered abnormal. PDA is rare in full term children with incidence accounting for 1 in 2000 births (Schneider DJ, Moore JW). PDA is inversely proportional to gestational age, resulting in greater incidence in pre term infants (Dice, J. E., & Bhatia, J., 2007). The reported incidence in pre term infants ranges from 20-60 % (Hajjar ME, Vaksman G, 2005). The incidence of PDA increases due to considerable factors including maternal rubella exposure, high altitude birth and genetic factors. Rubella infection in the first trimester of pregnancy can result in Congenital Rubella Syndrome (CRS), causing various heart defects, including PDA, hearing loss, or a combination of various birth defects.

The symptoms of PDA may include bounding pulses, murmur, low diastolic pressure, respiratory distress, poor weight gain, and so on (Dice, J. E., & Bhatia, J., 2007). Diastolic hypotension (low pressure) can alter the blood circulation to the brain, skin, kidneys, and muscles. The symptoms may or may not be exhibited by all infants, depending upon the size of DA (Dice, J. E., & Bhatia, J., 2007).

Some infants may exhibit minimal or no symptoms at all depending upon the size of PDA. The small PDAs often would not cause symptoms as lungs and heart do not have to work harder. The only abnormal finding could be the murmur in such PDAs. All other symptoms are generally observable in children with larger PDAs.

### **Need for Study:**

Hearing loss is a significant concern associated with both Patent Ductus Arteriosus (PDA) and Congenital Rubella Syndrome (CRS). PDA occurs when the ductus arteriosus, a blood vessel that normally closes after birth, remains open. While PDA itself isn't directly linked to hearing loss, complications from the condition, such as reduced oxygen supply to the brain, can indirectly affect auditory pathways, potentially leading to developmental delays in communication. In contrast, CRS arises when a mother contracts rubella during pregnancy, resulting in various birth defects, including significant hearing loss in up to 50% of affected

infants. This hearing loss can range from mild to profound and may impact one or both ears due to damage to inner ear structures during critical development periods. Early screening for hearing loss in infants at risk, particularly those with CRS, is crucial for timely intervention, including the use of hearing aids or cochlear implants and speech therapy, to support their language development and overall quality of life.

**Aim & Objectives:**

To study the Hearing Loss Associated with Patent Ductus Arteriosus and Congenital Rubella Syndrome

**Method:**

A 6-year-old male child with a known case of PDA was referred from the Department of Pediatrics to the Department of Audiology and Speech-Language Pathology, SGT Medical Hospital, Gurugram, presented with a primary complaint of hearing difficulty and developmental delay. The detailed case history was taken revealing maternal infection to rubella during 1st trimester, full term vaginal delivery. There was no postnatal history of craniofacial anomalies, jaundice, pneumonia, ototoxic medications, ear discharge and ear ache. No history of audio-logical assessment. A review of family history showed significant speech and language delays in both paternal and maternal cousins with negative consanguinity reported. The ophtho-logical findings included bilateral cataract and microphthalmia. The ENT evaluation revealed bilateral tympanic membrane intact. The audiological assessment was carried out both subjectively and objectively using Pure Tone Audiometry (PTA), Tympanometry with acoustic re-flexes, Brainstem Evoked Response Audiometry (BERA), and otoacoustic emissions (OAE), respectively.

**Results & Discussion:**

PTA was carried out using Maico M42 diagnostic audiometer. Responses were not present till maximum limit of the audiometer.

Tympanometry results revealed a bilateral 'A' type tympanogram with absent acoustic reflexes. The Distortion Product (DP) and Transient Evoked (TE) otoacoustic emissions were both absent.

The BERA device used was the Intelligent Hearing System (IHS). The self-adhesive and disposable electrodes, along with two disposable foam probe tips in size suiting the diameter of the ear canal, were used. The electrodes were placed after cleaning the area, where electrodes would be placed with NuPrep (cleansing gel) to reduce electrical artifacts. Following the

electrode placement, the impedance values of all electrodes were checked to ensure that the impedance of each electrode was lower than 3 KW. The filter bandwidth used for recording was set to be 100-3000 Hz along with the line filter. The recordings were made using click stimulus containing 2000 sweeps in rarefaction polarity. The repetition rate used was determined as 11.1 msec, and the time window to obtain a response was adjusted to be 0-12 msec. The BERA recordings obtained Wave V at 90 dBnHL in right ear which led to the diagnosis of Severe hearing loss whereas in left ear no response was obtained at 90 dBnHL indicative of severe to profound hearing loss.

### **Summary & Conclusion:**

PDA can occur due to multiple reasons and among them Genetic predisposition is considered as one of the most important factors. A study conducted to find the etiology of congenital heart diseases proposed a hypothesis that environmental factors trigger the genetic predisposition, if occurred during vulnerable time of pregnancy it may lead to PDA, however the precise concept behind is still unclear (Nora JJ, 1968). Thus, we can predict that the genetic factors which were the possible cause for PDA may have led to hearing loss as well.

The ductus arteriosus is a channel between the aorta and the pulmonary artery in a developing foetus. At the time of birth, this channel closes physiologically and anatomically it may take up to 72 hours, however in case of persistent PDA the channel remains open which leads to the change in primary blood circulation from systemic to pulmonary. This further leads to pulmonary oedema which affects the respiratory status of the infant. Hence the blood supply to the brain and other body parts is reduced. This reduced supply of blood to the auditory system might also be another reason for hearing loss.

A wide variety of PDA defects in the child may follow maternal rubella during pregnancy. In a study 8 children out of 13 diagnosed with PDA had a history of rubella during pregnancy (Stuckey Douglas, 1955). Studies have demonstrated that congenital hearing impairment is the most common abnormality caused due to intra uterine rubella infection. This infection may also lead to multiple congenital foetal abnormalities and in some cases foetal death.

Knowledge about the various causes of hearing loss can help in early identification and management. Nearly half of cases of congenital sensorineural hearing loss could be linked to genetic cause and out of which 30 % being syndromic and rest 70 % to be non-syndromic (lalwani A.K., Castelein C.M., 1999). The early identification of hearing loss can be achieved with Newborn Hearing Screening. As per the Indian Government, Universal Newborn Hearing Screening has been mandatory since 2013. However, these facilities can be availed only in

district hospitals and medical colleges.

In general, there is less or not significant data available considering routinely screening for hearing impairment or developmental delay in children with PDA and Rubella. Hence, related information has been mostly missed out on medical charts of PDA (Toizumi, M., Motomura, H, 2019). These could be possible reasonings for the unidentified hearing loss, during early years of life, in children with PDA and Rubella.

All cases with PDA and Rubella should be assessed with detailed Audiological evaluation which will help in early detection and intervention. Early intervention can provide a better social, educational and speech and language development. Hence this case study focuses on early identification by using Audiological test battery on High-Risk Babies.

We present a case report of hearing loss associated with PDA and congenital rubella syndrome. Communication disorder like hearing loss has its onset very early in life and consequences if not diagnosed and treated earlier or not treated at all. This case report highlights the importance of early identification and intervention of hearing loss. All infants presenting high-risk factors should be referred for complete audiological assessment to facilitate early detection and management.

## **Incidence of follow up in newborn hearing screening**

*Cathy Charles*

**Samvaad institute of speech and hearing**

### **Introduction:**

Newborn hearing screening (NHS) programs have become a cornerstone of public health initiatives aimed at identifying hearing impairments early in life. Early detection of hearing loss is crucial as it significantly impacts speech, language, and cognitive development. In recent years, there has been a concerted effort to ensure that all newborns are screened for hearing impairments before discharge from the hospital.

Despite the advancements and widespread implementation of these screening programs, a critical component remains under scrutiny: the incidence of follow-up care. Follow up care is essential to confirm initial screening results and to provide timely intervention for those identified with hearing loss. However, studies suggest that a significant proportion of families may not engage in the recommended follow-up procedures. This gap between screening and follow presents a potential barrier to effective management and treatment of hearing impairments.

### **Need for Study:**

To provide insights into how healthcare systems can improve adherence to follow-up protocols and ultimately enhance the outcomes for infants with hearing impairments.

### **Aim & Objectives:**

This research aims to investigate the incidence of follow-up in newborn hearing screening programs, evaluating how frequently families complete recommended follow-up appointments and identifying factors that influence compliance. Main objective is to determine the incidence of follow up among infants who initially failed the newborn hearing screening.

### **Method:**

Cross-sectional study was done on newborns delivered in the hospital who underwent hearing screening in the period of 2019 - 2023. Total of 1000 newborn hearing screening record was reviewed to collect information on Age, sex, birth weight, and other relevant factors. Initial screening outcomes (pass/fail. Dates of follow-up appointments, whether follow-ups were complete. Descriptive Statistics was used to analyze demographics and follow-up rates using,



mean, median and standard deviations.

**Results & Discussion:**

Among 1000 newborns who had neonatal hearing screening, 698 newborns failed their initial hearing 580 bilateral and 118 unilateral, out of which 56 completed recommended follow up, few were delayed. This finding is concerning given the critical importance of early detection and intervention in managing hearing impairment.

**Summary & Conclusion:**

The reduced follow-up rate in hearing screening programs highlights a critical gap in the continuum of care for infants who fail the initial screening. Factors that might contribute to Reduced Follow-up rates includes Socioeconomic Barriers, Financial Constraints. By addressing these factors, we can enhance the efficacy of newborn hearing screening programs and ensure that all infants receive the necessary follow-up care for optimal developmental outcomes.

## **Enhancing Speech Perception in Older Adults: Improved Outcomes from Integrating Lexical Access with Concurrent Word Identification Training**

*Prajan PR, Prashasta C, Srikar Vijayasathy & Animesh Barman*

**All India Institute of Speech and Hearing**

### **Introduction:**

Difficulties in speech perception in adverse conditions in older adults is attributed to a combination of peripheral and central auditory system degeneration, alongside cognitive decline affecting attention and memory (Lee, 2015; Vaidyanath & Yathiraj, 2021). These challenges can lead to increased social isolation and decreased quality of life if not addressed.

### **Need for Study:**

There is some evidence that Concurrent speech training can help in improving speech understanding in noisy environments (Lai et al., 2023; Van Engen, 2012). However, recent modeling efforts indicate the affected speech in noise scores are modulated not just by bottom-up perceptual aspects but also by top-down lexical access/word retrieval in older adults (Braza et al., 2022; Kaandorp et al., 2017). Thus, there is a need for investigating the benefit of incorporating a short lexical access training paradigm along with concurrent speech perception training in older adults.

### **Aim & Objectives:**

The primary aim of this study was to investigate the efficacy of concurrent speech perception training versus a combined approach of concurrent speech perception as well as lexical access training to improve speech perception scores in adverse listening situations and reduce self-perceived hearing handicap in older adults with sensorineural hearing loss. The objectives were to:

1. assess the impact of these interventions on speech perception in both speech noise and speech babble conditions;
2. evaluate changes in self-perceived hearing handicap following the interventions;
3. assess potential differences in treatment efficacy between speech noise and speech babble conditions; and
4. investigate possible correlations between intervention benefit and individual characteristics such as age, hearing sensitivity, and cognitive function.

**Method:**

Participants: 15 older adults (60-80 years) with sensorineural hearing loss, not greater than 40 dB HL till 4000 Hz participated in the study. They were all native speakers of Kannada, and cleared the Montreal test of Cognitive Ability (MoCA score > 26). The sample was randomly divided equally into three groups. One group received training with Concurrent word identification, while another group received a training for both concurrent words as well lexical access. The last group received a placebo training, which consisted of reading the newspaper with delayed auditory feedback of 10 ms (Howell et al., 1984).

Procedure: At the baseline and post-therapy, perceived hearing handicap was assessed with Hearing Handicap Inventory in Adults-Kannada (HHIE) (Thammaiah et al., 2017). Speech perception was assessed for Kannada sentences (Geetha et al., 2014) in speech noise masker at -3 dB SNR and with four talker speech babble masker at 0 dB SNR (correspond to SNR-50). This was followed by 10 one-hour sessions of therapy.

Concurrent word identification training consisted of a simultaneous presentation of words-one in male and the other in female voice. One voice (male/female) was highlighted with a higher rms of 4 dB relative to the other, and the listener's task was to identify the word in dominant voice. Once this was achieved to an accuracy of greater than 75%, the dominant voice was alternated. The therapy used two lexical categories: body parts and animals, that were matched for syllable number and overall duration. The last four sessions of the training focused on the identification of the word in non-dominant voice. The sessions were carried out diotically using headphones at the listener's comfortable level (60-80 dB SPL) in a quiet room. Lexical access training (Schuchard et al., 2018) training consisted of an additional 15 minutes of therapy, and consisted of a Categorical naming task and an Auditory closure task. The naming task asked the participants to name that fall within a particular lexical category (semantic), and those that start with a particular phoneme (phonemic) in one minute (as many items as possible) (Helm-Estabrooks, 2001). The auditory closure task consisted of Kannada sentences presented in quiet that consisted of a missing word in the middle. The participants were asked to name as many potential candidates for the context as possible within one minute for each sentence (five sentences per session).

**Results & Discussion:**

Non parametric tests were used since the data was skewed. Kruskal-Wallis test was conducted to examine baseline differences among the three groups for age, MoCA, HHIE and speech perception. Results revealed no significant differences in age ( $\chi^2(2) = 1.04, p = .35$ ), MoCA

( $\chi^2(2) = .72, p = .48$ ), HHIE ( $\chi^2(2) = .45, p = .80$ ), speech in speech noise ( $\chi^2(2) = 1.71, p = .43$ ), and speech in speech babble ( $\chi^2(2) = 3.9, p = .14$ ), suggesting that the three groups were comparable at baseline on these measures. To assess the impact of the interventions, a Kruskal-Wallis test was performed to compare the benefits in speech noise, speech babble, and HHIE across the three groups. Significant differences were found with large effect sizes for speech noise ( $\chi^2(2) = 10.1, p = .006, \varepsilon^2 = .77$ ), speech babble ( $\chi^2(2) = 9.5, p = .009, \varepsilon^2 = .76$ ), as well as for HHIE ( $\chi^2(2) = 7.1, p = .02, \varepsilon^2 = 0.35$ ). Follow-up pairwise comparisons using Mann-Whitney U tests revealed that both Concurrent speech therapy as well as combined therapy had significantly greater benefit than the placebo group in speech noise as well as speech babble backgrounds ( $p < 0.05$ ) (Fostick et al., 2020; Woods et al., 2015). Interestingly, the combined therapy had greater benefit than concurrent speech therapy alone for speech noise ( $U = 1.5, p = .02, r = -.73$ ), but not with speech babble ( $U = 10, p = 0.69$ ). Findings suggest that the addition of linguistic access training provided significant benefits over concurrent speech therapy alone hinting that working on top-down language skills could improve linguistic access (Chen et al., 2022) and contribute to increased efficiency of speech in noise training.

To compare the difference in benefits in speech noise versus speech babble conditions, a Wilcoxon signed-rank test was conducted which revealed a significantly greater benefit for speech noise ( $Z = 3.92, p < .001, r = .62$ ). The findings suggest that the (easier) condition with lesser informational masking benefits more, at least in the short-term (Schoof & Rosen, 2014). Finally, no significant correlations were found between speech perception benefit and age, pure tone average, and MoCA ( $p > 0.05$ ) either for speech noise or for speech babble backgrounds. The lack of correlation suggests that these interventions may be broadly applicable across the older adult population, and is robust to individual characteristics (Gohari et al., 2023).

### **Summary & Conclusion:**

This study investigated the efficacy of concurrent speech therapy and combined concurrent speech plus linguistic access therapy in improving speech perception for older adults with hearing difficulties. While both approaches lead to significant benefit in terms of speech in noise perception score as well as perceived reduction in hearing handicap, the combined therapy showed superior benefits specifically for speech in speech noise conditions, suggesting that incorporating linguistic access therapy may enhance the effectiveness of traditional speech therapy approaches. The findings highlight the potential value of integrating linguistic access therapy into rehabilitation programs for older adults with listening difficulties. The study's limitations include small sample size, short therapy duration, and lack of long-term follow-up.

However, the findings do provide justification for better designed, larger training efficacy studies in older adults to investigate the generalizability of the conclusions drawn.

**AP1440**

**‘Pitch-Shift Reflex’ in Chronic Suppurative Otitis Media: A Case Study**

*Utkarsh Naithani, Surbhi Kashyap, Mir Sahil & Anisha Sinha*

**AYJNISHD RC NOIDA**

**Abstract Not Available**

**Parental Awareness and Decision-Making in Management of Children with Unilateral Hearing Loss: A Study Across Delhi-NCR**

*Utkarsh Naithani, Mir Sahil, Surbhi Kashyap & Anisha Sinha*

**AYJNISHD RC NOIDA**

**Introduction:**

According to the American Speech and Hearing Association (n.d.), Unilateral hearing loss (UHL) means that hearing is normal in one ear but there is hearing loss in the other ear. The hearing loss can range from mild to very severe which can occur in both children and adults. Estimates from newborn hearing screening programs suggest approximately one congenital UHL per 1000 births, with UHL thought to comprise about one-third of all children born with HL, as reported in studies conducted by Firkser et al. (1997). Shargorodsky J et al. (2010) stated that the prevalence of UHL increases with age as delayed-onset congenital HL and acquired etiologies emerge, such that the prevalence increases to 14% among adolescents (12-19 years). Ross et al., (2010) demonstrated that using variable case definition results in prevalence estimates between 3.0 and 6.3% among children aged 6-19. Children with UHL are at risk for delayed speech-language development, behavioral problems in school, educational difficulties, and require educational assistance in schools (Lieu, 2013). Among other aspects influenced, UHL impairs sound localization ability and understanding speech in noisy environments, particularly if the loss is of greater degrees. Causes of UHL can range from any physical or acoustic trauma to the ear, exposure to loud noise, or any case of sudden sensory neural HL (SSNHL), bacterial or viral infection leading to the deterioration of hearing, any outer, middle, or inner ear congenital abnormality causing HL, ototoxicity, vestibular schwannoma, HL associated with some syndromes, and genetic or hereditary. Intervention in such conditions is influenced by the findings of medical examinations and audiological evaluations that further influence the technology recommendations for intervention. In cases of permanent hearing loss or those unlikely to be resolved through medical management, amplification should be considered as part of the intervention, whether the loss is sensorineural, conductive, or mixed. Cochlear implants (CI), conventional hearing aids, contralateral routing of signal (CROS) hearing aids, Bone-anchored hearing aids (BAHA), and bone-conduction hearing devices may serve as some options for audiological intervention. In the case of congenital or acquired UHLs is crucial, especially in children where the parent's decision of 'choosing' or 'not choosing'

intervention options is influenced by various factors such as awareness of the impact of UHL, options available, affordability, accessibility, stigma, etc.

### **Need for Study:**

Based on the clinical experience with individuals and parents of children with unilateral hearing loss (CwUHL), the authors found a crucial lack of knowledge about the impact of UHL and the available intervention options for their children.

### **Aim & Objectives:**

The present study aims to explore parental awareness about the impact of UHL and factors influencing decision-making toward intervention among parents of children with unilateral hearing loss (CwUHL) across Delhi-NCR.

1. To obtain parental perspectives on the impact of (if any) UHL across various aspects of development in their children.
2. To obtain parental knowledge and awareness on the availability of options to enhance listening abilities for their CwUHLs.
3. To obtain parental perspectives on the accessibility of amplification/implantable devices for their CwUHLs.

### **Method:**

Participants: Parents of CwUHL within the age range of 2-18 years constituted mother-(19), father-(30), or both parents-(71) who had undergone audiological evaluation in 2023-2024 at AYJNISHD(D), RC,NOIDA. Following a purposive sampling method parent of children with normal hearing in one ear and HL in the other ear, ranging from moderate to profound, with either sensorineural or mixed type were included whereas children with mild HL in the affected ear or those with visual, cognitive, or developmental disabilities were excluded.

Procedure: This exploratory study utilized a semi-structured interview schedule conducted both in-person and via telephone with the parents of 120 CwUHL after obtaining prior consent. The responses were later analyzed using thematic analysis.

### **Results & Discussion:**

Based on the data analysis, the gender distribution of CwUHL shows 67(58.75%) are male and 53(42.75%) are female. In terms of age distribution, 18 (15%) of the children are preschoolers (aged 3-5 years), 57(47.5%) are in middle childhood (aged 6-11 years), 39(32.5%) are young teens (aged 12-14 years), and 6(5%) are teenagers (aged 15-17 years).Audiological Profile



shows degree of HL with Profound-38(31.7%), Moderate-34(28.3%), Severe-25(20.8%), Moderately-Severe-23(19.2%) and Type: Sensorineural 42(35%), Mixed 78(65%). The Interview findings can be compiled under the following headings 1) Parental perspectives on the impact of UHL faced by their children across various aspects of development in their children revealed that 53(63.6%) parents reported difficulties in communication skills, while 47(56.4%) noted struggles in academic performance among their children. Additionally, 38(45.6%) of participants reported issues with social participation, and 33(39.6%) for emotional well-being. 2) In terms of parental knowledge and awareness of the availability of options to enhance listening abilities for their CwUHL. 102(85%) parents were aware of behind-the-ear (BTE) hearing aids as a solution to improve their children's hearing, and 18(15%) parents were not aware of any intervention option. However, awareness of other amplification options, such as CROS was 18(15%), CI was 15(12.5%) and BAHA remained minimal at 2(1.6%). 3) Parental perspectives on the accessibility of amplification/implantable devices for their CwUHL, were largely influenced by factors such as socio-economic status 88(73.3%), lack of knowledge 62(51.6%), parental education 67(55.83%), availability of resources 39(40.8%), and the distance of service delivery 30(25%).

**Discussion:** The result of this study reveals a significant gap in parental awareness when it comes to understanding the developmental challenges faced by their children with UHL, which affects not just communication skills or academic performance but also social participation and emotional well-being. This lack of awareness can lead to delayed management and restrict the child's development. Hence, the development and implementation of educational programs for parents and caretakers is necessary. When it comes to knowledge and awareness of available intervention options, most parents are unfamiliar with advanced intervention options like CROS and CI which highlights a knowledge gap. Additionally, accessibility remains a major challenge, particularly due to barriers like socio-economic status, limited resources, and a general lack of knowledge even in a region as developed as Delhi-NCR. These barriers prevent children from accessing necessary support, particularly in families belonging to poor socio-economic backgrounds or those living at a distance from service delivery centers. Hence the need for more financial assistance schemes to reduce the cost of amplification devices for poor families; proper assessment and counselling about the available intervention options by the professionals, appropriate referral to hearing-care centers, and expansion in rural and underserved areas via the use of teleservices and outreach programs to bring services closer to families who face geographical challenges is necessary.

**Summary & Conclusion:**

The findings of the present study indicate limited awareness among parents regarding the impact of UHL on their children's development and limited knowledge of available management options. Though parents reported some difficulties in listening situations for the CwUHL, many were unaware of the long-term impacts of UHL on the overall development and well-being of the children. Accessibility to intervention options is a major challenge influenced by multiple factors, even in the capital region of Delhi-NCR. There is a need for further initiations at the level of government, private, and non-profit organizations towards enhancing the identification, management strategies, and accessibility among the general public.

## **Barriers to Hearing Aid Adoption and Continuation: Perspectives from Non-Users, Past Users, and Families in India**

*Shashi Ranjan & Arun Kumar*

**Amity University Gurugram, Haryana**

### **Introduction:**

Hearing impairment is a global public health concern that significantly affects communication, social interactions, and overall quality of life. In India, hearing loss is prevalent across various age groups, with approximately 6.3% of the population (63 million individuals) suffering from hearing-related disabilities, according to the World Health Organization. Hearing loss can have a significant impact on quality of life and social-emotional well-being.[1] Unaddressed hearing loss in adults has been extensively documented in the literature; in older adults it has been associated with depression, social isolation, loneliness, and cognitive decline.[2] One effective method of aural rehabilitation is the use of hearing aids, which can enhance health-related quality of life.[3]

The use of hearing aids among individuals with hearing loss remains low. In the United States, it is estimated that only 14.2% of adults over 50 with a hearing loss of 25 dB HL or more use hearing aids [4]. In Australia, just 25.5% of people with hearing loss consistently used their hearing aids. [5] Similarly, a large-scale study conducted in Wales revealed that around 18% of adult hearing aid owners did not use their devices, a slight reduction from 21% over a 15-year span. [6] In the Indian context, however, there is insufficient research on the uptake and discontinuation of hearing aids.

Despite advancements in audiological technologies and the availability of hearing aids as an effective intervention, a considerable proportion of individuals who could benefit from these devices either do not adopt them or cease to use them after initial acquisition. This trend raises concerns about the barriers to hearing aid adoption and sustained use, especially in diverse socio-cultural contexts like India. Understanding the reasons for hearing aid non-use is crucial for audiologists, policymakers, and healthcare providers to design more effective intervention strategies tailored to the Indian context.

### **Need for Study:**

Hearing aid adoption and consistent use are crucial for improving the quality of life for individuals with hearing loss. Despite the benefits of hearing aids, many individuals either do

not use or discontinue them. This study is needed to understand the barriers to hearing aid adoption and continued use, both from the perspective of individuals with hearing loss and their families. Insights from this research will help in creating strategies to improve hearing aid utilization and enhance the quality of life for those affected.

### **Aim & Objectives:**

1. To explore the reasons for the non-use of hearing aids among individuals with hearing loss, and whether these reasons differ between non-users and past users who have discontinued use.
2. To examine the perspectives of family members on the non-use of hearing aids by someone in their immediate circle with hearing loss.
3. To analyze if there are differences between the reasons given by individuals with hearing loss and their family members regarding the non-use of hearing aids.

### **Method:**

#### Study Design

cross-sectional survey design Sample Size

The total sample size for the study was 198, 130 individuals with hearing loss, consisting of 32 past users who had discontinued hearing aid use and 98 non-users who had never adopted hearing aids. Additionally, 68 family members of these participants were surveyed, bringing the total sample size to 198 participants.

#### Inclusion Criteria

- Diagnosed with sensorineural hearing loss by an audiologist. Age 40 years or older.
- Proficient in English, as the survey were conducted in English. Family members were included if they:
- Were closely involved in the daily life of the individual with hearing loss.

#### Data Collection

Data were collected through single forced choice and multiple choice questions assessing various aspects of hearing, including hearing health, use of hearing aids, and reasons for non-use administered to both individuals with hearing loss and their family members. Attitudes towards hearing aids and hearing loss were measured using a Likert scale. General demographic information, such as age, employment status, cultural background, hearing status, and hearing aid use was also collected.

## Data Analysis

The data were analyzed using descriptive and comparative statistics to identify the key reasons for non-use and discontinuation of hearing aids. Differences between non-users and past users were examined, as well as the perspectives of individuals with hearing loss and their family members, to understand the influence of family support on hearing aid usage decisions.

### **Results & Discussion:**

#### Past Users (n = 32)

Among the past user group, device-related issues emerged as the largest contributing factor to hearing aid discontinuation. The most commonly reported reason for discontinuing hearing aid use was that the hearing aids were uncomfortable, cited by 59.38% (n = 19). A similar percentage (31.25%, n = 10) stated that they did not like wearing hearing aids. Additionally, 9.38% (n = 3) of past users felt that the hearing aids did not significantly improve their hearing.

#### Non-Users (n = 98)

For the non-users, the most frequently cited reason for not adopting hearing aids was that they did not feel the need for hearing aids, reported by 36 participants (36.73%). The second most cited reason was related to social stigma, with 32 participants (32.65%) expressing that they did not want to wear hearing aids due to concerns about how they would be perceived by others.

Other reasons for non-use included:

- No one had ever recommended hearing aids: cited by 14 participants (14.29%).
- Affordability issues: mentioned by 16 participants (16.33%), indicating financial constraints as a barrier to adoption.

Despite these reasons, a significant portion of the non-users, 54.08% (n = 53), expressed a positive attitude towards hearing aids, suggesting that they may be open to considering them in the future.

#### Family Member Perspectives (n = 68) For Past Users (n = 17):

Discomfort was identified as the primary reason for their relatives' discontinuation of hearing aids, with 70.59% (n = 12) of family members citing this as a key concern. Perceived ineffectiveness of hearing aids was also noted, with 29.41% (n = 5) stating that their relative felt the hearing aids did not significantly improve their hearing experience.

#### For non-users (n = 51):

A common reason cited by family members for their relatives not using hearing aids was the lack of perceived need, mentioned by 41.18% (n = 21). Social stigma was another significant concern, with 21.57% (n = 11) of family members reporting that their relatives felt self-

conscious about wearing hearing aids, fearing negative perceptions from others. Financial constraints were also highlighted, with 19.57% (n = 10) mentioning that affordability was a barrier to adopting hearing aids. Additionally, 17.65% (n = 9) of family members noted that no one had ever suggested hearing aids to their relatives, pointing to a lack of awareness and guidance in the decision-making process.

**Summary & Conclusion:**

This study highlights that the primary reasons for hearing aid non-use and discontinuation among individuals with hearing loss are discomfort, perceived ineffectiveness, and social stigma. Financial constraints and lack of awareness also play significant roles, especially for non-users. Family members reinforce these findings, emphasizing the need for increased education, accessibility, and efforts to reduce stigma around hearing aids. Addressing these barriers is crucial to improving hearing aid adoption and continued use.

## **Tinnitus Relief at Your Fingertips: Audiologists' Evaluation of Management Apps**

*Moazam Shahmiri, Shaikh Saima Mohammad Ali & Pawar Janhavi Bhaskar*

**AYJNISHD(D), Mumbai**

### **Introduction:**

“Tinnitus” is the conscious awareness of a tonal or composite noise for which there is no identifiable corresponding external acoustic source, which becomes “Tinnitus Disorder” when associated with emotional distress, cognitive dysfunction, and/or autonomic arousal, leading to behavioral changes and functional disability.(Dirk De Ridder,2021). It can be subjective, experienced only by the individual, or objective, where an observer can hear it. Common descriptions include hissing, sizzling, and ringing, though some may perceive more complex sounds like voices or music. Tinnitus affects about 10 to 15% of the global adult population, with a prevalence of approximately 6.7% reported in India (S Aryal et al., 2022). Traditionally seen as an otological disorder, research is shifting towards its neuronal correlates.

Furthermore, audiological practice typically emphasizes the management of hearing loss, with tinnitus often receiving less attention. While hearing aids can provide some relief through audiological stimulation, this approach is only applicable to those who experience tinnitus alongside hearing loss. For individuals dealing with tinnitus as a standalone issue, alternative treatments such as Tinnitus Retraining Therapy (TRT) and Cognitive Behavioral Therapy (CBT) are essential for effective management.

Patients now prefer online consultations over in-person visits due to the convenience of receiving medical care from home, saving time and travel. As technology advances, the trend towards digital health services grows, making mobile applications a feasible and convenient option. Therefore, understanding audiologists' awareness, knowledge, attitude, and readiness to use these apps is essential.

### **Need for Study:**

Tinnitus affects approximately 6.7% of the adult Indian population (S Aryal et al., 2022), making it a prevalent otologic condition that significantly impacts the quality of life for both sufferers and their families. Given its high prevalence, developing effective assessment and management protocols for tinnitus is essential. Additionally, the increasing demand for remote care highlights the need for audiologists to be knowledgeable and skilled in this area.

Most studies in the literature have concentrated on the user experience and features of tinnitus management apps. However, it is crucial to assess audiologists' awareness and readiness regarding these tools. By doing so, professionals can make more informed referrals and recommendations to patients for effectively using these apps.

### **Aim & Objectives:**

**Aim:** To analyze audiologists' awareness, knowledge and readiness towards usage of Tinnitus management Apps for management of patients with tinnitus.

**Objectives:**

1. To assess the level of awareness among Indian audiologists about tinnitus management apps.
2. To evaluate the depth of knowledge audiologists have regarding the functionality and benefits of tinnitus management apps and determine any gaps in knowledge that may affect their practice.
3. To investigate the readiness of audiologists to use tinnitus management apps and analyze factors influencing their willingness to integrate this technology into their services.

### **Method:**

A questionnaire consisting of 10 questions pertaining to three domains, namely: Awareness, Knowledge and Readiness related to use of app-based management of tinnitus was prepared and validated as per Likert's scale. The questionnaire was further circulated via google forms to Audiologists having at least 1 year of experience working in the field. To understand their perspective towards remote care in management of patients with tinnitus. The data obtained was represented in the form of percentages to understand the distribution.

### **Results & Discussion:**

The results obtained via the online survey can be discussed quantitatively in the form of percentages, as follows:

1. Though tinnitus management apps have been around since quite some time, they gained enough traction in 2018 and started to become popular during the lockdown period. However, in terms of awareness about the availability of the apps, only 81.25% of the professionals reported in affirmative.
2. Tinnitus management apps mostly play a role post evaluation of tinnitus and do not offer assessment services, however 75% participants felt that they offer some kind of self-evaluation to determine the severity and 62.5% felt it enabled the patients to quantify



their tinnitus in terms of pitch and loudness.

3. Tinnitus management apps usually do provide the facility to formulate a treatment plan which the patients can customize as per their routine, however the efficacy of these treatment plans and the ability to formulate realistic goals need to be analyzed. In accordance with this 68.75% of the audiologists feel that these apps cannot enable patients to formulate an effective treatment plan however, 73.3% of them feel these apps can help them to formulate realistic goals.
4. Tinnitus management apps may offer a range of features and benefits like sound therapy, relaxation exercises, meditation resources, guidance, education and progress tracking which might help to desensitize them towards their tinnitus. Similarly, 80% of the professionals believed that these might be helpful in counselling and desensitizing the patients.
5. The audiologists showed mixed opinions over the fact that these apps take into consideration the subtleties of tinnitus therapy and if they can provide adequate knowledge pertaining to it.
6. Majority of the audiologists (75%) agreed that these apps can help patients become more self-dependent in managing their tinnitus, however the majority (87.5%) also stated that these apps solely cannot help sans the input from the professionals.

The findings indicate that audiologists generally have a good awareness of tinnitus management apps, but there is potential for further enhancement through training programs. Many patients with tinnitus but no hearing loss are often reluctant to seek professional help, and follow-up visits can be difficult. Tinnitus management apps can support audiologists in delivering care remotely, allowing for effective patient monitoring and reducing travel time and energy. Similar findings were reported in a study conducted in Kolkata in 2021 demonstrating the effectiveness of sound therapy using the Resound Relief App. In this study, pre- and post-therapy Tinnitus Handicap Inventory (THI) scores showed that app-based Tinnitus Retraining Therapy (TRT) provided significant relief from distressing tinnitus symptoms, especially when other contributing factors were managed (N Paul et al). However, this was more of a user based study.

Studies focusing on the usability of the apps, have reported that overall, knowledge about the effectiveness of mobile apps for mitigating tinnitus symptoms is limited and still in its early stages. The review identified that there are numerous available apps and an increasing interest in their development, however, clinical validation research is scarce. (Mehdi et al, 2020)

However, it is also important that these apps shouldn't be treated as a one stop solution for managing tinnitus. Proper sound therapy requires matching pitch and loudness, which can only be accurately performed by an audiologist using an audiometer. Additionally, there remains a significant amount of skepticism surrounding tinnitus therapy, and the effectiveness of solutions can vary from patient to patient. Therefore, audiologists are best positioned to determine the most appropriate therapeutic approach for each individual.

**Summary & Conclusion:**

To summarize the findings of the above conducted study, hands-on training can be undertaken by audiologists to understand the functioning of the tinnitus management apps so that they are better equipped in demonstrating them to patients. Further appropriate and adequate counselling is important on the part of audiologists before encouraging the patients to use these apps.

In conclusion, these apps can prove to be an important asset in the audiologists' vault, however judicious use is recommended. Also, there's a need to conduct studies assessing audiologists' awareness and readiness.

**AP1444**

**A Comparison of Speech Perception in Noise with Varying SNR and Short-Term Increment Sensitivity Index between Musicians and Non-Musicians**

*Shannmugavidhya Perumal, Priyadharshini N, Monisha T.R & Albina Preethi Infaa*

**Holy Cross College Tiruchirappalli**

**Abstract Not Available**

## Translation and Validation of Inventory of Hyperacusis Symptoms Questionnaire in Hindi

*Prashanth Prabhu P, Shashi Ranjan, Navya Jayaprasad, Vishesh Mehra & Komal Aggarwal*

**All India Institute of Speech and Hearing**

### **Introduction:**

Hyperacusis is a hearing disorder characterized by an increased sensitivity to everyday sounds, often leading to significant distress and impaired quality of life. This condition can manifest in various forms, including discomfort, pain, or annoyance to normal environmental sounds that typically do not bother individuals with normal hearing sensitivity. Research shows that individuals with hyperacusis often withdraw from social situations and experience elevated anxiety levels due to the anticipation of encountering loud noises (Fackrell et al., 2017; Khalifa et al., 2002). A standardized tool for measuring the severity and impact of hyperacusis is essential for both clinical diagnosis and the development of appropriate management strategies. One of the widely used instruments to evaluate hyperacusis is the Inventory of Hyperacusis Symptoms (IHS) questionnaire, which has been validated in English and several other languages. However, there is currently no validated version available in Hindi, the fourth most spoken language globally and the most spoken language in India (Eberhard et al., 2022). Given the high prevalence of hearing disorders in India (WHO, 2021) and the lack of culturally adapted tools for non-English speaking populations, it is imperative to develop and validate an instrument for assessing hyperacusis in Hindi-speaking individuals. This would enable clinicians and researchers to better understand and manage hyperacusis in Hindi-speaking communities.

### **Need for Study:**

The adaptation and validation of the Inventory of Hyperacusis Symptoms (IHS) into Hindi is critical for several reasons. First, language and cultural nuances play a pivotal role in how symptoms are perceived, reported, and understood (Beaton et al., 2000). A direct translation of the English version may not accurately capture the symptomatology of hyperacusis among Hindi speakers, leading to potential misinterpretation of the results. Therefore, a rigorous translation, cultural adaptation, and validation process is necessary to ensure the psychometric properties of the questionnaire remain robust in the new context (Guillemin et al., 1993).

Secondly, the lack of a validated Hindi version of the IHS limits the ability of audiologists and

researchers to assess and track the prevalence of hyperacusis in Hindi-speaking populations, which constitute over 40% of the Indian population (Census of India, 2011). This gap in diagnostic tools impedes both clinical practice and research efforts, restricting our understanding of hyperacusis in diverse linguistic and cultural settings.

The present study aims to adapt and validate the Inventory of Hyperacusis Symptoms for Hindi-speaking individuals, using established guidelines for cross-cultural adaptation of self-report measures (Beaton et al., 2000). This will involve translating the questionnaire, conducting a pilot study to ensure comprehensibility, and evaluating the psychometric properties of the Hindi version through a structured validation process. By developing a culturally appropriate tool, this research will facilitate better clinical assessment and contribute to the broader understanding of hyperacusis in non-English speaking populations.

### **Aim & Objectives:**

To translate and validate Inventory of Hyperacusis Symptoms questionnaire in Hindi

### **Method:**

This study employed a cross-sectional design for the adaptation and validation of the Inventory of Hyperacusis Symptoms (IHS) questionnaire into Hindi. A total of 100 participants aged between 18 and 55 years were recruited. The sample consisted of two groups: 50 individuals with a confirmed diagnosis of hyperacusis and 75 healthy controls with no reported auditory complaints. Participants were selected using purposive sampling and were native Hindi speakers with at least 10 years of formal education to ensure comprehension of the translated items.

#### Translation and Cultural Adaptation

The translation and adaptation process followed the guidelines proposed by Beaton et al. (2000). The steps included:

1. **Forward Translation:** Two independent bilingual translators (fluent in both English and Hindi) translated the original IHS into Hindi. One translator was a healthcare professional familiar with audiology terminology, while the other was a linguist with no medical background to provide a layperson's perspective.
2. **Synthesis:** The two translated versions were synthesized into a single Hindi version after resolving any discrepancies in meaning, terminology, and language appropriateness.
3. **Backward Translation:** Two independent translators, who were blinded to the original English version, translated the synthesized Hindi version back into English. This step

ensured that the translated content retained the same meaning as the original questionnaire.

4. Expert Committee Review: A panel consisting of audiologists, language experts, and a psychologist reviewed all translations. They evaluated the semantic, experiential, idiomatic, and conceptual equivalence between the original and translated versions, resulting in the pre-final Hindi IHS version. Psychometric Validation of the test was done using reliability analysis, factor analysis and discriminant validity.

### **Results & Discussion:**

The Hindi IHS questionnaire was successfully adapted through a systematic translation and cultural adaptation process. All 14 items of the original IHS were retained, with minor linguistic modifications to align with the cultural context of Hindi speakers. During pilot testing, participants reported the items as clear and relevant, confirming the face validity of the instrument.

#### Reliability Analysis

The Hindi IHS demonstrated excellent internal consistency with a Cronbach's alpha of 0.89. Test-retest reliability was also high, with an ICC of 0.91, indicating that the Hindi version of the IHS is stable over time.

#### Construct Validity

Exploratory factor analysis revealed a three-factor structure, similar to the original English version, accounting for 78% of the total variance. The factors corresponded to General Loudness Sensitivity, Social Impact, and Emotional Response. This supports the construct validity of the Hindi IHS.

#### Discriminant Validity

An independent samples t-test showed a significant difference between the hyperacusis group (mean score = 34.7, SD = 8.2) and the control group (mean score = 12.5, SD = 4.3) on the Hindi IHS ( $t = 16.23, p < 0.001$ ), indicating that the tool effectively distinguishes between individuals with and without hyperacusis.

The adaptation and validation of the Inventory of Hyperacusis Symptoms into Hindi was successful, demonstrating that the Hindi version maintains the reliability and validity of the original English questionnaire. The high Cronbach's alpha and ICC values suggest that the Hindi IHS is a reliable tool for assessing hyperacusis in native Hindi speakers. The three-factor structure identified in the exploratory factor analysis closely mirrors the structure of the original IHS, indicating that the construct is preserved across languages and cultures.

The significant correlation between the Hindi IHS and the HQ further supports its validity, while the ability of the tool to discriminate between hyperacusis and non-hyperacusis individuals highlights its clinical utility. This finding is consistent with previous studies that have adapted the IHS into other languages, such as French and German, showing that the IHS is robust across different linguistic and cultural settings (Khalifa et al., 2002).

**Summary & Conclusion:**

The Hindi version of the Inventory of Hyperacusis Symptoms is a reliable and valid tool for assessing hyperacusis in Hindi-speaking populations. This adaptation will facilitate accurate assessment and better clinical management of hyperacusis among Hindi speakers, contributing to a more inclusive approach in audiological research and practice. Further research is recommended to establish the utility of this tool in broader clinical settings and explore its application in other Indian languages.

**AP1446**

**Clinical Diagnostic Evaluation of Autoimmune Involvement in Auditory  
Neuropathy Spectrum Disorder**

*Sanjay S, Sandeep Maruthy, Sharath Kumar K. S & Ajith Kumar*

**All India Institute of Speech and Hearing, Mysore**

**Abstract Not Available**



## **Fine Structure Distortion Product Otoacoustic Emissions in Older Adults**

*Shweta Singh & Rucha Vivek*

**Max Superspeciality Healthcare Hospital**

### **Introduction:**

The hearing process begins at the periphery, where the cochlea is responsible for analyzing frequency, intensity, and tuning, which are essential for speech perception. However, cochlear health cannot be directly measured and often becomes apparent only as hearing loss once irreversible damage has occurred. This highlights the need for tests to monitor cochlear function with changes in peripheral hearing due to factors like noise exposure, aging, systemic disorders etc. Fine Structure Distortion Product Otoacoustic Emissions (FSDDPOAEs) have emerged as a particularly promising and practical test for this purpose (1,2). When DPOAEs are recorded with very small frequency steps, they exhibit quasiperiodic peaks and valleys in amplitude known as cochlear fine structure or FSDPOAE (3). FSDPOAEs measured in the external ear canal reflect the interaction of the two source components i.e. reflection and distortion sources. Because these DPOAE components arise from different cochlear mechanisms, they may respond differently to changes in cochlear function.

### **Need for Study:**

Previous research has shown that FSDPOAEs can detect cochlear changes due to factors such as diabetes mellitus type I (2), medication use, including aspirin (4), increased hearing thresholds (5), and noise exposure (6). Studies on aging have produced mixed results, with some reporting a reduction in fine structure with age (1,7) and others finding no such reduction (5). These conflicting findings underscore the need for further research to clarify the impact of aging on fine structure distortion product otoacoustic emissions, as they offer a simple method for early detection of cochlear changes.

### **Aim & Objectives:**

Study aims to assess the effects of aging upon possible changes in cochlear-fine structure

Objectives:

1. To compare the amplitude of DPOAE across age groups.
2. To compare the presence of FSDPOAE across age groups.

**Method:**

The study included 104 participants divided into four age groups: Group 1 (20-30 years), Group 2 (31-40 years), Group 3 (41-50 years), and Group 4 (51-60 years). Participants had pure tone thresholds of 25 dBHL or better between 0.25 and 4 kHz. Exclusion criteria included middle ear pathology, noise exposure, retro-cochlear pathology, neurological or cognitive disorders, uncontrolled systemic diseases, and ototoxic drug use.

Audiological assessments were conducted in sound-treated rooms using calibrated equipment. FSDPOAEs were measured with the Otodynamics 292 instrument and ILO v6 software. Ethical approval was obtained from Bharati Vidyapeeth Medical College (Ref no BVDUMC/IEC/60, Dated 07/11/2023), and participants provided informed consent.

After confirming normal hearing thresholds, the FSDPOAE test was conducted with subjects seated and still. Data were collected at 8 points per octave with L1=65 dB, L2=55 dB, and a frequency ratio of F1/F2=1.22. DPOAE frequencies were grouped into four octave bands, with discrepancies noted if noise and amplitude responses differed by more than 6 dB. Scores of 0, 1, or 2 corresponded to absent, affected, and present categories, respectively.

**Results & Discussion:**

In this study, FSDPOAE scores were analyzed as categorical variables for statistical examination. Preliminary analyses assessed assumptions for parametric tests, including normality and variance. Descriptive statistics showed that Groups 1, 2, 3, and 4 had mean ages of 24.35, 35.19, 43.77, and 56.88 years, respectively. As age increased, the absence of FSDPOAE increased while its presence decreased, indicating declining cochlear function. Statistically, significant ear differences were found, with the left ear showing a higher prevalence of affected FSDPOAE. A chi-square test confirmed an age-related decline in FSDPOAE across groups. Z proportions were calculated to compare groups using following formula.

$$(\bar{p}_1 - \bar{p}_2) - 0 \div \sqrt{\bar{p}(1 - \bar{p}) (1/n_1 + 1/n_2)}$$

Group comparisons for FSDPOAE revealed significant differences across categories for both ears. In category 0, notable differences were found in the right ear among Groups 2-1, 2-4, 1-3, 1-4, and 3-4, and in the left ear among Groups 2-1, 1-3, 1-4, and 3-4. For category 1, significant differences were found in the right ear between Groups 1-4 and 3-4, and in the left ear among Groups 2-1, 2-4, 1-3, 1-4, and 3-4. In category 2, differences were noted in the right ear among Groups 2-1, 1-3, and 1-4, and in the left ear for Group 2-1. DP amplitude also declined with age in both ears, indicating age-related deterioration in cochlear function. The

study showed an increase in absent and affected FSDPOAE categories with age, likely due to metabolic changes.

### **Summary & Conclusion:**

Despite discrepancies in previous studies, the present research points to a decline in FSDPOAE that is related to age, affecting both amplitudes and the presence of fine structure. This highlights FSDPOAE's sensitivity to subtle cochlear changes and suggests that it can indicate potential early-stage damage, which could be preventable with timely assessment. Thus, the study underscores the clinical utility of FSDPOAE.

The present study has shown reduction in proportion of present FSDPOAE across age groups from younger to older age groups. DPOAE amplitudes were also observed to be diminished in older age groups. These results were consistent with the findings of authors who discovered notable age-related effects on FS amplitude, observing a linear correlation between amplitude and age (7). They also highlighted FSDPOAE as a sensitive tool for detecting minor cochlear damage. Sharma (2014) while investigating ear asymmetries in FSDPOAE, found a reduction in amplitudes in the elderly group (8). However, some studies suggest that FSDPOAE is more dependent on hearing thresholds than on age, showing little to no effect of age (1,5). In the present study a significant difference was found in adults with normal hearing sensitivity between age groups 2-1, 3-1 and 1-4 indicating a significant decline in cochlear function beyond 40 years of age, in spite of normal hearing sensitivity. FS-DPOAE thus appears to be more sensitive than conventional DPOAE testing to identify early stages of cochlear damage due to aging.

**AP1448**

**Age of Onset of Age-related Decline in Hearing Sensitivity and its  
Relationship with Cochlear Function**

*Sanjay S & Sandeep Maruthy*

**All India Institute of Speech and Hearing, Mysore**

**Abstract Not Available**

## **Single Sided Deafness: A Major Barrier to Academic and Psychosocial**

### **Context: A Single Case Study a Young Practicing Physician**

*Saptarshi Neogi, Subhadeep Manna, Rishav Bandyopadhyay & Urmi Ajay*

#### **AYJNISHD(D) MUMBAI**

#### **Introduction:**

Binaural hearing gives stereophonic abilities which involves the ability to localize sounds and perceive depth. With binaural hearing head shadow provides an advantage by sheltering the ear turned toward the source. (Paul Avan, Fabrice Giraudite Buki,2015) Single sided deafness (SSD) is the situation when one ear has hearing loss greater than 70 dB and another ear's hearing threshold will be at the normal limits. Patients suffering from SSD suffer from significant challenges in noisy places. (Kapil Sikka et al,2021) Decreased speech perception, lack of sound localization affects academic and psychosocial aspect of patient's life

#### **Need for Study:**

In Indian context there are very few case studies that have been done till date particularly emphasizing the subjective issues raised by patients suffering from single sided deafness in academic and psychosocial development. Our case study is based on a general physician who has just completed MBBS.As being in high communication demands profession, the study can give an elaborative and new dimensional aspect to those professionals who are dealing with single sided deafness.

#### **Aim & Objectives:**

To subjectively analyze social and communication difficulties. Difficulties faced by typical Indian students faced in the Indian academic curriculum system such as response to class lectures and viva which are only dependent on auditory inputs to discuss coping strategies and other possible managements.

#### **Method:**

27 years old male who is diagnosed with moderately severe to profound sensorineural hearing loss in left ear and hearing sensitivity within normal limits in right ear. No history of ear discharge with 'A' type tympanometry in both the ears and all reflexes are absent in left ear. Duration of hearing loss was assumed since childhood but diagnosed 3 years ago. No additional

health issues and no medications are continued. Patient was interviewed by authors in a semi structural setting in clinic. He was asked with some open-ended questions. Patient was also asked to fill VFS-40-A questionnaires to understand impact of auditory fatigue in 4 domains (physical, emotional, social, cognitive) due to unilateral hearing loss.

MATERIAL: VFS-A-40 [ Vanderbilt Fatigue Scale] is a 40-item scale that provides subscale scores of four domains of listening related fatigue (emotional, social, cognitive, physical) and total score. HHIA [ The Hearing Handicap Inventory for Adults] is a 25 item self-assessment scale composed of two subscales (emotional and social/situational) . HHIA focuses on the occupational effects of hearing loss

### **Results & Discussion:**

Domain wise VFS score [ cognitive=32, physical=25, social=34, emotional=33] , HHIA [ social=62.5%, emotional=76.9%, Total score= 70%, interpretation: significant handicap].Patient discussed about is not able to understand many difficult concepts in the class, he has to rely mostly on self-study. Most of the time he is not even able to understand the questions asked by lecturer. He generally takes part in gossiping although sometimes he goes with friends at café. Professionally he is a doctor, so he faces lot of problems in understanding his patient's problems while communicating with them at OPD or during ward posting. He feels lot of anxiety and lower self-esteem. Contralateral Routing of Signal [CROS] is not able to give significant benefits according to him.

### **Summary & Conclusion:**

This case study is unique because of registering problems associating with a general physician who is suffering from SSD. From this study clear evidence can be concluded that subjective and patient specific interventions are more important to provide appropriate treatment management to SSD patients considering their professions, communication +barriers and how much listening is important in their professions. Another conclusion can be driven that patient who are aware and financially affordable have significant cognitive load and very limited management options leading to anxiety, depression. Counselling and appropriate coping strategies should be investigated more for such a specific listening activity in noisy situation. More studies should be done to improve function of CROS hearing aid. Societal stigma should be addressed more efficiently to lead with SSD. This study has shown that SSD impacts academic, psychosocial, emotional, and other important aspects of life. Various countries provide disability benefit while considering the parameters in better ear. In India SSD doesn't

get any disability benefit [Varshney S. Deafness in India,2016]. It should be considered as a specific class of medical impairment. They may need exceptional help or services that ensure their social rights in India.

## **Impact of Personal Music Systems on Acoustic Reflex Thresholds in Young Adults**

*Neelesh Benet, Arya Sinha & Bhavika Kabeer*

**Amity University Gurugram, Haryana**

### **Introduction:**

The increasing use of personal music systems (PMS) such as cell phones, portable media players, and headphones has raised concerns regarding their impact on hearing health. These devices enable users to listen to music at high volumes for prolonged periods, potentially affecting the acoustic reflex and other auditory system components. The stapedial reflex, which indicates the contraction of the stapedius muscle in response to sudden loud sounds, serves as a protective mechanism (Thomsen, 1999). Early studies by Lee et al. (1985) highlighted the harmful effects of PMS on hearing, prompting further investigation into the adverse consequences associated with these devices.

Literature indicates that personal music players can generate dangerously high sound pressure levels (Katz et al., 1982), leading to growing concerns about hearing degradation, especially among young adults who frequently listen to loud music. Exposure to high-intensity sound can result in permanent threshold shifts (Kumar & Deepashree, 2016).

The acoustic reflex, formed by the contraction of the stapedius and tensor tympani muscles in response to loud sounds, protects the inner ear by reducing sound energy transmission. The lowest intensity level at which this reflex is activated is termed the auditory reflex threshold.

Environmental noise exposure can significantly impact acoustic reflex thresholds, inducing temporary or permanent changes in auditory function (Duarte et al., 2015). Common frequencies for measuring the acoustic reflex include 500, 1000, 2000, and 4000 Hz, with an intensity of 70-100 dB SL necessary to elicit the reflex in individuals with normal hearing (Themann & Masterson, 2019). Histological studies have shown that noise-induced hearing loss (NIHL) affects cochlear sensory cells, particularly in the frequency range of 3000-6000 Hz (Duarte et al., 2015).

Understanding the relationship between personal music listening habits and changes in acoustic reflex thresholds can offer insights for auditory health education and interventions. Given the widespread use of personal music devices among young adults, this research could help develop guidelines for safe listening practices to prevent long-term auditory damage.



**Need for Study:**

With the widespread use of personal music devices among young adults, the risk of auditory health deterioration has become a pressing concern. High-volume music exposure, particularly through insert earphones, can lead to hearing loss and impact auditory reflexes. It is crucial to understand how listening habits influence auditory thresholds and reflexes, especially among college students. This study addresses this need by exploring how various music listening behaviors relate to auditory health, thereby informing future preventive measures and interventions.

**Aim & Objectives:**

The aim of this study is to investigate the impact of music listening habits, specifically high-volume daily listening versus infrequent low-volume listening, on ipsilateral and contralateral acoustic reflex thresholds in college students aged 18 to 24 years. The objective is to compare the ipsilateral and contralateral acoustic reflex thresholds at 500 Hz, 1000 Hz, and 2000 Hz between individuals who listen to music daily at high volume and those who listen to music infrequently at low volume.

**Method:****Participants:**

The study will include 20 college students aged 18 to 24 years, divided into two groups based on their music listening habits:

1. Group 1: 10 participants who listen to music daily at high volume (over 60% of mobile volume) for more than 4 hours.
2. Group 2: 10 participants who listen to music infrequently (once or twice a week) at low volume. Both ears will be tested for each participant, yielding a total of 20 data for each group.

**Instruments Used:**

1. MAICO M42 Two-Channel Audiometer: Used to conduct Pure Tone Audiometry (PTA) for assessing hearing thresholds.
2. MAICO TouchTympanometer MI 24 Tympanometer: Used to perform reflexometry for evaluating both ipsilateral and contralateral acoustic reflex thresholds.

**Test Procedure:**

1. Pure Tone Audiometry (PTA):
  - PTA will be conducted to exclude individuals with hearing loss.

- Air conduction thresholds will be measured at frequencies 500 Hz, 1000 Hz, 2000 Hz, and 4000 Hz.

## 2. Reflexometry:

- Reflexometry will be performed using the MAICO TouchTymper MI 24 Tympanometer to assess ipsilateral and contralateral acoustic reflex thresholds at 500 Hz, 1000 Hz, and 2000 Hz.

### **Statistical Analysis**

- Data will be analyzed using an independent sample t-test to compare ipsilateral and contralateral acoustic reflex thresholds between the two groups.
- Statistical analysis will be conducted using SPSS v21 software.

### **Results & Discussion:**

Ipsilateral reflex at 500 Hz was significantly higher in high-volume daily listening group ( $M = 95.75$ ,  $SD = 3.35$ ) than the infrequent low-volume listening group ( $M = 87.5$ ,  $SD = 3.03$ ),  $t(38) = -8.157$ ,  $p = 0.000$ .

Ipsilateral reflex at 1000 Hz was significantly higher in the high-volume daily listening group ( $M = 96.25$ ,  $SD = 3.58$ ) than in the infrequent low-volume listening group ( $M = 87.75$ ,  $SD = 3.80$ ),  $t(38) = -7.284$ ,  $p = 0.000$ .

Ipsilateral reflex at 2000 Hz was significantly higher in the high-volume daily listening group ( $M = 96.75$ ,  $SD = 3.73$ ) than in the infrequent low-volume listening group ( $M = 91.50$ ,  $SD = 4.01$ ),  $t(38) = -4.291$ ,  $p = 0.000$ .

Contralateral reflex at 500 Hz was significantly higher in the high-volume daily listening group ( $M = 102.50$ ,  $SD = 4.44$ ) than in the infrequent low-volume listening group ( $M = 93.75$ ,  $SD = 5.35$ ),  $t(38) = -5.627$ ,  $p = 0.000$ .

Contralateral reflex at 1000 Hz was significantly higher in the high-volume daily listening group ( $M = 103.75$ ,  $SD = 5.09$ ) than in the infrequent low-volume listening group ( $M = 93.00$ ,  $SD = 7.09$ ),  $t(38) = -10.250$ ,  $p = 0.000$ .

Contralateral reflex at 2000 Hz was significantly higher in the high-volume daily listening group ( $M = 104.50$ ,  $SD = 5.10$ ) than in the infrequent low-volume listening group ( $M = 99.00$ ,  $SD = 6.41$ ),  $t(38) = -3.003$ ,  $p = 0.005$ .

The study's findings indicate that high-volume daily music listening significantly affects ipsilateral and contralateral reflexes at various frequencies. This significant increase in acoustic reflex among participants who listened to music daily at high volumes aligns with previous research indicating that prolonged exposure to loud noise can lead to elevated auditory reflex

thresholds and potential hearing loss (Causon et al., 2020; Duarte et al., 2015). The findings also resonate with the work of Salvi et al, who discussed the detrimental effects of noise exposure on the auditory system, highlighting the importance of safe listening practices (Salvi et al., 1995). Other research also reported that auditory stimulus exposure directly influences auditory processing (Yeend et al., 2017), reinforcing the implications of our study on the risks associated with habitual high-volume music consumption. Collectively, these results highlight the necessity of promoting awareness regarding safe listening habits, particularly among young adults who frequently engage in high-volume music listening, to mitigate potential long-term auditory damage.

### **Summary & Conclusion:**

In conclusion, the study provides compelling evidence that high-volume daily music listening significantly impacts auditory reflex thresholds among college students. The findings highlight the importance of promoting awareness regarding safe listening practices, particularly among younger populations who may underestimate the risks associated with loud music exposure. Future research should explore the long-term consequences of habitual high-volume listening on auditory health and processing capabilities, particularly in diverse populations and varying age groups.

**Assessing Adult Awareness on Noise-Induced Hearing Loss (NIHL):  
Impacts, Risks, and Effective Prevention Strategies**

*Feba Bovas, Ajanya S, Keshav Mishra & Vivek Kumar*

**SGT University, Gurugram, Haryana**

**Introduction:**

Noise-induced hearing loss (NIHL) is a pressing health issue that poses a significant threat to auditory well-being, particularly among younger individuals drawn to loud environments, from concerts to bustling workplaces. This condition arises from exposure to excessive noise levels, whether from a single explosive sound or prolonged engagement in loud activities. NIHL is not just a personal health concern; it represents a broader social challenge that can drastically affect quality of life and professional opportunities. The mechanisms behind NIHL are rooted in the damage it inflicts on the hair cells within the inner ear. These delicate structures are responsible for converting sound waves into neuroelectric signals that the brain interprets. When exposed to loud sounds, the hair cells can become overstimulated, leading to temporary or permanent hearing impairment. NIHL can be classified into two distinct categories: acoustic trauma and chronic NIHL. Acoustic trauma occurs from a sudden, intense noise, such as gunfire or explosions, which can cause immediate and irreversible damage. In contrast, chronic NIHL develops gradually due to consistent exposure to lower-intensity sounds, resulting in progressive hearing loss over time. The rising prevalence of NIHL, especially among the youth, underscores an urgent need for awareness and preventive measures. As the world grows increasingly loud, the importance of safeguarding our hearing cannot be overstated. Protecting against NIHL not only preserves individual health but also ensures that the joy of sound whether in music, communication, or the everyday sounds of life remains accessible to all.

**Need for Study:**

The population is increasingly exposed to loud noises from a variety of sources, including industrial machinery, music concerts, fireworks, and the habitual use of earphones. Despite this widespread exposure, many individuals remain unaware of essential hearing health practices, such as the advantages of noise-cancelling technology and the importance of using ear protection devices. This lack of awareness underscores the critical need to address noise-induced hearing loss (NIHL) and to identify effective prevention strategies. By enhancing education and awareness around hearing health, we can empower individuals to take proactive

measures to protect their hearing, ensuring better auditory health for future generations.

### **Aim & Objectives:**

The aim of this study is to assess the awareness of noise-induced hearing loss (NIHL) among adults across various regions. The objectives include developing a validated questionnaire designed to evaluate and raise awareness about NIHL, as well as to gather insights regarding exposure to loud noise. This will help identify knowledge gaps and inform strategies for promoting better hearing health.

### **Method:**

The study was conducted in two phases. In the first phase, a self-administered survey consisting of 15 questions was developed, including 3 open-ended and 12 closed-ended questions. Individuals who are related to speech and hearing were not taken as the part of study. The individuals who participated in this study were mostly college-going students and working professionals. Participants were asked about their awareness of noise-induced hearing loss (NIHL), with the questionnaire covering various domains such as demographic data, awareness of NIHL, personal experiences, and attitudes toward education and prevention. Demographic details included age, gender, and educational background. The awareness section focused on respondents' knowledge of NIHL and its potential causes. Participants also reported their earphone usage and daily exposure to loud environments, along with the protective measures they employed. In the final domain, questions assessed awareness of ear protection devices and their significance, as well as strategies for educating others about NIHL. In the second phase, the questionnaire underwent validation by three audiologists, each with over five years of experience in the field. Their feedback and suggestions were incorporated to refine and finalize the questionnaire, ensuring its reliability and effectiveness in assessing awareness of NIHL.

### **Results & Discussion:**

Descriptive statistics were computed for survey items regarding participant characteristics. Among the 112 participants, 68 (60.7%) identified as female and 44 (39.3%) as male. In terms of educational background, nearly half of the participants, 46 (49.5%), were students, followed by individuals currently in the workforce. When it comes to awareness of noise-induced hearing loss (NIHL), over 66.1% of those who had heard of it reported their knowledge primarily coming from social media, friends, and family, while 15.2% indicated they had never encountered the term NIHL. Among those familiar with NIHL, social media emerged as the predominant source of information, with health professionals cited as the least influential.

Approximately 75% of participants identified loud music and machinery noise as the leading causes of NIHL. Remarkably, nearly 93% reported using earphones, with 70% using them for about one hour daily, while nearly 30% used them for 2 to 3 hours. In terms of exposure to noisy environments, about 70.5% indicated occasional exposure to loud music, whereas 29.5% reported daily exposure to traffic and construction noises. Regarding ear protection, 49.1% of participants were aware of protective devices and mostly used canal caps and very few others used formable foam earplugs, while 50.9% were not. To mitigate noise exposure, approximately 50% of respondents actively avoided noisy situations, 40% covered their ears, and 10% used ear protection devices. Awareness of the noise cancellation feature in earphones was high, with around 79% recognizing its existence, while 21% did not. Of those aware, 60% believed its primary function was to minimize external disturbances, whereas 40% saw it as a means of protecting hearing.

Finally, an overwhelming 97.3% of participants considered it crucial to educate the public about NIHL, with only 2.7% feeling that such education was unnecessary. This strong consensus underscores the importance of raising awareness and implementing educational initiatives on NIHL prevention.

### **Summary & Conclusion:**

This study highlights a significant gap in the awareness of noise-induced hearing loss (NIHL) among adults, particularly regarding preventive measures. There is an urgent need for comprehensive educational programs and public health campaigns aimed at raising awareness and promoting the use of hearing protection. By enhancing knowledge about NIHL and its risks, we can potentially reduce its prevalence and mitigate the associated social and economic impacts. Addressing this issue is essential for fostering a culture of hearing health and safeguarding future generations from the effects of noise exposure.

**A comparative analysis on the validity and clinical efficiency of Turner's Modified Masking Method over Hood's Plateau method in asymmetrical hearing loss: A pilot study**

*Mohammed Rehan Raza, Masud Ahamed Halder & Ketaki Borkar*

**AYJNISHD(D), Mumbai**

**Introduction:**

Pure-tone Audiometry is considered the gold standard behavioral test that requires the active participation of the patient to determine hearing thresholds. Contralateral masking is a critical component in determining actual thresholds of the poorer ear as sound can cross over to the better ear due to significant interaural attenuation (IA), which refers to the loss of sound energy between the ears. Although, to some extent, masking may be avoided, particularly air conduction (AC) masking by using a transducer having larger IA values, however masking may still be needed in many circumstances.

Hood's Plateau method (Hood, 1960) is a standard masking procedure which has been widely used to determine the true thresholds of poorer ear. In plateau method, the initial presentation level of noise will be equal to the AC of better ear with the addition of 10 dB (Studebaker, 1979). Plateau method may require at least 4 masking levels. Despite its wide acceptance, it has certain drawbacks. Hence, there is a need to explore alternate masking methods and evaluate their validity and efficiency of the method as well as monitor the mental fatigue experienced by the patient during the masking procedure. One such method present in the literature is Turner's Modified Masking Method (TMM) as described by R.G. Turner in his two articles "Masking Redux I: An Optimized Masking Method" (2004) and "Masking Redux II: A Recommended Masking Protocol" (2004). Unlike Plateau method TMM's initial presentation level of noise (A1-initial presentation level for AC masking; B1-initial presentation level for BC masking) is 10 dB below the AC of poorer ear which is well below the over-masking region, once the threshold shift is determined, the masking noise is increased equal to the threshold shift and threshold is reestablished (A2), the actual threshold is determined if there is no further shift in threshold (i.e. masker is in the plateau). However, B2 may not be used for BC masking due to the audiometric limit of noise. By only establishing B1 and adding additional 5-10 dB noise (B1+5), masked BC threshold can be obtained.

**Need for Study:**

Determining thresholds accurately and efficiently is vital in audiological evaluation. Hood's plateau method is a well-established, widely accepted, and commonly used masking procedure in clinical audiology. However, it has certain drawbacks, despite its popularity. The main protest against the plateau method is that it is highly time-consuming due to higher number of masking levels, which can result in patient fatigue and anxiety, potentially leading to inaccurate responses and additional follow-ups. This can be particularly challenging in clinics with a high patient load. Hence, there are significant anecdotal evidences that many clinics use their own variations of plateau method to achieve efficiency, however these modifications arrive with their own limitations. One major limitation would probably be inaccurate masked thresholds and/or over-masking risk. Hence, it becomes necessary to explore and conduct research on alternate masking procedures that are simple, efficient, and accurate. One such masking procedure is Turner's Modified Masking Method (TMM) as described by R.G. Turner in his two articles (2004). Currently, this method only exists in literature with no clinical studies comparing the validity of thresholds, time-efficiency, mental fatigue experienced during masking procedure between plateau method and TMM. There is a pressing need for this research to ensure that theoretical findings translate effectively to clinical practice. This pilot study also monitors, informally assesses, and compares the mental fatigue resulting from the both masking procedures.

**Aim & Objectives:**

The study aims at comparing the validity, time efficiency, and patient's experiences of mental fatigue between Turner's modified masking method and Hood's plateau method in patients with asymmetrical hearing loss. It also aims to explore the further need for additional research on alternative masking protocols to enhance efficiency in the clinical settings.

**Method:**

16 adult patients, with asymmetrical hearing loss were selected for the study. These participants had normal hearing sensitivity or mild hearing loss not exceeding 35 dB HL in the better ear, with poorer ear thresholds above 65 dB HL. Specifically, the air-bone gap (ABG) in the better ear needed to be less than 20 dB to prevent a narrow plateau width.

A well-calibrated Type 1 audiometer (IEC, 1979) equipped with TDH-49/50 supra-aural earphones and a Radio-ear B-71 bone conduction vibrator was utilized for each assessment, and the thresholds were verified. After a one-hour rest, Hood's plateau method of masking was



implemented step-by-step, following Yacullo's guidelines (1996, 2004). The duration of the procedure was recorded, and patients were monitored for any signs of fatigue or anxiety throughout the test. Once masked AC and BC thresholds were established, mental fatigue was assessed informally (score designed by the authors itself validated by the experienced Audiologists) by asking the patient to rate their mental fatigue experienced during the test from 1 to 5 score (1-minimal fatigue, 2-a little, 3-moderate, 4-severe, 5-extreme).

After another hour of rest, Turner's modified masking method was conducted according to R.G. Turner's outlined procedure (2004). Given the broad acceptance of plateau method, the masked thresholds from the plateau method are utilized to verify the masked thresholds achieved through TMM. Timing was noted, and mental fatigue was assessed informally.

### **Results & Discussion:**

The validity of air conduction (AC) masking in the Turner's modified masking method was generally within 5 dB, with some frequencies showing a range of 5 to 10 dB. For bone conduction (BC) masking, the validity ranged from 5 to 10 dB, and in certain cases, it extended up to 10 to 15 dB. Hence, the findings suggest that the Turner's method demonstrate a reliable validity in most of the cases.

In plateau method the mean-time obtained to complete the testing procedure in both AC and BC masking is 24.75 minutes and the mean informal mental fatigue score obtained is 3.8 whereas in Turner's method the mean-time obtained to complete the testing procedure is 10.33 minutes and the mean mental fatigue score obtained is 1.6.

The mean-time result suggests that Turner's method takes significantly lesser time (over twice as fast) than the plateau method to complete masking.

The informal mental fatigue score suggests that the patients experienced “moderate” to “severe” mental fatigue during Hood’s plateau method. In contrast, the same patients on whom Turner's modified masking method was performed experienced “minimal fatigue” to “a little” mental fatigue.

Thus, the results of the study reveal that Turner’s modified masking method provides a reliable masked thresholds in asymmetrical hearing loss, and is significantly more time-efficient, leading to considerably lower mental fatigue as compared to Hood's plateau method.

### **Summary & Conclusion:**

Plateau method is a widely accepted masking procedure, and should still be recommended for contralateral masking, especially in those cases where the accuracy of thresholds becomes very

crucial. Yet, the clinicians should not be reluctant to use Turner's modified masking method, particularly in asymmetrical hearing loss to enhance efficiency and minimize mental fatigue. Hybrid approach method may also be explored in some complex situations such as using plateau method for BC masking and Turner's method for AC masking (as the validity of BC threshold in some patients obtained from this study were not within 5 dB with plateau method). Ultimately, further research must be conducted involving patients with diverse levels of hearing loss to gather data and to explore alternate masking protocols that can be applied in clinical settings.

## **Does COVID-19 Influenced Hearing Threshold Permanently? Five Years Longitudinal Outcome Study**

*Riya Raj, Grace Mariam Mathew & Meghavi Sarin*

**Amity University Haryana**

### **Introduction:**

Hearing loss plays an important role in public health sectors. The varying causes includes many factors eg. infections, noise, and ageing (Wagatsuma et al, 2022). Hearing loss were found more prominently after COVID-19 pandemic that occurred in January 2020 in India as it has great impact on various aspects of health, including auditory function. During pandemic time the emerging evidence suggests that the impact of COVID-19 on hearing capabilities over a five-year period has significantly increased. Some studies have indicated that viral infections, including those caused by coronavirus, can affect the auditory system. This includes inflammation, potential damage to the inner ear and the effects of associated conditions such as otitis media. Understanding the specific impacts of COVID-19 on hearing thresholds is critical due to its high incidence of the virus globally .To protect the audio-sensory organ from tissue damage from the immune system, the inner ear is separated from the circulating immune system by the blood-labyrinth barrier, which was previously considered an immune-privileged site (Kato et al 2020). Viral infections have significant impact hair cells, particularly in the inner ear since corona virus can invade hair cells causing cell death and impairing their function. The body's immune response to infection can lead to inflammation, which may damage hair cells and disrupt their ability to detect sound. The severity of hearing loss can vary from mild to permanent hearing loss or balance issues due to irreversible damage to hair cells hence it compromises the auditory and vestibular systems significantly. However, the people responding to hearing health were drastically increased after COVID-19 due to necessary guidelines and social norm followed by people has heightened awareness of health risk Thus leading to increased caution and changes in behavior regarding Aural rehabilitation and early intervention. The hearing loss before and after has found to have significant differences of this study aims to guide public health initiatives, ensuring that responses to future health crises are more effective and better aligned with public attitudes and behaviors. By examine these changes longitudinally, the research can reveal potential long-term impacts on mental health, social cohesion and economic stability, which are critical for planning and resource allocation

**Need for Study:**

The emergence of COVID-19 has promoted extensive research into its various health implications, yet its effects on auditory functions, particularly hearing thresholds, remain underexplored. Understanding the long-term impact of COVID-19 on hearing is crucial for several reasons. There is growing anecdotal evidence and preliminary studies suggesting that COVID-19 may contribute to hearing loss. A systematic long-term assessment is essential to determine the prevalence and severity of this potential complications. Investigating the pathways through which COVID-19 may influence hearing thresholds can elucidate the mechanism involved, including possible viral invasion of auditory structures or neuroinflammatory responses. Hearing impaired can significantly affect communication, social interaction and overall quality of life. Understanding long term changes in hearing thresholds can inform rehabilitation strategies and improve patient outcomes. Identifying the long-term auditory consequences of COVID-19 can guide public health policies and resources, particularly in audiology. As COVID-19 continues to affect population worldwide, a longitudinal study contributes to the broader understanding of its long-term health effects, providing valuable insights for future research and clinical practices.

**Aim & Objectives:**

To investigate the impact of COVID-19 on hearing threshold permanently after five years interval.

**Method:**

A longitudinal observation study assessing hearing thresholds over 5 years in individuals with a history of COVID-19 was conducted.

Participants were recruited through healthcare facilities, advertisements, and community outreach. Interested individuals were screened for eligibility based on the inclusion criteria. The participants underwent a comprehensive audiological evaluation, including pure-tone audiometry to establish baseline hearing thresholds. Additional demographic and health related data were collected via questionnaires. Participants were aged from a minimum of 45 years to a maximum of 85 years. These individuals were confirmed with a history of COVID -19 infection. The study was conducted in accordance with ethical guidelines, ensuring informed consent, confidentiality and the right to withdraw at any time. The method provides a structured approach to investigating the longitudinal effects of COVID-19 on hearing thresholds.

**Results & Discussion:**

Result indicates a remarkable difference in hearing thresholds of both ear in pre- and post-COVID-19. Independent sample t test findings reveals P value 0.00 for left ear and 0.027 for right ear where  $p < 0.05$  for both the ears. The observed differences highlight the potential for auditory perceptual difficulties associated with the virus, whether due to direct viral effects, secondary complications, or treatments taken during the illness. These results lighten up the importance of monitoring hearing function in individuals who have recovered from COVID-19, especially individuals reporting auditory symptoms or receiving treatments that may affect hearing. The findings of this study reveal a significant shift in hearing thresholds among individuals pre- and post-COVID-19, indicating that the virus may have a direct or indirect impact on auditory health. This observation is consistent with emerging literature suggesting that COVID-19 may lead to auditory complications.

Various mechanisms may contribute to these changes, including direct viral invasion of the auditory pathways, inflammatory responses, or the effects of pharmacological treatments administered during the illness. The potential for auditory complications highlights the necessity of ongoing monitoring of hearing function in individuals recovering from COVID-19. Many patients report auditory symptoms, including tinnitus and hearing loss, which warrant further investigation. Understanding the prevalence and nature of these symptoms can aid in early identification and intervention for affected individuals. Moreover, the results emphasize the need for further research into the underlying mechanisms driving these changes. Future studies should aim to clarify whether these auditory effects are transient or long-lasting and identify specific factors such as age, comorbidities, or severity of COVID-19 that may influence auditory outcome. Longitudinal studies could provide insights into the trajectory of auditory health post-infection, facilitating the development of targeted rehabilitation strategies. In conclusion, the implications of our findings are significant for both clinical practice and public health. It is crucial to integrate auditory health assessments into post-COVID-19 care protocols, particularly for patients with reported auditory symptoms or those receiving treatments with known ototoxic effects. By prioritizing research in this area, we can enhance our understanding and management of auditory complications associated with COVID-19, ultimately improving the quality of life for affected individuals.

### **Summary & Conclusion:**

This study highlights the significant impact of COVID-19 on hearing thresholds over a five-year period, underscoring the potential for auditory complications associated with the virus. The observed changes in hearing function warrant ongoing monitoring and assessment in

individuals recovering from COVID-19, particularly those experiencing auditory symptoms. Understanding the mechanisms behind these changes and their long-term implications is essential for developing effective rehabilitation strategies and public health policies. By integrating auditory health evaluations into post-COVID care protocols, we can improve outcomes for affected individuals and enhance overall quality of life. Continued research in this area will be vital for addressing the long-term health consequences of COVID-19 and ensuring that auditory health remains a priority in public health initiatives.

**AP1454**

**Navigating Barriers in Real Ear Measurement (REM) and Electro Acoustic  
Measurement (EAC): Enhancing Hearing Aid Fitting Practices in  
Audiology**

*R.Naveena Neolisha, Subikshaa Senthilkumar & Monisha T.R*

**Holy Cross College, Tiruchirapalli**

**Abstract Not Available**

**AP1455**

**Influence of Cognitive Load and Multisensory Distractions on Acoustic  
Reflex Thresholds in Clinical Environments**

*Priyam Arora , Neha Kumari, Keshav Mishra, Ritika & Vivek Kumar*

**SGT University, Gurugram, Haryana**

**Abstract Not Available**

## **Exploring the Benefits of Yoga on Speech in noise perception and Cognitive Skills in Adults with normal hearing sensitivity**

Sangeeta R, Vishal Kooknoor & Srikar Vijayasathy

### **Aanchal Hearing Care**

#### **Introduction:**

A natural decline in cognitive and auditory processing accompanies aging (Bishop et al., 2010), and significantly impacts the quality of life by impairing speech perception, particularly in noise (Hyams et al., 2018). Yoga, known for enhancing concentration, reducing stress, and improving overall mental agility, may offer a non-invasive approach to mitigating these challenges (Gothe et al., 2017).

#### **Need for Study:**

Yoga may help older adults to focus effectively on speech signals among background noise by potentially improving attention, auditory discrimination, and cognitive flexibility (Kumar et al., 2013). Investigating this relationship in large samples could lead to new, holistic intervention standards to maintain or even enhance communication abilities in the aging population, promoting overall well-being.

#### **Aim & Objectives:**

The present study aimed to examine the effect of yoga practice on speech identification in noise, selective attention, working memory, linguistic abilities, and self-reported hearing handicap in elderly normal hearing participants.

The objectives of the study were:

1. To compare speech identification scores in noise and speech babble between yoga practitioners and non-yoga practitioners among older adults with normal hearing.
2. To compare selective attention abilities between yoga practitioners and non-yoga practitioners using visual and auditory Strop tasks.
3. To compare working memory performance between yoga practitioners and non-yoga practitioners using digit span tests and N-back tasks.
4. To compare linguistic abilities between yoga practitioners and non-yoga practitioners using generative naming tasks.
5. To compare global cognitive function, risk for auditory processing, and self-reported



- hearing handicap between yoga practitioners and non-yoga practitioners, and
6. To identify predictors of speech identification performance in different noise conditions (speech-shaped noise and speech babble) among older adults.

### **Method:**

Sixty participants aged 50-70 years with normal hearing were recruited and equally divided into two groups: 30 yoga practitioners and 30 non-yoga practitioners (NYP). Speech identification scores were assessed using low predictive Kannada sentences (Geetha et al., 2014) mixed with speech-shaped noise (0 dB SNR, -2 dB SNR, -4 dB SNR and -6 dB SNR) and four talker speech babble (-2 dB, 0 dB, and +2 dB SNR) in the diotic mode at comfortable level using headphones in a quiet room. Selective attention was evaluated using visual (color-word conflict) and auditory Stroop tasks (gender-pitch conflict) running on EPrime 3 software. Working memory was assessed through forward and backward digit span tests (Smrithi Shraavan software: Kumar & Sandeep, 2013), and a numeric N-back 2 task (N-Back Evolution android application). Linguistic abilities were measured using categorical naming tasks: semantic and phoneme based (Cognitive Linguistic Quick Test: Helm-Estabrooks, 2001). Additionally, global cognitive measures of Montreal Cognitive Assessment (MoCA, Nasreddine et al., 2005), Screening Checklist for auditory Processing (SCAP-A, Vaidyanath & Yathiraj, 2014), and Hearing Handicap Inventory for the Elderly (HHIE, Thammaiah et al., 2017) were administered.

### **Results & Discussion:**

The Shapiro-Wilks test indicated that most of the variables were not normally distributed ( $p < 0.05$ ) prompting the use of non-parametric statistics. Mann-Whitney U test was done to compare between the groups at all the SNRs. Yoga practitioners demonstrated significantly higher speech identification scores across the SNRs in both speech shaped noise and speech babble conditions compared to non-yoga practitioners with a medium effect size ( $p < 0.05$ ,  $r > 0.4$ ). No significant differences were observed for visual or auditory Stroop interference reaction time measures between groups ( $p > 0.05$ ). In terms of working memory, Yoga practitioners exhibited superior performance in forward digit span, but no significant differences were found in backward digit span or N-back 2 tasks. The findings are in agreement with previous reports of the holistic beneficial effect of Yoga and meditation (Gothe et al., 2017; Kumar et al., 2013). Finally, Yoga practitioners showed significantly better linguistic abilities as measured by generative naming tasks ( $U=208.5$ ,  $p < 0.001$ ). No significant differences were observed

between groups in MoCA, SCAP-A, or HHIE scores ( $p > 0.05$ ). Linear Regression analysis revealed that forward digit span was the sole significant predictor of SIS at -6 dB SNR for speech-shaped noise, explaining 12.7% of the variance, in line with the previous modeling results (Humes, 2021). For speech babble at -2 dB SNR, multiple predictors were identified, including N-back scores, age, pure-tone audiometry, and forward digit span, collectively explaining 37.4% of the variance underlining the more complex nature of informational masking (Schmitt et al., 2022; Souza et al., 2007).

### **Summary & Conclusion:**

The study provides evidence that regular yoga practice may enhance speech perception in noise, auditory working memory, and linguistic abilities in older adults with normal hearing sensitivity. These findings suggest that yoga could be a beneficial intervention for maintaining and improving communication abilities in challenging listening environments among the aging population. Future research should explore the underlying mechanisms of these effects and investigate the potential of yoga-based interventions in audiological rehabilitation programs.

**AP1457**

**Preliminary Study for Normatives using Craniocorpography**

*Kannathal Chidambaram, Arjun Namboothiri, Parthivi Ch, Sam A & Nandana V Mukund*

**Annayya Heath Care, Holy Cross College**

**Abstract Not Available**

**AP1458**

**Impact of Noise on Vocal Intensity in Unilateral Cochlear Implant  
Recipients**

*Pratik Dane, Pratham Tirthani, Vaishnavi Rawat, Shejal Kasera & Nirnay Kumar*

**Sri Aurobindo Institute of Speech and Hearing**

**Abstract Not Available**

## **Exercise and its Potential to Aggravate Symptoms of Patulous Eustachian Tube Dysfunction**

*Ruchi Bhandari & Niharika Dash*

**Amity University, Haryana**

### **Introduction:**

The Eustachian tube performs the critical roles of aeration and drainage for the middle ear cavity. It also protects the middle ear from reflux of sound and material from the nasopharynx. Proper function of this tubular is required for optimal conduction of sound through the middle ear cavity. Eustachian tube dysfunction (ETD) can be divided into two categories: a) the tube cannot open properly or the tube remains inappropriately patent. Patulous Eustachian Tube Dysfunction (PETD) describes the condition when the tubal orifices remain inappropriately patent for variable periods of time outside of the normal brief interval of opening which occurs during deglutition or yawning. The symptoms can be aural fullness, disturbing autophony of their voices and nasal breathing, echoing. The condition may arise spontaneously or occur with exercises, probably from dehydration or decongestion from exercise related hormones. Symptoms may abate when patient lie down, compress their jugular veins and upper respiratory tract infections. Signs of the PETD are excursion of the tympanic membrane (during breathing through ipsilateral nostril while occluding the contralateral nostrils), longitudinal tissue loss which can be seen as concave defect along the superior aspect of the anterolateral wall.

### **Need for Study:**

Exercise is typically associated with numerous health benefits; certain types of physical activity may exacerbate symptoms in individuals with PETD. High-intensity exercises, especially those involving rapid movements or heavy lifting, can lead to significant changes in intra-abdominal and thoracic pressure. These fluctuations may trigger or worsen symptoms of PETD by further destabilizing the pressure regulation in the middle ear. Dehydration can affect the mucosal lining of the Eustachian tube, potentially leading to increased dysfunction. Intense aerobic activities can alter breathing patterns, leading to shallow or rapid breathing. This can affect the equalization of pressure in the ears, worsening symptoms like fullness or discomfort. Certain exercises that involve inverted or horizontal positions (like yoga poses or certain weightlifting techniques) can put additional stress on the Eustachian tube. This positioning may disrupt normal pressure regulation, leading to increased discomfort. Understanding the relationship

between exercise and PETD is crucial for those affected by this condition.

**Aim & Objectives:**

To examine the effect of exercise on the intensity of the symptoms PETD among young adult (aged between 18-40 years).

**Method:**

Individuals (aged between 18-40 years) having complaint of aural fullness, autophony were evaluated for presence of Patulous Eustachian tube dysfunction. Otosopic Examination, Tympanometry, Pure tone Audiometry, Endoscopic evaluation was performed on all the patients. Individuals having temporo-mandibular joint dysfunction, chronic otitis media with effusion, cholesteatoma, cochlear hydrops, fistula of inner ear, superior semicircular canal dehiscence are excluded from the study. They were not under the medications.

A total number of 30 individuals with the diagnosis of PETD were included in the study. They were divided into two groups. Group A includes 15 individuals with PETD who were not doing high impact exercises. Group B includes 15 individuals with PETD who were doing high impact exercises.

Eustachian Tube Dysfunction Questionnaire (ETDQ-7), PTA, tympanometry, Eustachian tube function (ETF) test using Valsalva and Toynbee maneuver were used before and after the 15 days of observation period.

**Results & Discussion:**

Comparative study was used to compare the Eustachian tube function of both the groups. Purposive sampling was used. One way ANOVA test was done to find out the mean, SD of the groups. Post hoc analysis was done to find out the significance between the groups. One way ANOVA test was performed to compare the mean score of ETDQ-7, ETF, Middle ear pressure (From Tympanometry) and PTA. Result revealed that both groups were having mild to moderate conductive hearing loss and 'C' type tympanogram before and after 15 days observation period. But 12 out of 15 individuals of Group A experienced increase level of symptoms while 4 out of 15 individuals of Group B experienced minimal increase level of symptoms which were correlating with the test results as well. The mean score of ETDQ-7 was 20.46 for 22.75 for Group A and Group B respectively (before the observation period) while it was 32.75 and 23.85 for Group A and Group B respectively (after the observation period). In Group A, the mean air pressure change was -10 dapa with valasalva maneuver and -7 dapa with Toynbee maneuver (before the observation dapa) and after the observation period

the mean air pressure change was -3 dapa with valasalva maneuver and -2 dapa with Toynbee maneuver. In Group B , the mean air pressure change was -7 dapa with valasalva maneuver and -5 dapa with Toynbee maneuver (before the observation dapa ) and after the observation period the mean air pressure change was -6 dapa with valasalva maneuver and - 3 dapa with Toynbee maneuver.

One Way ANOVA test revealed  $p < 0.05$ , there is no significant difference in air pressure change (both in Valsalva and Toynbee ) and ETDQ-7 in Group B before and after the observation period In Group A,  $p > 0.05$ , hence there is significant difference air pressure change (both in Valsalva and Toynbee ) and ETDQ-7 score.

### **Summary & Conclusion:**

While exercise offers many health benefits, it's essential for individuals with Patulous Eustachian Tube Dysfunction to approach physical activity with caution. High-impact or intense exercises may exacerbate symptoms, while low-impact activities can provide a safer alternative.

**AP1460**

**Understanding Vestibular Neuritis: Insights into Diagnosis and Treatment**

*Parthivi Ch, Arjun Namboothiri, Gracy M, Sundaresan R & Ashika P*

**Annayya Heath Care, Holy Cross College**

**Abstract Not Available**

## **Academic Performance of Children with Cochlear Implants in Mainstream Schools**

*Rinki Maurya, Geetanjali & Ruchi Bhandari*

**Amity University, Haryana**

### **Introduction:**

Profound deafness in childhood significantly affects the development of auditory speech perception, speech production, and the comprehension and expression of language skills. Failure to develop adequate oral communication can severely impact academic performance and communication development in these children. Language development following cochlear implantation requires targeted therapy emphasizing hearing, oral communication, and education.

Hearing loss, whether congenital or acquired, presents significant challenges to individuals, especially children, as it affects the development of auditory skills, speech perception, and language production. For children with severe to profound hearing impairment, cochlear implants (CIs) have emerged as a transformative treatment option, providing access to sound and enabling spoken language development. While the benefits of CIs in facilitating communication and language development are well-documented, understanding their broader impact particularly on academic performance is essential for ensuring the holistic well-being and societal integration of these children. Studies have consistently demonstrated the positive effects of cochlear implants on various aspects of children's lives, beyond just their hearing abilities. Research by Motesadi et al. (2009) and Langereis and Vermeulen (2015) revealed improved academic achievement among CI recipients, with enhanced performance in subjects like mathematics and language comprehension. These findings underline the pivotal role CIs play in providing children with hearing loss access to spoken language, thereby supporting their academic success.

Parental expectations regarding the outcomes of cochlear implantation also play a crucial role in shaping perceptions of success and satisfaction. Studies by Kumar et al. (2022), Nikolopoulos et al. (2001), Archbold et al. (2005), and Khan and Rajguru (2021) highlight the alignment between parental expectations and post-operative outcomes, stressing the importance of managing expectations and offering evidence-based counseling to parents and caregivers.



Understanding the academic performance of children with cochlear implants in mainstream schools is crucial for developing interventions and support strategies tailored to their needs. Identifying areas of strength and areas needing improvement can help educators, policymakers, and healthcare professionals support the optimal development and integration of children with hearing loss into mainstream education.

While existing literature provides valuable insights into the outcomes of cochlear implants in various cultural and educational contexts, there is a lack of research focusing on the Indian context. Given India's unique cultural and educational landscape, it is vital to explore the academic performance of CI recipients in mainstream schools. This study aims to address this gap by examining the academic performance of children with cochlear implants attending mainstream schools in India.

This study recruited CI recipients from the northern region of India, all of whom attended regular schools. Data on auditory performance, speech and language skills, and academic performance were collected through questionnaires administered to parents and teachers, providing a comprehensive understanding of the recipients' progress and challenges in the Indian educational environment.

#### **Need for Study:**

Children with profound hearing loss face significant challenges in developing auditory skills and spoken language, which can have a considerable impact on their academic performance. While cochlear implants have been effective in improving auditory and language outcomes, research on their impact within the Indian context remains limited. Given the unique cultural and educational dynamics in India, it is essential to understand how CI recipients in mainstream schools perform academically to ensure appropriate support and interventions are provided.

This study addresses a critical gap in the existing research by exploring the academic performance of children with cochlear implants in mainstream Indian schools. Insights gained from this research will guide educators, healthcare professionals, and policymakers in creating effective strategies to enhance educational outcomes and overall well-being for these children. Understanding the academic challenges and successes of CI recipients will enable the development of tailored support systems, ensuring their successful integration into mainstream education.

#### **Aim & Objectives:**

The study aims to examine the academic performance, speech and language development, and

auditory performance of children with cochlear implants (CIs) attending mainstream schools in the northern region of India. The goal is to understand the influence of CIs on their educational outcomes within the Indian cultural and educational context.

Objectives are:

1. To assess the academic performance of children with cochlear implants in mainstream schools in northern India. To evaluate the impact of cochlear implants on speech and language development among CI recipients.
2. To examine the auditory performance of children with cochlear implants, including their ability to perceive and discriminate sounds.

### **Method:**

A total of 30 participants were included in the study, all of whom had used a cochlear implant for at least one year and were enrolled in regular mainstream schools. The participants included unilateral and bilateral implantees, as well as bimodal users. Written consent was obtained from the guardians or teachers of the recipients prior to participation. Detailed demographic information of the participants was collected upon recruitment, and the most recent audiological reports were also acquired.

To evaluate various aspects of the participants' communication and academic abilities, several questionnaires were administered. The Meaningful Auditory Integration Scale (MAIS) assessed the child's use of and confidence with the implant, focusing on their ability to associate meaning with sounds and their confidence in hearing. The Meaningful Use of Speech Scale (MUSS) evaluated the child's control over their voice, their ability to produce language-like sounds, and their communication strategies. The Categories of Auditory Performance (CAP) provided a hierarchical rating of a child's auditory receptive abilities, ranging from basic awareness of environmental sounds to understanding speech in everyday life without lip-reading and the Speech Intelligibility Rating (SIR) measured how intelligible a child's speech is to listeners, offering insight into how comprehensible their spoken language is to both familiar and unfamiliar listeners.

### **Results & Discussion:**

An independent t-test was conducted to explore differences between typically developing children and cochlear implant users across several key variables, including behavioral development, non-standard environmental sounds discrimination, environmental sounds discrimination, and listening skills. Preliminary results indicate significant variations in

behavioral development, with typically developing children potentially demonstrating greater capabilities. The differences in the discrimination of non-standard environmental sounds and overall listening skills were observed, suggesting that cochlear implant users may face challenges in these areas. These findings highlight the importance of understanding auditory processing and development in cochlear implant users.

### **Summary & Conclusion:**

This study examined the academic performance, speech and language development, and auditory capabilities of children with cochlear implants (CIs) attending mainstream schools in northern India. The objectives included assessing the impact of CIs on educational outcomes, identifying communication strengths and challenges, and understanding the implications of CI use within the Indian context. The findings highlight the positive impact of CIs on academic success and overall well-being, showing improvements in auditory perception, speech intelligibility, and language development, which facilitate integration into mainstream education. Early intervention and continuous support are crucial for fostering these skills, enhancing academic performance and social interactions. Notably, children with cochlear implants reported friendships primarily with normal-hearing peers, reflecting successful social integration and highlighting the effectiveness of inclusive education. These results emphasize the need for tailored early intervention programs and ongoing support systems for children with hearing impairments to enhance their auditory and communication skills, thereby improving their academic achievement and overall development in mainstream educational environments.

**AP1462**

**Monoaural auditory fusion test to assess temporal resolution in older adults**

*Shweta Singh, Riyaz Memon & Rucha Vivek*

**Max Superspeciality Healthcare Hospital**

**Abstract Not Available**

**AP1463**

**Effect of Neck circumference on Cervical Vestibular Evoked Myogenic  
potential- A Retrospective Study**

*Abhishek Dora*

**All India Institute of Medical Sciences, Mysore**

**Abstract Not Available**

**Development of Working Memory Performance in Preschool and School-Aged Children with Cochlear Implants Compared to Age-Matched Children with Normal Hearing**

*Rinki Maurya, Priya Mishra & Jitendra Kumar*

**Amity University, Haryana**

**Introduction:**

Working memory is essential for language acquisition and cognitive skill development (Baddeley, 2003). It functions as a type of short-term memory that temporarily holds and manipulates information, particularly for cognitive tasks (Baddeley & Hitch, 2000). This cognitive ability involves the encoding, storage, and retrieval of phonological codes gained through auditory experiences, which are critical for supporting children with cochlear implants (CIs) in their literacy and language development. Understanding their unique learning strategies and specific needs is vital, as hearing impairment can lead to significant learning challenges for children with CIs compared to their hearing peers. These challenges often manifest in areas such as verbal working memory, vocabulary acquisition, and speech intelligibility. Working memory plays a significant role in language acquisition and cognitive advancement (Baddeley, 2003). In a study, children and adolescents were assessed using a testing protocol that required them to repeat sequences of digits and letters both forwards and backwards. An analytical review of the test scores through principal component analysis indicated that the forward and backward spans corresponded to different factors. As a result, the researchers (Roy, 2018) concluded that these spans should be treated separately, as they represent distinct cognitive processes.

**Need for Study:**

Previous research has detailed the development patterns and advancements in receptive, expressive, and social skills among preschool and school-aged children with cochlear implants (CIs). However, the cognitive aspects of their development have not been thoroughly assessed, highlighting the need to investigate the cognitive development patterns in preschoolers and school-aged children with CIs in comparison to their normally hearing peers. It is important to evaluate how the cognitive abilities of these children evolve over time and whether they eventually attain comparable developmental levels to their peers. Additionally, there is a need

to emphasize the significance of early intervention strategies for preschoolers, which can assist educators and clinicians in providing targeted support.

### **Aim & Objectives:**

1. To compare the working memory performance of preschool children who have had cochlear implants (CIs) for two years with that of age-matched children with normal hearing.
2. To compare the working memory performance of school-aged children who have had cochlear implants (CIs) for five years with that of age-matched children with normal hearing.

### **Method:**

The study included a total of 80 participants, consisting of 40 children with cochlear implants (CIs) and 40 children with normal hearing thresholds. The participants were divided into two groups: (a) preschoolers aged 3-5 years and (b) school-aged children aged 5-10 years. The inclusion criteria for the study included having a cochlear implant for 1-3 years, attending two therapy sessions of 45 minutes each, being bimodal users (with a CI in one ear and a hearing aid in the opposite ear), and exhibiting immittance findings of "A" type or "As" type. The control group comprised children with normal hearing sensitivity. Participants were excluded if they had unilateral hearing loss, inadequate language skills, additional disabilities, or anomalies such as middle ear infections, visual impairments, or borderline intellectual disabilities.

Assessments were conducted by experienced audiologists and speech therapists. All participants underwent audiological evaluations, including Auditory Steady-State Response (ASSR) and immittance audiometry. The digit span tests (both forward and backward) were administered to all participants. Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS) version 26.0, and a two-tailed t-test was employed to determine significant differences between the mean scores of the digit span tests among children with CIs and those with normal hearing thresholds.

### **Results & Discussion:**

The study evaluated the working memory performance of preschoolers and school-aged children with cochlear implants (CIs) using the Digit Span test. For the preschool group aged 3-5 years, an independent samples t-test indicated a significant difference in working memory capacity, with children with CIs achieving a mean digit span score of 6.6, which was

significantly lower than their age-matched peers with normal hearing, who had an average score of 10.63 ( $p < 0.05$ ). These findings suggest that preschoolers with CIs exhibit reduced working memory performance compared to their peers, highlighting the necessity for targeted early intervention.

In the school-aged group (5-10 years), the independent samples t-test revealed no significant difference in working memory performance. Children with CIs had a mean digit span score of 8.16, while their normal hearing peers scored 13.66 ( $p > 0.05$ ). Although school-aged children with CIs demonstrated improved performance compared to preschoolers, the absence of statistical significance indicates ongoing challenges in cognitive development. These results underscore the importance of tailored interventions for children with CIs, particularly in their early years to support cognitive growth.

The initial experience of deafness and the limited auditory input from CIs can have a lasting effect on speech, language, and other cognitive development aspects for many children with CIs (Pisoni et al., 2008). Our findings highlight the working memory development patterns in children with CIs and the significant early challenges therapists must address, along with eventual progress by school age. This underscores the importance of early intervention in enhancing cognitive skills and suggests directions for future research to improve educational and developmental outcomes for children with hearing loss. While the study provides valuable insights, further investigation is needed to understand the mechanisms underlying the differences in working memory between preschoolers and school-aged children with and without CIs. Additionally, examining the role of social and educational environments in supporting cognitive development for children with CIs could offer further clarity on how to enhance their quality of life.

### **Summary & Conclusion:**

This study sheds light on the cognitive development of children with cochlear implants (CIs) in comparison to their normal hearing peers, utilizing the digit span test. The results indicate that preschoolers with CIs exhibit significant differences in cognitive skills when compared to their peers with normal hearing. This suggests that preschool children with CIs may encounter challenges in specific cognitive areas, likely due to the shorter duration since implantation.

In contrast, school-aged children with CIs did not demonstrate significant differences in cognitive abilities compared to their normal hearing counterparts. This lack of disparity implies that early intervention and the advantages of auditory experiences during this critical developmental stage may help alleviate cognitive delays. It indicates that school-aged children

with CIs can perform at a level similar to their peers, possibly due to early language exposure and structured support. Future research should focus on the impact of cognitive development in children with CIs.



## **Evaluation of Frequency Specificity of the Meander Stimulus Compared to Tone Burst Stimulus in Auditory Brainstem Response Testing**

*Neelesh Benet, Prakash Kashyap, Prabal Khatri, Grace Mariam Mathew & Ankit Kumar*

**Amity University, Haryana**

### **Introduction:**

Auditory brainstem response (ABR) testing is a critical tool for assessing the auditory pathway from the cochlea to the brainstem. Among various stimuli used in ABR testing, the tone burst stimulus is widely recognized for its frequency specificity (Smith et al., 2020). If a response is frequency specific, it means that latency values will be frequency dependent; specifically, lower frequencies are associated with higher latencies, while higher frequencies yield lower latencies. However, despite its popularity, tone burst ABRs often exhibit suboptimal waveform morphology and replicability (Gorga et al., 1988; Brown et al., 2019), which can hinder the accuracy of the results. In contrast, the meander stimulus has demonstrated improved waveform morphology and replicability in preliminary observations, raising questions about its frequency specificity. This study aims to explore the frequency specificity of the novel meander stimulus compared to the traditional tone burst stimulus, focusing on the latency of wave V responses across different frequencies.

### **Need for Study:**

The need for this research arises from the limitations observed with tone burst stimuli in ABR testing. While tone bursts are established in clinical practice, their waveform morphology may not always provide clear and consistent results. The introduction of the meander stimulus presents an opportunity to enhance the reliability of ABR testing. Understanding the frequency specificity of the meander stimulus could lead to improved diagnostic capabilities in audiology, especially in populations where precise auditory assessments are crucial.

### **Aim & Objectives:**

The primary aim of this study is to evaluate the frequency specificity of the meander stimulus in comparison to the tone burst stimulus during auditory brainstem response testing. The objective is to compare the wave V latency values of the tone burst and meander stimuli at various frequencies (500 Hz, 1000 Hz, 2000 Hz, and 4000 Hz).

## **Method:**

### *Participants*

This study included ten subjects (20 ears) with normal hearing sensitivity, aged 18 to 24 years, recruited from a college setting. All participants provided informed consent prior to participation, ensuring ethical compliance.

### *Procedure*

1. Stimulus Preparation: The auditory brainstem responses were assessed using two different stimuli: tone burst and meander. The duration of the meander stimulus was matched to the total duration of each tone burst stimulus. The following durations for meander stimulus were used:
  - 500 Hz: 10,000 microseconds
  - 1000 Hz: 5000 microseconds
  - 2000 Hz: 2500 microseconds
  - 4000 Hz: 1250 microseconds
2. ABR Testing: Each participant underwent ABR testing for both tone burst and meander stimuli at the specified frequencies (500 Hz, 1000 Hz, 2000 Hz, and 4000 Hz). The responses were recorded using the Neuro-Audio Neurosoft Dual Channel AEP system.

### *Statistical Analysis*

The wave V latency values for both stimuli were compared using independent sample t-tests to determine any significant differences between the two stimulus types across different frequencies. The statistical analysis was performed using SPSS v21 software

## **Results & Discussion:**

At 500 Hz, there was no significant difference obtained for wave V latencies between tone burst ( $M = 13.45$ ,  $SD = 2.75$ ) and meander stimulus ( $M = 14.21$ ,  $SD = 2.25$ ),  $t(38) = -0.956$ ,  $p = 0.345$ . At 1000 Hz, there was no significant difference for wave V latencies between tone burst ( $M = 7.78$ ,  $SD = 1.41$ ) and meander stimulus ( $M = 8.30$ ,  $SD = 2.25$ ),  $t(38) = 1.509$ ,  $p = 0.139$ . At 2000 Hz, there was no significant difference for wave V latencies between tone burst ( $M = 6.81$ ,  $SD = 0.97$ ) and meander stimulus ( $M = 7.19$ ,  $SD = 0.75$ ),  $t(38) = -1.474$ ,  $p = 0.149$ . At 4000 Hz, there was no significant difference for wave V latencies between tone burst ( $M = 6.28$ ,  $SD = 0.81$ ) and meander stimulus ( $M = 6.61$ ,  $SD = 0.58$ ),  $t(38) = -1.474$ ,  $p = 0.171$ . The results of this study demonstrate that there were no significant differences in wave V latencies between the tone burst and meander stimuli across all tested frequencies. These findings align with previous research, indicating that frequency-specific auditory brainstem

response (ABR) wave V latencies are relatively stable across different types of stimuli when matched in duration. Gorga et al. (1988) demonstrated that the tone burst stimulus has been consistently effective for eliciting frequency-specific responses, but issues related to waveform morphology and replicability have persisted. In contrast, the meander stimulus has shown promise in improving waveform clarity and replicability although, as this study highlights, the frequency specificity in terms of wave V latency remains consistent between both stimuli. Despite the lack of significant differences in wave V latencies between the tone burst and meander stimuli, it is important to consider the potential clinical implications of the improved waveform morphology observed with the meander stimulus. Clearer waveforms may enhance the accuracy of ABR interpretations, especially in challenging clinical cases where subtle latency shifts could be easily missed due to poor replicability of responses (Brown et al., 2019). Furthermore, the stability of latency values across frequencies suggests that the meander stimulus maintains frequency-specificity, making it a viable alternative to the traditional tone burst stimulus without compromising diagnostic precision.

The absence of significant differences suggests that the meander stimulus can be considered an alternative to the tone burst stimulus for ABR testing without compromising frequency specificity. This could provide clinicians with a tool that offers better waveform morphology while maintaining the same level of frequency-specific information (Smith et al., 2020). Further studies should investigate the applicability of the meander stimulus in clinical populations to assess its broader utility.

### **Summary & Conclusion:**

This study demonstrated that the novel meander stimulus and the traditional tone burst stimulus elicited comparable wave V latencies across frequencies in auditory brainstem response testing. The lack of significant differences in latency suggests that the meander stimulus can effectively serve as an alternative to tone bursts, potentially offering improved waveform morphology and replicability. Further exploration of this stimulus in diverse populations may enhance our understanding of its clinical applicability in auditory assessments.

**Impact of Listening Fatigue in Adults with Unilateral Sensorineural  
Hearing Loss : A Qualitative Study**

*Saptarshi Neogi, Subhadeep Manna & Rishav Bandyopadhyay*

**AYJNISHD(D), Mumbai**

**Introduction:**

Binaural hearing provides access to cues which are important for more complex listening environments and to localize sound. Localization relies on the ability to detect differences in the level and timings of sounds arriving in the two ears. These binaural benefits derive from the head shadow effect (improving the signal-to-noise ratio), binaural squelch, and binaural summation (redundant auditory input.) According to Bess and Tharpe (1986); Unilateral hearing loss is defined as a condition where an individual has normal hearing sensitivity in one ear and a hearing threshold in other ear is worse than 20dBHL (Hearing level). Individuals with Single sided deafness faces many unique hearing challenges in noisy and complex environments, specifically localizing sound sources, spatial positioning to maximize hearing, and physical outcomes like vertigo. The Vanderbilt Fatigue Scale -Adult (VFS-A) is designed to assess listening-related fatigue in adults 18 years and older.

**Need for Study:**

VFS-A-10 gives us summed up scores ranging from 0-40 depending on severity. Our study is made not only to find out scoring but also to segregate further follow up cases, rather it aims to document individual patient's concerns in a detailed interview method. This study is needed to find out the effective management of listening fatigue which may greatly vary based on occupation, age, individual communication needs in daily life. Since counselling is an important aspect of fatigue treatment, hence qualitative study is a need of the hour.

**Aim & Objectives:**

Is there an impact of auditory fatigue in adults with unilateral hearing loss in physical, cognitive, emotional and social domains? Understanding how coping strategies vary from patients to patients and is there any possible factors that affects coping strategies

**Method:**

*Sample size:* Subjects of two different age groups [group A (20-30) & Group B (40-50)] are

included in the study. 15 adults of each group [N= 30] who are clinically diagnosed with pure tone average (PTA) no worse than 25 dBHL in the better ear and for the other ear > or equal to 70 dBHL. From group A, 7 patients are studying in college, 4 patients are working in office and 3 patients are working in noisy environment. From group B, 3 patients are working in office, 4 patients in noisy situations and 8 patients are home maker.

Inclusion & exclusion criteria: None of them have any middle ear pathology, diabetes, family history of hearing loss, no psychological issues, no ongoing medications taken which may affect hearing and balance.

One to one interview was taken in audiological clinics and statements were noted by the clinicians. 3 open ended questions were asked and verbatim of the patient was recorded. Authors also administered VFS's for adults [VFS-A] (VANDERBILT FATIGUE SCALE) which is designed to assess listening related fatigue in individuals with hearing loss or other communication and hearing difficulties. VFS-A-10 is a 10 items Likert scale that provides a single, unidirectional score reflecting overall listening related fatigue. Interviewer analyzed and the problems considered under four Domains -Physical, social, emotional and cognitive aspects of listening related fatigue. 4 questions are regarding physical domain, 3 questions are regarding social domain, 2 questions are regarding cognitive domain, 1 question is regarding emotional domain. In the Likert scale when "often" or "almost always" responses we get domain wise, we call the patient for additional follow up considering that the patient may be in high-risk category of listening related fatigue.

### **Results & Discussion:**

Analysis has shown that unilateral hearing loss has a significant impact in both age groups across the four domains (physical, emotional, social, and cognitive). Domain-wise analysis has given us the following result.

*Physical:* In Group A in the physical domain, 93.33% of patients needed follow-up. Under group B, in the physical domain, 80% patients are required follow-up. Patients spoke that because of giving extra attention in understanding the speech in noisy places such as market, in overcrowded classroom, group discussion while sitting in crowded restaurant or cafe© creates headache and physical fatigue also.

*Emotional:* In the group A emotional domain, 73.33% require follow-up. In group B emotional domain 73.33% require follow-up. Patients reported emotional issues like frustrations, anxiety, depressions usually caused because of listening related fatigue and unilateral hearing loss

*Social:* In group A the social domain, 80% patients require follow-up. In group B social

domain, 100% require follow-up. Patients reported avoiding social gathering, not going to group trips with friends, avoiding team lunch in fear of missing conversations, jokes, riddles and getting bullied by others.

*Cognitive:* In group A cognitive domain, 100% patients are needed follow up. In group B, cognitive domain 100% require follow-up. Based on the patient's interviews it is clear that because of extra cognitive load while listening monoaurally affects the academics of students and the career of some esteemed profession where the requirements of high listening demand always come in priority. Giving up listening the important lectures, meetings are some important complaints in both age groups.

**Discussion:** Professions such as health care professionals and journalists need to communicate very efficiently as it is an intricate part of their professions, so they are facing more problems to deal with the situation. Students attending colleges and facing these problems prefer to sit in the poor ear side so they can hear from better ear. Students also reported issues in viva when questions are asked from poorer side.

Treatment approaches included little in a way in which the better ear facing the speaker's face and are counselled to use Remote Microphone System. Contralateral Routing of signal Hearing aid does not benefit because background noise can interfere and in 70% of population that we have taken is not economically able to buy the Contralateral routing of signal hearing aid

### **Summary & Conclusion:**

Based on this qualitative study it is evident that majority of adults with Unilateral Hearing Loss irrespective of age group suffers from Listening related fatigue. Audiologists should be trained and skilled enough to determine the non-auditory consequences which are majorly influenced by listening fatigue. Use of coping strategies, remote microphone system, counselling about giving listening breaks is much needed to reduce fatigue. Some patients have high communication demands. Visual cues, coping strategies, more over acceptance of problem, sharing the problem with trusted friends can be beneficial sometimes. ADIP should include CROS hearing aid to make it affordable. Further assessments can be done to determine handicapped level in persons with disabilities by administering Hearing Handicap Adult (HHIA) and Speech Spatial Qualities (SSQ) along with VFS 40 Adult version

## **The vertigo Effect: How Shift Work influence Health in Nursing Professional**

*Priyadharshini N & Swati Solanki*

**Holy Cross College, Tiruchirapalli**

### **Introduction:**

Shift work is common in nursing, requiring adjustment to different schedules and shifts according to ward they work that may be intensive care unit or operation theatre or general ward, which can cause physical and psychological stress to nurses. Long hours, high patient loads, and emotional stress are all detrimental to nurses' health. The transition from night to day shifts may affect their circadian rhythms, causing sleep disturbances, increased fatigue, and stress, all of which are risk factors for health issues such as vertigo.

Vertigo, defined as a false sense of movement, can cause dizziness, balance problems, and nausea, jeopardizing nurses' ability to work safely and effectively. This impairment endangers both nurses and patients because sleep deprivation and anxiety can worsen their vertigo symptoms. The relationship between shift work and vertigo is concerning, as frequent schedule changes make it difficult for nurses to adjust according to them. Consulting with an audiologist could help them in managing vestibular disorders that is caused by irregular shifts and in rotating shifts. Nurses working irregular hours report higher levels of fatigue and stress during their shift hours and at home, which may be a risk factor for the development of vestibular symptoms such as vertigo (Lundberg and Kalliath, 2016). Collaboration between healthcare providers, including audiologists and nurses, is crucial for managing the health effects of shift work and related vestibular disorders (Bourgeois & Gagnon, 2020). Understanding these factors is essential for developing effective interventions and ensuring nurses to be long-term health.

### **Need for Study:**

There is a growing need to know the health consequences of nurses who are in high-stress professions. Shift changes disrupt circadian rhythms, impairing cognitive function and balance, and increasing the risk of vertigo symptoms. This poses significant safety risks for nurses and their patients. Furthermore, understanding the relationship between shift work and vertigo is critical for audiologists, who can diagnose and rehabilitate vestibular disorders.

There is lack of studies that explore how rotating shift work in nurses can contribute to the

development of vertigo. This study is essential to address the gap in research on the impact of rotating shift work on vertigo in nurses and to inform strategies for prevention and management, ensuring both nurse health and patient safety.

### **Aim & Objectives:**

This study aims to investigate the relationship between shift changes of the nurses and the incidence of vertigo in nurses and how change in shift could induce vertigo.

### **Method:**

The study was conducted with 50 nurses aged 30-50 years, using a questionnaire designed to examine how shift patterns and rotating schedules in nursing contribute to vertigo symptoms and their overall effects on health, work performance, and social life. The questionnaire was validated by three experienced audiologists, each with a minimum of three years of practice. Nurses were asked to provide their name, age, gender, years of nursing experience, area of practice (e.g., emergency, ICU, general), type of shifts worked (day, night, rotating), frequency of shift changes (weekly, bimonthly, monthly, or other), average weekly work hours, and typical shift length (8, 10, 12 hours, etc.). Participants were also asked whether they had experienced vertigo (yes/no), the frequency of vertigo episodes (rarely, occasionally, frequently, or always), and to rate the severity of their symptoms. The questionnaire contained 25 questions addressing related symptoms such as dizziness and balance issues, as well as any medical diagnoses linked to vertigo. Participants rated their agreement with various statements about the relationship between shift changes and vertigo on a scale ranging from "never" to "very much," with "never" indicating no vertigo symptoms and "very much" indicating significant vertigo symptoms. The collected data was then analyzed qualitatively.

### **Results & Discussion:**

The results revealed key insights into participants' experiences with vertigo. Regarding family support, 67% of participants reported that their family is very supportive and understanding of their vertigo challenges, while 24% indicated mostly understanding. This aligns with McGrail et al. (2017), who found that patients with strong family and social networks were better able to manage their vertigo symptoms and experienced less anxiety or depression related to their condition. In terms of confidence in social situations, 64% of participants reported rarely feeling less confident than before, while 43% felt mostly confident. Smith et al. (2010) similarly noted that chronic conditions like vertigo can contribute to social anxiety, with the unpredictability of vertigo attacks leading to fear of embarrassment and reduced participation



in social activities over time. When examining the frequency of vertigo after shifts, 60% of participants reported experiencing vertigo mostly after night shifts, with 24% experiencing it very much after these shifts. These findings align with Stevens et al. (2017), who highlighted that healthcare workers, particularly nurses, experience more frequent vestibular symptoms after night shifts due to the cumulative effects of stress, long hours, and irregular sleep patterns associated with shift work. Overall, the study emphasizes the role of social support, confidence in social situations, and the impact of night shifts on vertigo symptoms, providing valuable insights into managing vertigo among nurses in high-stress environments.

### **Summary & Conclusion:**

In conclusion, this study underscores the significant relationship between shift work and the incidence of vertigo among nurses. Findings highlight that irregular shift patterns, particularly night shifts, contribute to increased vertigo symptoms, negatively impacting nurses' health, confidence, and social interactions. The strong support from family plays a crucial role in managing these challenges, emphasizing the importance of social networks. Audiologists play a crucial role in managing vertigo among nurses affected by shift work. Their expertise is essential for diagnosing vestibular disorders and understanding the relationship between irregular shift patterns and vertigo symptoms. By collaborating with nurses, audiologists can develop individualized rehabilitation plans that address the specific vestibular challenges faced by these healthcare professionals. They can also provide education on coping strategies and management techniques to mitigate the impact of vertigo on nurses' work performance and overall well-being. This collaborative approach enhances the effectiveness of interventions aimed at improving nurses' health and ensuring patient safety.

**AP1468**

**Audio Vestibular Profile on CANVAS Syndrome**

*Arjun Namboothiri, Parthivi Ch, Sam A, Nandana V Mukund & Kannathal Chidambaram*

**Annayya Heath Care, Holy Cross College**

**Abstract Not Available**

## **Incidence of CI Non-usage among children implanted under ADIP Scheme**

*Shaikh Saima Mohammad Ali & Moazam Shahmiri*

**AYJNISHD(D), Mumbai**

### **Introduction:**

Cochlear implants have proven to be an established mode of intervention for children who do not benefit with hearing aids. A cochlear implant is a device that provides direct electrical stimulation to the auditory nerve by bypassing the damaged outer hair cells and further transmitting it to the brain for auditory processing. Ling [1] stated that cochlear implant makes the auditory information accessible to the children which are not provided by the conventional hearing aids. The cochlear implant provides the recipients with access to sounds, enabling them to develop their listening skills in the immediate period following the implantation.

Variables that affect/influence the outcome of CI in children are the duration and etiology of deafness, age at onset of deafness, pre-implant amplification history, communication mode, age at implantation, type of speech processor used and duration of implant usage. In very young children, language acquisition is easier as we can make appropriate use of the critical and sensitive periods, and hence there's a need for early implantation. In older pre-lingual deaf people, the response to implantation may not be optimal owing to the loss of neural plasticity and hence extensive pre-op counseling regarding realistic expectations is vital.

So, a lot of the caregivers pertaining to these factors, choose the way out and stop using the implants which causes a significant lag not only in the child's development but also makes the previous benefit provided by the schemes meaningless.

### **Need for Study:**

As understood, there's a lag between pre-implant and post-implant follow-up of CI implantees. It's very important to understand the challenges faced by caregivers post-implant and come up with strategies to tackle them.

India, been a developing nation, has majority of its population belonging to the low socio-economic background/strata finds it extremely difficult to bear the cost of ever increasing technological advancements.

### **Aim & Objectives:**

1. To determine the incidence rate of CI non-users and factors contributing to non-use.

2. To determine the percentage of full-time CI users
3. To determine the percentage of CI non-users
4. To understand the factors contributing to CI non use

**Method:**

Total number of children implanted under ADIP scheme in the time period between 2014 -2017 calculated. Out of which full time users and non-users were determined. Also, the number of beneficiaries who were not reachable was determined.

A follow-up call was done with the caregivers of non-users to understand their cause of non-use. Percentage-wise results were obtained for overall beneficiaries and also region specific.

**Results & Discussion:**

Based on the telephonic conversations, it was understood that about 44.98% of the implantees are regular users, 15% of the implantees are non-users and about 36.73% of the implantees couldn't be contacted.

Region-wise distribution reveals,

1. There were 42.85% regular users, 25.97% non-users and no update from 31.16% from North-east regions.
2. There were 55.17% regular users, 14.94% non-users, and 29.88% with no update.
3. In the South region, 41% were regular users, 16% non-users, and no update from 43%.
4. From West Central, there were 49.29% regular users, 17.73% non-users, and 32.97% showed no update.
5. The East region had 23.61% regular users, 19.44% non-users and 56.94% with no update.

From the above-represented figures, it can be noted that a significant percentage of the beneficiaries couldn't be reached due to factors like invalid phone number, no number available, etc. On the other hand, it is also noteworthy that a substantial number of beneficiaries were regular users. Coming to the non-users or drop-outs, they contributed to about 14-25% of the total beneficiaries. Further, various factors were understood that contributed to CI non-use.

These factors can be noted as,

1. Device related issues
2. Financial issues
3. Interpersonal or Family issues
4. No or Limited benefits from CI

## 5. Others

The success of a CI program is directly dependent on its ability to provide adequate consideration to patient expectations and balance it out with the outcomes. A multidisciplinary approach is required which involves the ENT surgeon, Audiologist, Speech therapist, Auditory verbal therapist, and pediatrician. The motivation level of the patient and their family member is also very important.

Factors influencing the overall outcomes are the transparency of the program, the expertise of the team, patient motivation, family support, and rehabilitation facilities. Difficulties in the Indian perspective have been due to their prohibitive costs, the introduction of radical technology in a developing country, and its impact on deaf culture. The dilemma of balancing advanced technology with the requirements of a developing country remains.

In the Indian subcontinent, there is the unique problem of distances (often patients have to travel thousands of kilometers to reach their implant clinics) and a plethora of languages, which poses a unique set of challenges to our auditory verbal therapists. Also, the post-operative costs such as the cost of mapping appointments, therapy costs as well as device repair and maintenance costs add to the already over-burdened caregivers. To overcome the lag posed by such factors various schemes have been implemented by the government, like ADIP schemes as well as various state-run schemes. ADIP scheme since its implementation has tried to uplift the deaf children born in the BPL population by covering the costs of surgery, mapping as well as therapy. However, these benefits and perks are available for a limited period. Beyond this tenure, the cost of these services needs to be borne by the caregivers which discourages them from following up. Also, the repair and upgradation costs are Inevitable which poses another headache to the caregiver.

As understood, getting a CI surgery done is a long commitment and not a one-time decision. Post-surgery care and maintenance of the device as well as regular therapy and guidance is very important to ensure consistent and appropriate use of the device. Problems unique to the Indian context are the distances between CI facilities and the multi-lingual society forming a language barrier for rehabilitation. These can be overcome by having a well-equipped audiology unit and mapping centers, speech therapy centers with access to good schools for hearing challenged, which believe in an auditory-verbal approach along with a long-term commitment to the implantees. A lingual map needs to be charted for uniform rehabilitation of various implantees in their mother tongue with the child's parents themselves forming an active and integral part of auditory verbal habilitation.

Also, significant weightage should be given to Pre-CI counseling wherein realistic expectations regarding the outcomes should be explained to the parents. Also, such counselling sessions should involve a focus on post-surgery device maintenance and repair costs which need to be borne by the parents as the scheme's benefit is limited to the initial period following CI surgery. This can help to ensure that parents make well-informed choices for safeguarding their child's future and be well-prepared for unforeseen financial adversity. In addition to this, funding schemes for repair and upgrade post-long-term usage of CI can curtail the incidence of drop-outs or non-use.

**Summary & Conclusion:**

A proper plan to overcome or curb these factors to keep the drop-out to a minimum is essential. Also, a long-term follow-up plan to ensure regular correspondence with the beneficiaries is important.

**Evaluating the Impact of Practical Training on Self-Efficacy, Confidence, and Competence in Noise Measurement, Infant Screening, and Endoscopy in BASLP students**

*Rithu Rajan, Krupa Milan Thanki & Srividya Balaji Asuri*

**Dr. S.R.Chandrashekar Institute of speech and hearing**

**Introduction:**

Self-efficacy refers to an individual's belief in their ability to successfully perform a specific task or achieve a certain goal (Bandura, 1997).

In the medical and healthcare fields, self-efficacy is closely linked to confidence and competence, influencing how practitioners approach clinical tasks and problem-solving scenarios. Confidence is particularly crucial in tasks such as noise measurement, infant screening, and endoscopy, where precision and correct technique are critical for patient safety and diagnostic accuracy.

**Need for Study:**

In the healthcare field, competence and confidence are critical for ensuring accurate diagnosis, effective treatment, and patient safety. Procedures such as noise measurement, infant screening, and endoscopy require not only theoretical knowledge but also practical skill and confidence to perform correctly. Despite the importance of these tasks, there is a limited body of research focused on how practical training impacts self-efficacy, confidence, and objective competence in healthcare professionals and students.

**Aim & Objectives:**

To evaluate the effect of practical training on self-efficacy and confidence in BASLP students in noise measurement, infant screening, and endoscopic procedures

**Method:**

*Participants*

The study included 100 participants, BASLP students (n = 60) and practicing professionals (n = 40) from diverse medical specialties. These participants were enrolled in practical training sessions covering noise measurement, infant screening, and endoscopy techniques.

*Procedure*

The study was divided into three phases: pre-training, training, and post-training. During the pre-training phase, participants were assessed using a self-efficacy scale specifically designed for the tasks under investigation. The tasks included:

- A. Noise Measurement: Assessing environmental sound levels using SLM
- B. Infant Screening: Performing neonatal auditory and developmental screenings.
- C. Endoscopy: Operating an endoscope for diagnostic purposes.

Each participant completed a self-efficacy scale and a confidence questionnaire before undergoing practical training. The practical training sessions included both theoretical instruction and hands-on experience, supervised by experienced professionals.

After the training, participants were reassessed using the same self-efficacy scale and confidence questionnaire. Additionally, participants' actual competence was measured through performance-based evaluations conducted by trainers, who used a standardized scoring rubric to assess proficiency in each task.

#### *Instruments*

1. *Self-Efficacy Scale*: A modified version of the General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995) was adapted for the specific clinical tasks in the study. The scale consisted of 10 items, rated on a Likert scale ranging from 1 (not at all confident) to 7 (completely confident).
2. *Confidence and Competence Questionnaire*: A task-specific questionnaire designed to measure confidence in carrying out noise measurement, infant screening, and endoscopy procedures. This included both subjective self-reports and objective skill assessment components.
3. *Performance-Based Evaluation*: A structured rubric that scored participant's practical competence in each of the three areas, focusing on precision, accuracy, and adherence to protocols.

#### *Statistical Analysis*

Paired t-tests were used to analyze the differences between pre-training and post-training self-efficacy and confidence scores. A correlation analysis was also performed to evaluate the relationship between self-reported confidence and objective performance outcomes.

### **Results & Discussion:**

#### *Pre-Training Self-Efficacy and Confidence*

Initial self-efficacy and confidence scores were moderate across all three domains. Students reported lower baseline self-efficacy (mean = 4.2, SD = 0.8) which is consistent with their



lesser exposure to practical clinical settings.

#### *Post-Training Self-Efficacy and Confidence*

Post-training evaluations showed a significant increase in self-efficacy and confidence scores. The mean self-efficacy score across participants increased to 5.8 (SD = 0.7,  $p < 0.001$ ), while confidence in performing specific tasks also improved markedly, with the largest gains seen in infant screening.

1. Noise Measurement: Confidence increased from a mean of 3.9 to 5.5 ( $p < 0.001$ ).

2. Infant Screening: Confidence rose from 3.8 to 6.2 ( $p < 0.001$ ).

3. Endoscopy: Confidence improved from 4.0 to 5.7 ( $p < 0.001$ ). Competence Outcomes

The performance-based evaluations corroborated the self-reported confidence gains, with participants demonstrating marked improvement in their practical abilities. Post-training performance scores were significantly higher than pre-training scores in all areas, with the most notable improvements in infant screening.

#### *Correlation between Confidence and Competence*

A strong positive correlation ( $r = 0.78$ ,  $p < 0.001$ ) was observed between post-training self-reported confidence and objective performance outcomes, indicating that participant's perceived self-efficacy was a reliable predictor of their actual competence.

### **Discussion**

The results of this study strongly support the hypothesis that practical training enhances both self-efficacy and confidence, leading to improved competence in performing clinical tasks. These findings align with previous research indicating that hands-on experience is essential for developing professional proficiency, particularly in tasks that require technical skill and clinical judgment (Zimmerman & Kitsantas, 2005).

The increase in confidence was particularly pronounced in the areas of infant screening and noise measurement, suggesting that participants felt more secure in tasks where precise measurements and patient interaction are critical. Endoscopy, a more complex task, also showed significant gains, though participants expressed greater apprehension before training. This study reinforces the role of self-efficacy in professional development and highlights the need for structured practical training as part of healthcare education and continuous professional development.

### **Summary & Conclusion:**

The findings from this study suggest that practical training has a profound impact on self-

efficacy, confidence, and competence in healthcare professionals and students. By enhancing these critical attributes, practical training prepares participants for real-world clinical tasks, improving patient outcomes and the quality of healthcare services. Further research could explore the long-term effects of such training and investigate whether repeated practice leads to sustained improvements in self-efficacy and competence over time.

## **Perspectives and Demands for Remote Mapping of Cochlear Implants from Users in India**

*Pawar Janhavi Bhaskar & Moazam Shahmiri*

**Ali Yavar Jung National Institute of Speech and Hearing Disabilities (D)**

### **Introduction:**

Tele-audiology has emerged as a transformative approach in the field of audiology, particularly in addressing barriers to access in remote or underserved regions. This innovative model leverages telecommunication technology to provide audiological services, including assessment, fitting, and follow-up care for hearing devices like cochlear implants. As Jones and Smith (2022) noted, Teleaudiology not only increases accessibility but also enhances the continuity of care for patients who may face challenges in attending in-person appointments. This is particularly significant in countries like India, where geographic and socioeconomic factors can limit access to specialized services.

Furthermore, studies indicate that patients receiving care through Teleaudiology report high levels of satisfaction and effective communication with their audiologists (Patel et al., 2023). However, challenges remain, including concerns over the technology's reliability and the need for audiologists to develop proficiency in remote service delivery (Kumar & Singh, 2021). Overall, Teleaudiology represents a promising advancement in audiological care, paving the way for more inclusive and effective service delivery models.

Cochlear implants (CIs) have transformed the auditory experience for individuals with severe to profound hearing loss, particularly in countries like India, where access to auditory rehabilitation remains limited (Smith et al., 2022). Traditional mapping of CIs, a critical component in ensuring optimal performance, typically requires in-person visits to audiologists. However, the COVID-19 pandemic and advances in telehealth have underscored the potential for remote mapping. This study explores the perspectives and demands for remote mapping of CIs among users in India, aiming to identify barriers, facilitators, and overall acceptance of this innovative approach.

### **Need for Study:**

India has a significant population of individuals with hearing impairments, with many reliant on cochlear implants for effective communication (Kumar & Sharma, 2021). The geographical and socio-economic diversity often hinders consistent access to auditory care, emphasizing the

need for flexible solutions. Remote mapping can potentially alleviate travel burdens, reduce costs, and enhance accessibility, particularly for rural users. Understanding user perspectives is crucial for developing effective remote services tailored to Indian contexts.

### **Aim & Objectives:**

The primary aim of this study is to explore the perspectives and demands for remote mapping of cochlear implants among users in India.

1. To evaluate the level of interest among cochlear implant users in adopting remote mapping services.
2. To identify the barriers and facilitators perceived by users regarding the implementation of remote mapping.
3. To gather insights into users' experiences with traditional in-person mapping and their expectations for remote services.
4. To provide recommendations for the effective integration of remote mapping services, focusing on user needs and technological support.

### **Method:**

This qualitative study employed a mixed-methods approach, utilizing surveys and in-depth interviews. A questionnaire was distributed online to a diverse cohort of CI users across various regions of India. The survey collected demographic data, experiences with existing mapping processes, and interest in remote mapping. Additionally, semi-structured interviews were conducted with 30 participants to gain deeper insights into their attitudes and concerns regarding remote mapping. Data were analyzed thematically to identify key trends and patterns.

### **Results & Discussion:**

The survey results indicated that 78% of participants expressed interest in remote mapping, citing convenience and reduced travel as primary motivations. However, 62% of respondents raised concerns about the reliability of remote mapping, particularly regarding technology issues and the perceived quality of care. In-depth interviews revealed that many users were apprehensive about the lack of personal interaction with audiologists, emphasizing the importance of a supportive relationship in the mapping process. Participants also highlighted the need for robust training for audiologists in remote technologies.

The findings suggest a promising demand for remote mapping of cochlear implants among users in India, yet significant barriers remain. While convenience and accessibility are critical benefits, concerns regarding the efficacy of remote interactions and technological challenges

need to be addressed. The study highlights the importance of developing comprehensive training programs for audiologists to improve remote service delivery. Moreover, the emotional and relational aspects of care in CI mapping cannot be overlooked; integrating telehealth services with personalized support could enhance user confidence and satisfaction.

### **Summary & Conclusion:**

This study provides valuable insights into the perspectives of cochlear implant users in India regarding remote mapping. While there is a clear interest in adopting this approach, users express valid concerns about its implementation and effectiveness. The study underscores the need for targeted interventions to build trust in remote technologies, ensure user-friendly systems, and foster ongoing communication between audiologists and users.

Remote mapping of cochlear implants presents a viable solution to overcome barriers to access in India, particularly for those in remote areas. However, for successful implementation, it is essential to address user concerns regarding technology and care quality. Future research should focus on developing a structured framework for remote mapping services, incorporating user feedback to refine the approach.

Ultimately, this could lead to improved auditory outcomes and a more inclusive model of care for cochlear implant users in India.

## Exploring User Attitudes and Perspectives on Hearing Aid Fine-Tuning Apps

*Shaikh Saima, Mohammad Ali & Moazam Shahmiri*

**AYJNISHD(D), Mumbai**

### **Introduction:**

The introduction of hearing aid fine-tuning apps has revolutionized the hearing rehabilitation process, providing users with unprecedented control and convenience. These apps enable users to adjust their hearing aids settings, access remote support, and monitor their hearing health. Despite their potential, the success of fine-tuning apps hinges on user acceptance, satisfaction, and effective integration into clinical practice.

### **Need for Study:**

Hearing loss affects over 430 million people worldwide, with hearing aids being a primary rehabilitation tool. However, traditional hearing aid fitting processes can be time-consuming, requiring multiple clinic visits. The advent of hearing aid fine-tuning apps has transformed this process, offering users greater control, convenience, and personalized adjustments.

### **Aim & Objectives:**

This study aims to investigate the attitudes and perspectives of hearing aid users towards fine-tuning apps, examining factors influencing adoption, usage, and perceived benefits. Specifically, this research explores:

1. User experiences and satisfaction with fine-tuning apps.
2. Perceived benefits and limitations of these apps.
3. Factors influencing adoption and continued use.
4. Suggestions for improvement and future development.

### **Method:**

Participants:

- 200 hearing aid users (ages 18-85) participated in an online survey.
- 30 participants took part in semi-structured interviews.

Survey Instrument:

- A 35-item questionnaire assessed:

#### Demographics.

- Hearing aid experience.
- App usage and satisfaction.
- Perceived benefits and limitations.
- Technical issues and support.

#### Interview Protocol:

- Open-ended questions explored:
- Initial experiences and expectations.

#### Facilitators and barriers to use.

- Desired features and improvements.
- Impact on hearing aid satisfaction and overall well-being.

#### Data Analysis:

- Descriptive statistics and inferential statistics (t-tests, ANOVA) analyzed survey data.
- Thematic analysis (Braun & Clarke, 2006) identified patterns in interview transcripts.

### **Results & Discussion:**

#### Survey Findings:

- 85% of participants reported improved hearing aid satisfaction with fine-tuning apps.

#### Users valued:

- Convenience (90%).
- Personalized adjustments (88%).
- Reduced clinic visits (82%).

#### Primary concerns included:

- Technical issues (25%).
- Audibility limitations (20%).
- Lack of professional guidance (18%).

#### Interview Themes:

1. Empowerment and Autonomy: Users appreciated the control and flexibility offered by fine-tuning apps.
2. Convenience and Accessibility: Participants valued the ability to adjust settings anywhere, anytime.
3. Professional Support: Users desired more guidance from audiologists and hearing specialists.

4. Technical Concerns: Participants reported frustration with connectivity issues and battery drain.

5. Future Development: Suggestions included:

Enhanced user interface.

Increased automation.

Integrated tele-audiology support.

### **Summary & Conclusion:**

This study demonstrates that hearing aid fine-tuning apps receive positive attitudes from users, enhancing their hearing experience.

However, addressing technical concerns, improving user-centric design, and integrating professional support will further optimize the benefits of these innovative tools.

Implications:

Findings inform:

1. Audiologists and hearing specialists: optimizing fine-tuning app integration into clinical practice.
2. App developers: improving user interface, automation, and technical stability.
3. Healthcare providers: enhancing support and guidance for hearing aid users.
4. Researchers: investigating long-term effects and outcomes of fine-tuning app usage.

Limitations:

- Self-reported data.
- Selection bias (participants may be more tech-savvy).
- Future studies should explore diverse populations and longitudinal outcomes.

Future Research Directions:

1. Investigating the impact of fine-tuning apps on hearing outcomes and cognitive function.
2. Developing personalized app-based rehabilitation programs.
3. Examining the role of fine-tuning apps in pediatric hearing rehabilitation.



## **Peripheral and Central Auditory Processing Abilities in Children with Mild Protein Energy Malnutrition**

Saransh Jain, Chandni Jain & Varsha Chowdri

**All India Institute of Speech and Hearing, Mysuru**

### **Introduction:**

Protein Energy Malnutrition (PEM), characterized by inadequate intake or utilization of essential nutrients, poses a significant threat to global public health, especially in underdeveloped countries(1). Insufficient intake of protein, iron, choline, and long-chain polyunsaturated fatty acids can disrupt crucial processes in neuronal development, including arborization, myelination, and synaptic connectivity(2). This disruption affects nerve conduction and weakens the structural and functional integrity of the developing brain, potentially leading to developmental delays, sensory-perceptual impairment, and compromised cognitive abilities. Additionally, malnutrition weakens the immune system, increasing vulnerability to recurrent infections(3).

### **Need for Study:**

The issue of PEM is a persistent public health concern that affects millions of children worldwide, particularly in low- and middle-income countries. While extensive research has been conducted on the physical and cognitive repercussions of malnutrition, there remains a significant gap in understanding how these nutritional deficits impact auditory processing abilities in children(4). Given the integral role of auditory processing in language acquisition, social interaction, and overall cognitive development, it is crucial to explore this relationship further.

Research has established that malnutrition can adversely affect neural development, leading to compromised cognitive and sensory functions. However, most studies focus on severe forms of malnutrition, leaving a substantial gap regarding the effects of mild PEM, which can still lead to critical developmental challenges. Any deficiencies in nutritional intake during the developmental stage could have far-reaching implications for a child's auditory processing capabilities. By examining the effects of mild PEM on both peripheral and central auditory processing, this study aims to fill a critical void in the existing literature. Understanding how even mild nutritional deficiencies affect auditory processing can help identify children at risk for language and learning disabilities, enabling early intervention strategies that can mitigate

long-term negative outcomes.

**Aim & Objectives:**

**Aim:** To assess peripheral and central auditory processing abilities in children with mild protein energy malnutrition.

**Objectives:** To compare the peripheral hearing sensitivity and central auditory processing abilities in children with and without PEM. To assess the relationship between auditory abilities and BMI in children.

**Method:**

108 children (7-14yrs) were divided into a control group (Group 1;n=53) and a PEM group (Group 2;n=55). The PEM was diagnosed based on the children's BMI, which is a reliable marker of PEM. Based on the criteria provided by the WHO in 2007 for children, BMI values between -1to-2S.D. of the age-matched mean were classified as mild PEM. A pediatrician tested the children, and those with endocrine and genetic causes for short stature, congenital malformations, or other reported physiological, psychological, behavioral, or related issues were excluded from the study. A complete haemogram was done, and children with iron deficiency anemia were also excluded.

**Peripheral hearing testing:** Pure tone audiometry at 250-8000Hz in air-conduction and 250-4000Hz in bone-conduction, speech audiometry including speech recognition threshold (SRT) and speech identification scores (SIS), and immittance evaluation including tympanometry and reflexometry, for both right and left ears was conducted. All these evaluations were done as per standard procedures.

**Central Auditory Processing Assessment:**

The Binaural Fusion Test (BFT)(5) assessed binaural interaction abilities. Stimuli comprised 25 words, where each word was filtered, and the low-band component was presented to one ear and the high-band component to the other with '0' ms lag. The participants had to repeat the words heard in both ears verbally, and each correct repetition was given a score of one.

Speech Perception in Noise Test in Kannada (SPIN-K)(6) assessed auditory closure abilities. Stimuli were two lists of phonemically balanced words (25 words/list) presented with eight speakers- Kannada babble. The testing was done at 0 dB SNR (signal-to-noise ratio), such that one list was presented to each ear. Children had to listen and repeat the words heard. A correctly identified word was assigned a score of one.

Dichotic Consonant-Vowel (DCV) assessed binaural integration abilities. Stimuli contained

six standardized pairs of the syllables /pa/, /ta/, /ka/, /ba/, /da/, and /ga/. They were presented in pairs with one syllable to the right ear and the other to the left ear with 0ms lag. Children were asked to repeat the stimuli they heard in both ears. The single correct right, single correct left, and double correct scores were measured.

Temporal processing was measured using the Gap Detection Test (GDT). Stimuli was a Gaussian noise. A three-alternative forced-choice task was used, with two standard stimuli (noise with no gap) and one variable stimulus (noise containing a gap/silence at its temporal center). The listener had to detect the gap in one of the three noise bursts. The minimum gap duration detected in a 3down-1up staircase procedure with six reversals was taken as the threshold.

Auditory working memory was assessed using forward and backward digit span (FDS and BDS, respectively). Digits from one to nine, excluding seven, were presented randomly with increasing difficulty. Children had to repeat the digits in the same (FDS) or reverse order (BDS). Thresholds were tracked using a three-down-one-up staircase procedure with six reversals.

### **Results & Discussion:**

**Peripheral Hearing Sensitivity:** All children had PTA $\leq$ 15 dB HL, indicating normal hearing, and SRT agreed with PTA. SIS scores were $\geq$ 90% for children of both groups, for right and left ears. The between-group difference was significant only for BC thresholds at 250 (U=1131.5, p=.026), 500 (U=1155, p=.042), and 4000 (U=1106, p=.021), as well as SRT scores in the left ear (U=1158, p=.043). All children had bilateral type 'A' tympanogram. Acoustic reflexes were at $\leq$ 100 dB at all test frequencies in both ears. As thresholds of both ears were within normal limits, with no middle ear pathologies, it was interpreted that PEM did not affect peripheral hearing sensitivity in children.

**Central Auditory Processing Abilities:** The PEM group performed significantly poorer than the control group in BFT (U=1084, p=.021) and SPIN-R (U=1056, p=.013), SPIN-L (U=1070.5, p=.017), FDS (U=1124.5, p=.040), and BDS (U=1115.5, p=.034). However, DCV and GDT scores were not significantly different between groups. It appears that PEM affects children's binaural interaction, auditory closure, and auditory working memory abilities but not binaural integration and temporal processing, based on the scores of the selected tests.

**Relationship between Body Mass Index and Auditory Abilities:** The relationship between BMI and auditory abilities was obtained using the Spearman correlation. It was noted that BFT, SPIN-R, SPIN-L, FDS, and BDS significantly correlated with BMI. However, the correlation

coefficient ( $r$ ) for all comparisons was  $\leq .35$ , indicating a poor correlation, which may not be markedly above the chance factor. The adjusted  $R^2$  values were also very poor, indicating poor relationship between BMI and auditory processing abilities.

The findings provide valuable insights into the potential impact of mild malnutrition on central auditory processing, highlighting areas of concern and avenues for future research. By focusing on mild PEM, we aimed to control for the effects of complications arising from more severe malnutrition, emphasizing the significance of mild PEM, which is often overlooked in children but can adversely affect auditory-cognitive processing. In developing countries, government health policies primarily target severe forms of PEM, often neglecting milder forms.

### **Summary & Conclusion:**

We stress on auditory-cognitive effects of mild PEM, advocating for increased attention to these less severe yet impactful conditions.

Comprehensive health policies are needed to address all degrees of PEM, ensuring that children with mild PEM receive appropriate care and intervention. Our findings advocate formulating and revising policy measures to address mild PEM and its effects on auditory-cognitive development, thereby improving overall child health outcomes in affected regions.

**Development of a Questionnaire in English and Kannada to Evaluate the Awareness about Hearing Disability, Central Government Schemes and Policies for Individuals with Hearing Impairment**

*Rajanikant Bharti, Mamatha N M*

**All India Institute of Speech and Hearing, Mysore**

**Introduction:**

Hearing loss can affect individuals at any age, impacting communication, work performance, quality of life, and overall well-being. Early rehabilitation is essential for enhancing individuals' function, activity, and participation. India, being a developing country where almost 70% of the people are living in rural areas have minimum to almost nil facilities to rehabilitate persons with hearing impairment. To improve the quality of life, the Govt. of India has introduced several schemes and provided different facilities. However, it is unclear whether people are aware of such schemes and facilities or not. However, there is limited information available on the awareness among hearing impaired population or their caregivers regarding central government schemes available for hearing-impaired individuals in India, and also an extensive and systematically developed questionnaire that can be administered to obtain the information.

**Need for Study:**

According to WHO, 2018 estimates, the global burden of deafness, particularly in India, is largely preventable and avoidable. "Around 50% of hearing loss in Southeast Asia is preventable, and an additional 30% is treatable or manageable with aids and devices." However, factors such as poor physical, educational, and economic conditions can hinder effective interventions for individuals with hearing impairment, leading to inadequate care for this health issue. Moreover, socioeconomic status significantly affects access to essential services, including healthcare services (Herrmann & Guadagno, 1997).

A wide range of schemes, acts, and laws have been introduced by the Ministry of Social Justice & Empowerment, Government of India, including ADIP, NPPCD, RBSK etc. Several organizations, such as ALIMCO, AIISH, AYJNISHD, and CRCs, also provide resources aimed at supporting the inclusion of individuals with hearing impairments. One notable example is the ADIP scheme, which has been in operation for over forty years. This scheme offers various

assistive devices to individuals with hearing loss and provides financial support of approximately six to seven lakhs for cochlear implant surgeries (ADIP Scheme, 2022).

There is currently limited research on the awareness among persons with hearing impairments and their caregivers and also evaluation of different facilities offered under various central government schemes. This highlights the need for increased efforts to raise awareness about these rehabilitation programs for individuals with hearing impairments. Hence, the authors' perspective suggests that there is a need to assess accessibility and evaluate the impact of the central government schemes on persons with hearing impairments and/or their family/caregivers.

### **Aim & Objectives:**

The present study aimed to develop a questionnaire in English and Kannada also to evaluate the current level of awareness amongst individuals with hearing impairment and/or their families/caregivers about hearing loss, disabilities-related issues, about various central government schemes and programs available for hearing impaired individuals.

### **Method:**

The study utilized the questionnaire method and exploratory research to achieve the objectives. First a questionnaire was developed using several previously published questionnaires and standard web-based resources such as the AIISH repository, Books, Google Scholar, PubMed, Scopus, and central and state government websites to collect information about various central government schemes, policies, etc. This, in turn helped us to create a comprehensive list of questions both in English and in Kannada addressing various issues related to hearing loss, disabilities, and government schemes available for the hearing-impaired population. Additionally, it was validated by 7 experienced audiologists for content validation and any further modification required. The questionnaire was revised based on the feedback and suggestions received from 7 audiologists to enhance its comprehensiveness and contextual relevance.

The finalized English version of the questionnaire was also translated and developed into the Kannada language. The questionnaire was translated using the widely acknowledged American Association of Orthopedic Surgeons (AAOS) (Beaton et al., 2000) guidelines, which include a forward-backward translation process. Further, the final validated questionnaire was administered to the participants considered for the study. The investigator administered the questionnaire through one to one interview sessions directly to individuals. It was administered

to parents or caregivers in cases of children and adults (with severe to profound hearing loss) who were unable to respond independently. The developed questionnaire was administered to 100 participants (80 Kannada versions, 20 English versions). All the statistical analyses were carried out using SPSS software (Version 26).

### **Results & Discussion:**

Two questionnaires one in English and one in Kannada (translated) were developed having 3 sections. Section I about demographic details, Section II cover the domain 1 having 11 questions related to hearing loss and disabilities and Section III covers domain 2 having 24 questions related to Central Govt. Schemes and Programs. The questionnaire has a total of 35 close ended questions under domain 1 and domain 2 regarding awareness. A Shapiro-Wilk test showed non-normal distribution ( $p < 0.05$ ) for most variables, so non-parametric analyses were used.

The results revealed significant gaps in awareness, with many participants unaware of the available schemes and disability eligibility criteria and process to avail the benefits of schemes. Section II showed higher awareness (39.64%) than Section III (17.63%), though most respondents in both sections were unaware and partial awareness. Between the gender, area of living (Rural vs Urban) and also across three different socioeconomic status groups showed no significant difference in awareness about hearing disability (Domain I) and available central government schemes (Domain II). However, significant differences were observed between the age groups (underage groups showed better awareness) across education levels and occupational groups. This increased awareness among child participants can be attributed to their caregivers completing the questionnaire on their behalf. Additionally, individuals with congenital hearing loss, those with implantable hearing devices, and those in the disability certification group demonstrated greater awareness, likely due to their utilization of government benefits.

Many eligible individuals with hearing impairments in India fail to access government benefits like disability certification, health insurance, and social security due to a lack of awareness and complicated application processes. Limited support, insufficient guidance, and ineffective outreach, particularly in rural areas, further hinder access. Simplifying procedures and expanding awareness campaigns are crucial, with a need for more large-scale studies across India.

**Summary & Conclusion:**

The strength of the developed questionnaire is that information was collected from several questionnaires, web-based resources, and framed questions were verified and modified by 7 audiologists. The participants from the underage group demonstrated better awareness, likely because caregivers or parents completed the questionnaires for underage participants. From the above results it can be concluded that the questionnaire developed as per the standard procedure followed by several other authors. The questionnaire is an extensive questionnaire focusing on several important issues that need to be addressed. The outcome of the assessment of awareness shows that participants, education, socioeconomic status, and severity of the hearing-impaired population are more likely to be aware of all the parameters that are included in the questionnaire.

The present study suggests lack of awareness of central government schemes and policies for individuals with hearing impairment. Hence, it highlights for further need of efficient awareness building programs across India.



**AP1476**

**Development of a Questionnaire in Kannada to Assess the Knowledge and Attitude of Individuals with Hearing Loss and Their Significant Others Toward Aural Rehabilitation**

*Joyline Rodrigues, Mohan Kumar Kalaiah & Usha Shastri*

**Kasturba Medical College, Managalore.**

**Abstract Not Available**

**AP1477**

**Translation, Validation and Reliability of the questionnaire titled “Quality of Life-rating for Dizziness- a self-reporting questionnaire”, in Hindi language.**

*Shubhangi Anand & Rajesh Ranjan*

**Manipal Academy of Higher Education**

**Abstract Not Available**

## Masseter-Vestibular Evoked Myogenic Potentials in patients with Benign Paroxysmal Positional Vertigo

*Sanjeev M.R.*

**Sri Ramachandra Institute of Higher Education and Research**

### **Introduction:**

Benign paroxysmal positional vertigo (BPPV) is one of the most frequent causes of vertigo encountered in ENT and general practitioner clinics in India and worldwide. Masseter Vestibular Evoked Myogenic Potential (mVEMP), a newer form of VEMP, is gaining interest as a potential tool for evaluating saccular function as well as brainstem involvement in neurodegenerative conditions. However, there is dearth of literature examining the effect of BPPV on the mVEMP response.

### **Need for Study:**

mVEMP as a test procedure is easily tolerated by patients as they only have to clench their teeth to activate the masseter muscle in contrast to the cVEMP procedure which necessitates laborious neck muscle contraction by turning or lifting head from supine position. Thus, mVEMP could be a viable alternative to cVEMP in assessing saccular function in subjects who have difficulty contracting and maintaining tension in the neck muscles due to aging or pathologic conditions such as cervical spondylosis.

### **Aim & Objectives:**

**Aim:** The aim of the present study was to investigate the effect of BPPV on the response parameters of Masseter Vestibular Evoked Myogenic Potential (mVEMP)

### **Objectives:**

To document mVEMP response parameters (absolute latencies, amplitude and inter-aural asymmetry ratio) obtained in patients with BPPV. To compare mVEMP response parameters obtained in patients with BPPV with that of the normal population (Vignesh et al., 2021).

### **Method:**

mVEMP recordings were obtained from 20 BPPV patients with no history of any other vestibular, cognitive, middle ear or oromandibular disorders, in the age range of 20 to 60 years. All mVEMP response parameters including absolute latency (p11, n21), rectified amplitude

(p11-n21), and interaural amplitude asymmetry ratio (IAAR) were tabulated. The response parameters obtained from BPPV ears were compared with unaffected ears and also with normative data.

**Results & Discussion:**

Results revealed a significant reduction in the p11 - n21 rectified amplitude in affected ears of BPPV patients in comparison to unaffected ears as well as normative data. None of the other response parameters showed statistically significant difference in comparison with unaffected ears and/or normative data.

**Summary & Conclusion:**

Despite the limitation of small sample size, the study demonstrated the viability of using mVEMP in assessing saccular function in BPPV patients. However, amplitude reduction in the affected ear was the only alteration observed.

**Digital Device Exposure and Its Association with Language, Cognition,  
Reading and Risk of Auditory Processing Disorder in Primary School  
Children**

*Srikar Vijayasathy, Saransh Jain, Sanjana S & Asha Yathiraj*

**All India Institute of Speech and Hearing**

**Introduction:**

The use of digital audio-visual devices in the last decade has increased exponentially among individuals in all walks of life. The increase in the use of audio-visual devices such as television, computers, and smartphones is not restricted to adults but is also seen in children. This has been noted to have a negative influence as it affects peer interaction as well as interaction with adults, thus affecting incidental learning, auditory processing, and language development (Madigan et al., 2019; Muthuri et al., 2014; Verkasa et al., 2021).

**Need for Study:**

It is well established that there is a critical (Lenneberg, 1967) or sensitive period (Ebbin, 1974) during which language development takes place optimally. The importance of meaningful exposure to speech and language during this period has been stressed by several researchers. Over the years, the use of audio-visual devices in children has increased, especially during the Covid lockdown period, where children were forced to use such devices. There is a possibility that increased screen time may negatively affect the development of speech, language, cognition, reading skills, and auditory processing abilities. While it is known that frequent use of audio-visual devices in children has a negative impact on specific aspects of development such as social interaction, its impact on multiple aspects such as auditory processing, language, cognition, and reading is sparse. Hence, there is a need to study the influence of audio-visual device exposure and its association with these variables. It is especially important to study these in primary school children in whom developmental changes are ongoing rapidly.

**Aim & Objectives:**

Broadly, the objectives include-

1. The study aimed to investigate the association between audio-visual device exposure and language, cognition, reading abilities, as well as risk of auditory processing disorder in primary school-children.

2. The study also evaluated the effect of parental supervision during audio-visual device exposure on language, cognition, auditory processing, and reading scores in primary school children.

**Method:**

The study was done using an Ex-post facto research design, with cross-sectional convenient sampling.

**Participants:** The study consisted of 100 students, aged 6 to 7 years, studying in first and second-grade private schools located in urban areas. The parents reported that the children had no history of hearing, speech-language, or associated problems. The children had no academic difficulties, as reported by the class-teacher. The IQ of the children was found to be normal, when measured using the Raven's progressive matrices. Only children from families with mid to high socio-economic status were selected. The participants were also categorized based on whether parental supervision was present during smartphone exposure (n = 78) or absent (n = 22). They were categorized as having parental supervision only if the parent/s interacted with the child regarding the content of the audio-visual material while the child was engaged with the device.

**Procedure:** Exposure to audio-visual digital devices during the last six months was measured using the Digital-screen exposure questionnaire (Kaur et al., 2021). Along with it, a general case history consisting of demographic details, socio-economic status, information regarding associated problems, and usage of audio-visual devices by the children and parents was obtained. The Extended receptive-expressive emergent language skills test (Bzoch and League, 2010) was utilized to screen for language problems. Cognition was evaluated using two tests, one to assess visual attention (Colour cancellation test, Kapur, 1974), and the other to assess intelligence quotient (Raven's progressive matrices). Reading and vocabulary were assessed using subsections of the Early reading skills test (Rae & Potter, 1973). Risk for auditory processing disorder was assessed using the Screening checklist for central auditory processing (SCAP) (Yathiraj & Mascarenhas, 2003) and the Screening test for auditory processing (STAP) (Yathiraj & Maggu, 2012). For all the tests, including the screening tests, the scores obtained were noted.

**Analyses:** The data were subjected to descriptive and inferential statistical analyses using SPSS (Version 21). The data were normally distributed on the Shapiro-Wilk test of normality ( $p > 0.05$ ) when taken as a whole, but not when they were sub-grouped based on the presence or absence of parental supervision.

## Results & Discussion:

The average television exposure per day ranged from ½ to 5 hours, with a mean of 1.5 hours per day. Similarly, smartphone exposure ranged from ½ to 4 hours per day, with an average of 1.22 hours per day. Unsupervised television exposure and smartphone use were seen in 15% (n = 15), and 22% (n = 22) of the children respectively. Supervised constructive use of smartphones for learning was seen only in 35% (n = 35) of the cases. The rest of them used smartphones for other purposes that included watching videos, songs, and gaming. This distribution was not significantly influenced by the socio-economic status of the family.

Television exposure duration was significantly higher than smartphone exposure, based on a paired samples t-test [ $t(99) = 2.38, p = 0.022$ ]. Pearson product-moment correlation indicated that the duration of exposure to television and smartphone were not correlated, suggesting that some children had more television exposure and others had greater smartphone exposure. The effects of the two types of audio-visual device exposures were thus analyzed separately. No significant associations were found between device exposure and language, cognition or reading scores. However, mild, but statistically significant effects of device exposure were found between the scores of the subsections of STAP with both kinds of device exposures. Greater television exposure was associated with a reduction in auditory memory scores ( $r = -0.35, p = 0.006$ ). Linear regression revealed that every 1-hour increase in television exposure resulted in a reduction of half a point in auditory memory score [ $F(1,98) = 7.98, p = 0.006, \text{adjusted } r^2 = 0.66$ ]. Similarly, lower SPIN scores were associated with higher smartphone exposure ( $r = -0.25, p = 0.014$ ), and the regression model suggested a similar effect as that of the previous model [ $F(1,98) = 6.24, p = 0.014, \text{adjusted } r^2 = 0.6$ ]. Interestingly, increased usage of gadgets for entertainment purposes was associated with later sleep times ( $r = 0.23, p = 0.02$ ), which in turn, was associated with poorer auditory discrimination scores ( $r = 0.21, p = 0.03$ ). The effect of the presence/absence of parental supervision on device use was analyzed using non-parametric statistics. Mann-Whitney U tests indicated that Raven's progressive matrices scores ( $U = 382, p < 0.001$ ) as well as reading scores ( $U = 568, p = 0.017$ ) were significantly lesser in children with unsupervised device exposure. None of the other parameters (language, visual attention, IQ, reading & auditory processing) were significantly different with and without parental supervision ( $p > 0.05$ ). The negative influence of passive device exposure on language development in young children has been replicated in the literature (Veraksa et al., 2021; Karani et al. 2022), highlighting the deleterious effects of greater device exposure on the well-being of children.

**Summary & Conclusion:**

The study indicated that a screen time of ~ 1.5 hours per day has a negative impact on auditory memory, as well as speech-in-noise performance. Further, lower cognitive performance and reading abilities were detected in children exposed to unsupervised digital content compared to those whose audio-visual device use was supervised. A much larger study, using more diagnostic tests, is indicated to confirm these preliminary findings.

**AP1481**

**Tympanometric Parameters in Normal Middle Ears: Findings in the Nepali  
Population at a Tertiary Care Hospital**

*Isha Wosti & Anil Kumar Adhikary*

**Green Pastures Hospital and Rehabilitation Centre**

**Abstract Not Available**



## **Behavioral Challenges and Parental Stress in Children with Cochlear Implants: A Psychosocial Study**

*Md. Noorain Alam, Sanjay Kumar, N Banumathy & Dharam Veer*

**PGIMER Chandigarh**

### **Introduction:**

Behavior problems negatively impact children's developmental, social, and educational development (Masten et al., 2005). Children with hearing impairments are at a heightened risk of developing behavioral issues compared to their peers with normal hearing due to communication challenges and emotional difficulties. Cochlear implants (CIs) have revolutionized hearing rehabilitation for children, improving their ability to perceive sound and communicate. However, despite the auditory benefits of CIs, many children continue to face challenges in behavioral and emotional domains. Parental stress is also a significant factor, as raising a child with a CI often involves navigating complex medical, social, and educational environments. Understanding the relationship between behavioral problems in CI children, parental stress, and cochlear implant outcomes is crucial for developing effective interventions.

### **Need for Study:**

Although there is a wealth of research on the auditory and speech outcomes of children with CIs, less attention has been given to their emotional and behavioral development. Moreover, few studies have examined the impact of parental stress on the behavioral issues faced by CI children. Given the unique challenges faced by this population, it is essential to explore the psychosocial aspects of CI use, including how family dynamics and parental well-being influence child behavior. Investigating the potential links between CI outcomes, parental stress, and abnormal behaviors in children can help inform more holistic interventions that address both the child's and family's needs.

### **Aim & Objectives:**

The primary aim of this study was to investigate the prevalence of abnormal behaviors in children with cochlear implants and explore the potential associations between these behaviors, parental stress, and CI-related outcomes.

The specific objectives of this study were:

1. To assess the behavioral issues in CI children using the Children's Behavior Checklist

(CBCL).

2. To evaluate the levels of parental stress using the Parental Stress Scale.
3. To explore correlations between behavioral problems, parental stress, and CI outcome measures such as auditory perception, speech intelligibility, and expressive ability.

### **Method:**

This cross-sectional study involved 11 children with cochlear implants, aged  $8.95 \pm 2.39$  years, with a hearing age of at least three years.

Children with developmental or intellectual disabilities were excluded to ensure that behavioral issues could be directly attributed to CI use rather than other confounding factors.

Behavioral problems were assessed using the Children's Behavior Checklist (CBCL), which measures various emotional and behavioral domains such as anxiety, social problems, thought problems, and externalizing behaviors. Parental stress was evaluated using the Parental Stress Scale, which quantifies stress levels related to parenting, particularly in parents of children with disabilities.

The outcomes related to cochlear implant usage were evaluated using standardized measures, including:

1. The Categories of Auditory Perception (CAP) to assess auditory perception.
2. The Speech Intelligibility Rating Scale (SIR) to evaluate speech clarity.
3. Expressive abilities were measured to determine the children's ability to communicate effectively.

The CBCL scores of CI children were compared with normative data from typical children to identify any significant differences.

### **Results & Discussion:**

The study revealed that children with cochlear implants exhibited significantly higher levels of abnormal behaviors compared to typical children, particularly in the areas of anxiety (18%), social problems (27%), thought problems (9%), attention problems (36%), and externalizing problems (54%). These findings are consistent with previous research, which has reported elevated rates of behavioral issues among CI children due to the challenges they face in social integration and emotional regulation (Stevenson et al., 2010; Hoffman et al., 2013). Such problems can stem from difficulties in communication and frustration with their auditory experiences, leading to maladaptive behaviors.

A Mann-Whitney U test confirmed that CI children had significantly higher CBCL scores

compared to norms for typical children ( $U = 20, p = 0.008$ ). This finding is supported by work from Punch & Hyde (2010), who found that CI children are more likely to experience behavioral challenges as a result of limited auditory input during critical periods of social-emotional development.

Parental stress levels in this study ranged from 23 to 55 on the Parental Stress Scale, with higher stress levels significantly correlated with five behavioral domains on the CBCL, including anxiety, withdrawal, social problems, thought problems, and externalizing behaviors. Previous research has similarly highlighted the link between high parental stress and negative behavioral outcomes in CI children (Quittner et al., 2010). This suggests that higher parental stress may contribute to or exacerbate behavioral issues in CI children.

Parenting stress in this context may arise from managing complex medical regimens, dealing with communication challenges, or navigating educational and social difficulties for the child (Pipp-Siegel et al., 2002).

Interestingly, the children's expressive abilities showed a significant negative correlation with all CBCL domains except withdrawal and attention problems ( $p < 0.05$ ), indicating that children who could communicate better exhibited fewer behavioral problems. Studies by Moeller (2000) and Niparko et al. (2010) have demonstrated that better language development and expressive communication skills can serve as protective factors against behavioral difficulties, as they reduce frustration and help children engage more effectively in social interactions.

However, no significant correlations were found between CBCL scores and auditory perception (CAP) or speech intelligibility (SIR), suggesting that while auditory and speech outcomes are important, they may not directly influence behavioral issues as much as expressive abilities. This finding is in line with research by Fellingner et al. (2009), which suggested that social and emotional adjustment in CI children is more closely tied to their ability to communicate effectively than to their auditory performance alone.

These results are consistent with previous studies, which have also noted higher rates of behavioral problems in CI children, particularly in social interaction and emotional regulation (Knoors & Marschark, 2014). The correlation between parental stress and child behavior highlights the need for family-centered interventions that address both the child's and parents' well-being (Quittner et al., 2010). Such interventions might include stress management for parents and targeted therapies to enhance the child's expressive communication skills.

**Summary & Conclusion:**

This study demonstrates that children with cochlear implants are at a heightened risk of behavioral issues, particularly in the areas of anxiety, social interaction, and externalizing behaviors. Parental stress was found to be significantly correlated with these behavioral problems, underscoring the importance of considering family dynamics in managing CI children's psychosocial needs. Furthermore, the study highlights the protective role of expressive communication in mitigating behavioral problems, suggesting that interventions aimed at improving language abilities could benefit both the child's behavior and family well-being.

The findings of this study call for further research to explore the mechanisms underlying behavioral problems in CI children and the role of parental stress. There is a clear need for comprehensive interventions that support both children and their families, addressing not only auditory and speech outcomes but also emotional, behavioral, and parental well-being. This approach could significantly improve the overall quality of life for children with cochlear implants and their families.

## Evaluating Cochlear Implant Outcomes Using the ICF Model

*Md. Noorain Alam, Sanjay Kumar, N Banumathy & Dharam Veer*

**PGIMER Chandigarh**

### **Introduction:**

Hearing loss is a major global public health issue, affecting millions of people and having a profound impact on quality of life. The World Health Organization (WHO) estimates that approximately 1.56 billion individuals, accounting for nearly 20% of the global population, experience some form of hearing loss (WHO, 2021). Furthermore, the Global Burden of Disease study (2019) identified hearing loss as the third most common cause of disability, emphasizing its prevalence and its implications for individuals' daily lives.

In countries like India, access to hearing care services remains limited, which exacerbates the impact of untreated hearing loss. The absence of adequate rehabilitation programs or timely intervention can result in severe functional impairments, limiting individuals' ability to communicate and participate in daily activities. Among those with severe hearing loss, cochlear implants (CIs) represent a vital intervention. While cochlear implants significantly enhance sensory functions, they require a comprehensive rehabilitation process to fully reintegrate users into society.

Cochlear implant rehabilitation is multidimensional, involving not only device fittings but also speech therapy, psychological support, and individualized care. Traditional measures, such as pure tone audiometry or speech tests, fall short of evaluating the full extent of improvements in CI users' quality of life and functional outcomes. Hence, there is a need for a more patient-centered, multidisciplinary approach to cochlear implant rehabilitation, ensuring that users' unique needs and goals are addressed.

### **Need for Study:**

Despite advancements in cochlear implantation, there remains a lack of standardized protocols for evaluating CI outcomes. This gap complicates the assessment of success and hinders collaboration between medical professionals involved in the rehabilitation process. Standard outcome measures often focus on auditory performance but fail to capture the broader aspects of CI users' quality of life, such as their social participation, work functioning, and communication challenges in various environments.

The absence of a consistent evaluation framework, especially in countries like India where the

burden of untreated hearing loss is high, underscores the need for more comprehensive rehabilitation strategies. The International Classification of Functioning, Disability, and Health (ICF) model, developed by WHO, offers a biopsychosocial framework that could help fill this gap. The ICF model not only assesses sensory restoration but also considers the impact of hearing loss on daily functioning, social interactions, and environmental factors.

### **Aim & Objectives:**

This study aims to evaluate the outcomes of cochlear implants in adults using a multidisciplinary, patient-centered approach that incorporates standardized questionnaires and the ICF framework. The study seeks to assess not only sensory restoration but also the broader aspects of quality of life, social participation, and work functioning.

The specific objectives are:

1. To assess work-related functioning among CI users using the Work Rehabilitation Questionnaire (WORQ).
2. To evaluate auditory satisfaction using the Hearing Implant Sound Quality Index 19 (HISQUI19) and the Audio Processor Satisfaction Questionnaire (APSQ).
3. To measure hearing and communication difficulties in everyday environments using the Abbreviated Profile of Hearing Aid Benefit (APHAB) and the Speech, Spatial, and Qualities of Hearing Questionnaire with 12 items (SSQ12).
4. To explore the relationship between auditory satisfaction and hearing difficulties using correlation analysis.

### **Method:**

A combination of standardized questionnaires was used to evaluate outcomes:

1. Work Rehabilitation Questionnaire (WORQ): This tool measures work-related functioning, focusing on the ability to perform tasks and responsibilities despite hearing challenges.
2. Hearing Implant Sound Quality Index 19 (HISQUI19): This questionnaire evaluates satisfaction with the sound quality of the cochlear implant.
3. Audio Processor Satisfaction Questionnaire (APSQ): This tool assesses satisfaction with the CI device itself, including comfort and performance.
4. Abbreviated Profile of Hearing Aid Benefit (APHAB): This standardized questionnaire measures hearing and communication difficulties in various everyday environments.
5. Speech, Spatial, and Qualities of Hearing Questionnaire with 12 items (SSQ12): This

tool assesses speech comprehension, particularly in challenging auditory environments such as noisy settings or fast-paced conversations.

The questionnaires were translated into Hindi using the forward and backward translation method. Modifications were made to ensure the questions were culturally appropriate for the Indian context, while maintaining the original meaning. A pilot test was conducted with five post lingual adults with cochlear implants to ensure face validity. The questionnaires were administered on 12 post lingual deaf adults using CI (7 males) with an average age of 39.3 years (SD = 12.73), and a mean hearing age of 4.16 years (SD = 3.68) post-cochlear implant.

### **Results & Discussion:**

The study found the following results:

1. WORQ Score: The average WORQ score was 29.5 (SD = 12.68), indicating a moderate level of work-related functioning. While CI users were able to perform certain tasks and responsibilities, they experienced some challenges in their work environments due to their hearing loss.
2. HISQUI19 Score: The mean HISQUI score was 73.66 (SD = 19.96), reflecting a moderate level of satisfaction with the hearing implant. While this score is above average, it indicates that CI users still face challenges and dissatisfaction in certain areas of sound quality.
3. APHAB Score: The average APHAB score was 85.33 (SD = 14.69), suggesting a significant level of difficulty in hearing and communication in various everyday situations.
4. SSQ12 Score: The mean SSQ12 score was 68.16 (SD = 11.07), indicating that participants experienced significant challenges in understanding speech, particularly in noisy environments or when speakers spoke quickly or softly.
4. Correlation Analysis: Spearman's correlation analysis revealed a significantly negative correlation between HISQUI and APHAB scores ( $r = -0.886$ ,  $p = 0.000$ ), indicating that as hearing difficulties increased, satisfaction with the hearing implant decreased.

The study's results highlight the multifaceted challenges faced by cochlear implant users, especially in the Indian context where access to auditory rehabilitation is limited. The moderate satisfaction reported by participants suggests that while cochlear implants significantly improve auditory function, they do not fully resolve all challenges. CI users still face considerable difficulties in communication, particularly in noisy environments (Plyler, Bahng, & von Hapsburg, 2008) or during fast-paced conversations (Ji, Galvin, Xu, & Fu, 2013). This reflects the importance of environmental factors in auditory rehabilitation. This

underscores the need for comprehensive rehabilitation strategies that extend beyond the initial implant and focus on long-term support for users in various auditory environments.

The negative correlation between HISQUI and APHAB scores indicates that as auditory challenges increase, satisfaction with the hearing implant decreases, echoing findings by Finke et al. (2015), who also observed that auditory satisfaction can be influenced by communication difficulties. This finding emphasizes the importance of post-implant support, which can address communication barriers. The ICF model, proposed by the WHO (2001), provides a holistic approach to evaluating these broader aspects of auditory rehabilitation. By accounting for environmental and social factors, the ICF framework helps clinicians assess not only auditory performance but also the quality of life for CI users (Lorens, 2020; Andries et al., 2024).

Incorporating this patient-centered, multidisciplinary approach can significantly improve cochlear implant outcomes, especially in resource-constrained settings. Studies such as Lorens et al. (2020) advocate for the need to adopt a common framework like the ICF to ensure a consistent assessment of CI outcomes. By providing a comprehensive evaluation, the ICF model enables more effective collaboration between audiologists, speech therapists, and psychologists, ultimately enhancing the quality of rehabilitation for cochlear implant users.

### **Summary & Conclusion:**

This study investigated cochlear implant outcomes in adults using a multidisciplinary approach. The findings highlight the challenges faced by CI users, even after implantation. While satisfaction was moderate, participants reported significant difficulties in communication, especially in noisy environments. The ICF framework offers a valuable tool for addressing these broader challenges and improving rehabilitation outcomes. Future research should focus on developing more tailored rehabilitation strategies to enhance the quality of life for CI users.



## **Teleaudiology: A New Frontier for Cochlear Implant Mapping in India” Perspectives from Audiologists**

*Pawar Janhavi Bhaskar, Shaikh Saima Mohammad Ali, Manisha Rathore & Gauri Telang*

**Ali Yavar Jung National Institute of Speech and Hearing Disabilities (Divyangjan)**

### **Introduction:**

Telemedicine, which is the transmission of health-related services and information via telecommunication technology, is acknowledged as a legitimate and practical approach for providing healthcare to underserved and rural populations (C. O. Alenoghen, 2023 ). Through a remote telemedicine link, services that might not be available in a remote place can be delivered securely. Through telemedicine, people with hearing loss who may otherwise be isolated due to financial or geographic constraints may be able to receive treatment from audiologists or other hearing specialists who work in remote areas(H. K. Slager, 2019). In addition to diagnostic testing and patient education, the provision of hearing healthcare in remote places encompasses the fitting and upkeep of cochlear implants and hearing aids, which is a rapidly developing and promising field of telemedicine.

In India, approximately 1 in 1000 babies is with hearing loss, leading to around 40 hearing impaired children born daily. The primary treatments available are hearing aids and cochlear implants (CI). While hearing aids are affordable, they face stigma and maintenance issues, and public awareness about their benefits is quite low. The government is working to improve awareness through the National Program for Prevention and Control of Deafness (NPPCD) to provide free hearing aids. For those who can't use hearing aids, cochlear implant surgery remains the only option. Larger cities are typically home to cochlear implant centers. Post CI the appointment involves programming adjustments, performance monitoring, expectations & communication strategy counseling, also introduction and demonstration of supplementary equipment like wearing options and ALDs. Some recipients who come from rural areas may find these visits burdensome.

### **Need for Study:**

Following cochlear implant surgery, patients should undergo regular evaluations, which typically include mapping, adjusting the settings for each implant electrode to optimize hearing and comfort and testing outcomes. In India, factors such as poor awareness and inadequate referral networks contribute to high fallout rates. Additionally, the demanding aural

rehabilitation process can impose significant personal burdens on patients, including missed work and travel expenses. To address these challenges and improve access to care in remote areas, telehealth has been proposed.

Despite advancements in telehealth and remote patient management, there is limited research on the awareness and acceptance of remote mapping among audiologists in India. With the rising number of cochlear implant recipients, it is essential to assess the current landscape of CI mapping practices. Understanding the barriers and facilitators that audiologists encounter regarding remote mapping can inform policy decisions, training programs, and the development of tailored telehealth services for the Indian population. This study aims to bridge the knowledge gap and contribute to the discourse on enhancing CI services in India.

### **Aim & Objectives:**

To evaluate the awareness and attitudes of audiologists towards remote mapping in cochlear implantation across India

1. To assess the level of awareness among audiologists regarding remote mapping technologies and practices.
2. To evaluate the attitudes of audiologists towards the effectiveness and feasibility of remote mapping.
3. To identify perceived barriers and facilitators to the implementation of remote mapping in clinical practice.

### **Method:**

A survey was employed across India to gather data from audiologists practicing in various settings (hospitals, private clinics, and rehabilitation centers) who have dealt with remote mapping in any means participated in the study. An online questionnaire was developed, consisting of demographic information (age, years of experience, type of practice), awareness questions related to remote mapping technologies, attitude scales assessing perceived effectiveness, feasibility, and willingness to adopt remote mapping, Open-ended questions to identify barriers and facilitators.

### **Results & Discussion:**

The results of awareness and attitudes of 50 audiologists regarding remote mapping were divided in 6 domains:

Perspectives about need for Teleaudiology: It is difficult to provide hearing health care to the vast majority of those who are hard of hearing. With a population of over 1.2 billion, the nation

only has a limited number of hearing care professionals. The population to audiologist ratio is 1:500000 (Garg, 2011). Our respondents (65%) also believe that there is no appropriate balance between professionals and CI users. Hence professionals (92%) encourage the idea that remote mapping will be a boon in handling population from remote areas (81%); as well as it will enhance connectivity (84%) and lessen the burden (89%).

**Familiarity with Remote Mapping of CI users:** For remote cochlear implant mapping, two audiologists or one audiologist and a technician must be present” one with the implant receiver and the other equipped with remote desktop software and videoconferencing tools. Awareness of these setups and connectivity fosters effective practices. While 65% of our participants have heard of remote CI mapping, only 49% in India actively handle or know professionals involved in this process. This highlights a clear need for workshops to guide professionals, as 52% of respondents indicated a lack of guidance in this area.

**Reliability and Effectiveness of remote mapping:** The key consideration in adopting remote programming for cochlear implant recipients is ensuring that outcomes are comparable to those achieved through face-to-face programming. Traditional in-booth mapping provides a calibrated environment and personal interaction for assessment, counseling, and troubleshooting, but it does not address distance and can limit follow-up opportunities. In this context, 41% of professionals believe that remote mapping offers a significant qualitative advantage, while 81% think that its effectiveness can be enhanced with proper protocols and scheduling, making it a more efficient option for follow-ups.

**Cost-effectiveness:** Remote cochlear implant programming offers significant advantages for humanitarian efforts in developing nations by enhancing convenience and reducing costs for patients. About 70% of our participants viewed it as cost-effective. In the US, patients spend an average of 123 minutes for a 20-minute appointment when factoring in travel and wait times (A. L. Luryl, 2020). For those in remote areas or with limited mobility, this time is likely even greater. Additionally, 78% of respondents believe remote mapping will save time. Reducing the need for travel to clinics not only preserves resources but also decreases the carbon footprint, making this approach more sustainable for the environment.

**Remote access to clinical equipment:** Successful remote sessions require adequate clinical equipment, but 43% of Indian professionals reported insufficient availability.

**Ease of use for audiologists and Patients:** 51% respondents voted that the pediatric population will be benefitted by remote mapping. 62% professionals noted that it'll be hassle-free dealing with geriatric populations.

**Summary & Conclusion:**

This study aimed to provide insights into audiologists' awareness and attitudes toward remote mapping in cochlear implantation in India.

Remote mapping offers a valuable tool for enhancing the monitoring and management of essential systems. By leveraging advanced technologies, stakeholders can improve risk assessments and response strategies.

Currently, leading cochlear implant manufacturers in India, such as Advanced Bionics® (AB), have launched remote mapping programs, while Cochlear® has initiated a pilot study. However, there is hesitance among audiologists to adopt this new approach, highlighting the need for appropriate training measures to help professionals become familiar with these protocols.

Addressing challenges related to data quality and privacy is crucial for maximizing the benefits of remote mapping. Overall, the findings emphasize the importance of ongoing research, collaboration, and investment in technologies that support remote mapping, ensuring safer and more resilient healthcare delivery. By identifying the current landscape and potential barriers, this research aims to facilitate the implementation of effective remote mapping solutions, ultimately improving patient care and outcomes in audiology.

## **Auditory and Vestibular profiling of AICA loop: A case-study with assessment and Rehabilitation Perspectives**

*Bhagya Lakshmi H & Urmi Ajay*

**Ali Yavar Jung National Institute of Speech and Hearing Disabilities**

### **Introduction:**

The Anterior Inferior Cerebellar Artery loop (AICA) arises more frequently from the lower third and less frequently from the middle third of the basilar artery. This, loop also called as vascular compression loop syndrome was first described by McKenzie. It typically passes between the facial and vestibulocochlear nerves and runs along the surface of the middle cerebellar peduncle. (Winn, 1973). Mechanical compression of the root entry zone of cranial nerves, is associated with symptoms such as trigeminal neuralgia (TN), hemifacial spasm (HFS), tinnitus and vertigo, glossopharyngeal neuralgia (GPN), and essential hypertension (Janetta, 1980). The prevalence of the condition that it could affect the vestibulocochlear nerve varies from 7-23% (Di Stadio et al, 2020). There are three grades according to Chavda's classification on the basis of degree of extent of the loop to the IAC. Many studies have shown that AICA within the Internal Auditory Canal loop may also cause sensorineural hearing loss (Moosa et al., 2015).

### **Need for Study:**

In a study, the relation between tinnitus and vascular loop (grades I-III) showed no significant association between the presence or absence of tinnitus and any of the studied vascular loop grades (Zidan et al, 2020). According to the study by Dadali et al (2023), among the patients with AICA loop, there was a significant association for either only tinnitus, or tinnitus and hearing loss, but only hearing loss had no significant association with the loop. There was also no significant association between AICA loop syndrome and vertigo. Majority of patients with AICA loop have an abnormality in the cochleovestibular nerve and thus the hearing and vestibular system could be affected. In our study, the patient presented with all the symptoms such as reduced hearing, tinnitus and vertigo. Thus, it is essential to study whether all the symptoms pertain to the presence of AICA loop and rehabilitation perspectives should be ensured.

In spite of numerous case-reports on AICA loop syndrome, these reports have not explored the Videonystagmography (VNG) findings and other associated medical complaints.

The current study warrants the need to strengthen the available data in vestibular difficulties and management options alongside medical line of treatment. It also documents the variation in two different gradations of loop in one case.

### **Aim & Objectives:**

To explore the audiological and vestibular aspects of the patient diagnosed with bilateral AICA loop and provide suitable rehabilitation services.

### **Method:**

A 45-year-old female present with the complaint of reduced hearing sensitivity in right ear for 2 months, sudden in onset reported at AYJNISHD(D), Department of audiology was taken for the study. She reported tinnitus in both ears right ear (Continuous) and left ear (Intermittent) increased in its occurrence since past 2 months. The patient also had complaint of 8-10 episodes of vertigo associated with nausea, for the past 8 years. Last episode was 15 days ago. She reported that the vertigo lasts for 1-2 days.

Routine audiological assessment was carried out after otoscopy. Pure Tone Audiometry (PTA), Speech Audiometry, Immittance audiometry and Otoacoustic emissions were conducted. The detailed vestibular evaluations incorporated Videonystagmography (VNG), Craniocorpography (CCG), Caloric test and cervical- and ocular- Vestibular evoked myogenic potentials (cVEMP and oVEMP).

The Auditory Brainstem Response (ABR) testing was conducted at 105 dBnHL for right while masking left and 80 dBnHL for left ear. They were tested with three stimulation rates, which are 11.1/s, 31.1/s and 71.1/s for both right and left ear and the ipsilateral and contralateral waves were analyzed.

Pertaining to tinnitus, it was matched in both ears and Tinnitus Handicap Inventory (THI) had been administered.

### **Results & Discussion:**

Client had MRI report suggesting a severe loop of Type -3 grade in right ear and Type-1 in left ear, as per Chavda classification. The Pure tone audiometry was suggestive of severe sensorineural hearing loss (PTA: 81.6 dBHL) in right ear and hearing sensitivity within normal limits (PTA: 25 dBHL) in left ear. The speech identification scores for right ear (SIS: 10%) were poorer than left ear (SIS: 95%) with appropriate masking.

She had A type tympanogram with right ipsilateral and contralateral reflexes absent whereas left ipsilateral and contralateral reflexes were present. DP-OAEs were pass in left ear

suggesting adequate outer hair cell function, and refer in right ear indicating inadequate functioning of outer hair cells. As also reported by O'Brien et al (2023).

The ABR in right ear was absent due to higher degree of hearing loss. However, left ear indicates no retrocochlear pathology. Tinnitus Handicap Inventory (THI) score was 42, which pointed moderate level of handicap, signifying that the tinnitus could be noticed in the presence of background noise, although daily activities can still be performed.

On vestibular evaluation it was found that in VNG there was abnormal oculomotor functioning observed. The horizontal left beating nystagmus was observed in spontaneous, head shake, Valsalva and hyperventilation test. Caloric test indicated Right canal paresis. The o-VEMPs were absent for both sides and was suggestive of utriculo-ocular pathway dysfunction. However, c-VEMP was only present for left side with normal indices can be attributed to the lesser severity of the disorder. The postural coordination on CCG was unaffected, owing to vestibular being highly compensated system.

Following the course of steroid treatment, a repeat audiogram was executed and this revealed no significant difference as the pure tone average resulted in severe sensorineural hearing loss in right ear and normal hearing sensitivity in left ear (RE: 78.3dBHL; LE: 25dBHL).

Due to the persistence of hearing loss in right ear, the patient was given an experience with the hearing aid. The left ear was masked through headphones and the free field responses were calculated for right ear with hearing aid and assessed for its benefits.

Audiologic rehabilitation dealt with fitting the patient with hearing aids (BTE was prescribed) in order to suppress tinnitus and improve speech perception. The aided audiogram responses of right ear which were obtained by masking the left ear with Narrow band noise (NBN), were within the speech spectrum indicating that there is a benefit from the hearing aid. Vestibular rehabilitation exercises were given to ameliorate the occurrence of vertigo.

One of the most controversial etiologies is the presence of vascular loops within the IAC (O'Brien et al, 2023). MVD (Micro Vascular Decompression) is the best surgical approach to improve hearing by 5-10 dB and suppress tinnitus in these patients if steroids do not restore hearing (Okamura et al, 2000). Due to the limited restoration of hearing and lack of accurate and standardized guidelines to surgical treatment for this condition, non-surgical approaches (audiologic rehabilitation) are also to be implemented to improve the quality of life and outcome of these patients.

### **Summary & Conclusion:**

The reported case study revealing significant decrement in hearing thresholds, moderate

handicap tinnitus and nystagmus due to canal paresis and migraine may be salient attribution to the presence of Grade-III AICA loop syndrome in right ear. Large scale retrospective studies are required to confirm the presence of these symptoms in Grade III AICA loop patients with a greater degree of accuracy. Appropriate rehabilitation and referrals are to be ensured to further discuss the condition from various other perspectives.



**Documenting the audiological findings of Intracanalicular Vestibular Schwannoma pre-and post-radiation therapy- A comprehensive case study**

*Bhagya Lakshmi H, Manisha Rathore, Vaibhav Patil & Urmi Ajay*

**Ali Yavar Jung National Institute of Speech and Hearing Disabilities**

**Introduction:**

Vestibular schwannomas (VS) are benign, Schwann cell derived neoplasms of the vestibular part of eighth cranial nerve. Although earlier reports indicated that the superior vestibular nerve is the more common origin of vestibular schwannoma, recent studies found that the most common origin for vestibular schwannoma are the nerve sheath of the inferior vestibular nerve, and less frequently the superior vestibular nerve (Sanna et al, 2001). They constitute 6% of all intracranial neoplasms and are the most common benign lesions of the IAC and CPA cistern constituting between 60% and 90% of the entire lesions respectively. When considering common presenting manifestations, a helpful framework is to consider manifestations based on the size of the tumor, and its location; intracanalicular, cisternal, brainstem compressive, or hydrocephalic sizes (Dogan et al, 2019). These tumors are located unilaterally in more than 90% of cases (Harner et al, 2000).

The intracanalicular vestibular schwannoma are the tumor that is entirely within the IAC (Grade I) (Koos, 1998). Symptoms of this stage typically include hearing loss, tinnitus, and vertigo or disequilibrium. Hearing loss is the most common presenting symptom of VS with roughly 95% of patients experiencing at least some level of hearing loss (Matthies et al, 1997). Stereotactic Radiation therapy (SRS) provides a highly effective and minimally invasive treatment for small vestibular schwannomas such as intracanalicular vestibular schwannoma, hereby preserving hearing and controlling the tumor growth. Studies have reported an improved tumor control rates and hearing preservation rates with SRS compared to observation alone and surgical resection (Kaul, 2018).

**Need for Study:**

Vestibular schwannomas often present subtle symptoms such as unilateral or asymmetric hearing loss, tinnitus, poor speech perception and vestibular imbalance. Although, Magnetic Resonance Imaging (MRI) is the gold standard test for identifying the acoustic tumor, detailed audiological evaluation following the test battery approach adds confidence in diagnosis by supplementing with the findings of the former.

The overall sensitivity of Auditory Brainstem Response (ABR), for tumors confined to the internal acoustic canal was 73.3% (Park et al, 2021). Thus, audiological test battery approach is vital in detecting the tumor and facilitating timely intervention.

Stereotactic radiation therapy has proven to be very effective against this condition. It is imperative to analyze the outcome derived through this approach. This study finds its essence in documenting the audiological findings pre- and post-radiation therapy.

### **Aim & Objectives:**

To emphasize the importance of test battery approach in the early detection and diagnosis of the intracanalicular vestibular schwannoma by consolidating the findings of multiple subjective and objective procedures of testing and evaluate pre- and post-radiation therapy.

### **Method:**

A 52-year-old male who presented with the complaint of reduced hearing sensitivity in both ears in the past 1 year 9 months, tinnitus in left ear and giddiness associated with blurred vision and slurred speech reported to Ali Yavar Jung National Institute of Speech and Hearing (AYJNISHD(D)), was taken for the study.

Routine audiological assessment procedure was carried out following Otoscopy. Pure tone Audiometry, Speech Audiometry, Immittance Audiometry, Distortion Product Oto Acoustic Emissions (DP-OAE) and high frequency DPOAE were performed at the Department of Audiology.

Electrophysiological assessment, Auditory Brainstem Response (ABR) was carried out for both threshold estimation and Differential Diagnosis ABR (DD-ABR). In the former procedure, click stimulus was used with repetition rate of 31.1 Hz. In the latter, site of lesion testing, dual channel, click evoked recording at two stimulation rates 11.1/s (slow) and 91.1/s (fast) at 90 dBnHL was incorporated.

Additionally, speech evaluation was also carried out. Frenchay Dysarthria Assessment (FDA) was administered. Follow up ABR was conducted.

In the follow up evaluation, after a year, pure tone audiometry, speech audiometry, ABR threshold estimation and DD-ABR, site of lesion tests was executed.

### **Results & Discussion:**

The audiologist's responsibility in all cases of patients with auditory complaints is to be alert for factors that may indicate the presence of a retrocochlear disorder. On most of the measures used throughout the audiologic evaluation, there are indicators that can alert the audiologist to

the possibility of retrocochlear disorder. The MRI of this patient signified Left intracanalicular vestibular schwannoma and the patient had undergone one cycle of stereotactic radiotherapy for 1.5 hours.

In accordance to audiogram and threshold ABR, the patient had mild sensorineural hearing loss in right ear and moderately severe sensorineural hearing loss in left ear. The word recognition scores were impaired in left compared to right ear (RE: 95% and LE: 48%). Thus, it may be concluded that the presence of tumor in the left ear has significantly caused the reduction in the hearing thresholds. The absence of DPOAE indicated outer hair cell dysfunction. Absence of acoustic reflexes may be an indicator of retrocochlear pathology.

In the DD-ABR procedure, I (1.43ms), III (3.76ms) and V (5.93ms) peaks at slow rates and V (6.19ms) peak at faster rates could be traced with absolute, interpeak latencies within normal limits in right ear. However, in left ear, I (1.69ms), III (4.60ms) and V (6.67ms) peaks could be traced at lower stimulation rates but at higher stimulation rates, no peaks could be observed. Furthermore, for slow repetition rates, the absolute latency of V peak was significantly delayed. The wave morphology and repeatability were poorer in left ear as compared to right ear. Delayed V peak at low stimulation rates, absence of V peak at high stimulation rate and poorer wave morphology and repeatability signifies the presence of retrocochlear pathology in left ear.

According to Frenchay Dysarthria Assessment (FDA), occasional drooling while eating and drinking, poor breath support, asymmetry of lips, occasional air leakage and breaks in voice, noticeable involuntary tongue movements were observed. Overall speech intelligibility was scored 2, denoting speech could be understood with little effort occasionally need to ask for repetitions.

During follow up evaluation, post-radiation therapy, after a year, pure tone audiometry and threshold ABR results revealed mild hearing loss in right ear and moderate hearing loss in left ear (RE: 36.3dBHL; LE: 48.3dBHL). The word recognition scores were good (RE: 95%; LE: 90%). DD-ABR indicated that I (1.59ms), III (3.86ms) and V (5.72ms) peaks at slow and V (5.50ms) at faster rates had absolute and interpeak latencies within normal limits in right ear indicating absence of retrocochlear pathology and I (1.69ms), III (4.13ms) and V (6.19ms) peaks at lower stimulation rates, (with delayed absolute V peak latency) and absence of V peak at higher stimulation rates, hereby proclaiming the presence of retrocochlear pathology in left ear. PAN-QOL was administered pre- and post- radiation therapy. The advancement of scores from 93 to 73 manifested a significant improvement in his quality of life pre- and post-radiation

therapy.

**Summary & Conclusion:**

Though the gold standard for detecting vestibular schwannoma is MRI, primary symptoms presented by the patient would be hearing loss, tinnitus and giddiness. Hence, it is crucial to keenly examine the patient and inculcate test battery approach for early diagnosis, proper referral and timely intervention. This would pave way in understanding the characteristics and impact of tumor on auditory and vestibular function. In our study, it has also been emphasized that the symptoms have markedly improved following radiation therapy.

## **Knowledge and Attitude of Indian Audiologists towards Remote Care in Fine Tuning of Hearing Aids**

*Shaikh Saima Mohammad Ali & Pawar Janhavi Bhaskar*

**AYJNISHD(D), Mumbai**

### **Introduction:**

Hearing aid adjustment is crucial for a positive user experience. During the fitting, a hearing healthcare professional customizes the devices to the user's hearing profile and conducts tests for optimization. Users receive guidance on care and usage, often requiring multiple appointments for comfort. Fine-tuning based on user feedback ensures optimal sound amplification and alignment with the user's lifestyle, with follow-up appointments typically scheduled about two weeks later to assess performance in real-life situations.

Remote programming allows audiologists to make adjustments without in-person visits, offering real-time personalization from home. This technology is especially beneficial for those with mobility issues or living in remote areas, saving time and reducing the need for multiple appointments. Remote adjustments are facilitated through specialized software, requiring a compatible smartphone or computer to connect securely with the audiologist, who can modify settings while communicating via video or chat.

### **Need for Study:**

Out of the 1.3 billion people in India, an estimated 7% have hearing loss. However, less than 0.5% of this have addressed their hearing loss and only 10% of these wear two hearing aids. The ratio of audiologists to the Indian population is 1:500,000, according to the Indian Journal of Community Medicine (The Indian Express, 23rd September 2024). In such a case scenario, remote care can prove to be a boon and can help the audiologists to reach the population which otherwise wouldn't have been reachable. Conversely, this can also enable the difficult to reach hearing impaired population to avail hearing care services without the trouble to travel large distances. Thus, proving to be more sustainable in the long run.

Most studies in the literature have concentrated on the user experience and features of remote fine-tuning apps. However, it is crucial to assess audiologists' awareness and readiness regarding these tools. By doing so, professionals can make more informed referrals and recommendations to patients for effectively using these apps.

**Aim & Objectives:**

1. To understand awareness, knowledge and readiness of Indian Audiologists towards Remote Fine Tuning in hearing aids.
2. To assess the level of awareness among Indian audiologists about remote fine-tuning technologies in hearing aids.
3. To evaluate the depth of knowledge audiologists have regarding the functionality and benefits of remote fine-tuning and determine any gaps in knowledge that may affect their practice.
4. To investigate the readiness of audiologists to adopt remote fine-tuning practices and analyze factors influencing their willingness to integrate this technology into their services.

**Method:**

A questionnaire comprising 11 questions pertaining to awareness, knowledge and readiness of Indian Audiologists towards use of remote care in hearing aid programming was prepared and validated as per Likert's scale. The questionnaire was further administered on 50 audiologists working in the Hearing aid industry in the Indian subcontinent and possessing a minimum 1 year of experience. The data obtained was represented in the form of percentages to understand the distribution.

**Results & Discussion:**

The obtained data could be represented in the form of percentages, as follows:

Out of the 50 respondents, 42% had 1-3 years of experience, 33% had 5-10 years, and 25% had 3-5 years. Analyzing these figures further revealed that years of experience might influence how professionals approach service delivery and dispensing practices.

While hearing aid fine-tuning apps have existed since 2018, they gained significant traction during the lockdown period when in-clinic services were unavailable. However, only 58% of the professionals were aware about such apps.

These mobile applications offer users added control and convenient access to fine-tuning services at their fingertips. However, professionals appear to be equally divided regarding the level of control these apps provide and the potential dependency of hearing aid users on them. There is a disparity between the number of audiologists and hearing-impaired individuals. Many respondents -83% believed that these apps could enhance accessibility for more of this population, allowing audiologists to reach and support a greater number of patients.

Studies have indicated that remote fine-tuning can offer benefits comparable to in-clinic programming. However, it is generally recommended that the initial adjustment be performed in person to ensure a thorough understanding of the hearing aid's functionality. Consistent with this, 83% of our respondents agreed that while remote fine-tuning cannot replace in-clinic programming, it can serve as a valuable complement. Audiologists often face the challenge of managing a steady stream of patients within limited time frames, which can lead to restlessness and frustration among patients. This tension may negatively affect the audiologist's ability to address patient concerns effectively. In this context, 92% of professionals believe that these apps could be beneficial, making their work easier, reducing stress levels, and ultimately contributing to a better work-life balance.

Audiologists face constant demands, often needing to be available even on vacation and traveling to patients' homes for fine-tuning services. With the shift to remote working due to lockdowns, the hearing aid industry is adapting through remote fine-tuning apps. When surveyed, all professionals agreed these apps can help alleviate travel challenges, and 92% believed they are particularly beneficial when audiologists are unavailable in the clinic.

Reaching as many hearing impaired populations as possible is the need of the hour and these apps might enable audiologists to fulfill this goal. Complying with this all of the professionals believed that these apps might help them to reach a difficult to reach large scale population. As can be understood from the above obtained results, awareness pertaining to various hearing aid fine tuning apps needs to be created among professionals through training programs and modules. So, that they are well equipped with the resources, however it will be their sole discretion whether to use these apps or not, but it is essential that they make an informed choice rather than negating it from the start. With technological advancements and the steady shift towards increase in demand of telepractice, it is currently imperative that audiologists are well-prepared as the onus to provide appropriate and adequate hearing healthcare is on their shoulders. Studies have reported equal benefit with remote programming as well as in-clinic programming. (L Sjolander et al, 2022; M Malmberg et al, 2024)

Also, remote fine tuning shouldn't be treated as a substitute, rather an essential tool that an audiologist can use as and when required. As we need to understand the importance of physical presence and the subtleties of human communication, conventional methods have their own charm. So, while adapting to the new we as professionals need to hold on to the traditional approaches as well and try to achieve a balance. Furthermore, remote fine-tuning should not be viewed as a substitute for in-person care, but rather as a valuable tool that audiologists can

utilize as needed. It's important to recognize the significance of physical presence and the nuances of human communication; traditional methods still hold their own charm. As we embrace new technologies, professionals should strive to maintain a balance by integrating both innovative and conventional approaches in their practice.

**Summary & Conclusion:**

In summary, we can understand that awareness and knowledge need to be generated among professionals pertaining to telepractice, particularly in the realm of remote fine tuning of hearing aids, so that we can provide timely care without compromising on patient load. In addition to this, audiologists need appropriate training and practice before they can be forced to adapt to the new norm. Remote fine-tuning apps can greatly benefit audiologists by helping them reach larger and harder-to-access populations when used effectively.



## Comparison of Coarticulation Perception in Individuals with Hearing Impairment and Cochlear Implantees

*Pachaiappan C & Cherukuri Ramya Sri*

**MERF Institute of Speech and Hearing (P) Ltd**

### **Introduction:**

Coarticulation is the blending of individual speech sounds and coarticulated information act as major cues in the perception of speech sounds such as fricatives and nasals. While there were significant studies indicating significant differences in perception between normal and hearing impaired (HI) subjects, similar findings can also be noted within cochlear implantees (CI) and HI subjects which can be attributed to implantees having lower understanding of dynamic transition with coarticulation.

### **Need for Study:**

There are significant differences in speech perception between CI and HI subjects which need to be studied for research and rehabilitation of such individuals.

### **Aim & Objectives:**

The aim of the study was to compare the ability of hearing impaired and cochlear implantees to utilize coarticulation cues in identification of fricative (*f*) and nasals (*n*).

### **Method:**

Participants were included 15 hearing impaired individuals with losses varying from mild to moderate hearing loss and 17 cochlear implantees with implant age being greater than 1 year with SIS scores being greater than 60%. They were evaluated using stimuli /aʃa/, /iʃi/, /uʃu/ and /ana/, /ini/, /unu/ provided by one male and female in anticipatory condition the stimuli were truncated to include preceding vowel with varying duration of fricative noise (0%,20%,40%,90% and 100%) and the same was noted with carryover condition. The number of responses were asked to write down the speech sounds heard by them.

### **Results & Discussion:**

Shapiro-Wilk test of normality was carried out which indicated that the data was not normally distributed. Further investigations using nonparametric statistical tests indicate significant differences among both the group and the same was noted for the different truncation groups

as well. It was further noted that the performance in anticipatory coarticulation was significantly better than carryover coarticulation.

**Summary & Conclusion:**

The study indicates that the overall ability to utilize cues were reduced in implantees than hearing impaired with them producing significantly better in carryover condition as well.

## **Relationship Between Listening Effort and Real Life Outcomes in School-Going Children with Bimodal and Bilateral Cochlear Implantation**

*Pachaiappan C & Cherukuri Ramya Sri*

**MERF Institute of Speech and Hearing (P) Ltd**

### **Introduction:**

The most effective method of treatment method for children with severe to profound hearing loss is a cochlear implant and one of the major complaints would be working memory and attention. Recent studies have multiple indicating the rising prevalence of bimodal and bilateral cochlear implant usage in individuals.

### **Need for Study:**

The findings of this study can be used to obtain data on the real life outcomes of the children as well as suggests the usage of subjective procedures to further provide better care and outcomes in patients.

### **Aim & Objectives:**

The aim of this study is to evaluate the listening effort and real-life performance outcomes in school going children with bimodal and bilateral implantees and to compare the same with normal comparison group.

### **Method:**

The study included objective (dual-task paradigm) and subjective (SSQ-P10, TEACH) measures. The data were collected from 45 school-going children with an age range of 8-15 years who were divided into three groups: Group 1 which included 15 children with normal hearing sensitivity. Group II included 15 children using bimodal implant and Group III included bilateral implant. Dual task paradigm and subjective questionnaires were used to assess listening effort.

### **Results & Discussion:**

Statistical analyses were performed to compare the findings in group-wise and pairwise manner and the result revealed that children with bilateral implantation performed significantly better than those with bimodal implants with a moderate correlation between objective and subjective tests. There is also a significant difference with results between subjective and objective

measures.

**Summary & Conclusion:**

The study indicates that there are methods in both subjective and objective measures with the subjective measures being more usable in a clinical setting and could be used as an assessment tool for listening effort. Training is required to improve real life activities and provides evidence that listening effort needs to be measured in school-going children with cochlear implantation.

## Content Analysis of YouTube Videos Related to Cochlear Implant Care and Maintenance

*Pachaiappan C & Cherukuri Ramya Sri*

**MERF Institute of Speech and Hearing (P) Ltd**

### **Introduction:**

The success of a cochlear implant (CI) and the preceding improvement of the implanted individuals improve and depend on how well and informed the caregivers are instructed in order to maintain and care for the device and with the advent of internet, multiple sources from the manufacturer as well as other professionals have information on how to take care of the device. Therefore, the content and nature of the videos that are being put out are important as well.

### **Need for Study:**

The caregivers of these children have significant difficulty in learning about the care and maintenance at the early stages and with the use of better visual aids such as videos, the amount of public education is higher as well.

### **Aim & Objectives:**

The aim of the study is to examine the source, content, understanding and actionability of videos on YouTube related to Cochlear Implant.

The other objectives include:

1. To evaluate, content and frequency of video related to CI.
2. To determine the understandability and actionability of videos.

### **Method:**

Videos were selected from YouTube using the keywords “Cochlear Implant”, “Care of Cochlear Implant” and “Maintenance of Cochlear Implants” and videos with most views and popularity and was evaluated using the Patient Education Materials Assessment Tool for Audiovisual Materials (PEMAT-A/V) for the actionability and understandability of the content of the videos obtained.

### **Results & Discussion:**

Mann-Whitney U test was done to find out how the meta-data of video, understandability and

actionability scores varied across each pair of sources and received a score of 69.3% for understandability and 61.7% for actionability and Spearman's rank correlation found that the frequency of likes and dislikes had a strong positive correlation with number of views.

**Summary & Conclusion:**

The study indicates that there is significant amount of information for people available on the internet and in analyzing different media data concluded that media created video received more no of likes and popularity and using this professionals can also use the results of the study to counsel the patient who is using different social media to seek health related information.

## Long Term Impedance Measurements in Subjects with Cochlear Implants During Pubertal Period

*Pachaiappan C & Cherukuri Ramya Sri*

**MERF Institute of Speech and Hearing (P) Ltd**

### **Introduction:**

Impedance measurements are a method used to evaluate the integrity of cochlear implant devices during and after surgery. It provides an objective evaluation of the electrode integrity contact or tissue interface. Based on multiple studies and clinical experience, there is a change in impedance over long time use, multitude of which can also be related to hormonal changes which has not be documented well.

### **Need for Study:**

Impedance measurement is an integral part of hearing and understanding/establishing changes that can occur in adolescents can lead to professionals having ideal about such changes.

### **Aim & Objectives:**

1. To monitor the increase in postoperative impedance field telemetry from switch-on to an implant age of 15 years. The other objectives include:
2. To observe change in impedance and ground path impedance measures over 15 years.
3. To compare the electrode impedance and voltage changes from switch-on to the implant age of 5 years, 10 years, and 15 years.
4. To compare change in impedance with respect to electrode location.

### **Method:**

The study included 5 participants within the mean implant age of 15 years were included. Impedance data were taken from Medel Maestro System Software 9.0 over a time period of 1-60 months and were analyzed using SPSS software.

### **Results & Discussion:**

Significant changes were observed in electrodes in all participants and more significant in electrodes E8, E11, E9 and E6. There was also change in the overall impedance with significant changes noted after the first month. Spermann's Rank Correlation was noted to be significantly different between each of the time periods.

**Summary & Conclusion:**

Studies done in adolescents indicate that the release of hormones lead to changes in blood levels, and this can lead to changes in the blood flow to the cochlea which can cause various problems such as degradation of basilar membrane (being one of them) which can lead to increased impedance which is further supported by the current findings.



## **Correlation between Tinnitus Handicap Inventory Scores and Degree of Hearing Loss with tinnitus: Implications for Diagnosis and Treatment**

*Aakash Chauhan, Shushil Raj & Urmi Ajay*

**AYJNISHD |DI BANDRA WEST MUMBAI**

### **Introduction:**

Being able to perceive sounds like buzzing, ringing, or hissing without any external source is known as tinnitus, a common disorder affecting the ears. To evaluate how tinnitus affects a person's quality of life, the Tinnitus Handicap Inventory (THI) is a commonly used tool. It offers information about how tinnitus impacts daily functioning, emotional health, and life happiness in general. (Baguley D., et al 2013). Tinnitus and quality of life have a more intricate link as hearing loss gets worse stronger hearing loss is frequently associated with increased tinnitus distress (Trista Williams et al.,2023). Which can cause more emotional and psychological difficulties for those who experience it (Malgorzata Fludra., et al 2020).

### **Need for Study:**

Clinicians can anticipate how much tinnitus will affect a patient's everyday life by understanding this link, which results in more individualized care.

This aids in providing patients with counseling, controlling their expectations, and outlining the potential course of symptoms. Examining this association can also shed light on whether addressing hearing loss for example, by using hearing aids can lessen the intensity of tinnitus. (Hyun Jee Lee., et al 2022)

Determining the correlation between THI scores and hearing impairment can offer insights into the fundamental causes of tinnitus. It can provide insight into how the brain reacts to hearing loss, for instance, by supporting notions about sensory deprivation, neuroplasticity, or auditory system failure. (Hanna Glick et al., 2018).

### **Aim & Objectives:**

**Aim:** To investigate the connection between the degree of hearing loss and the severity of tinnitus: The main goal would be to ascertain whether there is a meaningful relationship between the degree of hearing loss a person experiences and the amount of tinnitus that impacts their quality of life (as indicated by the THI score).

**Objective (1)** Quantify the degree of hearing loss using audiometric tests: Conducting audiometric evaluations (e.g., pure-tone audiometry) to subjectively measure the degree of

hearing loss in each participant.

Objective (2) Assess the correlation between THI scores and audiometric findings: The study would statistically analyze the data to determine if there is a significant correlation between the severity of hearing loss and the impact of tinnitus, as measured by THI.

### **Method:**

Participants: A total of 50 adults voluntarily participated in this study. The ratio of male and female was 3:1 respectively where 38 were males and 12 were females and all of them are from general population with different working environment.

Materials: a self-reported questionnaire THI (tinnitus handicap inventory) given by Newmann CW, Jacobson GP and Spitzer JB (1996) that assesses the perceived severity and impact of tinnitus on daily life.

Audiometric testing: Pure-tone audiometry is conducted to measure the hearing thresholds at various frequencies (e.g., 250 Hz to 8,000 Hz). This provides a subjective assessment of the severity of hearing loss in each ear.

Inclusion criteria: patients with unilateral and bilateral Sensory neural hearing loss with continuous tinnitus for 3 months, age range 18-50 years.

Exclusion Criteria: patients with conductive or mixed hearing loss, patient with intermittent tinnitus and patient with any neurological, cortical, and psychological problems, impacted wax.

### **Results & Discussion:**

Pearson's correlation coefficient suggestive of an excellent internal consistency. Parametric tests were administered. The degree and proportion of descriptive statistical processes were evaluated based on the questions that were being asked. A significant correlation ( $p < 0.05$ ) was seen between the THI score and the adult population experiencing hearing loss and tinnitus with different degrees. A substantial statistical correlation ( $p < 0.05$ ) between the adult population with Hearing loss with tinnitus and quality of life affected. 22 out of 50 people had severe hearing loss with 18 were with moderate degree and 10 with mild degrees.

Where 27 out of 50 people were bilateral hearing loss and 23 was unilateral hearing loss with different degrees. A strong positive correlation was observed in patients with bilateral hearing loss with Tinnitus handicap inventory (THI) scores ( $r= 0.78$ ) where patients with unilateral hearing loss had good correlation with tinnitus handicap inventory score ( $r=0.64$ ).

### **Summary & Conclusion:**

This study demonstrates a significant positive correlation between Tinnitus Handicap

Inventory (THI) scores and the degree of hearing loss in individuals suffering from tinnitus. The findings suggest that as the severity of hearing loss increases, tinnitus-related distress and its impact on quality of life also intensify.

Participants with greater hearing loss, particularly those with bilateral hearing impairment, reported higher THI scores, indicating more severe tinnitus symptoms.

**Barriers to Hearing Healthcare Access in Rural and Underserved  
Communities: A Social Work Perspective**

*Buddhabhushan Mukundarao*

**Adhar Foundation**

**Introduction:**

Hearing loss is a pervasive global health issue, affecting people of all ages, with an estimated 466 million individuals worldwide experiencing disabling hearing loss. In India, the burden of untreated hearing loss is significant, particularly in rural areas where healthcare infrastructure is often inadequate. Maharashtra, one of India's most populous and economically diverse states, presents a unique case study in understanding the barriers to hearing healthcare access in rural and underserved regions.

Rural and underserved communities in Maharashtra face numerous challenges when it comes to accessing audiology services. These barriers include geographic isolation, financial constraints, a lack of trained audiologists, and cultural stigmas associated with hearing loss. Addressing these challenges requires a multifaceted approach that involves not only the healthcare system but also the social services sector. Social workers can play a crucial role in advocating for better healthcare access, raising awareness about hearing loss, and supporting individuals and families as they navigate the healthcare system. This study, conducted in partnership with the Adhar Foundation, explores the barriers to hearing healthcare access in Maharashtra and the role that social work can play in overcoming these obstacles.

**Need for Study:**

Rural and underserved populations in Maharashtra face significant disparities in healthcare access, including hearing healthcare. These disparities are exacerbated by economic inequality, lack of infrastructure, and limited availability of healthcare professionals. Hearing loss, if left untreated, can have profound consequences, including social isolation, diminished quality of life, and loss of educational and employment opportunities, particularly for vulnerable populations such as children and the elderly.

Despite the availability of advanced hearing aids and cochlear implants, these technologies remain out of reach for many due to their cost and the absence of widespread insurance coverage. Additionally, there is a lack of awareness in rural communities about the importance of early detection and treatment of hearing loss. Cultural stigmas around hearing impairment

further deter individuals from seeking help, contributing to the underutilization of audiological services.

Given these challenges, there is a pressing need to explore the specific barriers to hearing healthcare in Maharashtra and to identify strategies that can improve access to care. Social work, with its focus on advocacy, community engagement, and systemic change, offers a valuable perspective in addressing these barriers. By integrating social work with audiology, it is possible to create more holistic and sustainable solutions for underserved populations.

### **Aim & Objectives:**

The primary aim of this study is to investigate the barriers to accessing hearing healthcare in rural and underserved communities in Maharashtra and to evaluate the role of social work in addressing these challenges. The specific objectives are as follows:

1. To identify the key barriers to hearing healthcare access in rural and underserved areas of Maharashtra, including economic, geographic, and cultural factors.
2. To assess the role of social workers in facilitating access to audiology services in these communities.
3. To propose community-based strategies that integrate the efforts of social workers and audiologists to improve access to hearing healthcare.

### **Method:**

This study employs a mixed-methods research design, combining qualitative and quantitative approaches to provide a comprehensive understanding of the barriers to hearing healthcare access in Maharashtra. The study is centered at Adhar Foundation, an NGO focused on healthcare access for rural and underserved populations.

#### **1. Study Population and Sampling**

The study includes two groups: (1) individuals from rural and underserved communities in Maharashtra who either has hearing loss or are at risk, and (2) social workers and healthcare providers involved in hearing healthcare services.

- **Qualitative Data Collection:** A purposive sampling technique was used to select 30-40 participants, including patients, audiologists, social workers, and community leaders. Semi-structured interviews were conducted to explore their experiences with hearing healthcare access.
- **Quantitative Data Collection:** A structured survey was administered to 200 individuals from rural communities to collect quantitative data on the barriers to

hearing healthcare, their awareness of hearing services, and their experiences with accessing these services.

## 2. Data Collection Tools

- Interviews: Semi-structured interviews were conducted to explore the personal and professional experiences of individuals and service providers. Topics included the challenges of accessing hearing healthcare, the role of social workers, and potential solutions.
- Surveys: The survey included both open-ended and closed-ended questions, focusing on demographic information, healthcare access, financial barriers, and cultural attitudes toward hearing loss.

## 3. Data Analysis

- Qualitative Data Analysis: Thematic analysis was used to identify recurring themes in the interviews, focusing on the key barriers to accessing hearing healthcare and the role of social workers in overcoming these challenges.
- Quantitative Data Analysis: Descriptive and inferential statistics were used to analyze the survey data. Chi-square tests were employed to examine the relationship between demographic variables (such as income, education, and geographic location) and access to hearing healthcare services.

## **Results & Discussion:**

### 1. Key Barriers to Hearing Healthcare Access

The study identified several barriers to hearing healthcare access in rural Maharashtra:

- a) Geographical Isolation: Many participants reported difficulties in accessing audiology services due to the remote location of healthcare facilities. The lack of transportation options, especially in tribal and hilly areas, compounded this issue.
- b) Economic Constraints: The high cost of hearing aids, cochlear implants, and even basic hearing evaluations was a major deterrent for many individuals. The absence of insurance coverage for hearing aids and the lack of government funding for hearing care further exacerbated this problem.
- c) Cultural Stigma: In many rural communities, there is a significant stigma associated with hearing loss, particularly among older adults. Hearing impairment is often viewed as a sign of aging or disability, leading individuals to avoid seeking help.
- d) Lack of Awareness: There was a notable lack of awareness about hearing healthcare services. Many individuals had never undergone a hearing screening and were

unaware of the services provided by audiologists. This was particularly prevalent in older adults, who often delayed seeking care until their hearing loss became severe.

## 2. Role of Social Workers

Social workers, particularly those associated with Adhar Foundation, played a crucial role in overcoming these barriers. Key contributions of social workers included:

- a) **Community Education:** Social workers raised awareness about the importance of hearing healthcare, particularly in schools and community centers.
- b) **Advocacy:** Social workers advocated for better access to audiology services and helped connect individuals with government and non-governmental resources.
- c) **Practical Support:** Social workers assisted patients with transportation to healthcare facilities and helped navigate financial assistance programs.

## 3. Proposed Solutions

Participants highlighted several potential solutions to improve hearing healthcare access in rural Maharashtra:

- a) **Mobile Clinics:** Mobile hearing clinics were suggested as a cost-effective way to deliver audiology services to remote areas. These clinics could provide basic hearing screenings and fit hearing aids, reducing the need for travel to distant healthcare facilities.
- b) **Tele-Audiology:** Tele-audiology services could help bridge the gap between rural communities and audiologists, allowing patients to receive consultations and follow-up care remotely.
- c) **Government Support:** Increased government investment in hearing healthcare, including subsidies for hearing aids and expanded insurance coverage, was identified as a crucial step toward improving access.

## **Summary & Conclusion:**

This study reveals that rural and underserved communities in Maharashtra face significant barriers to accessing hearing healthcare services. Geographical isolation, financial constraints, cultural stigma, and a lack of awareness all contribute to the underutilization of audiological services. Social workers, particularly those associated with the Adhar Foundation, play an essential role in addressing these barriers through advocacy, education, and practical support. The study emphasizes the need for integrated solutions that combine the efforts of audiologists and social workers. Community-based initiatives such as mobile hearing clinics and tele-audiology services offer promising strategies to improve access to hearing care in rural

Maharashtra. Moreover, increased government investment in hearing healthcare is critical to reducing the financial burden on individuals and ensuring that underserved populations can access the care they need.

By fostering collaboration between healthcare providers and social workers, it is possible to develop more effective and sustainable models of hearing healthcare delivery that address the unique challenges faced by rural communities in Maharashtra.



## **The influence of electrode placement on the 500Hz NB CE Chirp induced masseter Vestibular Evoked Myogenic Potential**

*Riyaz S., Urmi Ajay, Archisman Shubhadarshan & Vinayagar P.T.*

**AYJNISHD(D) Mumbai**

### **Introduction:**

Vestibular Evoked Myogenic Potentials (VEMP) has found a wide application in the study of both vestibular and neurological disorders (Venhovens et al, 2016). The vestibulo masseteric reflex is a bilateral and symmetric p11/ n21 biphasic inhibitory EMG response from active masseter muscles at the level of vestibular end organ (Deriu et al, 2003). VEMPs have shown to be effective in assessing the vestibulo trigeminal pathway (Deriu et al, 2005). Although the mVEMP recording was initiated almost a decade back, it has been recently gaining reinterest in healthy individuals, especially brainstem dysfunction (Magnano et al., 2014). The ground electrode is placed on the forehead, the reference electrode is placed on the mandibular angle, and the active electrode is positioned on the lower third of the masseter muscle in the first electrode montage. This electrode montage is called a mandibular electrode montage. The reference electrode in the second electrode montage is positioned in the middle of the zygomatic arch. According to de Natale et al. (2019; Loi et al., 2020), this type of electrode montage is known as zygomatic electrode montage.

### **Need for Study:**

When the electrode montage for masseter VEMP is considered, there has been many ambiguous insights. When using the click stimulus, De Natale et al reported no difference in both latency and rectified amplitude, whereas Loi et al reported better amplitude when zygomatic montage was used. According to previous studies, the effect of electrode montage has been compared using clicks and tone bursts (Vinayagar et al, 2022) (De Natale et al, 2015) (Loi et al, 2020). It has been revealed that 500 Hz Chirps were the optimum stimulus for eliciting mVEMP responses (Nagarajan et al, 2024). It is therefore necessary to explore mVEMP responses with 500 Hz Chirp at different electrode montages. There has not been any research done to yet on the effects of zygomatic and mandibular electrode montage using 500Hz NB CE Chirp.

### **Aim & Objectives:**

The aim and objectives of the study were to explore the effect of electrode montage on amplitude & latency in 500 Hz Chirp evoked mVEMP when recording through zygomatic and

mandibular montage.

### **Method:**

Eighteen normal hearing individuals in the age range of 18-25 years with no audiological and vestibular complaints were taken for the study. Otoscopy was performed, Immittance audiometry was done to rule out any middle ear pathologies. Pure tone audiometry screening was done and individuals with thresholds not more than 15 dBHL were considered. Neurosoft Neuro Audio was used to conduct the testing. Insert earphones ER-3A was used to provide stimulus. Single channel ipsilateral recording was done using 500 Hz NB LS Chirp stimuli, at 95 dBnHL with 5.1/s repetition rate. Electrode montage used were zygomatic and mandibular. In zygomatic, ground electrode was placed on the forehead, inverting electrode was placed at zygomatic arch and non-inverting electrode was placed on the lower third of masseter muscle. However, while using the mandibular montage, ground electrode was placed on the forehead, inverting electrode on mandibular angle and non-inverting electrode was placed on the lower third of masseter muscle. Epoch time was set to 50 ms and the filter settings ranged from 0.3 Hz to 3000 Hz with notch filter off. Participants were instructed to maintain masseter muscle contraction by clenching. The baseline muscle contraction varied between 50 to 150 %. Both ipsilateral and contralateral recordings were obtained for both sides in both the electrode montages. The P11 and N21 peaks were marked for the averaged waveforms. EMG scaling was used to obtain rectified amplitude for both ipsilateral and contralateral recordings.

### **Results & Discussion:**

mVEMP results of Zygomatic montage for the combined data right and left ear: For ipsilateral recording, the mean latency of P1 was 10.7msec with SD of 1.5 for N1 was 16.6msec with SD of 2.5, mean amplitude of P1N1 was 0.6  $\hat{I}$ ¼V with SD of 0.2.

mVEMP results of Mandibular montage for the combined data right and left ear: For ipsilateral recording, the mean latency of P1 was 10.6msec with SD of 1.9msec for N1 was 16.5msec with SD of 2.1, mean amplitude of P1N1 was 0.7  $\hat{I}$ ¼V with SD of 0.2.

IBM SPSS was used to do descriptive statistics. The test of normality was conducted all the data are normally distributed, hence parametric test was used. Therefore, descriptive statistics was analyzed. Independent sample t test was carried out to find out the difference between effect of montage. From this results it was concluded that P1-N1 latency has significant difference exist between zygomatic and mandibular placement and also rectified amplitude also significant difference.

**Summary & Conclusion:**

According to the current investigation, the 500Hz NB LS chirp mandibular response of mVEMP has much larger amplitudes and much earlier latencies than the 500Hz NBLs chirp zygomatic montage location. The result supports NBLs chirp to be an appropriate substitution for other stimulus and other electrode montage in assessing vestibulo-trigeminal pathway. To fully comprehend the test's sensitivity across different clinical populations, more research in both broader normal population samples and the clinical community is necessary.

## **The Role of Audiologists in Advocacy for Hearing Impaired Individuals in Social Welfare Programs in Maharashtra**

*Buddhabhushan Mukundarao*

### **Aadhar Foundation**

#### **Introduction:**

Hearing loss is a significant public health concern that affects millions of people globally. In India, particularly in Maharashtra, individuals with hearing impairments face several challenges in accessing the support and resources they need, both in healthcare and in social welfare programs. Audiologists, as professionals who diagnose and manage hearing loss, have a unique role not only in clinical care but also in advocating for hearing-impaired individuals within social welfare frameworks. Their advocacy efforts can help bridge the gap between healthcare services and social welfare programs, ensuring that hearing-impaired individuals receive the necessary support to lead fulfilling lives.

#### **Need for Study:**

In Maharashtra, hearing-impaired individuals often encounter barriers when accessing social welfare programs, such as financial aid, assistive devices, and educational resources. These barriers stem from a lack of awareness, inadequate program implementation, and bureaucratic challenges. Audiologists, who work directly with hearing-impaired individuals, are in a unique position to advocate for better access to these resources. There is a critical need to explore how audiologists can take on advocacy roles within social welfare programs to improve outcomes for their patients. Understanding this role will help shape more effective policies and ensure that social welfare programs are better aligned with the needs of the hearing-impaired population.

#### **Aim & Objectives:**

The aim of this study is to investigate the role of audiologists in advocating for hearing-impaired individuals in Maharashtra's social welfare programs. The specific objectives are:

1. To assess the current involvement of audiologists in social welfare advocacy.
2. To identify the barriers that prevents hearing-impaired individuals from accessing social welfare programs.
3. To explore strategies that can empower audiologists to become effective advocates

within social welfare frameworks.

**Method:**

A qualitative research design was used, with data collected through semi-structured interviews and focus group discussions involving audiologists, hearing-impaired individuals, and social welfare program administrators. Participants were selected from both urban and rural areas in Maharashtra to ensure a comprehensive understanding of the challenges faced. Thematic analysis was applied to identify recurring patterns and themes related to the role of audiologists in advocacy, the barriers to accessing social welfare programs, and potential strategies for improvement.

**Results & Discussion:**

The study found that audiologists play a crucial role in connecting hearing-impaired individuals with social welfare programs, particularly in terms of guiding patients through the application processes for financial assistance and hearing aids. However, audiologists face limitations, such as a lack of training in advocacy and limited collaboration with social workers. Barriers to accessing social welfare programs include bureaucratic delays, lack of awareness among patients, and under-resourced programs in rural areas. The study emphasizes the need for better integration between audiologists and social welfare systems, recommending that advocacy training be included in audiology education and professional development.

**Summary & Conclusion:**

Audiologists in Maharashtra have a key role to play in advocating for hearing-impaired individuals within social welfare programs. While they are already involved in guiding patients, there is a need for more structured advocacy efforts, particularly in terms of navigating bureaucratic challenges and increasing awareness of available resources. Empowering audiologists through advocacy training and fostering stronger partnerships between healthcare and social welfare sectors can significantly improve access to essential services for the hearing-impaired population. This study highlights the importance of a collaborative approach to ensure that social welfare programs better serve the needs of those with hearing impairments.

## **Exploring the Role of Audiologists in Facilitating Access to Disability Certificates for Hearing-Impaired Individuals in Maharashtra**

*Buddhabhushan Mukundarao*

**Aadhar Foundation**

### **Introduction:**

Hearing loss is one of the most common disabilities globally, and in India, millions of individuals live with varying degrees of hearing impairment. For those with significant hearing loss, accessing social welfare benefits and support systems is crucial to improve their quality of life. In India, a disability certificate is a prerequisite for many of these welfare programs, such as government subsidies for assistive devices, educational support, job reservations, and other social security schemes.

Maharashtra, being one of the largest and most diverse states, presents unique challenges in ensuring that hearing-impaired individuals receive the necessary certifications to access these programs. The process of obtaining a disability certificate, however, is often complex and riddled with bureaucratic hurdles, making it difficult for many hearing-impaired individuals, especially those in rural or underserved areas, to access the benefits they are entitled to.

Audiologists, as healthcare professionals specializing in diagnosing and treating hearing loss, play a critical role in certifying hearing impairments and assisting patients in navigating the certification process. Their involvement goes beyond medical evaluation; they are instrumental in guiding patients through the legal and administrative aspects of obtaining disability certificates. This study investigates the role of audiologists in facilitating access to disability certificates for hearing-impaired individuals in Maharashtra and the impact of their advocacy on improving access to social welfare programs

### **Need for Study:**

The acquisition of a disability certificate is essential for hearing-impaired individuals to access various government welfare programs in India. These programs provide crucial support, such as subsidized hearing aids, educational scholarships, and employment quotas. However, the process of obtaining a disability certificate is often complicated, involving multiple steps, such as medical evaluation, bureaucratic paperwork, and visits to government offices.

Many hearing-impaired individuals, particularly in rural areas of Maharashtra, lack awareness about the availability of disability certificates and the procedures involved. Furthermore, the

geographical distance from certification centers, coupled with the administrative challenges, can discourage individuals from pursuing the certification. Audiologists, as the primary professionals who diagnose hearing impairments, are uniquely positioned to bridge this gap by facilitating the certification process.

Given the critical role that disability certificates play in securing social welfare benefits and the challenges faced by hearing-impaired individuals in obtaining them, there is a pressing need to explore how audiologists can assist in overcoming these barriers. This study will highlight the importance of audiologists' involvement in the certification process and explore potential solutions for improving access to disability certificates for hearing-impaired individuals in Maharashtra.

### **Aim & Objectives:**

The primary aim of this study is to examine the role of audiologists in facilitating access to disability certificates for hearing-impaired individuals in Maharashtra. The specific objectives are as follows:

1. To investigate the role of audiologists in diagnosing hearing impairments and certifying disability in the process of obtaining a disability certificate.
2. To assess the challenges faced by hearing-impaired individuals in accessing disability certificates, with a focus on geographical, administrative, and awareness-related barriers.
3. To explore strategies that can empower audiologists to become more effective advocates for their patients in navigating the disability certification process.
4. To recommend policy interventions that could streamline the process and improve access to disability certificates for hearing-impaired individuals in Maharashtra.

### **Method:**

This study employs a mixed-methods research approach, incorporating both qualitative and quantitative data collection methods to gain a comprehensive understanding of the challenges and opportunities in facilitating access to disability certificates for hearing-impaired individuals. The study is conducted in collaboration with audiology clinics and government-run disability certification centers in both urban and rural areas of Maharashtra.

**Study Population and Sampling:** The study includes three key groups:

1. Hearing-impaired individuals who have applied for or are eligible for a disability certificate.
2. Audiologists working in Maharashtra who are involved in the diagnosis of hearing

impairment and certification processes.

3. Social welfare program administrators and officials involved in the disability certification process.

**Qualitative Data Collection:** In-depth, semi-structured interviews were conducted with 30-40 participants from each group to explore their experiences with the certification process and the role audiologists play in assisting patients. Participants were selected from a variety of locations, including urban centers and rural areas, to capture a diverse range of experiences.

**Quantitative Data Collection:** A structured survey was administered to 200 hearing-impaired individuals to gather data on their knowledge of the certification process, their experiences with obtaining a disability certificate, and the challenges they faced. Audiologists were also surveyed to assess their involvement in the process and any barriers they encounter in facilitating access to disability certification for their patients.

#### Data Collection Tools

**Semi-Structured Interviews:** Interviews with audiologists and patients focused on the procedural, logistical, and emotional aspects of the certification process, and the role audiologists play in navigating these challenges.

**Surveys:** Surveys were used to collect demographic information, patient experiences with the disability certification process, and audiologists' perspectives on their involvement in facilitating the process.

#### Data Analysis

**Qualitative Data Analysis:** Thematic analysis was used to identify key themes emerging from the interviews, focusing on the barriers to certification, the role of audiologists, and potential strategies to improve access.

**Quantitative Data Analysis:** Descriptive statistics were used to summarize survey responses, and inferential statistics (such as chi-square tests) were employed to examine the relationship between demographic variables (such as rural vs. urban location) and the likelihood of successfully obtaining a disability certificate.

### **Results & Discussion:**

#### 1. Role of Audiologists in the Certification Process

The study found that audiologists play a pivotal role in diagnosing hearing impairments and certifying the level of disability required for obtaining a disability certificate. Audiologists, particularly those working in government hospitals and certification centers, assist patients in undergoing the necessary audiometric evaluations and in completing the paperwork required



for the certification process.

However, many audiologists reported facing significant challenges in navigating the bureaucratic aspects of the certification process. They expressed frustration with the slow processing times and inconsistent standards applied across different certification centers. Moreover, audiologists in rural areas noted that patients often have to travel long distances to reach certification centers, which serves as a major deterrent for many.

## 2. Barriers to Accessing Disability Certificates

Participants identified several barriers to accessing disability certificates, including:

**Geographical Barriers:** Individuals in rural areas face significant challenges in traveling to certification centers, which are often located in urban centers or district headquarters. This is particularly problematic for individuals with severe hearing impairments who require assistance in traveling.

**Lack of Awareness:** Many hearing-impaired individuals, especially in rural areas, were unaware of the disability certificate and its benefits. Those who were aware often did not know how to begin the application process.

**Bureaucratic Delays:** The certification process was frequently described as cumbersome, with multiple steps and long waiting periods for official approval.

## 3. The Need for Advocacy and Collaboration

The study highlighted the importance of collaboration between audiologists and social workers in assisting patients through the certification process. Audiologists often serve as the first point of contact for hearing-impaired individuals seeking a disability certificate, but without formal training in advocacy or administrative processes, their ability to assist patients beyond medical evaluation is limited.

## 4. Proposed Solutions

Participants suggested several solutions to improve access to disability certificates:

**Mobile Certification Camps:** These camps, conducted in rural areas by audiologists and government officials, could significantly reduce the travel burden for rural patients and streamline the certification process.

**Awareness Campaigns:** Government-led initiatives to raise awareness about the benefits of disability certificates and how to apply for them could improve uptake, especially in underserved areas.

**Simplification of Bureaucratic Procedures:** Streamlining the certification process, reducing paperwork, and ensuring consistent standards across certification centers could reduce delays

and make the process more accessible.

**Summary & Conclusion:**

The study reveals that audiologists play a crucial role in facilitating access to disability certificates for hearing-impaired individuals in Maharashtra, particularly through their involvement in the diagnostic and certification process. However, significant barriers, including geographical isolation, lack of awareness, and bureaucratic inefficiencies, limit access to disability certificates for many hearing-impaired individuals, particularly those in rural areas.

The study underscores the need for a more streamlined certification process and increased collaboration between audiologists, social workers, and government officials. By implementing mobile certification camps, raising awareness, and simplifying bureaucratic procedures, it is possible to improve access to disability certificates for hearing-impaired individuals, ensuring they can fully benefit from the social welfare programs designed to support them.

These findings call for policy interventions that empower audiologists to become more effective advocates for their patients and highlight the need for greater integration between healthcare services and social welfare programs to better serve the needs of the hearing-impaired population in Maharashtra.

## **Assessing the Role of NGOs in Bridging Gaps in Hearing Healthcare and Social Welfare Services for the Hearing-Impaired in Maharashtra**

*Buddhabhushan Mukundarao*

### **Aadhar Foundation**

#### **Introduction:**

Hearing impairment is one of the most prevalent disabilities worldwide, affecting millions of individuals across different age groups and socio-economic backgrounds. In India, the magnitude of hearing loss is significant, with millions suffering from mild to profound hearing impairment. For those living with hearing loss, access to healthcare and social welfare services is critical to ensuring a quality life. However, in many parts of India, particularly in rural and underserved regions like those in Maharashtra, hearing healthcare services and access to social welfare programs remain inadequate.

Non-Governmental Organizations (NGOs) have historically played a key role in bridging gaps where government programs may be insufficient, particularly in the fields of education, health, and social services. NGOs, with their grassroots reach, flexibility, and community-oriented approach, have the potential to address these challenges by providing hearing healthcare services, awareness programs, and advocacy for the hearing-impaired to access social welfare benefits. This study investigates the role of NGOs in bridging these gaps in Maharashtra, focusing on how they contribute to improving access to hearing healthcare and social welfare services for the hearing-impaired population.

#### **Need for Study:**

The government of India has introduced several initiatives to support the hearing-impaired population, including the issuance of disability certificates, subsidized hearing aids, job reservations, and educational assistance. Despite these efforts, a significant gap persists in both healthcare delivery and access to social welfare benefits. In Maharashtra, rural and underserved areas face particularly acute challenges, with limited healthcare infrastructure, a lack of trained professionals, and insufficient awareness among the population regarding available services and entitlements.

NGOs can play a pivotal role in filling these gaps. They often operate in regions where government services may be scarce and can provide essential healthcare services such as hearing screenings, diagnosis, and the provision of hearing aids. Furthermore, they can educate

communities about the rights and benefits available to hearing-impaired individuals and assist them in navigating bureaucratic processes such as obtaining disability certificates or enrolling in social welfare programs.

There is a need to understand how NGOs operate within the context of hearing healthcare and social welfare in Maharashtra, what challenges they face, and what impact they have on the lives of the hearing-impaired. This study aims to fill this gap in the literature by assessing the contributions of NGOs to hearing healthcare and social welfare services in Maharashtra, with a focus on the hearing-impaired population.

### **Aim & Objectives:**

#### Aims and Objectives

The primary aim of this study is to assess the role of NGOs in bridging the gaps in hearing healthcare and social welfare services for the hearing-impaired population in Maharashtra. The specific objectives of the study are as follows:

1. To examine the extent to which NGOs are involved in providing hearing healthcare services to the hearing-impaired population in Maharashtra.
2. To assess the contribution of NGOs in raising awareness about hearing impairment and promoting the utilization of social welfare programs for the hearing-impaired.
3. To identify the challenges NGOs face in delivering hearing healthcare services and advocating for social welfare benefits.
4. To evaluate the effectiveness of NGO-led initiatives in improving access to disability certification, healthcare services, and social welfare programs for the hearing-impaired.
5. To recommend strategies for improving the collaboration between NGOs, government bodies, and healthcare professionals to enhance service delivery for the hearing-impaired in Maharashtra.

### **Method:**

This study employs a mixed-methods research approach, integrating both qualitative and quantitative data collection methods to provide a comprehensive understanding of the role of NGOs in hearing healthcare and social welfare services for the hearing-impaired in Maharashtra. The research is conducted in collaboration with NGOs operating across various regions of Maharashtra, including both urban and rural areas, to ensure a diverse sample and wide-ranging insights.

#### Study Population and Sampling

The study focuses on three main stakeholder groups:

1. Hearing-impaired individuals who have received services or support from NGOs.
2. NGO representatives involved in hearing healthcare and advocacy for social welfare services for the hearing-impaired.
3. Government officials and healthcare professionals working with or alongside NGOs in Maharashtra.

**Qualitative Data Collection:** In-depth interviews were conducted with NGO representatives, hearing-impaired individuals, and government officials to explore the range of services provided, the challenges encountered, and the impact of NGO interventions. Interviews were conducted with 40-50 individuals from each group, selected based on their involvement in or experience with NGO-led hearing healthcare services and social welfare programs.

**Quantitative Data Collection:** Structured surveys were administered to 300 hearing-impaired individuals who have received services from NGOs. These surveys aimed to gather data on the types of services accessed, the perceived effectiveness of the support received, and challenges in accessing government programs or healthcare services. Additional surveys were administered to NGO representatives and healthcare professionals to capture data on service delivery, barriers faced, and recommendations for improvement.

#### Data Collection Tools

- **Semi-Structured Interviews:** Interviews with NGO representatives, hearing-impaired individuals, and healthcare professionals focused on understanding the scope of services provided, the advocacy efforts made, and the outcomes achieved for the hearing-impaired.
- **Surveys:** Surveys collected quantitative data on service utilization, barriers faced by hearing-impaired individuals in accessing healthcare and social welfare benefits, and the role of NGOs in addressing these challenges.

#### Data Analysis

- **Qualitative Analysis:** Thematic analysis was employed to identify key themes emerging from the interviews, focusing on the role of NGOs in service provision, challenges faced in reaching underserved populations, and the impact of their interventions.
- **Quantitative Analysis:** Descriptive statistics were used to summarize the survey data, and inferential statistics were applied to examine the relationship between variables such as rural vs. urban settings and the availability of services. Cross-

tabulations were also conducted to compare the effectiveness of different NGO-led initiatives in improving access to healthcare and social welfare services

## **Results & Discussion:**

### **1. Role of NGOs in Hearing Healthcare**

The study revealed that NGOs in Maharashtra play a vital role in providing basic hearing healthcare services, especially in rural and underserved regions. These services include hearing screenings, audiometric evaluations, distribution of hearing aids, and referrals to specialist care where needed. NGOs often collaborate with local healthcare providers and government-run health camps to reach populations that may otherwise have no access to hearing healthcare. NGOs also address the lack of awareness about hearing impairment in these regions. Many individuals, particularly in rural areas, do not seek treatment due to a lack of understanding of hearing loss and the available treatment options. NGOs conduct awareness campaigns, both in-person and through digital platforms, to educate communities about the importance of early detection and treatment.

### **2. Advocacy for Social Welfare Services**

In addition to providing healthcare services, NGOs are actively involved in helping hearing-impaired individuals access social welfare benefits. This includes assisting them in obtaining disability certificates, which are necessary for availing of government subsidies for hearing aids, educational scholarships, and job reservations. NGOs also provide support in navigating bureaucratic processes and paperwork, which are often barriers to accessing these services.

### **3. Challenges Faced by NGOs**

Despite their critical role, NGOs face significant challenges in delivering services. One of the main challenges is funding. Many NGOs rely on donations and grants, which can be unpredictable, leading to gaps in service provision. Moreover, the lack of trained audiologists and healthcare professionals in rural areas limits the scope of services that can be provided. NGOs also report difficulties in coordinating with government agencies, particularly in streamlining the process of obtaining disability certificates for the hearing-impaired.

Another challenge is the stigma associated with disability in many communities. NGOs must often overcome deep-seated cultural beliefs that prevent individuals from seeking help for hearing impairments. Additionally, the lack of infrastructure, such as transport services, makes it difficult for hearing-impaired individuals in remote areas to access the services provided by NGOs.

### **4. Effectiveness of NGO Interventions**

The study found that NGO interventions have had a significant impact on improving access to hearing healthcare and social welfare services for the hearing-impaired in Maharashtra. Individuals who received NGO support reported higher satisfaction with the healthcare services they accessed, as well as an increased likelihood of obtaining a disability certificate and utilizing social welfare benefits. However, the study also highlighted the need for stronger partnerships between NGOs, government bodies, and healthcare providers to ensure that these services are sustainable and reach a broader population.

### **Summary & Conclusion:**

Study highlights the critical role that NGOs play in bridging gaps in hearing healthcare and social welfare services for the hearing-impaired population in Maharashtra. NGOs provide essential services such as hearing screenings, hearing aid distribution, and awareness campaigns that address the unique challenges faced by rural and underserved populations. Furthermore, NGOs act as advocates, helping hearing-impaired individuals navigate the complex bureaucracy involved in accessing social welfare benefits such as disability certificates.

Despite their significant contributions, NGOs face several challenges, including funding limitations, a lack of trained professionals, and difficulties in collaborating with government agencies. To enhance their effectiveness, it is essential for NGOs to strengthen partnerships with government bodies and healthcare professionals. Additionally, policy interventions that support the integration of NGO-led services with government initiatives can help ensure that hearing-impaired individuals in Maharashtra have equitable access to the healthcare and social welfare services they need.

By addressing these challenges, NGOs can continue to play a vital role in improving the lives of hearing-impaired individuals in Maharashtra, particularly in rural and underserved regions where access to both healthcare and social welfare services remains limited.

## **Assessing the Impact of Awareness Campaigns on Hearing Loss and Accessibility to Social Welfare Programs in Rural Maharashtra**

*Buddhabhushan Mukundarao*

**Aadhar Foundation**

### **Introduction:**

Hearing loss is a significant public health concern, particularly in rural areas where awareness and access to services are often limited. In Maharashtra, many individuals living with hearing impairments lack the necessary knowledge about available social welfare programs, leading to underutilization of essential resources that can improve their quality of life. Awareness campaigns serve as a critical tool in educating communities about hearing health, the importance of early detection, and the accessibility of social welfare benefits designed for those with disabilities. This study aims to assess the impact of these awareness campaigns on understanding hearing loss and the subsequent utilization of social welfare programs among the rural population in Maharashtra.

### **Need for Study:**

Despite the government's efforts to promote social welfare programs for individuals with disabilities, a significant gap persists in rural areas regarding awareness of hearing loss and available support systems. Many individuals are unaware of their rights and the benefits they can access, such as disability certificates, subsidies for hearing aids, and educational support. This lack of awareness not only affects the quality of life for those with hearing impairments but also perpetuates the stigma surrounding disability in these communities.

Given the pressing need for improved awareness and education, it is essential to evaluate the effectiveness of awareness campaigns aimed at promoting understanding of hearing loss and accessibility to social welfare programs. This study seeks to fill the gap in existing literature by examining how awareness campaigns influence the perceptions and actions of rural populations concerning hearing loss and their engagement with social welfare services.

### **Aim & Objectives:**

The primary aim of this study is to assess the impact of awareness campaigns on knowledge and accessibility related to hearing loss and social welfare programs in rural Maharashtra. The specific objectives include:



1. To evaluate the level of awareness regarding hearing loss and its implications among rural communities before and after the implementation of awareness campaigns.
2. To examine the effectiveness of different campaign strategies (e.g., workshops, community outreach, informational materials) in increasing awareness and understanding of hearing loss.
3. To assess changes in the utilization of social welfare programs related to hearing impairment following awareness campaign interventions.
4. To identify barriers that still exist in accessing social welfare programs, even after increased awareness.
5. To provide recommendations for improving future awareness campaigns to maximize their impact on community engagement with hearing healthcare and social welfare services.

**Method:**

This study adopts a mixed-methods approach, incorporating both qualitative and quantitative research methods to comprehensively assess the impact of awareness campaigns. The research is conducted in collaboration with NGOs and local health organizations implementing awareness campaigns in rural Maharashtra.

**Study Population and Sampling** The study involves three key groups:

1. Rural community members who have participated in awareness campaigns related to hearing loss.
2. NGO representatives and healthcare providers involved in conducting the campaigns.
3. Local government officials responsible for overseeing social welfare program implementation.

**Qualitative Data Collection:** In-depth interviews and focus group discussions were conducted with 30-40 participants from each group to gather insights on their experiences with the awareness campaigns, perceived changes in knowledge, and barriers encountered in accessing social welfare services.

**Quantitative Data Collection:** Surveys were administered to 300 rural community members before and after the awareness campaigns to measure changes in knowledge about hearing loss, awareness of available social welfare programs, and the actual utilization of these services.

**Data Collection Tools**

**Semi-Structured Interviews:** Interviews focused on personal experiences, perceptions of

hearing loss, and the effectiveness of awareness campaigns in influencing attitudes and behaviors.

Surveys: Surveys collected quantitative data on demographics, knowledge levels about hearing loss and social welfare programs, and self-reported utilization of services before and after the campaigns.

#### Data Analysis

Qualitative Analysis: Thematic analysis was employed to identify key themes from the interviews and discussions, focusing on changes in awareness, attitudes toward hearing loss, and barriers to accessing services.

Quantitative Analysis: Descriptive statistics were used to summarize survey responses, and paired t-tests were conducted to assess the significance of changes in awareness and service utilization before and after the campaigns.

### **Results & Discussion:**

#### 1. Impact of Awareness Campaigns on Knowledge

The findings revealed that awareness campaigns significantly increased knowledge about hearing loss and its implications among rural community members. Participants reported a greater understanding of the signs of hearing impairment, the importance of early intervention, and the benefits of obtaining a disability certificate. The campaigns effectively reached a diverse audience, with a notable increase in knowledge across age groups and socio-economic backgrounds.

#### 2. Effectiveness of Campaign Strategies

Different campaign strategies, such as interactive workshops and door-to-door outreach, proved effective in engaging the community. Workshops provided opportunities for hands-on demonstrations of hearing screenings and discussions about hearing aids, which resonated well with participants. Informational materials, such as pamphlets and posters, were also helpful in disseminating information but were less effective in prompting direct engagement compared to interactive methods.

##### a) Changes in Utilization of Social Welfare Programs

Following the awareness campaigns, there was a significant increase in the reported utilization of social welfare programs related to hearing impairment. Participants indicated that they were more likely to seek out disability certifications, apply for subsidies for hearing aids, and utilize educational resources available to them. However, despite the increased awareness, barriers to accessing these programs persisted, particularly bureaucratic challenges and a lack of available

resources in rural areas.

#### b) Remaining Barriers to Access

Although awareness campaigns improved knowledge and engagement, many individuals still faced obstacles when trying to access social welfare programs. Common barriers included complicated application processes, limited availability of services, and ongoing stigma surrounding disability. Many participants reported feeling overwhelmed by the bureaucratic requirements, which deterred them from pursuing the benefits they were now aware of.

#### **Summary & Conclusion:**

This study highlights the significant impact of awareness campaigns on increasing knowledge about hearing loss and improving access to social welfare programs in rural Maharashtra. The findings demonstrate that well-implemented campaigns can effectively educate communities and empower individuals to seek necessary resources and support. However, while awareness has increased, persistent barriers remain that hinder full access to social welfare services for the hearing-impaired.

The study underscores the importance of ongoing advocacy and support to complement awareness efforts, ensuring that individuals can navigate the bureaucratic landscape and fully benefit from available services. Future campaigns should focus on not only educating the community but also simplifying access to services and addressing systemic barriers within the social welfare framework. By doing so, it is possible to create a more inclusive environment that supports the hearing-impaired population in rural Maharashtra.

## **Results of newborn hearing screening: A community-based investigation**

*Rajeev Ranjan*

### **Composite Regional Center for Skill Development, Rehabilitation & Empowerment of Persons with Disabilities (CRC) Lucknow**

#### **Introduction:**

Hearing impairment refers to varied degrees of hearing loss, from hard of hearing to complete deafness. The Centers for Disease Control and Prevention (CDC) report that of 1000 examined newborns, 1.7% had a hearing impairment in 2019. According to projections, the prevalence of inborn hearing loss ranges from 1.2-5.7/1000 neonates, and it is significantly higher in high-risk neonates.

#### **Need for Study:**

This study investigates the outcomes of newborn hearing screening within a community-based framework.

#### **Aim & Objectives:**

To identify the prevalence of hearing impairment and the effectiveness of early detection strategies in the community sector.

#### **Method:**

A longitudinal research design was employed. Conducted over a 12-month period in Primary health center, Kakori, Lucknow, the research involved screening of 505 newborns using otoacoustic emissions (OAE) tests.

#### **Results & Discussion:**

The results indicated an initial referral rate of 15.44% (in which, refer for both ears: 10.49%, right ear: 2.17%, and left ear: only 2.77%) for further audiological evaluation, with a confirmed incidence of hearing loss in 78 infants, representing 15.44% of those screened. Follow-up assessments revealed significant delays in diagnosis and intervention among families lacking access to resources. The findings underscore the importance of community engagement and tailored educational programs to improve screening follow-up and support systems.

#### **Summary & Conclusion:**

This investigation highlights the need for ongoing advocacy and resource allocation to enhance early hearing detection and intervention services in community settings, ultimately aiming to optimize developmental outcomes for affected infants.

## AP1501

### **Acoustic Inertance: - An effort to reach the optimum vent dimension to eliminate occlusion effects.**

*Debadatta Mahallik, Imran Ansari & Preeti Sahu*

**Pt JNM Medical College, Raipur, Chhattisgarh**

#### **Introduction:**

To reduce the occlusion effect produced by the hearing aid shell or earmold, there are two ways, either insert the earmold deeply into the ear canal or create a vent. In the former condition as the canal stalk approaches the second bend or it fills completely the cartilaginous portion, the remaining bony portion is not an effective generator of occlusion sound because there is presumably small phase difference between all walls of each side of the temporal bone. Although, deep canal fitting provides several benefits but it is difficult to get an impression and at the same time patient will more concern to physical discomfort than the technical benefit. In later condition (i.e. vent). The space between the medial end of the sound bore and the tympanic membrane is a major factor in sound pressure production. The sound pressure produced will increase as the leftover volume decreases. Some sound vibration will exist through an escape route, such as vent rather than contribute to the sound pressure inside the ear canal. The proportion of the impedance of the escape route (vent) to the impedance of the remaining ear canal volume determines how much sound vibration will persist. The air inside the vent exhibits some of the properties of both acoustic compliance and acoustic inertance. The mass of the air inside the venting section has an inertance value that is directly proportional to its length and inversely proportional to its cross-section area.

#### **Need for Study:**

When a hearing aid or earmold obstructs the ear canal, producing an artificial voice. This so-called occlusion effect and can be lessened when the ear is opened using vents or domes. An earmold's apparent occlusion effect and coupling quality are mostly determined by the acoustic mass of the vent. The occlusion effect is highly predictive of the vent's acoustic mass, hence the vent's resonant frequency associated with residual volume leftover in the canal, combining acoustically these elements is not reliably evaluated.

#### **Aim & Objectives:**

To reach out optimum vent dimension by the mathematical calculation of acoustic inertance to

get rid of occlusion effects.

### **Method:**

The study was carried out from 67 positive impressions, out of 67, 25 were CIC and 42 were earmold. Physical measurement through the scale was carried out for length measurement and measurement was from tip of the canal to the bottom of the faceplate on the posterior side of the instrument and as well as from earmolds. The mean length was 14.07mm with STD  $\pm 1.34$ mm. The postero-superior canal wall is about 6 mm shorter than the opposite (antero-inferior) wall due to the tympanic membrane oblique orientation. Because of the "end effect" of the concha and the way the concha is attached to the ear, the effective acoustic length of the canal is approximately 25% larger than its physical length, which corresponds to the effective length of the ear canal will be 32 mm. It is necessary to add a length correction to each end of the vent that opens out into a larger space (free air at the lateral end and residual volume at the medial end). The end corrections were added 0.4 times of the diameter of the vent. The end correction of 0.8mm, 1.6mm, 2.4mm and 3.2mm were added for 1mm, 2mm, 3mm, and 4mm vent respectively. The total lengths were taken 14.8mm, 15.6mm, 16.4mm, and 17.2mm for 1mm, 2mm, 3mm, and 4mm vents (i.e. mean canal stalk length plus end corrections). From the total length of EAC, the vent length was subtracted. The diameter of 1mm, 2mm, and 3mm was taken for the calculation by using the formula ( $M_{vent} = \rho_0 L / \pi r^2$ ) density of air multiplied by length and divided by pi multiplied by radius square. The compliance is related to the volume of the residual air in the ear canal ( $C_{canal} = V / (P_0 C^2)$ ), where V is the volume of air in m<sup>3</sup> and C is the speed of the sound (340m/sec) The compliance is proportional to the enclosed volume of air and there is also compliance of the tympanic membrane  $C_{tym} = V / (P_0 C^2)$  and these two compliance giving the total compliance of the ear canal. Then the resonant frequency of the acoustic mass-spring system was calculated by converting from radians to Hertz.  $\omega^2 = 1 / (M_{vent} [C_{canal} C_{tym}])$ , converting to Hertz =  $f_0 = (1 / 2\pi) \sqrt{1 / (M_{vent} [C_{canal} C_{tym}])}$ .

### **Results & Discussion:**

The length of the vent is not a critical factor in decisions concerning vents. As a general rule, as the length increases there will be less low-frequency attenuation when the diameter is held constant. Hence the crucial decision is usually the diameter of the vent. In our study, for a 1mm vent diameter, there is a vent-associated resonance is 322Hz, for a 2 mm vent diameter there is a vent-associated resonance is 629Hz and for a 3 mm vent diameter there is a vent-associated

resonance is 944Hz. A high-pass acoustic filter is created by the vent interacting with the remaining air volume in the ear canal; because the cutoff frequency of the filter is dependent on the resonance frequency associated with the vent, it will also increase as the radius of the vent increases. All signal power will be eliminated by the vent, below the frequency of vent-associated ear canal resonance, and an additional amplification will be provided for approximately one octave above the vent-associated resonance. As per the length of vent concern, if it is long up to the second bend there is less occlusion will be created then the diameter of the vent may not need to be wide but if the vent length is shortened, it may produce more occlusion effect then the diameter of the vent may need to be wide enough to eliminate occlusion effect. For a 3 mm vent diameter, there is a vent-associated resonance is 944Hz, which means frequencies below 944Hz will be filtered out from the ear canal, hence there will be very little occlusion effect that will persist.

#### **Summary & Conclusion:**

Occlusion effects are generally seen at low frequencies i.e. 250Hz, 500Hz, and 1000Hz, and as the occlusion effect is seen up to 1000Hz, means up to 1000Hz should be filtered out from the ear canal. In our study, it is closely approximate (I.e.944Hz) to 1000Hz. A straightforward method is to choose a vent diameter that is big enough to reduce occlusion as much as possible without compromising the necessary gain in the high frequencies. A vent diameter greater than 3mm may produce a compromise of the gain at the high frequencies. If there will be some degree of occlusion still persist even after a 3 mm vent, then the hearing aid wearer can be counselled to accept a certain amount of physical occlusion, then that vent size might not be required greater than 3mm.



## **Long-Term Speech Perception and Language Development Outcomes in Children with Cochlear Implants: Insights from the Indian Context**

*Vijay Kumar & Anmol*

**Amity University Haryana**

### **Introduction:**

Cochlear implantation brings tremendous benefits to children with severe to profound sensorineural hearing loss due to access to auditory information vital to speech and language development. It is well known that speech perception is integral to spoken languages as it involves the ability to hear, identify and understand auditory signals. Objective assessment of speech perceptions helps in understanding the rate and pattern of development of a child's expressive and receptive language skills (Dettman et al., 2016). In terms of outcomes, children with CIs have been shown to score well in the immediate phase following surgical implantation and application in terms of language and speech perception (Niparko et al., 2010; Leigh et al., 2013). However, there seems to be limited evidence on how these children perform in speech and language outcomes in the long term especially in countries like India that have fewer resources. A more similar group of patients in India may suffer from unequal outcomes owing to poor availability of follow-up auditory-verbal therapy (Sarant et al., 2015). Speech perception plays a vital role in the development of language abilities more broadly since it allows for the interpretation of spoken words in addition to sound detection, which promotes general cognitive, linguistic, and social development (Geers et al., 2009). The acquisition of language features, covering aspects such as grammar, vocabulary, and sentence structure, has a close relationship with our ability to perceive speech. The derivative works and comprehension of language - both expressive and receptive - suggest the need for more detailed studies regarding the assessment of the phenomenal adaptation of cochlear implant users to different auditory situations. The demand that some aspects of language, such as the ability to develop a narrative, high-level language comprehension, and complex conversation that takes place a few years post-implant (Davidson et al., 2014).

### **Need for Study:**

There has been limited research on the long-term effects of cochlear implants on recipients' speech perception and language development.

This type of research is the need of the hour, especially in low-resource environments and

communities; such as India. Other elements like early implantation, family participation, and access to rehabilitation have also not been researched in long-term studies, even if short-term studies show promising enhancements in speech perception (Boons et al., 2012). There is a need for such a study as speech production is of utmost importance in the component of learning spoken language, for both language production and understanding. Such a long-term study will ensure that children with cochlear implants reach their full linguistic potential and functionality. This study aims to assess the development of critical language components, including grammar, vocabulary, and higher-order comprehension, several years after implantation in order to offer a comprehensive understanding of the factors that influence long-term success.

### **Aim & Objectives:**

This research aims to study the long-lasting effects of speech perception and language development in children who have been fitted with cochlear implants. The specific objectives are:

1. To test the link between early implantation and long-term speech comprehension and language development results.
2. To probe the main factors that contribute to the successful application of speech and communication, such as age at implantation, duration of CI usage, and adherence to auditory training therapy.

### **Method:**

Method:

#### a) Participants:

The current investigation involved a total of 8 participants who were aged from 8 to 16 and who had cochlear intraoperative implantation done to either ear 2 to 8 years earlier. The participants received therapy from different centers and were from different socioeconomic backgrounds. The models of cochlear implants used by the participants were Medel Opus 2, Cochlear Nucleus CP802, and Cochlear Nucleus 7S.

#### b) Test instruments and stimuli:

**Speech Perception:** In respect of speech perception two measures were employed including the Categories of Auditory Performance (CAP) and the Speech Intelligibility Rating (SIR) (Archbold et al, 1995).

**Language Development:** For purposes of measuring language development, Preschool Language Scale-5 (PLS-5) and Clinical Evaluation of Language Fundamentals-5 (CELF-5)

(Davidson et al, 2014) were adopted.

c) Procedure:

In the procedure, follow-up sessions were conducted at additional intervals of 3 months, 6 months, and one year. These sessions began after help seekers recorded baseline measures collecting information from each participant. Besides the follow-ups, primary data on implantation such as the type of cochlear implant used and the duration of therapy, that is, in their respective centers, was collected. Most of the participants received therapy of 8-10 weeks, but the total duration of treatment was indeed different between centers.

d) Measures and Scoring:

The children's speech perception abilities were rated using the CAP and SIR scales. Higher scores on these scales suggested better performance in auditory recognition and speech intelligibility. Language development was measured using PLS-5 and CELF-5, focusing on key components such as grammar, vocabulary, and higher-order comprehension.

## **Results & Discussion:**

### Results:

This study found that children who were implanted before the age of 3 years appeared to have delays in speech perception and language development, as measured by auditory performance (CAP) and speech intelligibility rating (SIR) scales the measurement of. Regular speech therapy significantly improved these outcomes, with children doing well in more frequent sessions. Family involvement and a multilingual home environment further supported language development.

However, children from lower socioeconomic backgrounds with limited access to treatment developed more slowly, and often declined in their language development, emphasizing the importance of long-term intervention and emphasis on socioeconomic factors in long-term success Discussion:

Speech-language development is important for cognitive and social development in children with cochlear implants (CIs), but these abilities often develop later than hearing peers Early language intervention and therapy consistency are needed to build a solid foundation, but more complex language skills, such as understanding grammar and spoken word, can take years (Davidson et). al., 2014).

Long-term follow-up and long-term interventions are necessary for the sustained development of children, especially in low socioeconomic settings. Speech perception affects not only language but also academic and social development, making ongoing support essential for the

full integration of CI children into society (Geers et al., 2009; Niparko et al et al., 2010).

**Summary & Conclusion:**

The results of this research note that there is a patient, continuity, and family understanding around the implantation and the first installed device use within the targeted children in order to achieve the best possible speech skills and language. The existing inequalities in socio-economic factors and therapy availability could heavily influence these measurements, creating a situation where a decreased level of rehabilitation services, in particular, predicated on those of India, is very much required. Work regarding these areas can minimize the extent to which patients with CIs who may wish to assimilate fully into society are prevented from doing so by the language barrier as well as the stigma attached to such patients.

## **Bhramari Pranayam as a Complementary Therapy for Tinnitus: A Randomized Controlled Trial with Caroverine and Counseling**

*Satish Patel & Sonam Sharma*

**All India Institute of Medical Sciences**

### **Introduction:**

Tinnitus, the perception of a phantom sound in the absence of an external acoustic stimulus (Møller et al., 2010), is a prevalent condition affecting an estimated 20-42.8% of the population (Chen et al., 2021). This phantom noise can manifest in various forms, from ringing and buzzing to hissing and clicking, significantly impacting an individual's quality of life. The etiology of tinnitus is often complex and multifactorial, with potential underlying causes including hearing loss, noise exposure, ototoxic medications, head injuries, temporomandibular joint disorders, and neurological conditions. While the exact mechanisms underlying tinnitus remain elusive, it is thought to involve aberrant neural activity in the auditory pathways.

Current tinnitus management strategies encompass a range of approaches, including sound therapy, cognitive-behavioral therapy, tinnitus retraining therapy, and pharmacological interventions (Chen et al., 2021). Bhramari Pranayam, a yogic breathing technique, has been suggested as a potential complementary approach to tinnitus management, as it may help alleviate the associated stress and anxiety through its effects on the autonomic nervous system. (Pawlak-Osińska et al., 2018)(Osisanya, 2019)(Abdelhaliem et al., 2020).

### **Need for Study:**

Given the limitations of existing tinnitus management strategies, particularly in elderly patients with comorbidities, there is a growing need for exploring integrated approaches that combine various therapeutic modalities. A multimodal approach may offer a more comprehensive and personalized treatment strategy by targeting multiple aspects of tinnitus, including its physiological, psychological, and emotional dimensions. Bhramari Pranayam, a yogic breathing technique, has shown promise in reducing stress and anxiety, potentially modulating the autonomic nervous system and influencing tinnitus perception. Caroverine, a medication with neuroprotective and antioxidant properties, may offer additional benefits in managing tinnitus. Combining these interventions with counselling, which provides education, support, and coping strategies, may further enhance treatment outcomes.

**Aim & Objectives:**

The aim of this study is to evaluate the efficacy of a multimodal approach combining bhramari pranayam, oral caroverine, and counselling in the management of tinnitus in elderly patients with comorbidities.

The specific objectives are:

1. To assess the impact of the combined intervention on tinnitus severity, measured using standardized tinnitus questionnaires.
2. To evaluate the effects of the intervention on secondary outcomes, including anxiety, depression, sleep quality, and overall quality of life.

**Method:**

This open-label randomized controlled trial, conducted at the Department of ENT, AIIMS Patna, aimed to evaluate the efficacy of Bhramari Pranayama as an adjunct to standard tinnitus management. Ethical approval was obtained from the institute's committee prior to data collection. Adults (18+ years) with subjective tinnitus and intact tympanic membranes were enrolled in the study. Exclusion criteria included ear discharge or outer/middle ear pathologies. Baseline audiological data, including pure tone audiometry, immittance audiometry, and otoacoustic emissions with tinnitus matching, were collected. Following informed consent, all participants received tinnitus counseling and caroverine. A randomly selected subset of participants was also instructed in Bhramari Pranayama, as described in "Asana Pranayama Mudra Bandha," and advised to practice it for 10 cycles, three times daily, for 12 weeks. Adherence to the Bhramari Pranayama regimen was monitored through self-reported logs and verified by family members. The primary outcome measure was tinnitus severity, assessed at baseline and follow-up using validated questionnaires. Secondary outcome measures included anxiety, depression, sleep quality, and quality of life, assessed using the Depression Anxiety and Stress Scale. Statistical analysis will be conducted to compare outcomes between the intervention and control groups.

**Results & Discussion:****Results**

A total of 169 participants were enrolled in the study. Demographic data collected included age, gender, education, type of tinnitus sound, and self-reported hearing ability. Audiological assessments were conducted as follows: pure tone audiometry (n=106), otoscopic examination (n=169), immittance audiometry (n=90), and otoacoustic emissions (n=23). The Tinnitus

Handicap Inventory (THI) and the Depression Anxiety and Stress Scale (DASS) were administered to 64 participants at baseline. Follow-up data for the THI and DASS were collected at one month (n=33) and two months (n=30).

Due to the small sample size at follow-up, a non-parametric approach was used for analysis. Significant improvements in THI scores were observed at both follow-up time points. However, no significant changes were found in the DASS Depression and Anxiety subscales, despite a significant positive correlation between these measures and the THI.

Participants with hearing loss reported significantly higher THI and DASS scores, indicating a stronger perception of tinnitus. Gender did not significantly influence outcomes.

### Discussion

This study investigated a multimodal intervention for tinnitus management in elderly patients with comorbidities, combining bhramari pranayam, caroverine, and counselling. Results showed significant improvement in tinnitus severity levels post-intervention, suggesting this combined approach may be promising. This aligns with research on stress and anxiety reduction through yogic breathing (Köksoy et al., 2017), bhramari pranayam may influence tinnitus perception by altering autonomic nervous system response, potentially synergistically enhanced by caroverine's neuroprotective and antioxidant properties, and counselling played only an educational and supportive role.

Despite THI improvement, depression and anxiety remained unchanged, raising questions about the relationship between tinnitus severity and emotional distress. While correlated, the intervention's primary impact seems to be on tinnitus perception, not emotional distress. Further research should explore this, potentially considering longer monitoring periods or additional therapeutic components.

Consistent with existing literature hearing loss correlated with increased tinnitus perception (higher THI and DASS scores), (Watts et al., 2018) highlighting its importance in tinnitus management. Gender did not influence outcomes, suggesting equal efficacy for both sexes.

Study limitations include the small sample size for follow-up, necessitating a non-parametric approach. Larger-scale studies are needed to confirm the findings. The open-label design introduces potential bias, and future blinded, placebo-controlled studies are warranted.

Additionally, the loss of follow-up restricts the complete estimation of the result leaving the uncertainty about absolute effect of the adopted methodology.

### **Summary & Conclusion:**

This study provides preliminary evidence supporting the combined use of Bhramari Pranayam,

caroverine, and counselling for tinnitus management in elderly patients with comorbidities. The significant THI improvement suggests this multimodal intervention may be a valuable addition to existing strategies. Further research should explore long-term effects, component optimization, and efficacy in diverse populations.



**AP1504**

**Speech Perception in Noise among Mainstreamed Children with Normal  
Hearing and Hearing Loss Using Bimodal Device**

*Saumya Sundaram, Heramba Ganapathy S & Prakash Boominathan*

**National Institute of Speech and Hearing**

**Abstract Not Available**

## **Evaluating the Test-Retest Reliability of 500 Hz Narrowband Chirp ABR in Infants: Insights from a Rural Indian Hospital**

*Rithu Rajan, Krupa Milan Thanki & Srividya Balaji Asuri*

**Dr. S.R.Chandrashekar Institute of Speech and Hearing**

### **Introduction:**

Newborn hearing screening is increasingly becoming a standard practice in birthing centers across India. This development is crucial in the early detection of hearing loss, as it allows for timely intervention, reducing the impact on speech, language, and cognitive development. As more babies undergo hearing screening, there is a growing demand for quicker and more reliable methods for confirming hearing loss, especially in remote areas where access to specialized healthcare may be limited.

### **Need for Study:**

Auditory brainstem response (ABR) testing is one of the most commonly used objective methods for diagnosing hearing loss in infants. However, in rural or satellite clinics, where environmental noise and logistical challenges are significant, it is essential to adopt methods that are efficient, robust, and relatively easy for professionals in main centers to interpret remotely.

Chirp signals are emerging as a preferred stimulus for ABR due to their ability to elicit robust and repeatable waveforms, particularly in challenging recording environments. Chirp-evoked ABR has shown superior results compared to traditional tone bursts, with stronger wave amplitudes and better signal-to-noise ratios. While the utility of chirp ABR has been reported for high-frequency stimuli (1 kHz and 4 kHz) in infants, there is limited data in the Indian context, especially for low-frequency stimuli like 500 Hz narrowband chirp ABR.

### **Aim & Objectives:**

AIM : To evaluate test retest reliability of narrowband 500Hz CE Chirp elicited ABR in infants in a rural based hospital in India.

Objective :

1. to measure amplitude and latencies of wave I and V for narrowband 500Hz chirp ABR for different intensities in infants
2. to measure test retest reliability of the recorded responses in same infants.

**Method:**

Sample: 20 babies in the ages of 5days to 15 days , full term with no identifiable high risk factors for hearing loss.

Inclusion criteria were

1. Babies who passed two stage infant hearing screening programs at a rural hospital / govt hospitals in satellite location of speech and hearing center in south India.
2. Babies with no identifiable medical problems and or not under prolonged antibiotics.
3. Gestational age of 36-41 weeks.
4. Consenting parents
5. Approval from neonatologists and pediatrician

Exclusion criteria:

1. Babies who were crying or fidgeting during time of test
2. babies who were discharged before completion of second test of ABR.

Data collection: Parents were explained on the study procedure and need to repeat ABR. They all were aware of first ABR as part of new born hearing screening program. Consent was sought for the study. Study was conducted in a relatively quiet room of the hospital.

Recording :

IHS 2 channel audiometer was used to record. Surface electrodes with snap in and corresponding leads were used. Standard protocol was followed for hygiene, recording procedures and saving the results. Stimulus was 500Hz CE Narrowband chirp with rate of 21.1/sec, 100-3000Hz filter setting and 1024 samples collected for each recording levels. Montage was reference - opposite ear mastoid; active- same ear mastoid, ground - forehead. Amplification setting was 100,000.00 times and artifact rejection was set to Impedance values were checked before each recording and ensured to be below 5kHz and inter electrode impedance below 2kHz. Two traces were obtained for each of intensity levels of 70dB nHL , 50dB nHL and 30dB nHL.

The test was repeated the next day with same protocol and responses noted.

Data analysis:

The recorded waveforms were reviewed by two experienced audiologists who are also researchers in this study. Both had experience of reviewing ABR results of infants for not less than 4-5 years. Waves were marked and latencies & amplitude readings were noted down.

**Results & Discussion:**

**Objective 1:** to measure amplitude and latencies of wave I and V for narrowband 500Hz chirp ABR for different intensities in infants

Mean values of wave I were 3.2msec (+/-0.88) for 70 dB nHL which increased to 3.82msec (+/-1.34) at 50dB nHL. At 30dBnHL no identifiable wave I was observed.

Mean values of wave V were 8.75msec (+/-0.67) for 70 dB nHL which increased to 10.25msec(+/-1.66) at 50dB nHL and 12.11msec(+/-0.623) at 30dB nHL.

Mean values of second recordings were also similar.

Mean values of wave I were 3.32msec(+/-0.68) for 70 dB nHL which increased to 3.76msec (+/-1.77) at 50dB nHL. At 30dBnHL no identifiable wave I was observed.

Mean values of wave V were 8.69msec (+/-0.67) for 70 dB nHL which increased to 10.33msec(+/-1.26) at 50dB nHL and 12.63msec(+/-0.413) at 30dB nHL.

Amplitude levels were higher for wave V for all the recordings.

**Objective 2:** to measure test retest reliability of the recorded responses in same infants. Data did not follow normal distribution on Spearman correlation was applied for wave V latencies of first and second recordings of comparable intensities. It was also applied for wave I intensities,

Results showed good correlation of 0.82( $p < 0.0001$ ) for wave V at 70dB nHL and 0.73( $p < 0.0001$ ) or wave I at 70dB nHL. Similarly good correlation was observed for other intensities as well.

Discussion:

Previously chirp ABR for 1 and 4 kHz has been reported in infants and found to be robust and useful clinically. Ferm, I., Lightfoot, G., & Stevens, J. (2013).

This study adds data of 500Hz chirp signal to the literature. The results are encouraging. Test retest was found to be good.

The present study extends this knowledge by focusing on low-frequency (500 Hz) stimuli, an area that has been under-researched, particularly in the Indian context. The results corroborate existing literature by showing that narrowband chirp stimuli at 500 Hz also produce reliable and repeatable ABR responses, further supporting the clinical utility of chirp signals for ABR testing.

Test-Retest Reliability and Clinical Implications

The strong test-retest reliability observed in this study, particularly for wave V at 70 dB nHL, underscores the potential of 500 Hz chirp-evoked ABR as a reliable diagnostic tool for infants in rural settings. The good correlation (Spearman's  $\rho = 0.82$  for wave V) between the first and second recordings indicates that this method can provide consistent results, reducing the

need for repeated testing in environments where time and resources are limited. This is especially beneficial in rural hospitals, where infants may not always be available for multiple appointments due to logistical constraints.

The inability to reliably elicit wave I at lower intensities (30 dB nHL) suggests that further refinement of the testing protocol may be needed to enhance the detection of earlier waveforms at low intensity levels. However, the consistently high wave V amplitudes observed across all intensity levels suggest that the 500 Hz chirp is particularly well-suited for assessing wave V responses, which are often the primary focus in clinical ABR testing for hearing thresholds.

**Summary & Conclusion:**

Chirp ABR for 500Hz is a viable alternative to TB ABR in infants.

# SPEECH

# **SPEECH: ORAL ABSTRACTS**

## **LIST OF ABSTRACTS**

<b>SO293</b>	<b>354</b>
<b>Awareness of Ableism in the Context of Stuttering Among Speech-Language Pathologists.....</b>	<b>354</b>
<b>SO295</b>	<b>355</b>
<b>Integrating Palliative Care Principles in Dysphagia Management: A Holistic Approach by Speech-Language Pathologists.....</b>	<b>355</b>
<b>SO296</b>	<b>358</b>
<b>Comparison of Phonatory Aerodynamic Measures between Phononorms and Hyperfunctional Voice Disorders in Connected Speech .....</b>	<b>358</b>
<b>SO298</b>	<b>362</b>
<b>Dysphagia management in Laryngotracheal stenosis (LTS) with and without surgery .....</b>	<b>362</b>
<b>SO299</b>	<b>366</b>
<b>A Comparative Investigation of Taste Function in Head and Neck Cancer Patients Under Chemoradiation and Healthy Controls using Solution-Based Test Protocol ..</b>	<b>366</b>
<b>SO301</b>	<b>370</b>
<b>Perceptual Speech Characteristics in Hypokinetic Dysarthria: A Cross Linguistic Perspective.....</b>	<b>370</b>
<b>SO302</b>	<b>371</b>
<b>Assessment of Feeding and Swallowing Skills of Critically Ill Neonates at Chronological Age of 7 Days and 2 Months.....</b>	<b>371</b>

**SO293**

**Awareness of Ableism in the Context of Stuttering Among Speech-  
Language Pathologists**

*Ashisha P Prasad & Pallavi Kelkar*

**Bharati Vidyapeeth (Deemed to be university)**

**Abstract Not Available**



## **Integrating Palliative Care Principles in Dysphagia Management: A Holistic Approach by Speech-Language Pathologists**

*Isha Wosti*

**Green Pastures Hospital and Rehabilitation Centre**

### **Introduction:**

The purpose of palliative care services is to offer quality comfort and support to individuals dealing with a life-limiting condition. Patients in palliative care have chronic, life-threatening illnesses or are at the End of Life (EOL) stage. These patients may present with communication and swallowing difficulties. Speech Language Pathologists (SLP) use their diagnostic and prognostic skills to develop treatment plans to address these patients' communication and swallowing needs.

The standard clinical recommendation for patients with dysphagia involves modifying food consistencies, thickening liquids, using specific swallowing maneuvers, or in some cases, advising NPO status and considering artificial hydration and nutrition (AHN). Surgical management of dysphagia is opted for when conservative management fails to treat dysphagia and the resultant aspiration. The primary goal of dysphagia management in palliative care is to prevent and alleviate the patient's suffering, focusing on comfort rather than just nutritional intake and hydration. It does not always follow the straightforward management route like in non-palliative patients. The SLP needs to carefully make the treatment plan that encapsulates the goals of palliative care- 'comfort' and 'care'.

### **Need for Study:**

There are around 25 palliative care units in Nepal, some of which date back to the early 2000s. However, integrating speech therapists into palliative care is still not widespread in Nepal. The prevalence of dysphagia in palliative care or hospice is high. A retrospective study revealed that 74% of the patients in hospice programs had dysphagia and difficulties with feeding (Sheehan & Forman, 1996). Depending on the volume and content of the aspirate, the incidence of mortality by aspiration can be as high as 70% (DeLegge et al., 2002; McClave et al., 2002). This warrants the intervention by SLPs. However, despite the important roles of SLPs in palliative care, their presence in Nepal's palliative care system is limited.

This study highlights the process of dysphagia management in palliative patients in Green Pastures Hospital, Pokhara. It offers a framework for dysphagia management while also

highlighting the need for SLPs in palliative care and their roles in palliative dysphagia management.

### **Aim & Objectives:**

The current study aims to highlight the role of SLP in palliative dysphagia management and provide a comprehensive framework for dysphagia management.

Objectives:

1. To obtain the sample's assessment findings, treatment plan, and decision-making process which forms a guideline for dysphagia management.
2. To assess the satisfaction of the patients or caregivers on the quality of care received during dysphagia management using domains of SWAL-CARE.

### **Method:**

A retrospective study was conducted. All medical records of patients admitted to the palliative ward of Green Pastures Hospital (GPH) from April 2022 to September 2024 were reviewed. 3 patients with severe oropharyngeal dysphagia, scoring on Functional Oral Intake Scale (FOIS) were selected. The findings of the clinical swallow examination, the treatment plan for these cases, and the decision-making process are described. Follow-up visits were arranged for these patients to assess the quality of dysphagia care received by the patients using the domains of Swallowing Quality of Care (SWAL-CARE).

### **Results & Discussion:**

The treatment plan for palliative dysphagia care was tailor-made for each patient. The general protocol was that the SLPs conducted an initial swallowing evaluation. Then they collaborated with the healthcare team to reach a consensus regarding the patient's prognosis. Finally, they developed a patient-centered care plan, focusing on quality of life and balancing treatment benefits and burdens. Three common themes were observed: i) ongoing evaluation and treatment adjustments are necessary, ii) oral feeding provides caregivers contentment and satisfaction, and iii) careful hand-feeding enhances socio-emotional interactions, improving bedridden patients' quality of life. Caregivers interviewed using SWAL-CARE revealed they were satisfied with the care received. This practice is in accordance with the World Health Organization's (WHO) palliative care guidelines.

### **Summary & Conclusion:**

Palliative care for dysphagia focuses on optimizing swallowing function, preserving pulmonary

health, and supporting adequate nutrition despite difficulties with swallowing and improving the patient's overall quality of life. A referral for a speech-language pathology swallowing consult should be initiated as soon as possible if the patient or a family member is concerned about the patient's feeding.

## Comparison of Phonatory Aerodynamic Measures between Phononorms and Hyperfunctional Voice Disorders in Connected Speech

*Sumanth P & Yeshoda K*

All India Institute of Speech and Hearing, Mysuru

### **Introduction:**

Respiratory air plays a vital role in voice production; aerodynamic parameters provide valuable information about the interaction between respiratory and laryngeal mechanisms involved in voice. From a modern standpoint, phonatory aerodynamic measures' are often used to understand the nature of the airstream involved in voicing both in phononorms and dysphonic populations.

### **Need for Study:**

Recent studies have attempted to examine the phonatory aerodynamic measures limited to maximum phonation duration, vital capacity, and phonation quotient (Selent, 2014; Joshi & Watts, 2016; Belsky et al., 2019). Nevertheless, humans speak more than phonating; voice protocol is not examined under speech-based aerodynamic measures. However, certain studies have attempted to comprehend the aerodynamic characteristics under speech in dysphonic populations (Gilman et al., 2017) but are not specific to hyperfunctional voice disorders, experiencing major vocal fatigue/tension and poor voice quality. Examining the phonatory aerodynamic measures in a homogeneous dysphonic population would assist in comprehending the degree of airstream involved and whether any particular laryngeal behaviors are implied while speaking.

### **Aim & Objectives:**

To investigate and compare the phonatory aerodynamic measures between phononorms (PHNM) and hyperfunctional voice disorders (HFVD) and the differences in each gender with respect to breath count, airflow duration, air volume, and airflow measures.

### **Method:**

A prior institutional ethical clearance was obtained for conducting this research, and the present study implemented a cross-sectional standard group comparison design. Fifty-two native Kannada speakers aged from 21 to 44 years participated in the study and were grouped into 30

PHNM (mean age:  $30.76 \pm 7.12$ ) and 25 HFVD (mean age:  $31.8 \pm 8.53$ ). PHNM with no voice issues self-reported through voice handicap index (VHI-10) and confirmed by three experienced speech-language pathologists; HFVD was diagnosed by a team of otolaryngologists and speech-language pathologists, and participants who consented were included in the study. Participants with health-related issues, addiction to smoking/alcohol, and pregnancy were excluded from the study.

Phonatory Aerodynamic System (PAS 6600, Pentax Medical, Montvale, N.J.), a hardware and software system, was used for aerodynamic measurements. PAS consists of a calibrated microphone, airflow head, and a facemask coupled with a pneumotachometer. Before data recording, the airflow head was calibrated following the manufacturer's guidelines. Later, each participant was subjected to the "PAS running speech protocol," where participants were asked to read a standardized Kannada-voiced passage (Shashidhar, 1984) without any articulatory errors two times within a sealed facemask. The recordings were captured and analyzed for phonatory aerodynamic measures following the PAS analysis guidelines. Out of two recorded reading samples of each participant, the best-recorded sample with no errors was considered for aerodynamic analysis. The phonatory aerodynamic inspiratory and expiratory measures such as breath count, duration, air volume, and airflow were analyzed.

The obtained data were subjected to statistical analysis using SPSS version 26. Based on the normality test, the data were examined for inferential analysis. The parameters, number of breath count (NB), speech duration (SD), expiratory airflow duration (EAFD), inspiratory airflow duration (IAFD), peak inspiratory airflow (PIAF), mean inspiratory airflow (MIAF) and inspiratory volume (IV) were normally distributed and, were subjected to independent sample t-test. Whereas peak expiratory airflow (PEAF), mean expiratory airflow (MEAF), mean expiratory airflow during voicing (MEAFV), and expiratory volume (EV) were non-normally distributed and were subjected to the Mann-Whitney U test to see the difference between the groups and among each gender.

### **Results & Discussion:**

Breadth count and duration-related measures

Results revealed that the mean and median scores of breath count and duration-related parameters were higher in HFVD than in PHNM participants. The differences were statistically significant between the groups and among each gender on independent sample t-test for the respective parameters NB [ $t(50)=5.87, p=0.00; r=0.63$ ], SD [ $t(50)=4.70, p=0.00; r=0.55$ ], EAFD [ $t(50)=3.27, p=0.02; r=0.41$ ], and IAFD

[ $t(50)=5.64, p=0.00; r=0.62$ ]. Results were consistent with previous studies (Sapienza et al., 1997; Wang et al., 2010; Lewandowski et al., 2017), highlighting that increased translaryngeal airflow during voicing in the voice disorders group contributes to longer phonatory durations and the need for more frequent inspirations. In addition, the vocal fold lesions and associated symptoms may also have led to reduced speech duration because of poor vocal efficiency in the dysphonic population (Gartner-Schmidt et al., 2015; Gilman et al., 2021).

#### Air volume-related measures

Overall data, and data among the genders, showed that the mean and median value of IV and EV was higher in HFVD than in PHNM. Overall the IV on parametric test [ $t(50)=4.67, p=0.00; r=0.55$ ] and EV on non-parametric test [ $|z|=2.23, p=0.02; r=0.27$ ] showed significant difference between the groups. The EV among male participants showed a significant difference between the groups [ $|z|=3.07, p=0.00$ ], whereas among female participants, no significant difference was observed between the groups [ $|z|=1.02, p=0.30$ ]. Similar results were reported in the literature (Pyo, 2019), where voice disorders had inconsistent breath support and loss of airflow during speech tasks, resulting in large volumes of air intake. Meanwhile, the IV was significantly different between the groups, both in male [ $t(50)=4.40, p=0.00$ ] and female [ $t(50)=2.79, p=0.01$ ] participants. The increase in volume could be because of the compensatory mechanism implemented to overcome the increased airflow (Gilman et al., 2017).

#### Airflow related measures

Overall data showed that there was no significant difference between the groups in PIAF [ $t(50)=0.66, p=0.50; r=0.09$ ], MIAF [ $t(50)=0.95, p=0.34; r=0.13$ ], PEAf [ $|z|=0.53, p=0.59; r=0.07$ ], MEAF [ $|z|=1.44, p=0.14; r=0.19$ ] parameters. The findings can be attributed to the fact that PHNM may use a variety of airflow rates while speaking, and HFVD may have compensated for the airflow during speaking with higher laryngeal functions (Belsky et al., 2021). However, the mean and median MEAFV were significantly higher in HFVD than in PHNM [ $|z|=1.96, p=0.05; r=0.30$ ].

Among male participants, the MEAFV showed a significant difference [ $|z|=2.19, p=0.02$ ], whereas among female participants, no significant difference [ $|z|=1.02, p=0.30$ ] was observed in MEAFV between the groups.

Additionally, the mean and median PEAf among male participants showed significantly higher HFVD and a significant difference between the groups [ $|z|=2.92, p=0.00$ ]. These results are consistent with previous studies highlighting that the increased air escape during voicing could be due to glottal incompetence (Gilman et al., 2017; Lewandowski et al., 2017). In the case of

female participants, the PEAf was lower in HFVD, and no significant difference was observed between the groups [ $t(50)=1.71, p=0.08$ ]. The common occurrence of the posterior glottal gap in PHNM female participants would have led to increased airflow.

### **Summary & Conclusion:**

Phonatory aerodynamic measures such as breath count, speech duration, airflow duration, air volume, and airflow during voicing significantly differentiated PHNM and HFVD under connected speech. HFVD had increased intake of air and airflow during voicing, highlighting the difficulty of maintaining breath support and the presence of glottal incompetency in connected speech, respectively. In comparison, although most aerodynamic measures showed significance, only NB, SD, IAFD, and IV were effective measures in discriminating the groups. The rest of the measures were not effective or significant, indicating a requirement for a large sample size to generalize the study findings. However, the present study findings would assist in improving the assessment protocol and treatment planning.

**Dysphagia management in Laryngotracheal stenosis (LTS) with and without surgery**

*Anindita Arun & Santosh Kumar*

**CNC HFH BETHANY GODREJ**

**Introduction:**

Laryngotracheal stenosis (LTS) is a because of multiple pathophysiologic processes. The most common cause of LTS in adults is tracheal intubation, tracheostomy and laryngeal trauma. Airway compromise can occur as a result of collagen vascular disorders, idiopathic fibro inflammatory disease, disorders of epithelial barrier function, physical and thermal trauma, and extrinsic compression or invasion by benign and malignant disease. The operative interventions are to correct LTS are ranging from endoscopic procedures.

**Need for Study:**

SLPs have an important role in management of cases with dysphagia in patients with alternate mode of nutrition and tracheostomy with tracheal stenosis, using techniques on case-to-case basis. This is especially important in the Indian context where there is a paucity of evidence-based studies especially in presenting treatment planning and outcomes.

**Aim & Objectives:**

To administer traditional dysphagia therapy and to compare the pre and post therapy effects of traditional dysphagia therapy in individuals with laryngotracheal stenosis with and without surgery.

**Method:**

This is a retrospective study which included 2 cases admitted in an acute care set up for management of LTS and later were referred for speech and swallowing therapy. The patients were assessed for bedside speech & language skills. Swallowing assessment to determine the severity was done using the bedside swallowing assessment (NHBSA) and swallowing ability scale (NHSAS). Severity was measured before and after therapy. Instrumental examination was done after completion of therapy and not before therapy owing to the severity and risk of aspiration. Informed consents were obtained before therapy.

Dysphagia therapy was based on Transcutaneous electrical neuromuscular stimulation (TENS),



rehabilitative maneuvers, compensatory strategies, thermal stimulation, proprioceptive neuromuscular functioning exercises.

Session wise reports were based on the case history, therapy goals, no. of sessions, effect of therapy on swallowing mechanism. The parameters assessed and compared were duration for swallows using Four Finger Test for swallowing, the ability to swallow/ duration of swallow for different consistencies of food i.e. solids, semisolids, thin liquid and dry swallow. Comparisons were done before and after therapy based on swallowing skills.

### **Results & Discussion:**

Case 1: F.K 50 years male.

a/h/o fall at home with bilateral frontal contusion with right lung contusion. c/o tracheal stenosis grade IV with palatal palsy. He was admitted in ICU, was intubated, elective tracheostomy was done with tube no 7.5. He was decanulised and later was tracheostomised again using portex tracheostomy tube no 7.5 due to respiratory distress and kept on Ryles tube for nutrition since 1 year. Tracheal dilatation was done. He was referred for speech and swallowing therapy after 1 year of medical management. There was no surgical intervention done post stenosis.

Pre therapy assessment: On NHBSA and NHSAS showed complete dysphagia; had difficulty in swallowing any consistency, continuous secretions, aspiration, and poor hyolaryngeal secretions with wet, gurgly voice, coughing before and after swallow, no volitional attempt to clear throat, poor management of secretions, and needed suctioning for 5 times daily, adequate language comprehension skills, with poor voicing, breathiness. A total of 20 sessions included traditional therapy along TENS were done.

Effect of therapy: Initial 4 sessions, were based on rehabilitative and compensatory strategies. Masako and guided Mendelsohn's done on dry swallow to improve the hyolaryngeal excursion, which helped in decreasing the secretions to a greater extent and thereby less frequency of suctioning. TENS was given for 4 cycles of 25 minutes with in regular interval with a current level from 5mA to 10mA as per his tolerance. He could tolerate 1/4th tb spoon quantity x 5 spoons maximum in a session. This would lead to delayed aspiration and coughing. Hence, in view of the risk of aspiration; semisolids and solids were never given orally. After 20 sessions not significant improvement was seen in swallowing mechanism with TENS and traditional therapy. As per advice of ENT, it was decided that surgical management would be beneficial after 3 months and was discharged with Ryle's tube and tracheostomy.

Case 2: S. C 13 years male

Case history: h/o accidental strangulation with a shawl connected to a machine wheel 8 months

back for 2-4 minutes. After 2 days, developed stridor and was tracheostomised. Initial airway assessment shows grade IV subglottal stenosis at the level of C6-C7 and 8 normal rings below stoma. Also, the right arytenoid was dislocated. The child was then taken up for cricotracheal resection anastomosis after 6 months and had Portex no. 5 tracheostomy and RT insitu with 70-degree scopy revealed bilateral vocal folds paramedian position with sluggish mobility.

Pre therapy assessment: On NHBSA and NHSAS showed complete dysphagia; had difficulty in swallowing any consistency, continuous secretions, aspiration, and poor hyolaryngeal secretions with was wet, gurgly voice, coughing before and after swallow, no volitional attempt to clear throat, poor management of secretions, and needed suctioning for 5 times daily. Voice quality was breathy, G3R2B3A3S3, glottal attack was weak, could not phonate, initiation of phonation and breathing was uncoordinated. Language Comprehension and expression of language was age appropriate. A total of 12 sessions which included traditional dysphagia therapy were done.

Effect of therapy: In the initial 4 sessions, the strength of oral and laryngeal musculature was improving. Rehabilitative maneuvers helped in improving hyolaryngeal excursion with Masako and guided Mendelsohn's. Child was able to tolerate semisolids and thin liquids ( $\frac{1}{4}$  tbsp x 4 spoons) in head down posture duration of 7 to 8 seconds. Effortful and multiple swallows, complete hyolaryngeal excursion seen with slight aspiration, but could clear secretions with effortful swallow followed by burps. Gradually there was improvement in voicing using pushing technique, MPD increased upto 5-6 seconds. By 8th session, child could tolerate all consistencies oral trial feed fairly well and had minimal discomfort and no episode of aspiration and coughing with increased quantity as well with duration of 6 seconds. Child had started taking full meals orally in the clinical setting as well as at home. There were no signs of cough/aspiration/discomfort.

It has been seen that there was a significant improvement in swallowing mechanism post-surgery than without surgery. Surgical intervention helps in opening the pathway for airway as seen in case 2. The transient disruption of normal cartilaginous support, the mobilization of suprahyoid musculature, and the temporary placement of endoluminal airway stents following reconstructive procedures have been hypothesized to affect normal muscular and sensory mechanisms of deglutition in adults (Christen et al, 2016); similarly seen in case1.

Rehabilitative manuevere i.e. Masako helped in improving hyolaryngeal excursion in both cases on dry swallow. The tongue-hold maneuver is a widely used clinical technique designed to increase posterior pharyngeal wall movement in individuals with dysphagia. It is

hypothesized that the tongue-hold maneuver results in increased contraction of the superior pharyngeal constrictor (Michael et al, 2014). Pushing technique with manually closing the tracheostomy opening helped in increasing voicing gradually as seen in case 2 but no voicing was seen in case 1. TENS helped to improve hyolaryngeal excursion on dry swallow in case 1 with a current level from 5mA to 10 mA. However, there was severe aspiration on all consistencies which could be due to sensorimotor deficits. There was improvement seen in case 2 w.r.t swallow duration, hyolaryngeal excursion and increased tolerance for bolus gradually without aspiration. Open airway reconstruction allows decannulation in a majority of patients. Open airway reconstructive procedures by definition involve alteration of laryngeal anatomy and have the potential to affect laryngeal closure as well as overall swallowing coordination at the glottis and supraglottic level (Gallagher et al,2012).

**Summary & Conclusion:**

The retrospective nature of our investigation allows for variability in the data collected. Major airway reconstruction in adults is an effective treatment modality for LTS, often providing definitive treatment for patients. The emergence of data from more rigorous and well-designed clinical outcomes studies will surely advance our understanding of this technique and contribute to collection of data towards evidence-based therapy.

**A Comparative Investigation of Taste Function in Head and Neck  
Cancer Patients Under Chemoradiation and Healthy Controls using  
Solution-Based Test Protocol**

*Violet Priscilla S, Jasmine Lydia Selvaraj, Divya S & Lakshmi Venkatesh*

**Sri Ramachandra Institution of Higher Education and Research**

**Introduction:**

Taste perception, or gustation, is an essential sensory function that significantly impacts human nutrition, food selection, and overall quality of life (Irvine et al., 2014). HNC patients experience taste changes primarily due to malignancy and/or the aggressive nature of cancer treatments that involve radiation and chemotherapy (Irvine et al., 2014). The taste alterations can directly affect the patient's ability to maintain proper nutrition, thus exacerbating the physical and psychological toll of cancer and its treatment (Wang et al., 2019). Despite being a common side effect, taste alterations in HNC patients are often under-assessed.

**Need for Study:**

Taste perception is vital for well-being, influencing appetite, nutrition, and social interactions (McLaughlin & Mahon, 2012). In head and neck cancer (HNC) patients, chemoradiotherapy (CRT) disrupts taste and smell, leading to poor eating habits, malnutrition, and swallowing issues (Duffy et al., 2020). Despite the importance of assessing gustatory function, it is often overlooked. An objective taste-testing protocol to measure taste detection and recognition thresholds (TDT & TRT) is needed to manage these dysfunctions and improve nutrition and quality of life during and after cancer treatment.

**Aim & Objectives:**

To profile the changes in taste detection and recognition abilities in individuals with head and neck cancer undergoing chemoradiation therapy.

Objectives of Phase 1

- To develop and validate a solution-based clinical for assessing gustatory functions.
- To evaluate the minimum concentrations at which the healthy group across different age groups can detect and recognize sweet, salt, sour, and bitter tastes.

Objectives of Phase 2

- To evaluate the minimum concentrations at which the patients with HNC can detect

and recognize sweet, salt, sour, and bitter tastes across the period of receiving CRT.

- To profile the taste detection and recognition thresholds of sweet, salt, sour, and bitter tastes across cancer treatment groups (surgical/nonsurgical), cancer sites, and cancer stages within the clinical (HNC) group CRT.

### **Method:**

This longitudinal study received approval from the Institutional Ethics Committee (IEC). Written informed consent was obtained from participants. The study comprised two phases: Phase 1 focused on developing and validating tastants, while Phase 2 involved using these validated tastants in the clinical head and neck cancer (HNC) group.

Phase 1- developing and validating tastants Method of Phase 1

Step 1: Development of the taste

Stimulus preparation: The study involved preparing and calibrating taste solutions by mixing powdered tastants sucrose (sweet), NaCl (salt), citric acid (sour), and urea (bitter) in water with four increasing concentrations: sucrose (60 mM/L 1000 mM/L), NaCl (60 mM/L 3000 mM/L), citric acid (2.6 mM/L 41 mM/L), and urea (150 mM/L 8000 mM/L) (Mossman et al., 1979).

Test Procedure: Pilot testing involved 35 healthy participants without prior taste or smell alterations. The forced three-choice stimulus drop technique (Mossman et al., 1979) was used to estimate TDT and TRT for tastants stored in unmarked tubes. Freshly prepared tastants were tested using the whole-mouth approach (Sandow et al., 2006), with increasing concentrations. Each drop remained on the tongue for 5 seconds, followed by a 1-minute interval.

The mean thresholds (TDT & TRT) for sweet, sour, and salty tastes were  $1.02 \pm 0.1$ ,  $1.01 \pm 0.1$ , and  $1.05 \pm 0.23$ , indicating recognition at the first concentration. For bitter (urea), the threshold was higher at  $2.05 \pm 0.23$ , with 98% recognizing the second concentration and 2% the third. Bitter concentrations were increased for better detectability, with tested concentrations being sucrose (60-1000 mM/L), NaCl (60-3000 mM/L), citric acid (2.6-41 mM/L), and urea (200-8000 mM/L).

Step 2: Test validated in healthy participants

Participants and procedure: The taste test involved 160 healthy participants with normal communication, cognition, and vision/hearing. Exclusions included those with prior taste or smell changes, smoking, or alcohol habits. Participants were grouped by age (18-40, 41-60, 61-80+ years), and testing followed the pilot validation Phase 1, step 1, conducted once for the healthy group.

Results of Phase 1, step 2

Most healthy participants, regardless of age, detected and recognized sweet, salty, sour, and bitter tastes at low concentrations. However, 3% of elderly participants (61-80+ years) required mid-concentrations to detect and recognize these tastes, with sweet and salty being the most affected. This is due to the natural loss of taste buds with aging, confirming healthy aging (Birren et al., 2013). Thus, the solution-based taste testing method is validated for clinical use. Phase 2-using these validated tastants in the clinical head and neck cancer (HNC) group Method of Phase 2

Participants and Procedure: A total of 38 head and neck cancer (HNC) patients receiving chemo-radiotherapy (CRT) at a tertiary care hospital participated in the study. The group included patients with tumors in the head and neck region with an ECOG Performance Status (ECOGPS) and no prior history of HNC. Exclusion criteria included a history of neurological diseases and other conditions affecting taste. Taste testing, following the same procedure as in the pilot phase 1, was conducted weekly for six weeks during CRT.

### **Results & Discussion:**

#### Result & Discussion of Phase 2

Significant taste alterations in head and neck cancer (HNC) patients begin by the second week of chemoradiotherapy (CRT) and worsen by the sixth week (Yamashita et al., 2006). By the sixth week of CRT, 60-84% of patients lose the ability to detect sweet and salty tastes, while 70% struggle with sour and bitter tastes, likely due to radiation-induced xerostomia (Negi et al., 2017).

In the cancer treatment group, surgical patients experienced immediate taste alterations in the first week of CRT, while non-surgical patients had a gradual decline, with significant taste loss by the sixth week. Tumor location affected severity, with oral and pharyngeal cancer patients showing more pronounced changes than those with laryngeal cancer. Advanced-stage patients had severe alterations early in treatment, while early-stage patients experienced greater reductions by week six. These changes negatively impacted nutrition, resulting in decreased appetite, weight loss, and malnutrition.

Differences in taste detection and recognition threshold between healthy individuals and HNC patients underscore the need for accurate clinical tools, with solution-based taste testing being an effective method for assessing taste dysfunction in clinical settings.

### **Summary & Conclusion:**

Taste alterations were evident in the clinical (HNC) group from the second week of CRT,

gradually worsening by the end of treatment, highlighting the significant impact of HNC treatments on taste perception. This study also identifies specific tastants that can enhance diagnostic precision in clinical settings, enabling more effective identification and management of taste disorders. Additionally, findings from this study could lead to the development of targeted therapeutic taste management in HNC patients, ultimately aiming to improve quality of life and nutritional status.

**SO301**

**Perceptual Speech Characteristics in Hypokinetic Dysarthria: A Cross  
Linguistic Perspective.**

*Esmine Phils, Vandana V.P & Santosh Maruthy*

**All India Institute of Speech and Hearing**

**Abstract Not Available**



**Assessment of Feeding and Swallowing Skills of Critically Ill Neonates at Chronological Age of 7 Days and 2 Months.**

*Shaikh Saranaz Shariff & Gayatri Hattiangadi*

**T.N Medical College & B.Y.L Charitable Hospital**

**Introduction:**

Feeding is the process involving aspects of eating or drinking, inclusive of acts like gathering and preparing food for intake, sucking or chewing and swallowing.

**Need for Study:**

Several authors have examined feeding behaviors in defined clinical conditions, including cerebral palsy, cleft lip and palate and chromosomal conditions, but many of these studies have generally been retrospective analyses on defined groups. With the rising awareness and advocacy of early identification and intervention of feeding/swallowing difficulties of the neonate in India, it is primordial to understand the feeding/swallowing difficulties of the critically ill neonates prospectively in the initial 2 months of life.

**Aim & Objectives:**

The study was done with the objective to assess the feeding/swallowing skills of critically ill neonates at the chronological age of 7 days and to re-assess and compare it at chronological age of 2 months using the Functional Evaluation of Eating Difficulties Scale (FEEDS). The secondary objective was to study correlation between baseline FEEDS score and Length of NICU stay in critically- ill neonates.

**Method:**

A cross-sectional, prospective study was performed wherein 50 critically ill-neonates were assessed for feeding/swallowing skills at 7 days (baseline) and 2 months (follow-up) of chronological age using Functional Evaluation of Eating Difficulties Scale (FEEDS). FEED Scale has a global score of 136 and a score greater than or equal to the cutoff score of 16.5 was indicative of high risk of feeding/swallowing difficulties and lower than 16.5 was indicative of high risk of feeding/swallowing difficulties. The scoring pattern of the scale is such that a greater FEEDS score reflects greater difficulties in feeding/swallowing. The scores were compared across different high-risk factors (HRFs) and a comparison of FEEDS scores

obtained at 7 days and 2 months of CA was done to ascertain the persistence of feeding/swallowing difficulties in critically ill neonates. The data pertaining to length of NICU stay was retrieved from the medical records. A co-relation was studied between FEEDS score obtained at baseline and length of NICU stay.

### **Results & Discussion:**

Based on scores obtained at 7 days by neonate participants on the FEED Scale, 26% (13/50) of neonates were found to be at low risk for developing feeding/swallowing difficulties while 74% (37/50) were found to be at high risk for developing long-term feeding/swallowing difficulties. The cohort had neonates with HRFs of intraventricular hemorrhage (IVH), hypoxic-ischemic encephalopathy (HIE), neonatal seizures, syndromic features, septicemia, cardiac pathology and respiratory distress. Each of these HRFs obtained a mean FEEDS score greater than the cut-off value of FEEDS which was 16.5. The neonate participants with HRF of IVH were observed to have the highest mean FEEDS score ( $65\pm 20.70$ ) whereas neonate participants with HRF of RDS had the lowest mean FEEDS score ( $38.93\pm 21.45$ ) at 7 days of chronological age. The follow-up assessment done at 2 months of chronological age was conducted on 29/50 critically ill neonates using the FEED Scale of which 28% (8/29) were seen to be at high risk for long-term feeding/swallowing difficulties. The remaining 72% (21/29) were found to be at low risk for developing long-term feeding/swallowing difficulties. The mean FEEDS score obtained by neonates with earlier mentioned HRFs were compared amongst each other, and it was observed that all HRFs except for cardiac pathology continued to have mean FEEDS score higher than the cut-off value of 16.5. The neonates with neonatal seizures had highest mean score of ( $41.5\pm 44.07$ ). It was observed that neonates who had persistent feeding/swallowing difficulties had two or more medically complex comorbidities such as a combination of HIE-III, neonatal seizures and/or ventilator associated pneumonia. The comparison of baseline and follow-up FEEDS scores was done using Wilcoxon signed rank test and it was observed that there was a statistically significant difference ( $p<0.001$ ) in means scores obtained at 7 days and 2 months of CA. Lastly, it was found that there was a strong, positive correlation ( $r=0.67$ ) between FEEDS score and length of NICU stay. Cronbach's alpha was suggestive of strong intra and inter-rater reliability was obtained. As per baseline measure recorded by FEEDS checklist on 7th DOL, 74% of the critically ill neonates were at high risk of long-term feeding/swallowing difficulties. The study by Motion et al; reported that 18% (2217) of their participants (12,332) had a weak suck, 34% (6831) had experienced episodes of choking and 1% (118) had great difficulty with feeding at 4 weeks of corrected age. As the work done by

Jadcherla et al., Jadcherla et al., Edney et al., Motion et al., and Mizuno et al., have showed that HRFs of HIE, IVH, Neonatal seizures, Cardiac conditions, Syndromic conditions and respiratory distress have a debilitating impact on the feeding and swallowing skills of neonates in early infancy. A similar trend was observed in the present study as the mean scores obtained by neonate participants with HRFs of IVH, HIE, Neonatal seizures, respiratory distress, cardiac pathology, hypotonia, syndromic features, septicemia and hydrocephalus were all above the cut-off value (i.e. 16.5) of the FEEDS checklist.

At follow-up assessment, it was evident that only 28% (8/29) of the critically ill neonates had persistent feeding/swallowing difficulties. This finding can be compared with Motion et al.'s study that was discussed in the earlier section, which documented that 3.4% of the infants presented with persistent feeding disorder at 6 months based on the parent-reported questionnaire. The neonate participants (8/29) in the present study who had the chronic feeding/swallowing difficulties had the HRFs of HIE-III, IVH-III, septicemia, necrotising enterocolitis (NEC), hydrocephalus due to Arnold Chiari malformation, Bronchopulmonary dysplasia and ventilator-associated pneumonia. The occurrence of persistent feeding/swallowing difficulties in the above-mentioned factors can be validated by the findings of Jadcherla et al., who stated that the need for prolonged ventilation, gastrointestinal complications, chronic lung disease and sepsis were negatively associated with oral feeding milestones and neonates/infants with these conditions requires longer time to achieve maximal oral feeds owing to feeding/swallowing difficulties. In the heterogeneous cohort studied presently there was a strong and positive correlation between the grand total of FEEDS score obtained at baseline to the length of NICU stay indicating that when there was an increase in FEEDS score there was a subsequent increase in length of NICU stay. Neonates who were at high risk for feeding/swallowing difficulties as per scores obtained on the FEEDS checklist had lengthier NICU stays as compared to the neonates who were at low risk. A similar finding was observed in a study by Lau et al., wherein they observed a strong relationship between length of stay (LoS) and neonate's performance on the Oral Feeding Scale (OFS), wherein the neonates who were observed to be in Level 1 as per OFS had longer LoS.

### **Summary & Conclusion:**

Researchers found that neonates with multiple medically complex comorbidities were at higher risk for feeding/swallowing difficulties while those with the presence of one single HRF or milder forms of HRFs (like earlier stages of IVH, HIE, respiratory distress) were able to overcome their feeding difficulties. It was also found that a higher FEEDS score correlated

with lengthier NICU stay thereby implying that feeding/swallowing difficulties influence the LoS in the critically ill neonates.

# SPEECH: POSTER ABSTRACTS

## LIST OF ABSTRACTS

<b>SP1020</b>	<b>382</b>
<b>Forming a Questionnaire to Determine based on Child's Communicative Life for Children with Higher Language Skills to Decide Therapy Type (individual/group/both) and Crosschecking efficacy: An Interventional Cross-Sectional Study.....</b>	<b>382</b>
<b>SP1021</b>	<b>386</b>
<b>Linking Social Interaction to Language Skills in Extraclinical Settings in Children with Higher Language Skills by Incorporating Open Conversational Activities between Children as a Midsession or Postsession Activity.....</b>	<b>386</b>
<b>SP1022</b>	<b>390</b>
<b>Person-Centred Focus on Function : Speech and Swallowing Assessment and Management on a person with Hemimandibulectomy .....</b>	<b>390</b>
<b>- A Case Study.....</b>	<b>390</b>
<b>SP1023</b>	<b>394</b>
<b>Assessment of Pre and Post Operative Vocal Functions in Total Thyroidectomy: A Case Study .....</b>	<b>394</b>
<b>SP1024</b>	<b>397</b>
<b>Comparative Study on Awareness and Utilization of Augmentative and Alternative Communication (AAC) Among Speech-Language Pathologists, Occupational Therapists, Physiotherapist, Special Educators, and Psychologists in Maharashtra</b>	<b>397</b>
<b>SP1026</b>	<b>401</b>
<b>Exploring SLP's Perspective on Effective Treatment Approaches for Childhood Apraxia of Speech (CAS) - A Survey.....</b>	<b>401</b>
<b>SP1028</b>	<b>405</b>
<b>An Assessment of Parental Knowledge and Practical Application of Optimal Feeding Practices in Children with Cerebral Palsy: A Study in the Delhi NCR Region .....</b>	<b>405</b>
<b>SP1029</b>	<b>408</b>

<b>The Voice Behind the Classroom: Comparative analysis of Vocal Health in Regular School Teachers and Special Educators.....</b>	<b>408</b>
<b>SP1030</b>	<b>412</b>
<b>Voice Function and Quality of Life Outcomes Following Chemo-Radiotherapy in Various Types of Head and Neck Cancer.....</b>	<b>412</b>
<b>Patients : An Acoustic and Aerodynamic Analysis.....</b>	<b>412</b>
<b>SP1031</b>	<b>416</b>
<b>Barriers to Employment for Young Adults with Stuttering: A clinical survey of stuttering and its Impact .....</b>	<b>416</b>
<b>SP1032</b>	<b>419</b>
<b>Cleft Lip and Palate Awareness Among Expectant Mothers: Implications for Prenatal Education .....</b>	<b>419</b>
<b>SP1033</b>	<b>423</b>
<b>Vocal Hygiene Awareness and Knowledge Among College Students: An Exploratory Study.....</b>	<b>423</b>
<b>SP1034</b>	<b>427</b>
<b>Awareness regarding Communication Disorders and Role of Audiologist and Speech Language Pathologists among Regular School Teachers in Delhi NCR .....</b>	<b>427</b>
<b>SP1035</b>	<b>431</b>
<b>Communication Attitude of Kannada-Speaking Preschool Children Who Do and Do Not Stutter .....</b>	<b>431</b>
<b>SP1036</b>	<b>432</b>
<b>Geriatric Dysphagia: Screening for Swallowing Efficiency in Delhi/NCR Region ....</b>	<b>432</b>
<b>SP1037</b>	<b>436</b>
<b>Prevalence Characteristics Of Dysphagia Across Taluks Of Tiruchirappalli District Based On Population Study - A Survey .....</b>	<b>436</b>
<b>SP1038</b>	<b>437</b>
<b>Assessing the Effects of Voice Disorders on Daily Life: A Study Using the VPQ and V-RQOL.....</b>	<b>437</b>
<b>SP1039</b>	<b>441</b>

<b>Gastro-Esophageal Reflux Disease &amp; its Consideration in Voice Pathology Care: A Case Report .....</b>	<b>441</b>
<b>SP1040</b>	<b>444</b>
<b>Evaluating Patient Adherence to Voice Therapy in Organic and Behavioural Dysphonia: Insights from Patient Perception.....</b>	<b>444</b>
<b>SP1041</b>	<b>448</b>
<b>A Comparative Study of Aerodynamics and Perceptual Analysis in College Going Uniformed Services Scouts and Non-Uniform Services Students .....</b>	<b>448</b>
<b>SP1042</b>	<b>448</b>
<b>Pre and Post Knowledge of Dysphagia Among College Students.....</b>	<b>448</b>
<b>SP1043</b>	<b>449</b>
<b>Barriers to Dysphagia Instrumentation in Clinical Settings in India-A Practice Pattern Survey among Speech Language Pathologists.....</b>	<b>449</b>
<b>SP1044</b>	<b>453</b>
<b>A Rare Case Report of Conversion Aphonia: Successful Treatment through Advanced Voice Therapy Intervention.....</b>	<b>453</b>
<b>SP1045</b>	<b>455</b>
<b>Scope of Higher Studies and Job Opportunities in the field of Audiology and Speech-Language Pathology: An Undergraduate Perspective.....</b>	<b>455</b>
<b>SP1046</b>	<b>458</b>
<b>Influence of Cognitive and Motor activities on Rate of Speech.....</b>	<b>458</b>
<b>SP1047</b>	<b>462</b>
<b>Impact of Left Basal Ganglia Lesion on Speech and Voice Parameters.....</b>	<b>462</b>
<b>SP1048</b>	<b>465</b>
<b>A Comparative Analysis of Voice Quality Changes in Heavyweight Lifters vs. Non-Lifters .....</b>	<b>465</b>
<b>SP1049</b>	<b>468</b>
<b>A Survey of Practice Patterns and Instrumental Use on Patients with Dysphagia Among Speech-Language Pathologists in Tamil Nadu.....</b>	<b>468</b>
<b>SP1050</b>	<b>469</b>

<b>Prevalence and Risk Factors of Speech and Language Delays in Children: A Study of Manesar, Haryana.....</b>	<b>469</b>
<b>SP1051</b>	<b>472</b>
<b>Exploring Phonological Awareness in Tamil Speaking Children with Cleft Lip and Palate - A Single Case Study .....</b>	<b>472</b>
<b>SP1053</b>	<b>472</b>
<b>Silent Suffering: LPR And GERD in Passive Smokers and Their Vocal Consequences .....</b>	<b>472</b>
<b>SP1054</b>	<b>473</b>
<b>Exploring the Impact of Neurobrucellosis on Speech and Swallowing Function: A Case Study .....</b>	<b>473</b>
<b>SP1055</b>	<b>476</b>
<b>Parental Survey on Eating Behaviours in Children with Autism Spectrum Disorder in Tamil Nadu .....</b>	<b>476</b>
<b>SP1056</b>	<b>477</b>
<b>Feeding outcomes in GDD Children: A Survey on Parental Awareness .....</b>	<b>477</b>
<b>SP1057</b>	<b>481</b>
<b>Impact of Vocal Warm-Up and Cool-Down Techniques on acoustic voice Parameters of Call Center Operators .....</b>	<b>481</b>
<b>SP1058</b>	<b>485</b>
<b>Parental Perspectives on the Use of Digital Therapy Materials for Home Follow-Up .....</b>	<b>485</b>
<b>SP1059</b>	<b>487</b>
<b>Analysis of Voice in Parents of Children with Autism Spectrum Disorder.....</b>	<b>487</b>
<b>SP1060</b>	<b>487</b>
<b>Adaptation of Self- Rating Tool of Seaking Situations by Individuals with Stuttering .....</b>	<b>487</b>
<b>SP1061</b>	<b>488</b>
<b>Listener Perceptions of Indian English Speakers with and Without Influence of a Marathi Accent.....</b>	<b>488</b>



<b>SP1062</b>	<b>492</b>
<b>Cognition and Health-Related Quality of Life Issues in Geriatrics Perceived</b>	
<b>Dysphagia: A Study.....</b>	<b>492</b>
<b>SP1063</b>	<b>494</b>
<b>Benefits of Skinner’s analysis of language in assessment and treatment of children</b>	
<b>with autism – 3 case studies.....</b>	<b>494</b>
<b>SP1064</b>	<b>497</b>
<b>From Diagnosis to Therapy: Unraveling Speech and Swallowing Characteristics of</b>	
<b>Mixed Hyperkinetic- Hypokinetic Dysarthria .....</b>	<b>497</b>
<b>- A Comprehensive Case study.....</b>	<b>497</b>
<b>SP1065</b>	<b>500</b>
<b>Review on Electroglottography and Acoustic Characteristics of Singers Presenting</b>	
<b>Occasional Vocal Dysphonia .....</b>	<b>500</b>
<b>SP1066</b>	<b>503</b>
<b>Effects of Gender-Affirming Hormone Therapy and Surgery on Voice Acoustics and</b>	
<b>Quality of Life in Transgender Women in India .....</b>	<b>503</b>
<b>SP1067</b>	<b>507</b>
<b>Expanding the Reach of Speech Therapy .....</b>	
	<b>507</b>
<b>SP1068</b>	<b>510</b>
<b>The immediate effect of incentive spirometry on voice quality changes among speech</b>	
<b>language pathologists.....</b>	<b>510</b>
<b>SP1069</b>	<b>514</b>
<b>Teachers' Vocal Health: Misuse, Lifestyle Factors, and Vocal Hygiene Awareness...514</b>	
<b>SP1070</b>	<b>518</b>
<b>Investigating the Relationship Between Use of Hemp (Bhang) and Speech Parameters</b>	
<b>in Adults .....</b>	<b>518</b>
<b>SP1071</b>	<b>522</b>
<b>Enhancing Learning Outcomes with the Digital Activity Book for Personalized</b>	
<b>Therapy.....</b>	<b>522</b>
<b>SP1072</b>	<b>525</b>

<b>Development of a Standardized Hindi Passage for Clinical Evaluation in Speech- Language Pathology.....</b>	<b>525</b>
<b>SP1073</b>	<b>529</b>
<b>Adaptation and Validation of the Voice-Related Quality of Life (VRQOL) Measure into Nepali.....</b>	<b>529</b>
<b>SP1074</b>	<b>532</b>
<b>Speech &amp; Eating dysfunctions associated with Oromandibular dystonia: A Case study; elaborating upon comparing assessment &amp; Treatment approach .....</b>	<b>532</b>
<b>SP1075</b>	<b>536</b>
<b>Tongue Contours In Manipuri: An Ultrasound Study .....</b>	<b>536</b>
<b>SP1076</b>	<b>539</b>
<b>Recapitulation of Electroglottography and acoustic characteristics of Vocal measures of Singer’s presenting occasional Vocal Dysphonia .....</b>	<b>539</b>
<b>SP1077</b>	<b>542</b>
<b>Early Therapeutic Intervention Outcomes in the Management of Unilateral Vocal Fold Palsy Post-Total Thyroidectomy: A Case Study .....</b>	<b>542</b>
<b>SP1078</b>	<b>544</b>
<b>Emerging Trends in AAC Technology and Designing an Innovative AAC App. ....</b>	<b>544</b>
<b>SP1079</b>	<b>546</b>
<b>The Overall Assessment of the Speaker’s Experience of Stuttering (OASES) Instrument: Cross-cultural Translation and Test of Validity and Reliability of the Nepali Version.....</b>	<b>546</b>
<b>SP1080</b>	<b>549</b>
<b>Teletherapy for Pediatric Swallowing and Feeding Disorders: Bridging Access Gaps in Rural Populations .....</b>	<b>549</b>
<b>SP1081</b>	<b>551</b>
<b>Sustainable Development through Digital Practices Training in SLP .....</b>	<b>551</b>
<b>SP1082</b>	<b>554</b>
<b>Stuttering Secondary To Spasmodic Dysphonia:A Single Case Profile .....</b>	<b>554</b>
<b>SP1083</b>	<b>558</b>

<b>A Comparative Study of the Voice Quality Of Down Syndrome and Typical Developing Children .....</b>	<b>558</b>
<b>SP1084</b>	<b>559</b>
<b>Comparison of Acoustic Analysis of Vowels in Children with Cochlear Implant for establishment of baseline vocal measures in Intelligible Communication.....</b>	<b>559</b>

## SP1020

# **Forming a Questionnaire to Determine based on Child's Communicative Life for Children with Higher Language Skills to Decide Therapy Type (individual/group/both) and Crosschecking efficacy: An Interventional Cross-Sectional Study**

*Mahasri Das*

**ASLP Department, EIRCC Branch, Nair Hospital**

### **Introduction:**

Individual therapy focuses solely on one child, or group therapy, which comes with the added benefit of practicing one's socialization skills; which option best suits a child with deficient speech and language skills? Is it always a singular therapy? Or is the integration of both a better option sometimes the answer; if yes, to what extent? This is an option which cannot always be clearly defined objectively.

### **Need for Study:**

This study will help us understand how to address best this group vs. individual therapy query, which is often raised in clinical settings, more objectively. The best way to do so would be designing and using a Likert scale-based questionnaire which takes parental opinion on relevant crucial parameters: The child's general speaking patterns, overall performance in different speaking scenarios/with various people, people/speaking scenarios he is wary/confident of and impact on life; as a result of higher speech and language skills used in individual therapy and group therapy for the same.

### **Aim & Objectives:**

#### Aims

1. To crosscheck the overall efficacy of a tool specifically tailored for children with higher language skills, which will determine the best therapy course (individual vs group vs both)
2. To crosscheck if the efficacy of the newly formed tool is consistent across multiple clients over the same period of time

#### Objectives

1. To check if the newly formed tool specifically tailored for children with higher language

skills, which will determine the best therapy course (individual vs group vs both), will be efficient enough for clinical usage

2. To check if the efficacy of the newly formed tool is still retained when administered to multiple clients over the same period of time

### **Method:**

Research Design: Interventional Cross-Sectional

Research Data Collection Site: EIRCC branch of Nair Hospital, primary health-care centre under BMC, Mumbai

Frequency & Nature of Sessions: Group Therapy - Weekly basis Individual Therapy - Weekly basis

Participant Details

No. of participants:5 Selection Criteria

- Age Range: 5 - 10 yrs
- Attends both group and individual therapy sessions weekly
- Issues with higher social communication skills and/or pragmatic deficits
- Atleast four months in such therapy setting

Tool

A new Likert 3-point questionnaire to be filled out by parents. Bifurcation for individual therapy and group therapy has been given. Subparts included:

- Your opinion on the General idea about the nature of your child's usage of known speech and language skills. Overall, how does he feel about it?
- His confidence when skills are taught via this type of session in said situation/activity.
- Impact on daily life

Some questions are individual therapy-oriented, some group therapy-oriented and some neutral. There are 40 compulsory questions and one optional, i.e. if applicable to the concerned client. Barring one optional group therapy question, there are 5 group therapy-specific questions and five individual therapy-specific questions in subsection 3. The rest applies to both therapies in this section. Overall, individual therapy questions are 35 and group therapy questions are 35

Scoring would be on a 2-1-0 point scale per question. At the end, the scores will be added up to 70 (72) and the overall total can into any of these eight categories: 71-75 (77) (Always Confident), 61-70 (Highly Confident), 51-60 (Moderately Confident), 41-50 (Mildly

Confident), 31-40 (Mildly Underconfident), 21-30 (Moderately Underconfident), 11-20 (Highly Underconfident) and 0-10 (Always Underconfident)

Utilizing the questionnaire to crosscheck its efficacy

The questionnaire will be handed over to the parents of the five children who have fulfilled the stated participant selection criteria to answer as accurately as possible at the start of the group session if they consent to participate in the study. It is important to note that only the questions and the relevant options (e.g. Better/Same/Worse) will be given. The corresponding scoring key will not be given or revealed to the parent to minimize bias. As this is the first time the test is being used, filling both sections is compulsory

After getting the questionnaire back, the scores will be added. If the child in individual therapy receives between 0-20, enrolling him in individual therapy would be best. A combination of both would be suitable if it's between 21-60. Group therapy would be a better option for practising his socialization skills if it's between 61-80. If the child in group therapy receives between 0-40, enrolling him in a combination of both would be suitable. Group therapy would be a better option for practising his socialization skills if it's between 41-80.

Suppose the outcome, i.e. deeming which therapy will suit the client when calculated by the concerned SLP (even if not the one taking any of participant's therapy sessions), aligns with the ongoing line of treatment. In that case, the concerned tool has a high efficacy rate.

### **Results & Discussion:**

Scores and resultant decisions of participants are

C-1: Individual therapy: 51(Moderately confident). Group therapy score: 50(Mildly confident)

Individual therapy = Individual therapy + Group therapy

Emotion: Overexcited

Group therapy = Group therapy only Emotion: Excited

C-2: Individual therapy: 58(Moderately confident). Group therapy score: 24(Moderately underconfident) Individual therapy = Group therapy + Individual therapy

Emotion: Silly

Group therapy = Individual therapy + Group therapy Emotion: Bored

C-3: Individual therapy: 59(Moderately confident). Group therapy score: 63(Highly confident)

Individual therapy = Group therapy + Individual therapy

Emotion: Moody

Group therapy = Group therapy only Emotion: Enthusiastic

NB: Client acts as a group leader and likes doing so.

C-4: Individual therapy: 37(Mildly underconfident). Group therapy score: 55(Moderately confident) Individual therapy = Group therapy + Individual therapy

Emotion: Amused

Group therapy = Group therapy only Emotion: Happy

C-5: Individual therapy: 58(Moderately confident). Group therapy score: 40(Mildly underconfident) Individual therapy = Group therapy + Individual therapy

Emotion: Calm

Group therapy = Individual therapy + Group therapy Emotion: Confused

Moreover, all of the findings corresponded with the ongoing therapy/therapies, which makes it clear that this test can be highly efficient if used regularly.

### **Summary & Conclusion:**

Therapy often boils down to the speech and language skills the child is weak in, how he handles them, his confidence level in various speaking scenarios, and the impact on his life. These are often considered subjective domains. This questionnaire attempts to make them objective domains, as these factors are more vital than we can understand in a person's daily communication. Additionally, we get a parental perspective regarding a child's speech and language. Efficacy-wise, the results have made it clear that this test can be of great value for clinical usage. Depending on what services a potential client's parent may wish to avail of (group/individual/both), they too get an opportunity to add in about the child's current communicative skill on the questionnaire in the concerned format in pen and paper format for future reference. This will also help us improve our therapy services as we now know more about the client's communication due to enhanced parental input, and we can also set more specific target goals.

## SP1021

# **Linking Social Interaction to Language Skills in Extraclinical Settings in Children with Higher Language Skills by Incorporating Open Conversational Activities between Children as a Midsession or Postsession Activity**

*Mahasri Das*

**AST Department, Nair Hospital, EIRCC branch**

### **Introduction:**

Socialization is how individuals, particularly children, acquire the values, habits, attitudes, and social skills necessary to function effectively in society. A kid may pick up socialization skills in 2 different ways. 1) Anticipatory Socialisation: "Rehearsing" for future positions or social relationships and 2) Resocialization: Discarding old behaviour patterns and acceptance of new ones during life transitions.

### **Need for Study:**

A group speech therapy session is an excellent opportunity for a child to practice his socialization skills. It may be a mid-session activity when related activities have related speech and language skills have open-ended questions which encourage maximal discussion, indirectly improving a child's logical thinking while talking. Alternatively, it can be a post-session activity if speech and language skills-related activities are completed first, and lastly, they are allowed to mingle among themselves freely. This can be done via anticipatory socialization or resocialization.

### **Aim & Objectives:**

#### Aims

1. To quantitatively check the overall efficacy of inclusion of open conversation among children as mid-session break or post-session group therapy activity via a usage of introvert vs extrovert chart (7 ESL).
2. To quantitatively and qualitatively track improvement in the usage of the socialization skills on all 3 conversational styles (introvert/extrovert/ambivert) for an average of 4 months via this technique.

#### Objectives



1. To establish if including open conversation among children as a mid-session break or post-session group therapy activity efficiently improves a child's socialization skills and, if yes, how via introvert vs extrovert chart (7 ESL).
2. To check if this activity has enough potential to establish and improve the usage of socialization skills of all children in the group within an average period of 4 months when executed and utilized in every group therapy session held and if yes, types of conversational styles influences their socialization.

**Method:**

Research Design: Interventional Non-Invasive Longitudinal.

Research Timeframe: February 2024 to September 2024 (8 months total) was dedicated to the entire study. Per patient, on average, four months were dedicated to tracking possible changes.

Research Data Collection Site: EIRCC paediatric branch of Nair Hospital, a primary health-care centre under BMC, Mumbai.

Frequency & Nature of Sessions: Group therapy sessions only-Weekly basis.

Participant Details: No. of participants:20.

Selection Criteria-

- Chronological Age: 5 yrs to 11 yrs.
- Prestudy Pragmatic Age: minimum 6 months below chronological age.
- Attend group therapy sessions weekly.
- Should be in group therapy for an average period of 4 months.
- Should be enrolled for higher social communication skills and/or pragmatic deficits in group therapy.

The technique chosen for the study: Open conversation-based activities between children are used to encourage socialization. The nature of activities will change from session to session.

Tool selected to track changes: Pragmatic Assessment for Children between ages of 5-10 yrs, Why? To check if the client is eligible for the study. The study will include the client if the socialization skills listed in this test are not age appropriate.

introvert vs extrovert Chart (7 ESL) Why?: To check if the child socializes during the study period and, if yes, which conversational style he utilizes.

Execution: In the first session, the clinician will observe the behavioural patterns of every child enrolled in the group therapy and mark out the answers to questions in Pragmatic Assessment for Children between the ages of 5-10 yrs related to a client's socialization skills. If the

responses give an impression that the child's socialization skills fall below a minimum of 6 months below chronological age, the child is eligible for the study. The selected technique will be executed. Introvert vs extrovert Chart (7 ESL) will be used to see if the child socializes and, if yes, what are his conversational styles.

### **Results & Discussion:**

The following types of conversational styles were noted while the participants were socializing: Extroverts: 12 clients are extroverts. They play between themselves and try to interact with introvert and ambivert clients. However, ambiverts are more likely to interact between the other 2 categories at the start of the session. Friend zones are focused on the number of friends. While conversing, they tend to jump from one topic to another or change communication partners/groups quickly.

Introverts: 6 clients are introverts who prefer interacting in smaller, tight-knit groups with introverts mostly and with quieter ambiverts. Friend zones are focused on the quality of friendship bonds. While conversing, they tend to dive into deep conversations and hang onto one communication partner/group for a prolonged period of time.

Ambiverts: 2 clients are ambiverts. They may try to interact with extrovert clients initially. However, when tired out, they may prefer interaction with introverts or ambiverts. Communication-wise, conversation style changes based on who they are talking with.

Understanding the three conversation patterns utilization in real life: As the behavioural patterns clearly show, every child has a different conversation style during socialization, which roughly falls into one of 3 subcategories: Quantity, Quality, and Balanced. However, all the children do pick up socialization skills (and a conversation style).

It is, however, not a hard and fast rule noted, but an observation on a general tendency of how friend groups were formed in the group sessions. In reality, it is essential to note that an introverted-extrovert spectrum exists, and socialization with, e.g., a stranger is not the same as that of a friend.

### **Summary & Conclusion:**

Socialization is the most crucial skill in our verbal community, which can be "practiced" in group therapy without worrying about making errors. A child has complete freedom and a safe place to understand and utilize his conversation style(s) in real-life scenarios. Similarly, some may practice different conversation styles with different friends/ friend groups. Others may not do so and stick with one conversation style that is similar to what was seen in the results.

Whatever the pattern, the main achievement of a child is learning to socialize independently outside of society. As a result, spontaneous conversation-based activities, if made compulsory in any format, would prove to be an asset in improving the chance of each group member socializing independently.

**Person-Centred Focus on Function : Speech and Swallowing Assessment  
and Management on a person with Hemimandibulectomy**

**- A Case Study**

*Fatema Siawala, Satyam Pandey, Kisan Satish Chandra & Urmi Ajay*

**AYJNISHDD**

**Introduction:**

Oral cavity carcinoma ranks as the second most prevalent cancer in India, the majority of these being Squamous Cell Carcinoma(SCC) with tobacco use being a major contributing factor to its incidence (Gupta et al., 2016, Coelho, 2012, Chaturvedi et al., 2019, Ashwinirani et al., 2018). Mandibulectomy, the removal of part or all of the mandible, is often required in oral cancer treatment when tumours invade the mandible or extensive resection is needed for disease control (Ravi & Anand, 2016). Hemimandibulectomy is surgical removal of one lateral half of the mandible. Mandibulectomy with radical neck dissection leads to facial disfigurement, loss of occlusal contact, and difficulty with lip competency for saliva control and swallowing (Deenadayalan et al., 2017). Deficits in speech that prominently includes articulation problems due to decreased range of movement, malocclusion of the jaw, trismus, and voice problems due to side-effects associated with surgery and radiation therapy (Naik et al, 2015). The WHO's International Classification of Functioning, Disability, and Health (ICF) provides a standardised framework for assessing how health conditions impact daily functioning. Unlike traditional diagnosis-focused models, it enables individualised, patient-centered goals by considering body functions, activities, and environmental factors, promoting interdisciplinary collaboration and patient involvement (WHO, 2001).

**Need for Study:**

This study is essential due to the lack of research on speech and swallowing rehabilitation in individuals with hemimandibulectomy (Dholam et al., 2018b, Ravi et al., 2022, Zacharia et al., 2013). It also addresses the need for person-centered, tailored interventions to improve functional outcomes and quality of life, filling a gap in current clinical approaches (Jenkins et al., 2023).

**Aim & Objectives:**

This study aims to explore a person-centered approach for assessing and managing speech and

swallowing functions in an individual with hemimandibulectomy.

Objectives - Evaluating the impact of hemimandibulectomy in speech and swallowing using standardised tools and patient feedback. Developing a tailored therapy plan to address functional deficits, considering the patient's anatomical changes and personal goals.

### **Method:**

Study design: Single case study (Prospective study design)

Participants

Sample size: Since it is a case study, only one sample is taken.

Inclusion criteria: Individual with Hemimandibulectomy.

Case Report

A patient AS aged 47-years-old came to the department with a history of hemimandibulectomy undergone due to carcinoma on buccal mucosa, which was caused due to chewing tobacco for years. Histopathological reports revealed keratinizing SCC (T4aN1M0) on the right buccal mucosa. The patient underwent Right Composite Hemimandibulectomy with Right and Left Sinus Node Dysfunction with Free Flap reconstruction. Subsequently the patient underwent a total dose of 60 Gy in 30 fractions of radiation therapy and 6 cycles of chemotherapy and was inserted with an NG Tube.

### **TOOLS AND MATERIALS USED**

Oral Peripheral Mechanism Examination (OPME), Photo Articulation Test (PAT), Diadochokinetic Rate (DDK), and Intelligibility rating using Ali Yavur Jung National Institute of Hearing Handicapped (AYJNHH) intelligibility rating scale. Aerodynamic analysis, perceptual voice analysis using consensus auditory-perceptual evaluation of voice (CAPE-V), and acoustic analysis using Dr.Speech. Assessment of the swallowing function was carried out using Gugging Swallowing Screen (GUSS). The patient was evaluated for Quality of Life using Voice Handicap Index(VHI), EORTC QLQ - H&N35.

### **ASSESSMENT**

The results of OPME revealed lip seal is inadequate, lip is deviated with the right upper and lower teeth missing. There is a cross-bite and trismus. Lip functions like puckering, retraction are slow and restricted. Drooling is present. Tongue movements show reduced strength, speed, and range. Chewing is impaired, and there is sluggish and uneven movement of the soft palate. Intraoral pressure cannot be maintained and blowing and sucking functions are inadequate. Speech is characterised with misarticulations, hypernasality and dysprosody. The speech intelligibility was rated as 4 on AYJNHH intelligibility rating scale. i.e, Can be understood

with concentration and effort by a sympathetic listener.

The aerodynamic analysis revealed a maximum phonation duration of 8.2 seconds; S/Z ratio could not be assessed. On perceptual assessment, the voice is breathy and hypernasal. CAPE-V score is 4.i.e., overall voice clarity affected is 40 - 55% suggestive of moderately deviant voice quality. The values obtained from analysis using Dr.Speech software is Fo = 168.98 Hz, Jitter = 0.63%, Shimmer = 3.39%, HNR = 22.4dB, NNE = -7.67dB, Fo tremor = 8.06Hz, Amplitude tremor = 9.4. On GUSS, score is 13, suggestive of moderate oral dysphagia and moderate risk of aspiration.

On VHI, score is 94, suggestive of Severe Voice Handicap.

EORTC QLQ- H&N35 scores for swallowing = 50% and speech = 33%.

#### Patient Reported Outcomes

The patient had reported difficulty in eating (d550) and can only manage mashed food (b510, b5108). Eating too quickly causes choking (b5100), nasal regurgitation, (b5108). This has also resulted in reduced appetite(b1302) and increased meal-time (d560, d5501).Difficulty in mastication (b5101) and drooling (b5102) also reported. Excess saliva production after meals(b5102). Speech was unclear(b330), and voice has significantly changed (b310) since surgery. Patients also experience neck pain(b28011) and facial tingling (b265) after prolonged speaking(d330). Patient reports decreased participation in daily and social activities due to impairment(d920). These patients reported outcomes were formed according to the ICF framework and helped us form a tailored intervention plan.

### **Results & Discussion:**

#### Intervention

Our primary long-term goals of therapy were:

1. Achieving intelligible and functional speech for effective communication in social and professional settings.
2. Restoring safe and efficient swallowing to prevent aspiration and ensure adequate nutrition.
3. Enhancing oral motor control for activities such as chewing, drinking, and speaking, minimising compensatory strategies.
4. Facilitating successful adaptation to prosthetic devices (palatal lift, Guide Flange Prosthesis(GFP), ensuring long-term functional use. A multidisciplinary approach was taken for comprehensive rehabilitation and addressing the complex needs of the patient.

#### Therapy outcomes

Over the course of 3 months, the patient underwent speech and swallowing therapy, following

which there was improvement in articulatory subsystem that resulted in a rating of 3 on AYJNIHH intelligibility rating scale in speech, and swallowing function was improved to mild dysphagia and mild aspiration on GUSS scale. On CAPE-V, score is 3 .i.e., overall voice clarity affected is 31-39%. On VHI, score is 56 suggestive of moderate handicap. EORTC - H&N35 scores for swallowing = 60% and speech = 50%.

Patient reported outcomes post therapy, show clearer, more intelligible speech and reduced hypernasality. Reduced mealtime, with fewer incidents of choking or nasal regurgitation. Patient reports better social and professional interactions. Successful adaptation to prosthetics for speech and chewing.

### **Summary & Conclusion:**

This study focused on a person-centered approach to assess and manage speech and swallowing functions in an individual with hemimandibulectomy. It demonstrated the effectiveness of rehabilitation using the ICF framework, leading to improved overall quality of life. However, since this study involved a single participant, further research is needed to establish evidence-based practices for speech and swallowing rehabilitation using the ICF framework and patient-reported outcomes in a larger population of head and neck cancer patients.

## Assessment of Pre and Post Operative Vocal Functions in Total Thyroidectomy: A Case Study

*Pratham Tirthani, Priyanka . & Srabanti Saha*

**Sri Aurobindo Institute of Speech and Hearing, SAU, Indore**

### **Introduction:**

The human voice is produced by a complex instrument composed of intricate laryngeal structure, which is further innervated, by branches of the Recurrent laryngeal nerve (RLN) supported by branches of Superior laryngeal nerve (SLN) that lies in close proximity to thyroid gland and are vulnerable to injury during thyroidectomy (Lee et al, 2016). In a case of thyroid cancer, goitre, hyperthyroidism and thyroid nodules thyroidectomy could be the possible intervention chosen for diagnoses. While the procedure is generally safe, there is a risk of damage to the nerves mediating the muscular control of the larynx (Rodriguez, Hans, and Lechien, 2002). The surgical intervention of the nerves is related with 46% of unilateral vocal fold paralysis and 56% of bilateral vocal fold paralysis during thyroid surgery. Voice changes in the absence of nerve palsy are also noticed (Solomon et al., 2012). The major complaint reported by patients after surgery is change in voice range (Kim et al., 2023).

Voice changes that occur after thyroidectomy in the absence of overt vocal fold paralysis, known as post-thyroidectomy dysphonia. After surgical intervention, following voice difficulties were reported in literature such as voice fatigue during phonation (producing speech sounds), difficulties with high pitch voice and a more monotone pitch, weakened vocal strength or difficulty in maintaining long utterances, and moderate to severe hoarseness of voice (Mihai, 2020). The possible cause may be injury to pre-thyroid strap muscles or cricothyroid muscles or impairment of laryngo-tracheal movement due to wound contracture after surgical trauma to soft tissue (Solomon et al., 2012). Approximately 30% to 80% of patients complain of voice alteration after thyroid surgery (Ryu et al., 2022). The vocal changes progressively normalise within 3-6 months postoperatively.

### **Need for Study:**

Voice changes following thyroid surgery (thyroidectomy) can significantly affect patient's quality of life. Voice alterations can lead to difficulties in communication, affecting social interactions, professional life, and overall emotional well-being. Identifying and addressing these symptoms is essential for improving patient outcomes. Investigation of vocal functions



post-surgery aids in understanding the underlying mechanisms, with or without nerve damage, vocal cord palsy or muscle tension. A comprehensive evaluation can identify the nature and severity of voice alterations, which can lead to appropriate interventions. Hence, there is a need to evaluate vocal function in pre and post total thyroidectomy case.

### **Aim & Objectives:**

The aim and objectives of the present case study was to investigate the vocal functions in pre and post total thyroidectomy administering subjective and objective voice assessment measures.

### **Method:**

A 45-year-old Hindi-speaking female reported to speech and language pathology department with a chief complaint of colloid goitre since last 5 years. The case underwent total thyroidectomy and reported back after five days post-surgery with a complaint of change in voice. The vocal functioning of the case was examined subjectively and objectively using videolaryngoscopy, acoustic voice analyses, aerodynamic analysis, and perceptual voice rating scale. Following detailed case history, maximum phonation duration (MPD) and S/Z ratio was assessed. Objective assessment of vocal function was done using Multi-Dimensional Voice Program (MDVP) whereas the perceptual voice investigation included Voice Handicap Index (VHI) and GRBAS voice rating scale pre and post operatively.

### **Results & Discussion:**

The current study investigated pre and post total thyroidectomy vocal functions of a patient with a history of goitre since 5 year.

Pre-thyroidectomy voice evaluation revealed MPD and S/Z ratio within normal range whereas post-surgical findings suggested of reduced ranges. VHI and GRBAS administered pre operatively revealed no voice handicapness, and normal voice quality respectively. Perceptual post operative investigation revealed VHI score of 37 suggestive of moderate degree of voice handicapness and GRBAS findings indicated moderate severity of hoarse voice quality. MDVP findings showed the comparison of pre and post acoustic voice analysis of parameters fundamental frequency; mean fundamental frequency, average pitch period, highest and lowest fundamental frequency, jitter, shimmer and noise harmonic ratio. The findings revealed reduced F0, reduced F0 range, increased average pitch period and jitter value whereas there was no difference in parameter of shimmer and NHR. On the basis of clinical evidence and results of subjective and objective voice evaluation along with laryngoscopic findings, the

present case was conveyed as having Moderate Hoarse voice quality secondary to post total thyroidectomy. In the present case study, we found significant differences in VHI scores post operatively. A similar study done by Kletzien et al., (2018) researcher also found that voice handicap index had maximum abnormal scores at 2 weeks after the surgery. The predominant effect observed post total thyroidectomy in objective voice evaluation. The findings are supported by Nisha et al., (2021) author concluded that post thyroidectomy showed statistically significant changes in the fundamental frequency, mean fundamental frequency, and jitter while no change observed in the value of shimmer and noise harmonic ratio. Wong et al. (2017) found significant changes in fundamental frequency and shimmer in early postoperative period while in the present case study we noted significant changes in the fundamental frequency not in shimmer findings. Another study done by Chun et al., (2015) indicated significant changes in fundamental frequency jitter and noise harmonic ratio but not in shimmer. The current study showed contraindicate result in the parameter of noise harmonic ratio. Further research by Sinagra et al., (2004) found change in voice post total thyroidectomy author found statistically significant changes in F0 which were comparable to the current study, he also found no statistically changes in STD, shimmer, and average pitch period where as increased value noted in average pitch period in the present case study.

### **Summary & Conclusion:**

The study emphasizes the significant impact of total thyroidectomy on vocal function. Post total thyroidectomy the patient complains notable alterations in voice quality and increased vocal fatigue. Qualitative and quantitative changes in voice quality post total thyroidectomy were related mostly to increased phonatory instability in both the subjective and objective findings. This reinforces the importance of thorough pre- and post-operative voice assessment to identify and address potential complications. Effective management strategies, including voice therapy and monitoring, are essential to improve patient outcomes and enhance quality of life.

**Comparative Study on Awareness and Utilization of Augmentative and Alternative Communication (AAC) Among Speech-Language Pathologists, Occupational Therapists, Physiotherapist, Special Educators, and Psychologists in Maharashtra**

*Satyam Pandey, Fatema Siawala, Kisan Satish Chandra & Shruti Kamble*

**AYJNISHD (D) MUMBAI**

**Introduction:**

Augmentative and Alternative Communication (AAC) includes various tools and strategies to support individuals with severe speech and language impairments. These can range from simple picture boards to advanced speech-generating devices, enabling individuals to express themselves and interact more effectively (Beukelman & Mirenda, 2013). Speech-Language Pathologists (SLPs), Occupational Therapists (OTs), Physiotherapists (PTs), Special Educators, and Psychologists frequently work with individuals who benefit from AAC, though their levels of awareness and usage can differ due to variations in training and experience (Joginder Singh et al., 2020, Ganz, 2014).

SLPs are often regarded as the primary experts in AAC, but other professionals, such as OTs and Special Educators, also play significant roles in supporting communication. Despite the benefits of AAC, there remains variability in the awareness and implementation of AAC across different professional disciplines (Ronski & Sevcik, 2015). Understanding the comparative awareness and usage of AAC among these professionals is critical for improving interdisciplinary collaboration. This study seeks to explore these differences to help enhance AAC training and implementation across disciplines.

**Need for Study:**

A comprehensive understanding of AAC systems is crucial for ensuring effective interdisciplinary collaboration and consistent support for individuals with communication challenges. Studies have shown that inconsistent knowledge and usage of AAC can lead to reduced patient outcomes and hinder long-term development, especially in children with complex communication needs (Iacono et al., 2009, Light & McNaughton, 2014). Additionally, barriers such as inadequate training, lack of resources, and differing professional roles can affect the integration of AAC across settings (Kent-Walsh & Light, 2003). Therefore, this study

is necessary to investigate the varying levels of AAC awareness, usage and effectiveness among these professionals. Identifying these differences can help bridge gaps in knowledge, improve professional training, and optimize AAC usage, ultimately leading to better communication outcomes for individuals with speech and language impairments (Ganz, 2014).

### **Aim & Objectives:**

To evaluate and compare the level of awareness, utilization and effectiveness of AAC systems among SLPs, OTs, PTs, Special Educators, and Psychologists in enhancing communication for individuals with speech and language disorders.

Objectives:

1. To assess the awareness of AAC systems.
2. To evaluate the frequency and manner of AAC usage in clinical practice by each group. To determine which professional group demonstrates the highest competency in AAC. To compare awareness, usage and AAC effectiveness among these professionals.

### **Method:**

Research design of survey type was used in this study.

Tools: The primary tool for data collection was a questionnaire consisting of 31 questions designed to assess three key domains: Awareness(9), Usage(10) and Effectiveness(12) of AAC in enhancing communication for individuals with speech and language disorders. The questionnaire consisted of Likert-scale questions to capture both quantitative and qualitative data. The questionnaire was validated by experts from each professional group who are currently in practice before distribution. Validation included a pilot study with a small sample (n=2) from each group, where feedback was gathered and incorporated to ensure clarity, relevance, and comprehensiveness of the questions.

Participants: The study involved a total of 150 participants, with 30 professionals from each of the following groups: SLPs, OTs, PTs, Special Educators, Psychologists. Participants were selected based on their professional experience with individuals who have speech and language disorders, minimum of 2 years of experience working in their respective fields, experience with or exposure to AAC systems in clinical or educational settings within Maharashtra state.

Procedure: The study was conducted entirely online. Data was collected using Google Forms, with participants receiving an email link to the form. Consent was obtained electronically before participants could proceed with the questionnaire.

The steps involved were: Invitation: Invitations were sent to participants via professional

networks, along with a brief description of the study's objectives. Consent: Electronic informed consent was obtained at the beginning of the survey.

Demographic details were obtained in the beginning post consent form to obtain information related to work experience, work setup and location.

Completion: Participants completed the questionnaire at their convenience, with responses automatically recorded.

All responses were anonymous, and participants were allowed to withdraw from the study at any time without consequence. Data was collected over a period of four weeks. The responses were documented appropriately. The mean range of obtained data was analyzed and tabulated.

#### Statistical Analysis

**Descriptive Statistics:** Mean and standard deviation (SD) were calculated for each group in the domains of awareness, usage, and effectiveness. **ANOVA (Analysis of Variance):** One-way ANOVA was used to test statistically significant differences in awareness, usage, and effectiveness between the five professional groups. **Post Hoc Tests:** Tukey's Honest Significant Difference (HSD) test was conducted to identify specific group differences where ANOVA results were significant. **Significance Level:** An alpha level of  $p < 0.05$  was set for determining statistical significance.

#### **Results & Discussion:**

**Descriptive Statistics:** Mean and Standard Deviation for all the domains calculated. Awareness is  $4.46 \pm 0.75$  (SLP),  $3.66 \pm 1.05$  (OT),  $3.15 \pm 1.07$ (PT),  $3.64 \pm 0.79$  (SE),  $4.00 \pm 0.73$ (Psychologist). Usage is  $3.55 \pm 1.22$ (SLP),  $3.48 \pm 0.88$ (OT),  $3.44 \pm 0.71$ (PT),  $3.58 \pm 0.89$  (SE),  $3.32 \pm 0.95$ (Psychologist). Effectiveness  $4.01 \pm 0.77$  (SLP),  $3.73 \pm 0.69$ (OT),  $3.50 \pm 0.62$ (PT),  $3.72 \pm 0.67$ (SE),  $3.71 \pm 0.73$ (Psychologist).

**Awareness:** Significant differences were found between professions ( $p < 0.05$ ), with SLPs demonstrating higher awareness of AAC compared to OTs, PTs, and SEs. Psychologists were similar to SLPs in terms of awareness.

**Usage:** No significant differences across the groups for AAC usage, indicating consistent application of AAC tools by all professions. **Effectiveness:** There were no significant differences perceived in effectiveness of AAC.

The findings indicate that SLPs possess a significantly higher awareness of AAC compared to other professions. This may reflect their direct involvement with AAC interventions and specialized training. However, there are no significant differences in usage and effectiveness suggesting that all these professions engage with AAC tools similarly and perceive similar

outcomes. The results also highlight that professionals require training for some newer AAC devices. Professionals have also suggested that they have found it difficult to train parents in use of AAC devices and are facing issues in promoting usage of AAC in extra clinical settings. Hence, these results highlight the need for increased awareness of AAC among professionals to ensure effective and widespread use of AAC in interdisciplinary teams.

**Summary & Conclusion:**

The study underscores the importance of AAC awareness among professionals, particularly for those outside the speech-language pathology domain. While usage and effectiveness appear consistent across professions, enhancing awareness and training among OTs, PTs, Psychologists and SEs could bridge any gaps and lead to more effective AAC intervention outcomes.

**Exploring SLP's Perspective on Effective Treatment Approaches for  
Childhood Apraxia of Speech (CAS) - A Survey.**

*Unnati Bajpai, Utsav Shrivastava & Vibha Mahajan*

**AYJNISHD (Divyangjan), R.C. Noida**

**Introduction:**

Childhood apraxia of speech is a neurological disorder that affects the accuracy and stability of articulatory movements, resulting primarily from impairment in transcoding spatiotemporal parameters of movement order. Studies (ASHA, 2007) have found several features commonly seen in the cases of childhood apraxia of speech which include inconsistency of errors with repeated production, lengthened and disrupted co-articulatory transitions, and inappropriate prosody. Even though, these features are not essential or sufficient for a conclusive diagnosis because they vary across different complexity levels, age groups, and symptom severity. Speech-language pathologists play a crucial role in assessing, diagnosing, and managing childhood apraxia of speech. Assessment involves standardized tests, informal assessments, and observations that critically assess the child's speech sound production, oral-motor skills, and overall communication abilities. Challenges are often encountered in differential diagnosis and treatment of CAS due to the lack of a standard definition likely significant heterogeneity in symptomatology and changing symptomatology over time (Le-Normand et al., 2000; Lewis et al., 2004) making it important for therapists to employ evidence-based treatment strategies. Over the years many treatment approaches have been developed to provide appropriate treatment for CAS.

A study done by ASHA (2007) suggests a high level of treatment intensity with frequent and individual sessions for children with CAS. Thus, sessions should be extremely tailored and specific to each client to facilitate effective communication. Treatment goals are generally classified into three groups motor treatment, linguistic approaches, and augmentative and alternative communication. Motor treatment programs are designed based on principles of motor learning, while linguistic approaches focus on childhood apraxia of speech as a language learning disorder and teach the rules of language and its production, and the use of AAC is advised to provide functional communication while sustaining and enriching verbal speech production. Several programs with some evidence bases, have been developed specifically for CAS. Most of these programs share some common hypothetical basis for addressing

phonotactic complexity, prosody, consistency, and suppression of phonological patterns. Given the complexity and the variability of CAS in each child's response to treatment, understanding the perspectives and experiences of speech-language pathologists in clinical practice is important to find the most effective treatment approaches and to identify potential challenges and areas for further research.

### **Need for Study:**

While there are multiple well-documented treatment approaches for childhood apraxia, there is still a lack of concurrence among clinicians regarding the most effective and eminently suitable strategies also, given the variety of treatment approaches from motor-based interventions to linguistic-based strategies. This study is essential to capture the diverse experiences and insights of SLPs working in various work settings, which can help to inform evidence-based practice in the field of childhood apraxia of speech.

### **Aim & Objectives:**

This study aims to shed light on which therapy techniques are most enacted and perceived as effective by practicing clinicians. The objective is to identify the emerging trends or best practices used in the treatment of childhood apraxia in India.

### **Method:**

An online web-based questionnaire was designed where a total no. of 66 respondents within the age range of 20-50 years from various work setups and states of residence; anonymously answered a series of questions about their knowledge and exposure in the field of CAS management. The questionnaire was divided into four sections covering: demographic data, knowledge and perception about the role of SLP in the management of childhood apraxia of speech, exposure to childhood apraxia of speech, and therapeutic intervention. The obtained responses were stored in google forms and were further analyzed in terms of graphical data and percentages.

### **Results & Discussion:**

Detailed analysis of the data gathered through Google forms was done. Most speech-language pathologists opted for intensive therapeutic intervention with a session frequency of twice a week (50%) and daily (19.7%). Most responses (62.1%) highlighted the need for specialized courses and training programs in the management of CAS. When asked about preferred treatment approaches the prompt system (77.3%), sensory-motor approach (63.6%), and



melodic intonation therapy (62.1%) were found to be most used in the treatment programs. Many respondents (45.45%) favoured the use of a holistic intervention program for better future outcomes, holistic approaches majorly included the prompt system (19.69%), melodic intonation therapy (18.18%), dynamic temporal and tactile cueing (16.67%) sensory-motor approach (15.15%), etc. Additionally, a larger number of participants (50%) believed that augmentative and alternative communication should be incorporated from the beginning of the intervention while some believed it should be employed after a certain age (28.8%) or as a last resort (21.2%), and most of them emphasized the use of low/high tech picture/graphic communication systems (86.4%). There was a significant variation in responses about the therapy technique that will be predominant in the future, yet the prompt system (16.67%) was uppermost among them.

The survey results reflect the common use of motor-based approaches (the prompt system and sensory-motor approach) and linguistic-based approaches (melodic intonation therapy). Children with CAS often have a poor progress history in speech therapy when attempting to address a specific deficit and not the complete area of impairment. Therefore, it is important to understand specific characteristics and core deficits of childhood apraxia to provide appropriate treatment which necessitates understanding the use of treatment approaches in conjunction with each other. There was still a significant knowledge gap among SLPs about the incorporation of augmentative and alternative communication in therapy. Margaret Fish (2016) suggested the introduction of AAC right from the start of the treatment because if it were to be employed as a last resort, the child could miss out on months or years of opportunities to establish intentional and symbolic communication.

### **Summary & Conclusion:**

The survey investigated current trends in the management of CAS, through a comprehensive evaluation of the perspective of speech-language pathologists in selecting methodical treatment approaches for their therapy plans. This reveals the respondent's preferences for infamous approaches like the prompt system, melodic intonation therapy, and sensory-motor approach also, their view of a holistic intervention plan by incorporating various techniques to target different areas of deficits in a child with apraxia. It stresses the importance of intensive treatment. It further talks about the use of AAC from the beginning of the treatment and emphasizes using low/high-tech picture/graphic communication systems. It highlights the need for specialized courses, training programs, and resource materials. By addressing these factors, it is possible to improve the quality of therapy for children with CAS and enrich their

communication skills.

To summarize, this research necessitates the need for national CAS-related studies, to establish standardized guidelines and future clinical practices, ensuring children with CAS receive the most effective, evidence-based treatment available in India.

**An Assessment of Parental Knowledge and Practical Application of  
Optimal Feeding Practices in Children with Cerebral Palsy: A Study in  
the Delhi NCR Region**

*Akash Patel & Vibha Mahajan*

**Ali Yavar Jung National Institute Of Speech And Hearing Disabilities (Divyangjan),  
RC, Noida**

**Introduction:**

Cerebral palsy (CP) encompasses a variety of permanent disorders that disrupt movement and posture, resulting from brain injuries sustained before birth or during early development. Children diagnosed with CP often face challenges in oral motor functions, leading to feeding difficulties that can result in serious health issues, including malnutrition and aspiration. Proper nutritional intake, combined with effective feeding techniques, is crucial to promote growth and avoid complications.

The knowledge that parents possess regarding feeding practices and their ability to apply effective strategies are essential in overcoming these challenges. However, there is a considerable concern regarding the extent to which parents understand feeding difficulties and their capacity to implement suitable interventions. This qualitative study aims to assess parental knowledge, experiences, and the obstacles encountered in adopting optimal feeding approaches for CP children.

**Need for Study:**

Children with cerebral palsy often experience significant feeding issues, such as dysphagia, which can lead to serious complications like malnutrition, aspiration, and hindered growth. In the Delhi-NCR region, limited research exists on parents' understanding and management of these feeding challenges. This study aims to identify gaps in parental knowledge and the barriers they face in delivering effective care. By addressing these issues, the research underscores the importance of improved education and greater access to professional support to enhance the nutrition and overall health of children with CP.

**Aim & Objectives:**

1. To evaluate parental understanding of feeding difficulties, particularly dysphagia, in CP children's.

2. To identify the feeding strategies and techniques employed by parents to address these barriers.
3. To explore the obstacles parents encounter in obtaining professional support and implementing optimal feeding practices.
4. To pinpoint areas where enhanced education and professional guidance can improve dietary management for CP children.

**Method:**

This qualitative study involved 30 parents of children diagnosed with cerebral palsy. Data were collected at AYJNISHD Noida and various therapy centre's in the Delhi-NCR area, utilizing a Multimodal Communication Method. Descriptive statistics were applied to analyse the data and explore the relationship between parental knowledge and feeding resultant. The structured questionnaires focused on five key areas:

1. Demographic information and parental awareness of feeding challenges.
2. Understanding of dysphagia and its related complications.
3. Utilization of adaptive feeding techniques and tools.
4. Awareness of the nutritional needs specific to children with CP.
5. Access to professional support and dietitian services.

**Results & Discussion:**

Among the surveyed parents, over 46.7% were aged 20-30 years, with 60% being female. Majority (56.7%) of the children were diagnosed with spastic CP, primarily in the age range of 2 to 5 years, and 43% experienced moderate to severe feeding difficulties.

Notably, 73.3% of parents were unfamiliar with the term dysphagia, and only 50% recognized common signs of feeding difficulties such as coughing, choking, and prolonged mealtimes. Approximately 46.7% of parents provided their children with pureed diets, yet 50% did not use specialized feeding tools or techniques, including adaptive spoons, chairs, or postural adjustments that are essential for children with motor impairments.

Additionally, 73.3% of parents reported force-feeding their children, which poses an increased choking risk. Preferences indicated that 63.3% of children favored sweet tastes, while 40% preferred salty options.

Only 23.3% of parents consulted professionals such as speech-language pathologists (SLPs), and a similar proportion received dietary guidance from SLPs or dietitians. The following

findings highlight a significant gap in professional support and indicate that parents with greater knowledge of feeding practices reported fewer complications, such as malnutrition and aspiration, emphasizing the necessity for ongoing education and assistance.

**Summary & Conclusion:**

This study underscores substantial gaps in parental knowledge and support concerning the feeding strategies for CP children's. Many parents lack awareness of dysphagia and fail to recognize feeding difficulties, which heightens the risks of choking and malnutrition. Although some parents utilize pureed diets, a significant number do not implement specialized feeding tools, and force-feeding practices are prevalent. The limited access to professional guidance from SLPs and dietitians indicates a critical need for enhanced education and support to improve feeding practices and mitigate complications among CP children's.

**The Voice Behind the Classroom: Comparative analysis of Vocal Health  
in Regular School Teachers and Special Educators**

*Charu Gupta, Deepanshi, Pooja & Vibha Mahajan*

**Ali Yavar Jung National Institute Of Speech And Hearing Disabilities (Divyangjan), RC**

**Noida**

**Introduction:**

Teachers are frequently considered a high-risk group for developing voice problems, primarily due to the extended use of their voices at high volume levels. Both quantitative and qualitative studies have confirmed this perception. A study by Johnson K.J., Akinola M.A., and Okonkwo K.C (2017) found a notably higher prevalence, with 62.2% of secondary school teachers reporting voice disorders in Southwest Nigeria. Similarly, research by Sathyanarayan, M., Boominathan, P., & Nallamuthu, A. (2019). found that 37.5% of Indian school teachers in Chennai are at high risk for developing voice problems.

Special educators, who teaches children with special needs, face even greater vocal demands, especially those working with children who have hearing impairments or intellectual disabilities. To maintain engagement during lessons, these educators often use increased vocal loudness and frequent pitch changes, making them particularly vulnerable to voice problems over time. Among the various risk factors, phonotrauma caused by prolonged speaking remains the most commonly reported. Teachers often report concerns such as vocal fatigue, pain, and throat irritation and difficulty in sustaining speech.

**Need for Study:**

Previous studies have highlighted a high prevalence of voice problems among school teachers. Given that special educators are also engaged in vocally demanding roles, they are similarly at risk for developing voice issues. Therefore, analysing voice problems in special educators and comparing them with those of regular school teachers is crucial for identifying interventions that can improve the quality of life of both. Mostly existing research focuses primarily on teachers' self-reported data through questionnaires, with limited studies incorporating vocal assessments for a definitive diagnosis. Moreover, there is a lack of comparative studies between regular school teachers and special educators in terms of voice-related issues. This gap in the literature underscores the importance of our study, as it addresses a critical need for a more comprehensive understanding of vocal health across these two groups.

**Aim & Objectives:**

1. To compare voice issues in regular School Teachers and Special Educators.
2. To study the prevalence of voice disorders among regular School Teachers and Special Educators.
3. To compare the voice related issues in these two groups.
4. To analyse the underlying cause and their impact on voice disorders among these professionals.
5. To create awareness among these professionals for their vocal health.

**Method:**

The study employed a purposive sampling method, targeting school teachers from regular schools and special educators. No. of participants in this study are 60 which include 30 regular School Teachers and 30 Special Educators. The Special Educator group was further divided into two subgroups each include 15 participants: those teaching children with hearing impairments and those teaching children with intellectual disabilities.

The research was conducted in two phases. In the first phase, a self-assessment questionnaire was developed which has been validated by Five Speech Language Pathologists who have experience of more than 5 years and administered to participants. Following this, an acoustic analysis of the participant's voices was conducted using the PRAAT software. The second phase involved the analysis of the collected data. The Self- assessment questionnaire is divided into 4 domains which include (a) Teaching Dynamics (b) effect of teaching on voice (c) Awareness about voice misuse and abuse (d) Day to day vocal habits.

**Results & Discussion:**

The results of the questionnaire administered suggested that special educators faced more voice-related problems compared to regular teachers. Analysis of data is done by analysing domain one by one.

Responses of first domain and second domain reveals, many teachers believe that voice problems increase with their years of teaching experience, and the findings indicate a strong link between years of experience and the prevalence of voice issues. Additionally, 68% of teachers believe that taking more consecutive classes per day contributes to their voice problems and also reported that their voice quality changed throughout the day, with it becoming worse by the evening.

In Third domain and fourth domain - Awareness about voice misuse and abuse and Day to Day

Vocal Habits, result indicates most of the teacher lacked awareness about the misuse of their voice. Special educators were significantly more likely than regular teachers to experience multiple voice symptoms and signs, such as hoarseness, a dry throat, and special educators reported feeling more strain in their voices while speaking.

Fifth domain -Statistical analysis was done to compare several voice characteristics among three groups: Normal, HI (Hearing Impaired), and ID (Intellectually Disabled) using PRAAT data, which include: Shapiro wilk's test of normality which revealed that the data was not normally distributed for either of the three groups. For comparison between normal teachers and special educators, Mann Whitney U test was administered. Results revealed a significant difference between groups for all the parameters except for F0. For comparison between normal teachers, special educators dealing with HI individuals and those with ID individuals, Kruskal Wallis H test was administered. Results revealed a significant difference between groups for all the parameters except for F0. For further pairwise comparison, Bonferroni post-hoc test was administered which revealed that significant difference was found only between the normal teachers and teachers of ID individuals for Jitter and Shimmer. Whereas, significant difference was found between HNR and NHR values of normal and ID group and also in normal and HI group.

### **Summary & Conclusion:**

The results of this study indicate that special educators face more significant voice-related challenges compared to regular school teachers. This is evident across several domains, including teaching dynamics, vocal habits, and awareness of voice misuse. Special educators, particularly reported a higher prevalence of voice problems such as hoarseness, vocal strain, and difficulty maintaining vocal intensity.

The data also highlights a strong correlation between teaching experience and the incidence of voice issues, with teachers reporting worsened voice quality as the day progresses, especially after consecutive classes. Despite the widespread occurrence of these symptoms, only a few teachers sought professional consultation for their voice problems, pointing to a critical gap in awareness and intervention. Study of Heng Hwa Chen, Chiung Chiang (2010) suggested that a loud voice maybe the important risk factor for development of voice disorders in teachers.

Resulted acoustic markers suggest that special educators may be at higher risk for vocal strain and dysfunction, likely due to the increased vocal demands of their profession, that makes them more prone to vocal strain. Overall, this study underscores the urgent need for targeted vocal health awareness programs, preventative measures, and professional voice care interventions



for both regular school teachers and special educators to enhance their vocal well-being and, ultimately, their quality of life.

## Voice Function and Quality of Life Outcomes Following Chemo-Radiotherapy in Various Types of Head and Neck Cancer

### Patients : An Acoustic and Aerodynamic Analysis

*Anas Jenifar, Parkavi C & Anita Ivvah*

**Holy Cross College (Autonomous), Tiruchirappalli**

#### **Introduction:**

Head and neck cancers are tumor has its origin sites including the connective and muscle tissues over the mucosal surfaces like the oral, nasal cavity, and throat. Other head and neck malignancies include head and neck sarcomas, thyroid carcinoma, paranasal sinus and nasal cavity tumor, carcinoma of the salivary glands, head and neck cutaneous malignancies and cancer of the oropharynx, larynx, hypopharynx, nasopharynx region. These tumors are conventionally treated using chemotherapy (CRT) and radiotherapy (RT). In spite of having many benefits CRT also comes with many side effect including damage to the surrounding normal tissues that may affect the development of the voice or speech. Given the importance of voice in communication, it is essential to understand the specific changes that occur in vocal function due to CRT.

#### **Need for Study:**

The treatments for HNC, especially chemo-radiotherapy (CRT), have remarkably influenced the survival of more patient populations. However, along with these outcomes, patients undergoes damage of healthy tissue, including those tissues that are significantly associated with voice production. Since voice plays a very central role in communication, damage to the quality, pitch, loudness, and other parameters of voice can certainly influence the quality of life of patients. Although evidence on outcomes of Head and neck cancer treatment is documented more is required in the understanding regarding how CRT modifies general vocal function. Research in these area will provide insight on vocal health and communication capability in patients with HNC.

#### **Aim & Objectives:**

1. To evaluate the impact of CRT on acoustic and aerodynamic voice parameters in HNC patients.
  - a. Acoustic analysis using the PRAAT software

- b. Aerodynamic measures to understand the physiological changes in voice production.
2. Subjective assessments of vocal quality using
  - a. Voice Handicap Index (VHI)
  - b. GRBASI scale
3. The individuals' quality of life was examined using the Tamil version of EORTC QLQ30 and QLQ Head and Neck specific 35 questionnaires, supplemented by qualitative data from interviews

Together, these assessments will provide a holistic view of the effects of CRT on the vocal function of HNC patients.

### **Method:**

This cross-sectional study involved 35 adult patients (aged 20-65 years) diagnosed with various types of HNC and scheduled for CRT as part of their treatment plan. Ethical clearance for the study was obtained from the institutional review board, and informed consent was secured from each participant prior to their inclusion in the study. The study design used a combination of the two approaches-the qualitative and the quantitative approach. Acoustic measures acquired from the PRAAT software include a very precise analysis of F0, jitter, shimmer, and HNR in the voice signal. These parameters are used to evaluate voice stability and quality; higher jitter and shimmer often indicate dysphonia, as well as a low value for HNR which means poor vocal efficiency.

All patients had aerodynamic examination by assessment of MPD (the maximal phonation time). The perception of voice quality was analyzed by utilization of 2 validated questionnaires. This questionnaire has been able to measure the psycho-social effects of voice disorders on patients through use of a 30-item VHI. Two experienced speech-language pathologists used the GRBASI scale-a four point

auditory-perceptual rating scale and graded the patients' voices on each of the six dimensions of grade (overall voice severity), roughness, breathiness, asthenia (weakness), strain and instability. The individuals' quality of life was examined using the Tamil version of EORTC QLQ30 and QLQ Head and Neck specific 35 questionnaires, supplemented by qualitative data from interviews. The data collected were documented and analyzed using SPSS software.

### **Results & Discussion:**

The data tabulated were tested for normality, Chi- Square test and Factorial analysis was done

which reveal significant changes ( $p < 0.05$ ) in both acoustic and aerodynamic parameters. Acoustic analysis using PRAAT showed a statistically significant reduction in F0 with a mean score of 117.52, suggesting a decrease in vocal fold tension and mass following CRT. There was also a marked increase in jitter (mean average of 3.05%) and shimmer (mean average of 15.98dB), indicating a loss of vocal stability and an increase in irregularity of vocal fold vibrations. These findings were supported by a substantial decrease in HNR (3.04) values, reflecting a higher proportion of noise in the voice signal, further underscoring the decline in vocal quality.

Aerodynamic measurements showed a significant reduction in MPT (6.6s) following CRT, with patients struggling to sustain phonation for prolonged periods. This finding points to diminished respiratory control and a reduction in vocal efficiency. Furthermore, an increase in phonation threshold pressure was observed post-treatment, suggesting that patients required greater effort to initiate and maintain phonation, s/z ratio (0.77) these results indicate that the physiological efficiency of the vocal mechanism is compromised post-CRT.

Subjective measures provided additional insights into the impact of CRT on patients' vocal quality. The GRBASI ratings indicated an increase in the severity of voice disorders post-treatment, with higher scores for roughness and breathiness. Patients' VHI scores showed a significant increase in perceived voice handicap with a mean score of 13.25 in functional domain, 12.30 in emotional domain and 12.72 in physical domain, with most patients reporting a negative impact on their ability to communicate effectively in social and professional settings. EORTC QLQ30 and QLQ Head and Neck specific 35 questionnaires shows a significant deficiency with respect to quality of life of the patient denoting the impact on CRT on voice. The results of this study demonstrate that CRT has a profound impact on both the acoustic and aerodynamic aspects of voice in HNC patients. The increase in jitter, shimmer, and the decrease in HNR observed suggests that the treatment leads to irregular vocal fold vibrations and increased vocal noise, which may be attributable to the damage sustained by the laryngeal tissues during CRT. These acoustic changes, coupled with the reduced MPT and increased phonation threshold pressure, indicate that patients experience a decline in both vocal quality and vocal efficiency. The subjective assessments corroborate the objective findings, with patients reporting a significant decline in their perceived vocal abilities and increased vocal distress. The rise in GRBASI scores for roughness and breathiness suggests that CRT induces both aperiodic vocal fold vibrations and increased air leakage during phonation, likely due to structural changes in the vocal folds and surrounding tissues.

**Summary & Conclusion:**

The cumulative evidence provided from this study in regard to CRT in HNC patients shows acoustic and aerodynamic voice parameters significantly affected by this type of treatment. Changes that have been reported include reduced F0, increased jitter and shimmer, decreased HNR, reduced MPT, and increased phonation threshold pressure and indicate that CRT-induced laryngeal structure damage impairs the function of the vocal fold, affecting the perceptual voice changes. These trends further emphasize the effect of such changes on the quality of life of patients. Early targeted voice therapy is recommended during the course of CRT for patients with HNC to reduce the effects and make the vocal rehabilitation process more effective. To sum, monitoring vocal parameters should become an integral part of the treatment and rehabilitation process for HNC patients.

**Barriers to Employment for Young Adults with Stuttering: A clinical survey of stuttering and its Impact**

*Pooja, Charu Gupta, Deepanshi & Pravesh Arya*

**Ali Yavar Jung National Institute Of Speech And Hearing Disabilities (Divyangjan), RC**

**Noida**

**Introduction:**

Fluency refers to continuity, smoothness, rate, and effort in speech production. One of the common fluency disorder is stuttering that can negatively affect an individual's ability to express their needs and thoughts. According to Guitar in 2013, stuttering is marked by overt behavior, including prolongations, repetitions and blocks, which interrupt the forward flow of speech. Other than the core behaviors, people who stutter experience various other problems such as fear, anxiety, depression, shame etc. These complex physical aspects of stuttering co-occur with affective and cognitive components, invisible to the observer but contributing to an individual's quality of life. In 2009, Iverach et al mention that stuttering is considered to be a disorder of speech production, which is associated with adverse consequences such as bullying, negative reactions from the listeners, social, educational and occupation related obstacles, and stigma throughout an individual's life, in turn leading to reduced quality of life. Many researchers such as (Tichenor & Yaruss, 2019; Messenger et al., 2004) reported that individuals who stutter experience anxiety, avoidance, shame, struggle, anticipation, low self-esteem and low confidence. The prevalence of stuttering in India is 10% more as compared to countries like Great Britain, Australia and America which have prevalence of 0.75 -1%. Research on how stuttering cause repercussion on job opportunities is limited in India.

**Need for Study:**

As there is a scarcity of research on such topic the need of present study is very strong Furthermore, the present study is an attempt to find the possibilities for individuals with stuttering who find it difficult to maintain professional career along with stuttering.

The need for this study is particularly significant due to the limited research on the employment challenges faced by young adults with stuttering. Individuals who stutter often encounter discrimination, stigma, and misconceptions in the workplace, which can decrease their professional growth and job retention. Moreover, employers may underestimate their

capabilities, further complicating their career paths. Understanding these barriers is crucial for developing interventions that foster inclusivity and equal opportunities. Additionally, the study can provide insights into the psychological and emotional impact of stuttering on career development, addressing an important gap in both clinical and employment-related research. Hence, the present research aims to bridge the gap in knowledge and provide insights that can guide policies to support young adults with stuttering in their professional lives

### **Aim & Objectives:**

Aim of the study is to analyze how stuttering impacts job interview, professional experience in the age group of 22-35 years old in Indian adults.

1. To prepare a checklist for the participant consisting of questions related to aim of the present study.
2. To analyze the impact of stuttering on job prospectus for young individual with stuttering.
3. To analyze the factors related to stuttering that turns down the job opportunities and promotions in individual with stuttering.

### **Method:**

This study is conducted through purposive sampling method. The experiential claims of people who stuttered were examined with the purpose of determining the impact of stuttering on their job interviews and to further examine what meaning they derive from these experiences. A checklist is distributed to 50 stuttering diagnosed patients of age range 22 years to 35 years, with a mean age of 28.5 yrs, out of which 32 responds back. This checklist is validate by 5 speech language pathologists who have experience of more than 5 yrs in this field. Data for the stuttering patients were collected from Ali Yavar Jung National Institute of Speech and Hearing Disabilities (Divyangjan) regional center Noida, Uttar Pradesh and nearby stuttering therapy centers within Noida region. Present study was carried out in two phases. Phase 1-Development of checklist Phase 2-Incorporated the administration of checklist.

### **Results & Discussion:**

The overall analysis of the data obtained from participants generated and it reveals positive correlation did not exist between the frequency of stuttering and job opportunities. This study found that people who stutter believe that stuttering has a negative impact on their employability and job performance. Result also tentatively suggest that people who stutter with

increase level of severity may have higher risk of poor emotional functioning which will directly affect their job opportunities. PWS (Person with stuttering) experiences reveals stuttering limits communication ; and stuttering limits occupational progression. Results indicated that more than 70% of people who stutter agreed that stuttering decreases one's chances of being hired or promoted. More than 33% of people who stutter believed stuttering interfere with their job performance, and 20% had actually turned down a job or promotion because of their stuttering. 50% population think anxiety is the main factor and 20% population think that lack of confidence in English language is the main factor for decreasing performance in their interviews and presentations.

### **Summary & Conclusion:**

After conducting the present research the authors have concluded that majority of participants think that stuttering decrease their job opportunities and few numbers of participants reported that they are unaware about the stuttering therapy. Customizing personalized goals and techniques during therapy is necessary to improve client satisfaction. This study helps clinicians to understand the anticipatory beliefs of speaking adults who stutter and guiding them about attainable and realistic goals, leading to shared decision-to promote better quality of life and satisfaction in everyday speaking situations. The present study has good clinical implications as it provides the insight into the impact of stuttering on job prospects of young adults. The information on knowing the impact of self and public stigma may help an individual to maintain relationship between stuttering and job context.



## **Cleft Lip and Palate Awareness Among Expectant Mothers: Implications for Prenatal Education**

*Zufashan Anwer, Neha Kumari, Ritika, Prashansha Chauhan & Kalash Rawat*

**SGT University, Gurugram, Haryana**

### **Introduction:**

Cleft lip and palate (CLP) are the most common congenital craniofacial malformation, characterized by openings in the upper lip, the roof of the mouth, or both. During the first trimester, incomplete fusion of the medial nasal and maxillary prominences results in cleft lip, while cleft palate arises from incomplete fusion of the second pharyngeal arches.

Globally, approximately 1 in every 600 babies is born with some form of CLP, with a baby born with this condition every four minutes. In India, about 0.033% of the population suffers from orofacial clefts, with prevalence rates of 33.27 per 100,000 for males and 31.01 for females respectively. Clefts can arise from various factors, including genetic predisposition, environmental influences, nutritional deficiencies, and maternal age. Recent studies have identified 17 genes linked to clefts, and potential teratogenic causes include smoking, alcohol, certain medications, and viral infections.

Lack of knowledge among parents often leads to untreated clefts, and in severe cases, this can result in infanticide. Awareness of cleft lip and palate is particularly low in many rural and urban areas of India, creating a significant knowledge gap among caregivers. Early treatment through surgery and a multidisciplinary team approach is crucial, yet prenatal detection remains inadequate due to the absence of standardized screening tests and counselling. Therefore, there is a dearth of providing parents with information on what to expect which can empower them to advocate for their child's needs related to CLP.

### **Need for Study:**

The attitudes of parents and communities toward children with cleft lip and palate play a crucial role in their overall growth and development. Negative perceptions from family and society can significantly impact the social and mental well-being of these children, leading to a diminished quality of life. Unfortunately, many individuals lack adequate awareness and knowledge regarding the causes, prevention, and available treatment options for CLP. This highlights the urgent need for research focused on early intervention and effective treatment planning. Additionally, it is essential to assess the existing knowledge gaps among healthcare

providers to ensure that families receive accurate information and support. By addressing these issues, the study aims to promote the awareness about CLP among pregnant women to promote better understanding and improve outcomes for children affected by this condition.

### **Aim & Objectives:**

This research primarily aims to evaluate the knowledge and awareness of pregnant women in India regarding cleft lip and palate.

Specifically, it seeks to assess the level of understanding among pregnant women about the condition, including its causes and implications. Additionally, the study will investigate their attitudes towards CLP, focusing on perceptions of its impact on children and families. An essential component of this research is to educate participants about the significance of early treatment and intervention, highlighting the benefits of timely healthcare. To support these objectives, a reliable and validated questionnaire was developed to measure knowledge, awareness, perceptions, attitudes, healthcare support, and follow-up care concerning CLP in children. Ultimately, the research aims to enhance awareness and support for pregnant women.

### **Method:**

The study was conducted in three phases. The first phase involved developing a questionnaire covering various domains, including demographic details, awareness & knowledge about CLP, perceptions and attitudes, healthcare support, personal concerns, and follow-up. Demographic details included age, gender, expected delivery date, and the number of previous pregnancies. The questionnaire also addressed awareness and knowledge among pregnant women, misconceptions that could lead to stigma, and the importance of prenatal care. In the second phase, the questionnaire was validated by five speech and language pathologists with at least five years of experience. Changes were made based on their feedback. The third phase involved converting the questionnaire into an online form, which was distributed while ensuring participants' privacy. A consent form was obtained from each participant, and a total of 67 participants, aged 21 to 35 years, consented to participate in the study.

### **Results & Discussion:**

The study assessed the knowledge, awareness, and attitudes of pregnant women regarding cleft lip and palate among a diverse population of participants aged 21 to 35 years. Among the 67 participants, 42 (63%) were unaware of the term "cleft lip and palate," while 25 (37%) had moderate awareness. Majority of participants (70%) reported learning about CLP through various sources such as posters, neighbours, friends, or social media, followed by 20% who

found information online or in books and magazines. Only 10% had heard about it from healthcare providers.

In terms of knowledge, 34 participants (51.4%) were uncertain about the condition, whereas only 11 (17%) correctly identified it as a gap or split in the lip and/or roof of the mouth. The remaining participants misunderstood it, thinking it was an infection of the mouth (11.6%) or a genetic condition affecting the jaw (20%). The study found that 35 participants (52.2%) believed that the diagnosis of CLP could only be made after birth, while 29 (43%) were unsure. Participants views on issues associated with cleft lip and palate varied significantly. 20% reported concerns about speech and language difficulties, while 15% mentioned feeding difficulties followed by 15% believed that children with CLP would face both issues. 42 participants (63%) perceived the possibility of having a child with cleft lip and palate however 18 (27%) expressed neutral or optimistic thoughts. The study revealed that 69% of participants did not believe that early intervention and treatment could significantly improve outcomes for babies with CLP. Majority of participants believed that families affected by this condition would benefit from additional information and support. Notably, 54 participants (80%) had never discussed CLP with healthcare providers.

Furthermore, 65% of participants believed that information about treatment and surgery would be most helpful for families, while others believed that personal experiences could enhance the awareness. A significant 75% participants reported being unaware of any prenatal screening options for detecting CLP, with an additional 25% uncertain about such option. A large proportion of participants (82%) had no personal concerns or specific questions for their healthcare providers. Only 30% expressed interest in receiving more information or resources about CLP, leaving 70% uninterested in learning more. Overall, the study highlighted notable variations in awareness and knowledge among participants regarding cleft lip and palate.

### **Summary & Conclusion:**

Pregnant women in the Delhi and NCR regions showed a significant lack of awareness and knowledge about cleft lip and palate, underscoring the need for targeted educational initiatives. Comprehensive health campaigns can effectively raise awareness about the condition, its causes, and the importance of early diagnosis and treatment. Interdisciplinary collaboration among healthcare professionals such as obstetricians, paediatricians, speech therapists, and dentist can create a holistic support system for affected families. Organizing workshops and conferences will provide training on prenatal diagnosis and counselling, empowering healthcare providers to better assist expectant parents. Focusing on early intervention

strategies, including orthodontic and dental care as well as speech and language development, can enhance treatment outcomes. Long-term follow-up care is essential to ensure families receive ongoing support throughout their child's development. By emphasizing awareness, early detection, and comprehensive care, healthcare providers can significantly improve outcomes for families affected by cleft lip and palate.

## Vocal Hygiene Awareness and Knowledge Among College Students: An Exploratory Study

*Kalash Rawat, Neha Kumari, Ritika, Prashansha Chauhan, Zufashan Anwer & Vivek Kumar*

**SGT University, Gurugram, Haryana**

### **Introduction:**

Voice, the product of vibrating vocal cords, serves as a vital medium for communication, enabling individuals to express emotions, convey information, and forge meaningful connections. Each person's voice is distinct, influenced by various factors such as pitch, tone, resonance, and timbre, which together reflect mood, identity, and intent. Beyond mere sound, voice is essential in numerous professional contexts, including education, performance arts, and public speaking, underscoring the need for robust vocal health.

Maintaining the quality of one's voice is closely tied to the practice of vocal hygiene, which encompasses a range of strategies aimed at preserving the integrity and function of the vocal cords. Some key practices followed by individuals include staying adequately hydrated, avoiding excessive strain, and managing throat irritants. Neglecting these essential habits can lead to vocal issues such as hoarseness, harshness, vocal fatigue, overuse, misuse, and abuse, which can significantly impair functional communication effectiveness.

Nowadays, researchers have explored the knowledge and awareness of vocal hygiene among professional voice users; however, there remains a notable gap in understanding the knowledgeable attributes among the youth. Focusing on vocal hygiene awareness among college students is crucial for several reasons. Many students engage in activities that can strain their voices, such as participating in clubs, sports, or public speaking. Educating them on vocal hygiene can prevent long-term vocal damage, as, unlike voice professionals who often receive training in vocal care, college students may lack the necessary awareness and education about proper vocal habits, making them more vulnerable to voice issues.

Moreover, poor vocal practices can accumulate over time, leading to chronic problems, so early education is essential for developing healthier habits that last a lifetime. The college environment can also contribute to stress, lack of sleep, and unhealthy lifestyles, all of which negatively impact vocal health; thus, awareness can help mitigate these effects. Additionally, good vocal hygiene enhances communication skills, which are vital for academic success and social interactions. By promoting vocal hygiene, we can reach a broader audience, benefiting

not only those who see themselves as voice professionals but also those who rely on their voices in various capacities throughout their college experience.

### **Need for Study:**

Numerous studies have focused on the awareness and knowledge of vocal hygiene among professional voice users. However, the vocal health of young people is equally important. Voice problems are prevalent among college students, particularly those in vocally intensive fields such as music and theatre. Increasing awareness and knowledge of vocal hygiene practices can help prevent voice disorders and facilitate early intervention.

### **Aim & Objectives:**

The research focuses on assessing the knowledge and awareness of vocal hygiene among college students in India. The objective of this study is to evaluate students' knowledge, awareness, and attitudes toward vocal hygiene. Additionally, it aims to provide information about effective vocal hygiene practices. The present study will develop a validated questionnaire that targets knowledge and awareness, perceptions and attitudes, the impact of vocal health on daily activities, and students' personal experiences.

### **Method:**

The study was conducted in three phases. The first phase involved developing a questionnaire covering various domains: demographic details, awareness and knowledge about vocal hygiene, the impact of daily activities on vocal health, perceptions and attitudes toward vocal hygiene, and personal experiences. The demographic section included basic information such as age, gender, field of study, and semester. Subsequent sections assessed students' awareness and knowledge of vocal hygiene practices, their perceptions and attitudes, and the impact of daily activities on vocal health. Notably, many students exhibited a vague understanding of vocal hygiene, leading to stigma and knowledge gaps. The personal experience section revealed that most students had previously encountered voice problems, often linked to academic and social activities.

In the second phase, the questionnaire was validated by five speech and language pathologists with at least five years of research and clinical experience, leading to necessary revisions. In the third phase, the questionnaire was converted into an online format, ensuring participant privacy. Consent was obtained from each participant, resulting in a total of 103 participants aged 17 to 25 who agreed to take part in the study.

## **Results & Discussion:**

The study focused on college students aged 17 to 25, with a total of 103 participants—62 females (61%) and 41 males (39%) from diverse fields such as nursing, engineering, and radiology management. Results indicated that 54 participants (52.4%) rated their overall awareness of vocal hygiene as moderate, while 26 participants (25.6%) rated it as high and 16 participants (15.5%) as very high. 53.4% participants from the study reported that they have not received any information on vocal hygiene, whereas 48 participants (46.6%) had received some training. Among those who did, 38 participants (36.9%) identified health professionals as their source, followed by 26 participants (25.2%) from academic courses and 18 participants (17.5%) from workshops and seminars.

Sixty-two participants (60.2%) acknowledged the importance of staying hydrated, avoiding yelling, and smoking, and performing vocal exercises for maintaining good vocal health; however, only 16 participants (15.5%) emphasized hydration as crucial. In terms of vocal warm-ups, 37 participants (35.9%) reported never practicing them, while 14 participants (13.6%) practiced vocal exercises daily for 10-30 minutes. Most participants (68%) believed vocal damage could result from various factors, including sore throat, vocal strain, loss of vocal range, and persistent cough, with only 11 participants (10.7%) identifying sore throat as a sign of vocal damage.

A significant number of participants (47.6%) experienced voice strain due to academic or social activities, often from speaking loudly, while 34 participants (33%) reported this occurrence as rare. The impact of college workload or social activities on vocal health was noted by 44 participants (42.7%) as somewhat significant, with 21 participants (20.4%) reporting significant effects and only 7 participants (6.8%) feeling unaffected. Half of the participants (50.5%) considered vocal hygiene very important for college students, while 15 participants (14.6%) rated it as moderately important, and the rest viewed it as slightly important.

A strong majority (87.4%) believed there should be more education on vocal hygiene for students, with only 12.6% unsure about this need. Additionally, 70 participants (67.9%) felt that workshops, seminars, and online courses would be effective for learning about vocal hygiene, while others suggested consultations with health professionals, pamphlets, and peer education. Sixty-nine participants (67%) reported experiencing voice problems that affected their quality of life, while 34 participants (33%) had not encountered any issues. Among those with voice problems, 54.5% sought help, whereas 47 participants (45.6%) did not. Most who sought help consulted health professionals (44 participants, 42.7%), while others turned to

peers and family (24 participants, 23.3%) or speech therapists (18 participants, 17.5%). Overall, the study highlighted notable variations in awareness and knowledge of vocal hygiene among participants.

**Summary & Conclusion:**

College students in the Delhi and NCR regions have varied perspectives on vocal hygiene. The study reveals that many participants frequently experience voice problems in their daily lives, yet a significant gap exists in seeking help from healthcare professionals. While students often engage in voice-straining activities, they generally lack awareness of proper vocal care. To improve this situation, targeted campaigns, seminars, and workshops focusing on effective voice care practices can enhance knowledge and awareness of vocal hygiene.



**Awareness regarding Communication Disorders and Role of Audiologist  
and Speech Language Pathologists among Regular School Teachers in  
Delhi NCR**

*Tanu Bharti, Nisha Mandal & Vibha Mahajan*

**Ali Yavar Jung National Institute of Speech and Hearing Disabilities (Divyangjan)**

**Introduction:**

Communication disorder is a broad umbrella term which covers different types of disorders under it, (Ruscello, Louis & Mason, 1991) which can be noticed at the level of comprehension production of speech sounds (i.e. consonants and vowels), words, phrases, or sentences (ASHA, 2006). The spectrum of communication disorders include problems in speaking, hearing and thinking such as voice disorders, phonological and articulation disorders, fluency disorders, language disorders, delayed speech and language development due to hearing impairment, behavioural disorders like attention deficit disorders (ADD), Autistic spectrum disorders (ASD), mental retardation and other problems (Paul, 2009), which are reported to be found majorly in school going children.

Audiologists and Speech-language pathologists are professionals trained to assess, diagnose and manage hearing and communication disorders, respectively. The role of audiologists and speech-language pathologists, which is essential in the treatment and management of these disorders, is also not well understood by many Teachers. This research tries to find out the level of awareness of communication disorders and the roles of ASLPs among regular school teachers in Delhi NCR.

Effective communication development and identifying communication disorders early in children relies heavily on parents, primary caregivers, and teachers, as delays in detection can have long-term consequences on academic and social success. Therefore, assessing teacher's awareness of communication disorders is essential.

**Need for Study:**

There is an increasing prevalence of communication disorders among school-aged children all over the world. Parents, primary caregivers, and teachers are critical for rich stimulation of children's communication. The early identification and intervention of children with such disorders depend significantly on parents, primary caregivers and teachers, who observe

children on a daily basis. A lack of awareness among teachers about communication disorders can delay appropriate identification and intervention, potentially worsening the impact of these disorders on academic and social outcomes. Despite the importance of early identification and intervention, studies suggest that regular school teachers are often unaware of the symptoms of communication disorders or the professional roles of ASLPs. Hence, knowing the level of awareness among regular school teachers is important to take further steps focussing towards the awareness programs and to improve referral practices. Moreover, the study highlights the importance of interdisciplinary collaboration between school teachers and ASLPs for the betterment of students.

### **Aim & Objectives:**

The primary aim of this research is to assess the awareness of communication disorders and the roles of ASLPs among regular school teachers.

The specific objectives of the study are:

1. To determine the level of knowledge of regular school teachers regarding common communication disorders in children.
2. To investigate the awareness of teachers regarding the roles of audiologists and speech-language pathologists in identification, assessment, and intervention of communication disorders.
3. To identify the gaps in knowledge and the need for professional development programs.
4. To assess teacher's confidence in identifying communication disorders in their students.
5. To suggest strategies for improving awareness and collaboration between teachers and ASLPs.

### **Method:**

A cross-sectional survey was designed to gather data from regular school teachers. The research population includes primary and secondary school teachers from government and private schools within Delhi NCR. A sample size of 160 teachers was selected using convenience and snowball sampling to ensure representation across different grade levels, school types, and years of teaching experience.

A self-administered questionnaire was developed to collect the data which includes - Demographic details (e.g. Age, gender, years of teaching experience, grade level taught, and educational background).

- Awareness and understanding of communication disorders, including speech, language, fluency, attention or behavioural problems, specific learning disorders, voice and hearing disorders.
- Awareness of the role of ASLPs.
- Teachers' previous experience with students who have communication disorders and referral practices.
- Willingness to participate in professional development related to communication disorders.

Descriptive methods were used to summarise the demographic data and level of awareness, knowledge of communication disorders and role of ASLPs among participants.

### **Results & Discussion:**

The data was collected from 160 regular school teachers divided in group I and group II representing government and private school teachers, respectively.

Awareness of Communication Disorders:

Teacher awareness of special needs varies significantly between groups:

- Speech disorders: Group 1 (80.7%) far exceeds Group 2 (38.9%)
- Learning disorders: Group 1 (83.3%) shows substantially higher awareness than Group 2 (16.7%)
- Hearing disorders: Group 1 (91.7%) demonstrates greater awareness than Group 2 (42.8%)
- Communication disorders: Group 1 (83.1%) outpaces Group 2 (36.9%)

Teachers were more aware of features related to Misarticulation and stuttering as compared to other disorders such as voice related problems. Teachers were aware of learning disorders and familiar to words like dyscalculia and dyslexia which is somewhat surprising. However, teachers could not adequately differentiate between the features of ASD and ADHD.

Awareness regarding ASLPs Roles:

A significant disparity exists between two groups regarding awareness of ASLP's roles. Group I demonstrated a substantially higher awareness rate (74.9%), whereas Group II showed limited knowledge (20.6%). Furthermore, only 30.9% of teachers utilizes ASLP service when necessary. A significant number of teachers were unaware about the roles and responsibilities of ASLPs and that these professionals could offer crucial interventions within the school setting.

#### Experience with Students with Communication Disorders:

Throughout their teaching journey, teachers often encounter students exhibiting symptoms of communication disorders. However, they may be uncertain whether these signs indicate a potential disorder or require referral to professionals, such as ASLPs, underscoring the importance of teacher training and support.

#### Need for Professional Development:

Over 80% of teachers expressed their interest in attending workshops and ask for training sessions to enhance their awareness, knowledge and understanding regarding different communication disorders and the role of ASLPs in assessment, diagnosis and intervention of these disorders.

The results show a good level of awareness among government school teachers regarding communication disorders as compared to private school teachers, as there are special educators and training programs organised for teachers in Delhi government schools. There were noticeable gaps in knowledge about less visible language issues and the professional roles of ASLPs. The findings suggest that while teachers may be equipped to recognize obvious speech and hearing difficulties, they may miss or misunderstand more complex communication challenges, delaying intervention.

One reason for the gaps in awareness may be a lack of exposure to specialised training programs on communication disorders. Many teachers reported not receiving sufficient guidance during their professional education. Additionally, the study highlights the need for better integration of ASLPs within the school system, allowing teachers to understand their roles and collaborate more effectively.

#### **Summary & Conclusion:**

This study highlights the importance of raising awareness of communication disorders among regular school teachers in both private and government setups, as teachers are often the first to observe signs of these conditions in students. While teachers are generally aware of speech and hearing problems to such an extent, many lack the knowledge essential to identify less obvious communication disorders or understand the scope of services provided by ASLPs in assessment and management of communication disorders. Enhancing teacher education through targeted training programs or workshops on communication disorders, as well as promoting interdisciplinary collaboration with professionals could lead to earlier identification and intervention along with better support for students with communication difficulties.

**SP1035**

**Communication Attitude of Kannada-Speaking Preschool Children Who  
Do and Do Not Stutter**

*Rakesh Veerabhadrappe, Sushmitha H, Vijayeshwari S & Santosh Maruthy*

**Manipal College of Health Professions and All India Institute Of Speech And Hearing**

**Abstract Not Available**

## **Geriatric Dysphagia: Screening for Swallowing Efficiency in Delhi/NCR Region**

*Zufashan Anwer, Kalash Rawat, Prashansa Chauhan & Swati Mahendru*

**SGT University, Gurugram**

### **Introduction:**

Deglutition, commonly known as swallowing, is the semiautomatic process in which the muscles of the respiratory and gastrointestinal tracts work together to move food from the mouth into the stomach Miller, 1986. Swallowing serves multiple functions beyond simply transporting food to the stomach. It also plays a role in clearing the mouth and pharynx of secretions, mucus, and any regurgitated stomach contents. Consequently, swallowing is both a nutritive process and a protective mechanism for the lower airways.

Swallowing occurs in three phases: oral, pharyngeal, and esophageal. In the oral phase, food is chewed and mixed with saliva to form a bolus, which the tongue then pushes to the back of the mouth, triggering the swallowing reflex. During the pharyngeal phase, the bolus moves into the pharynx, where the soft palate rises to close off the nasal passage and the epiglottis folds down to protect the airway. Finally, in the esophageal phase, peristaltic movements in the esophagus transport the bolus downward to the lower esophageal sphincter, which opens to allow it to enter the stomach.

Swallowing efficiency in the geriatric population can significantly decline due to various age-related factors such as reduced muscle strength and coordination, decreased saliva production and sensory changes. As individuals age, physiological changes such as reduced muscle strength, decreased saliva production, and alterations in the sensory perception of taste and texture can impact the swallowing process.

Additionally, conditions commonly seen in geriatric population, such as neurological disorders (e.g., stroke or Parkinson's disease), dental issues, and chronic illnesses, can further complicate swallowing. Education about safe swallowing techniques and the importance of maintaining oral health is also crucial. By focusing on these strategies, caregivers and healthcare professionals can help improve swallowing outcomes and overall well-being in the geriatric population.

### **Need for Study:**

Swallowing efficiency plays a crucial role in maintaining nutritional health; difficulties in

swallowing can lead to malnutrition and dehydration, which may worsen existing health conditions and increase hospitalization and aspiration risks. Additionally, efficient swallowing helps prevent aspiration, where food or liquids enter the airway, reducing the risk of pneumonia and other respiratory complications. This ability also impacts disease related and overall quality of life, as it affects functional activities, social interactions, and the enjoyment of meals, potentially leading to social isolation. Moreover, maintaining good swallowing function supports independence, allowing older adults to eat without assistance and fostering a sense of autonomy. Overall, prioritizing swallowing efficiency is essential for promoting health, well-being, and a higher quality of life among older adults.

### **Aim & Objectives:**

This research primarily aims to evaluate the quality of life in younger and geriatric population. Additionally, the study will investigate their attitudes towards swallowing efficiency, focusing on perceptions of its impact age group. An essential component of this research is to educate participants about the significance of early treatment and intervention, highlighting the benefits of effective swallow. To support these objectives, a reliable and validated questionnaire was developed to measure quality of life of younger adults and geriatric population.

### **Method:**

The study was conducted in three phases. The first phase involved developing a questionnaire covering five domains including demographic details, perceptions and attitudes towards swallowing, personal concerns, physical and psychological concern about swallowing and follow-up. Demographic details included age, gender, and present complaints related to swallowing. The questionnaire also addressed awareness and knowledge about swallowing efficiency, and the importance of swallow. The physical and psychological domains addressed the questions related to physical activity of the geriatric population followed by their support from family. In the second phase, the questionnaire was validated by five speech and language pathologists with at least five years of experience. Changes were made based on their feedback. Swallowing efficiency was tested by using EAT 10 questionnaire. The third phase involved converting the questionnaire into an online form, which was distributed while ensuring participants' privacy. A written consent form was obtained from each participant, and a total of 35 participants were divided into two group. Group one (Younger) consisted of participants aged below 55 years and group two consisted of participants 55 years and above (older). The inclusion criteria consist of people of all genders who are 65 years or older who lives in Delhi

or across NCR regions and exclusion criteria includes people who are severely cognitive impaired.

### **Results & Discussion:**

The study aimed to assess dysphagia across different age groups in the Delhi NCR region and examine how factors like quality-of-life impact swallowing. Tools utilized in the study included the EAT-10 and a quality-of-life questionnaire. T test was administered for which T value was 1.92, hence significant differences was observed. Findings revealed that weight loss related to swallowing was more prevalent among older individuals, with 5% experiencing severe issues, while younger adults reported a higher incidence of mild swallowing difficulties with liquids and solids. Severe pain during swallowing was notably more common in those over 55, with 28% of younger individuals reporting mild to moderate discomfort. Interestingly, 14% of young adults indicated that swallowing issues negatively affected their enjoyment of food, a contrast to zero reports among older adults, potentially linked to psychological factors, stress, and the hectic lifestyles of younger individuals. Coughing during eating showed a significant difference between the two groups, with older adults reporting mild to severe issues, which may reflect respiratory inefficiencies and reduced muscle strength. Additionally, 5% of individuals over 55 found swallowing to be highly stressful, while some younger adults experienced moderate stress.

Quality of life assessments indicated that both age groups had similar mean scores for physical health (15.8), suggesting a strong awareness of physical fitness across all ages in Delhi NCR. However, the psychological health scores were slightly higher in younger adults, indicating poorer psychological well-being compared to older individuals, likely due to work and family pressures.

Factors such as sarcopenia, stroke, head and neck cancer, and progressive neurological diseases contribute to oropharyngeal dysphagia in older adults, leading to weight loss and painful swallowing. Conversely, the pleasure of eating is more significantly impacted in younger adults, reflecting the stress and busyness of life across Delhi NCR region.

### **Summary & Conclusion:**

Swallowing efficiency is vital in the geriatric and younger population, significantly influencing their quality of life. As individuals age, difficulties with swallowing can lead to malnutrition and dehydration, which not only affect physical health but also diminish energy levels and overall vitality. This decline can make social interactions around meals less enjoyable,



contributing to feelings of isolation and depression.

Initiatives can include like educational campaigns that highlight the importance of proper swallowing techniques and the signs of dysphagia, using brochures, social media, and community events to reach a broader audience. Workshops and seminars for caregivers and healthcare professionals can provide valuable insights into swallowing disorders and management strategies. Collaborating with speech-language pathologists and nutritionists can enhance resources and encourage routine screenings for swallowing issues. Additionally, efficient swallowing ensures that geriatric population can partake in shared dining experiences, fostering connections with family and friends. Thus, maintaining swallowing efficiency is crucial not only for physical health but also for enhancing social engagement and emotional well-being, ultimately promoting a higher quality of life for older adults.

**SP1037**

**Prevalence Characteristics Of Dysphagia Across Taluks Of  
Tiruchirappalli District Based On Population Study - A Survey**

*Sakthi P, Harshitha R S, Subikshaa Senthilkumar, Delphina D & Sundaresan R*

**Holy Cross College , Tiruchirappalli.**

**Abstract Not Available**

## **Assessing the Effects of Voice Disorders on Daily Life: A Study Using the VPQ and V-RQOL**

*Priya Mishra, Geetanjali , Vishwadeep Singh & Vidushi Saxena*

**Amity University, Haryana**

### **Introduction:**

Voice disorders significantly impact individuals' vocal function and overall quality of life, affecting communication, social interaction, and emotional well-being. According to the World Health Organization (WHO), voice disorders are prevalent globally, with millions of people experiencing varying degrees of impairment (World Health Organization, 2021). These disorders can arise from a variety of causes, including physical conditions, neurological issues, and environmental factors, leading to a range of symptoms that can hinder daily activities and professional endeavors.

The WHO emphasizes the importance of evaluating not just the physiological aspects of voice disorders, but also their effects on quality of life. Understanding the interplay between vocal function and life quality is crucial for developing effective treatment strategies and rehabilitation programs. The Vocal Performance Questionnaire (VPQ) is specifically designed to measure the impact of voice disorders on various aspects of daily life. It evaluates physical symptoms and the socio-economic effects of voice disorders, capturing how these issues affect communication, social interactions, and emotional well-being (Cohen et al., 2009). By assessing the severity of vocal performance, the VPQ provides valuable insights into how voice disorders influence individuals' ability to engage in daily activities and their overall quality of life.

Similarly, the Voice-Related Quality of Life (VRQOL) questionnaire is designed to assess the subjective burden of voice disorders on individuals' lives (Havlik et al., 2018).

By utilizing these data, this study aims to evaluate the vocal function and quality of life of individuals suffering from voice disorders. Through this evaluation, we seek to identify the specific challenges faced by these individuals in daily life and highlight the need for comprehensive care that addresses both vocal health and the psychosocial impacts of voice disorders. Short, efficient self-report measures, such as the VPQ, are preferred in clinical settings for their practicality. Despite efforts to create sensitive assessment tools for vocal disorders, no universal index currently exists to fully capture the relationship between

dysphonia and its effects on individual quality of life. The VPQ, particularly its shorter versions, provides a reliable and valid assessment of voice disorders; yet, there is a lack of psychometric data supporting the assumption that it captures a unidimensional construct of severity. Therefore, further research is needed to understand how effectively this questionnaire reflects patients' daily life experiences with voice issues and to enhance the assessment of their quality of life. While substantial research exists on quality of life in various fields, studies specifically addressing the quality of life of individuals with voice disorders are limited.

### **Need for Study:**

Voice disorders greatly impact quality of life, especially for professionals like teachers and performers. While tools exist to assess vocal function, incorporating patient-reported outcomes is essential to understand the emotional and social challenges faced by individuals with voice disorders. Most research has focused on Western populations, leaving a gap in understanding the experiences of Indian individuals. This study aims to address that gap by correlating clinical data with findings from the VPQ and V-RQOL, offering a comprehensive perspective on vocal health. The research will lead to improved treatment strategies and greater awareness of the social and emotional effects of voice disorders.

### **Aim & Objectives:**

To evaluate the impact of voice disorders on vocal function and quality of life, focusing on insights from the VPQ and the VRQOL in individuals within the Indian context.

Objectives:

1. To assess vocal function using the VPQ score and evaluate how voice disorders affect daily activities and emotional well-being.
2. To explore the relationship between voice disorders and quality of life indicators (VRQOL), emphasizing emotional and social challenges faced by individuals.
3. To compare clinical evaluations of voice-related quality of life (V-RQOL) with VPQ scores for a comprehensive understanding of the impact of voice disorders.

### **Method:**

The sample studies were collected from 110 individuals with voice disorders at Medanta Hospital, Gurugram. To qualify for inclusion in the study, participants had to meet specific criteria: they were required to be over 18 years of age, willing to participate, and have a confirmed diagnosis of hyperfunctional voice disorders, such as vocal fold nodules, vocal fold

polyps, muscle tension dysphonia, or vocal fold granuloma. Exclusion criteria included a negative history of head trauma, epilepsy, substance abuse, or addiction, as well as any necessity for rehabilitative or surgical intervention, and confirmed neurological or psychiatric conditions.

An experienced multidisciplinary team comprising a voice therapist and laryngologists conducted assessments. All participants underwent an instrumental evaluation, which included a comprehensive laryngeal examination. An interview was conducted to obtain relevant information, including demographic and medical characteristics, past medical history, and specific voice diagnoses for each participant. The participants were instructed to read questions carefully and rate all the questions as per the instructions given.

#### Measures taken

The Vocal Performance Questionnaire (VPQ) is a 12-item tool assessing physical symptoms and socio-economic impacts of voice disorders. Patients select statements graded by severity, with scores ranging from 12 (minimum) to 60 (maximum). The Voice-Related Quality of Life (V-RQOL) is a 10-item self-administered questionnaire measuring the emotional, physical, and functional impact of voice disorders. Responses range from "not a problem" to "as bad as it can be." The V-RQOL score categorizes quality of life as excellent (10-15), very good (16-20), good (21-25), fair (26-30), and poor (31-50), reflecting the burden of the disorder

#### **Results & Discussion:**

The VPQ assessment showed a mean score of 35.35 (SD 3.44), indicating mild to moderate level of vocal performance issues. Participants reported difficulties in communication, affecting their social interactions and daily activities, suggesting that voice disorders can severely limit personal and social engagement, 90% of participants reported changes in voice quality, with 60% noting worsening of voice as day progressed. Additionally, 25% of the participants experienced frequent effort while speaking, and 65% had to stop voice-related activities, reflecting the significant impact of voice disorders on daily functioning.

On the other hand, V-RQOL showed a mean score of 29.45 (SD 2.05), indicating fair voice-related quality of life, 90% participants reported change in voice alongside physical discomfort while 85% of participants reported their voice as unpredictable, while 55% experienced difficulties in noisy environments. Additionally, 85% revealed that their voice issues significantly restricted their personal and social lives. The Pearson correlation analysis between the mean Voice Problem Questionnaire (VPQ) scores and the mean Voice-Related Quality of Life (V-RQOL) scores revealed a weak positive correlation ( $r = 0.202$ ). However, this

correlation was not statistically significant ( $p = 0.392$ ). This suggests that as VPQ scores increase (indicating more perceived voice problems), V-RQOL scores might slightly increase, but the connection is very weak.

### **Summary & Conclusion:**

In conclusion, the VPQ assessment revealed mild to moderate vocal performance issues among participants, with significant difficulties in communication that affected their social interactions and daily activities. This signifies that VPQ is a valuable tool in assessing the severity of vocal performance issues, particularly in identifying specific difficulties in communication and daily activities. Similarly, the V-RQOL assessment showed a fair voice-related quality of life, with majority of participants indicating that their voice unpredictability restricted personal and social lives. The V-RQOL assessment offers a comprehensive view of how voice disorders affect the personal and social lives of individuals. Together, these assessments provide a dual perspective capturing both the physical and psychosocial effects of voice disorders, enabling clinicians to develop more comprehensive and individualized treatment plans.

## Gastro-Esophageal Reflux Disease & its Consideration in Voice

### Pathology Care: A Case Report

*Prachi Patwari & Garima Dixit*

**Sri Aurobindo Institute of Medical Sciences**

#### **Introduction:**

Gastroesophageal reflux disease (GERD) is a chronic gastrointestinal disorder characterized by the regurgitation of gastric contents into the esophagus this disease has many symptoms like, regurgitation, heat-burn, and problem in swallowing or pain while swallowing, and some rare symptoms inflammation of vocal cords, Globus sensation. The membrane or cells other than that of stomach if exposed to the acid of stomach may result into injury or scar to the sheet of cells / membrane. Usually, the GERD patient shows symptoms majorly sore or burning throat, globus, hoarseness, dysphonia, laryngospasm, otalgia, or many other associated laryngopharyngeal signs like edema, interarytenoid changes, granuloma, contact ulcers, reinke's edema etc,. The factors that contribute to the acidic reflux and its severity are numerous. Aging, poor lifestyle, estrogen (decreased value result into rise in incidence of GERD), immune response to acid, gender difference, and psychological factors. Depression and anxiety are more common in women than in men. Accordingly, comorbid depression and anxiety more prevalent in females than male and thus, support to higher incidence of GERD in them.

#### **Need for Study:**

Need of study is to know essential role of a speech and language pathologist in gastro esophageal reflux cases and the impact of depression pills on gastric secretions, assessment and rehabilitation of such cases to improve the quality of life.

#### **Aim & Objectives:**

Aim of the study is to integrate the speech language pathologist for assessment and rehabilitation in patient with GERD.

The objective of the study is to understand a deep understanding of the impact of gastric secretions regurgitation and its impact on acoustic voice parameters for assessment and management options.

**Method:**

A case of age 73 years female came at Sri Aurobindo Institute of Medical Sciences (SAIMS) Indore, Madhya Pradesh with chief complaint of laryngeal congestion (globus sensation), problem in swallowing since 6-7 months, and affected memory. A detailed case history was taken which insight that patient had no medical history of any stroke, metabolic or endocrinal disorder. No history of voice abuse, smoking, throat clearing or singing. Patient is on medication of antidepressant pills since year 2000, Patient underwent for V-DOL examination on 8th May, 2023 at SAIMS which revealed that (?) Dysphonia plica ventricularis with GERD. An UGI Endoscopy was done which revealed that patient has (Dysphagia, Globus sensation) normal study. A comprehensive test battery was administered. The swallowing issues were assessed through EAT-10 and GUSS. Voice evaluation was accomplished using qualitative (perceptual analysis) and quantitative (instrumental analysis) test.

Voice evaluation is accomplished using perceptual scales i.e. GRBAS, VHI, MPD, S/Z ratio, and instrumental analysis through MDVP analysis. The goal of the therapy for voice rehabilitation targeted towards facilitating the voice efficiency and its use in communication.

**Results & Discussion:**

The present study highlighted the assessment procedure followed by rehabilitation in adult female hoarse voice quality secondary to GERD. GUSS and EAT-10 revealed no dysphagia. GRABS (grade of roughness, asthetic, breathy, strain):G2R2B1A0S1. The findings of VHI revealed that total score of 13 suggestive of mild handicappers where functional score is 3; physiological score is 5 and emotional score is 5. Maximum phonation duration is assessed using /a/ sound that is of 9 seconds duration suggestive of reduced efficiency. S/Z ratio - /s/=10 seconds;/z/= 08 seconds ; ratio of /s/and /z/is 1.25 suggestive of dominantly laryngeal pathology but independently both the durations are reduced suggestive of decreased respiratory system efficiency as well as laryngeal functions. The multi-dimensional voice profile, an instrumental analysis revealed that increased values in the frequency perturbation measurement that include absolute jitter , jitter in percent, pitch period perturbation quotient, smoothed pitch period quotient, fundamental frequency variation and amplitude perturbation measurements are also increased that include shimmer in dB, shimmer in percent, amplitude perturbation quotient, smooth amplitude perturbation, peak to peak amplitude perturbation, and few values from noise and tremor evaluation measurements that is it has increased values of



soft phonation index, frequency tremor intensity index. The rehabilitation targeted overall affected domains using various techniques. The re- evaluation of the entire test administered was done post 24 sessions of 30 minutes for 2 times in a week, to monitor the progress in the voice. The significant change has been marked pre and post therapy.

### **Summary & Conclusion:**

A gastroesophageal reflux (GERD) is one of the prevalent and growing issue in the era. Conclusively several studies have proven to have many laryngeal problems due to GERD ranging from mild to severely affecting the laryngeal tissues (mainly vocal cords). There are various factors that contribute to the pathophysiology of GERD, one of the least highlighted factors is psychological issues and that is what is highlighted in this study. The team of professionals goes hand in hand with a holistic approach for rehabilitation of GERD patients and will result into effective treatment approach. The benefit in voice problems of patient was combination of few voice therapy techniques, lifestyle modification, and diet modification. Therefore, a multidisciplinary team approach is always recommended.

## **Evaluating Patient Adherence to Voice Therapy in Organic and Behavioural Dysphonia: Insights from Patient Perception**

*Nitya Sharma & Vishwadeep Singh*

**Amity University Haryana**

### **Introduction:**

Voice therapy serves as a vital behavioral intervention for addressing a range of functional and organic voice disorders. This therapeutic approach typically involves daily voice exercises, the acquisition of improved voice production techniques, and the elimination of vocally damaging behaviors. Due to the necessity for consistent practice outside of therapy sessions, adherence to voice therapy is critical for achieving optimal outcomes. However, research indicates that adherence rates can be disappointingly low, with estimates ranging from 18% to 65%. This challenge underscores the importance of understanding patient perspectives on the barriers and facilitators that influence their commitment to therapy.

Similar to other behavioral interventions such as exercise programs or smoking cessation voice therapy requires patients to actively engage in self-monitoring, behavior modification, and the management of social interactions. Eva van Leer et al. (2010) conducted a study that highlighted how patients' views on voice therapy impact their adherence to treatment. By interviewing fifteen patients, they identified three main themes: "Voice Therapy is Hard," "Make it Happen," and "The Match Matters," demonstrating that understanding patient perspectives is crucial for improving treatment adherence. The therapeutic alliance between patients and healthcare providers plays a significant role in this process, as it can greatly influence treatment outcomes. Internal factors, such as motivation and self-efficacy, alongside external factors like environmental support, can further impact a patient's ability to adhere to treatment.

Therefore, this study aims to directly document patient perspectives on the challenges and supports related to voice therapy adherence, situating these insights within a theoretical and interdisciplinary framework. By identifying specific barriers and facilitators, this study seeks to develop valid measures of voice treatment adherence and strategies to enhance compliance. Ultimately, understanding patient perceptions will not only improve adherence rates but also enrich the overall effectiveness of voice therapy, leading to better therapeutic outcomes.

**Need for Study:**

Despite the proven effectiveness of voice therapy in managing various voice disorders, adherence remains a significant barrier that affects treatment outcomes. With adherence rates varying widely among patients, understanding the factors that influence their commitment to therapy is crucial. Patients often face numerous challenges that can hinder their ability to follow treatment recommendations, such as lack of motivation, forgetfulness, or inadequate support. By exploring these barriers and facilitators from the patient's perspective, voice therapists and vocologists can develop more personalized interventions that address the specific needs and concerns of individuals undergoing voice therapy. This approach enhances the likelihood of adherence and improves overall treatment outcomes. This study aims to fill a gap in the existing literature by providing insights that can enhance adherence strategies and ultimately improve patient outcomes in voice therapy.

**Aim & Objectives:**

To evaluate patient adherence to voice therapy exercises and identify barriers and facilitators from the patients' perspectives.

Objectives:

1. To assess adherence levels to recommended voice therapy exercises over the past week and anticipated adherence for the upcoming week.
2. To identify barriers that hinder adherence and facilitators that enhance commitment to voice therapy.
3. To evaluate patients' beliefs regarding the effectiveness and benefits of voice therapy exercises and their emotional responses to the regimen.

**Method:**

The sample studies were collected from 45 individuals (22 males and 23 females) with voice disorders who had undergone at least 2-3 sessions of voice therapy at Lok nayak jai Prakash hospital (LNJP), New Delhi. To qualify for inclusion in the study, participants had to meet specific criteria: they were required to be over 18 years of age, willing to participate, and have a confirmed diagnosis of hyperfunctional voice disorders, such as vocal fold nodules, vocal fold polyps, muscle tension dysphonia, or vocal fold granuloma. Exclusion criteria included a negative history of head trauma, epilepsy, substance abuse, or addiction, as well as any necessity for rehabilitative or surgical intervention, and confirmed neurological or psychiatric conditions. An experienced multidisciplinary team comprising a voice therapist and

laryngologists conducted assessments. All participants underwent an instrumental evaluation, which included a comprehensive laryngeal examination.

Relevant information was gathered, including demographic and medical report findings, past medical history, and specific voice diagnoses for each participant.

The study was conducted in three phases. Phase I involved the development and validation of a self-administered questionnaire designed to gather detailed information across several domains, including demographic characteristics, professional background. The questionnaire contains 15 questions which assessed adherence to exercises, perceived benefits, barriers to adherence, and attitudes towards the therapy, as well as suggestions for improving compliance. It was initially developed based on a thorough review of existing literature and discussion with experts to ensure content validity. Validation occurred through a two-step process, incorporating a pilot study with a small group of participants and feedback from five experienced speech-language pathologists to enhance clarity, relevance, and reliability. Phase II focused on data collection, where a semi-structured interview was conducted gather the basic details from participants and then each participants were required to complete all sections of the questionnaire, with all questions marked as mandatory. In Phase III, the collected data were analysed using both qualitative and quantitative methods to derive insights into adherence and the factors influencing it.

### **Results & Discussion:**

The results were analyzed using both qualitative and quantitative methods. Findings revealed that a majority of participants (40%) reported following all (90%) of the recommended voice therapy exercises, while 17.6% indicated adherence to half (50%) of the recommended exercises also, 6.7% reported adherence to some (25%) of the recommended exercises. In terms of perceived benefits, 22.2% described the exercises as highly effective, and 42.2% found them effective, although 8.9% believed they were not effective at all. Furthermore, 55.6% of participants felt that completing all recommended exercises made a large difference compared to not doing any. Regarding forgetfulness, 26.7% reported frequently forgetting to perform the exercises, while 37.8% occasionally forgot, and 31.1% rarely did so. In the attitude domain, 35.6% of participants viewed the recommended exercises as a hassle or burden, with 77.8% expressing that performing them could be annoying or bothersome. Additionally, only 46.7% felt confident that the recommended exercises would lead to improvement, while 15.6% were not confident about their effectiveness. Barriers to adherence were notable, with 31.1% citing a lack of immediate results, 11.1% preferring medicinal treatments, and 42.2% feeling that the

exercises took too long to show improvement. In addition, paired t test was performed and the results revealed that there is a statistical difference between attitude domain and perceived benefits ( $p < 0.05$ ) signifies that individual with positive attitude has better perceived benefits of voice therapy.

### **Summary & Conclusion:**

In conclusion, this study highlights the mixed adherence and varying perceptions of voice therapy exercises among participants. While a significant portion reported high adherence levels, many also expressed challenges related to forgetfulness and perceived barriers such as time commitment and lack of immediate results. Although a majority recognized the potential benefits of the exercises, a notable percentage found them burdensome and annoying, which may hinder consistent practice. Furthermore, confidence in the exercises' effectiveness was moderate, indicating a need for improved education and support to enhance patient motivation. Addressing these barriers and fostering a positive attitude towards voice therapy could lead to better adherence and ultimately more favourable voice related health outcomes. Future interventions should focus on simplifying the exercises, providing clearer feedback on progress, and integrating motivational strategies to encourage sustained participation.

**SP1041**

**A Comparative Study of Aerodynamics and Perceptual Analysis in  
College Going Uniformed Services Scouts and Non-Uniform Services  
Students**

*Reena A, Mahima Evelyn & A Vinnarasi*

**Holy Cross College Tiruchirappalli**

**Abstract Not Available**

**SP1042**

**Pre and Post Knowledge of Dysphagia Among College Students**

*Trini Rock, Varunisha G, Shannmugavidhya Perumal & Hasmithaa Balaji*

**Holy Cross College (Autonomous), Tiruchirappalli.**

**Abstract Not Available**

## **Barriers to Dysphagia Instrumentation in Clinical Settings in India-A Practice Pattern Survey among Speech Language Pathologists**

*Shashi Ranjan, Shivam Singh & Vishwadeep Singh*

**Amity University Gurugram, Haryana**

### **Introduction:**

Dysphagia, or difficulty in swallowing, is a significant health concern that can lead to severe complications such as malnutrition, dehydration, and aspiration pneumonia. It affects a diverse population, including individuals with neurological disorders, head and neck cancers, and the elderly.

Accurate assessment and management of dysphagia are critical to prevent these adverse outcomes, and instrumentation plays a vital role in this process. Advanced tools such as Video fluoroscopic Swallowing Studies (VFSS), also referred to as Modified Barium Swallow Studies (MBSS), are considered one of the gold standard methods for assessing structural and functional dysphagia (Logemann, 1998).[1] In addition to offering insight into the anatomy and physiology of the oropharyngeal swallow, VFSS can evaluate the efficacy of therapeutic interventions and compensatory strategies. These assessments are typically conducted by speech-language pathologists (SLPs) in collaboration with imaging specialists. The importance of standardized guidelines for VFSS has been highlighted in a recent systematic review by Boaden et al.[2] These tools provide detailed visualization and analysis of swallowing physiology, helping clinicians develop precise and individualized treatment plans.

However, despite their clinical importance, the utilization of these instrumental assessments remains limited in India.[3] In the Indian clinical context, several challenges hinder the widespread adoption of these tools. Awareness and knowledge of dysphagia management are also limited among healthcare professionals and the general public.[4,5] Dysphagia is often under-recognized and poorly understood, leading to delayed diagnosis and intervention.[3,6] Many healthcare providers are unaware of the benefits of instrumental assessments and may not refer patients for these evaluations. This lack of awareness is compounded by the fact that dysphagia is often viewed as a secondary concern compared to other medical conditions, leading to its marginalization in clinical practice. In light of these challenges, it is crucial to identify and address the barriers that prevent SLPs from utilizing dysphagia instrumentation effectively in India.

**Need for Study:**

Despite the availability of instrumental tools like VFSS for accurate diagnosis and treatment, their use in India is limited due to various barriers. This study is needed to identify and address these barriers, enhancing the effective management of dysphagia in Indian clinical settings.

**Aim & Objectives:**

The aim of this study is to explore the barriers experienced by SLPs in the use of dysphagia instrumentation, such as VFSS and FEES, in clinical practice in India.

Objectives:

1. To understand the specific barriers and facilitators that clinical speech-language pathologists (S-LPs) face in various clinical settings when seeking to obtain instrumental swallowing assessments.
2. To investigate the different clinical pathways utilized to access instrumental swallowing assessments.
3. To determine the outcomes associated with the current access to instrumental swallowing assessments.

**Method:**

This study employs a cross-sectional survey design to investigate the barriers to dysphagia instrumentation among speech-language pathologists (SLPs) in health care settings across India. The study recruited 115 Speech Language pathologists (SLP) working in different setups such as institutions, Physical rehabilitation medicine in hospitals set up, and Acute Care, Otolaryngology clinic-based set-ups using a survey research design'. The participants recruited had a minimum of five years of experience, and they had experience in handling PWAs. Participants in this study are certified SLPs with at least a Bachelor's degree in Audiology and Speech-Language Pathology (BASLP) or a Master's degree in Speech-Language Pathology (MASLP). To be eligible, they must have a minimum of one year of experience in the assessment and management of dysphagia and be practicing in India in either government or private healthcare settings, such as hospitals, clinics, or rehabilitation centres. SLPs who do not engage in dysphagia management or are working outside India are excluded from the study.

The study was conducted in three phases: Phase I involved the development and validation of a self-administered questionnaire. The questionnaire is designed to gather detailed information on several domains, including demographic characteristics, professional background, knowledge and training related to dysphagia instrumentation., availability and access to



instrument like VFSS (Does your patients have sufficient access to instrumental swallowing assessments?), its impact (i.e., My patients experience no potential harm from the current level of access to instrumental swallowing assessments.) perceived barriers to their use (i.e., Does the facility you primarily practice in have on-site video fluoroscopic swallowing studies (VFSS)?) attitudes towards these assessments, and suggestions for improving access and utilization.

The questionnaire is initially developed based on a comprehensive review of existing literature and expert consultations to ensure content validity. It is then validated through a two-step process involving a pilot study with a small group of SLPs and feedback from five Speech language pathologists who were experts in the field of dysphagia assessment and management. This process helps refine the questionnaire, ensuring clarity, relevance, and reliability of the items. Phase II involved data collection, during which the questionnaire was fed into both google Forms and circulated through hard copies. In total SLPs need to complete all the domains of the questionnaire with their appropriate choices. While filling the questionnaire, SLPs are instructed to answer all the questions, which are mandatory, consequently, after filling the questionnaire the participants received an acknowledgment email for successful submission. In phase III, data were analyzed both qualitatively and quantitatively.

### **Results & Discussion:**

The study results were analyzed both quantitatively and qualitatively. Findings reveal that 73.3% of speech-language pathologists (SLPs) utilized fiberoptic endoscopic evaluation of swallowing (FEES) as part of dysphagia management, while only 33.3% used video fluoroscopic-swallowing studies (VFSS). Additionally, Majority of SLPs (60%) reported challenges in accessing timely instrumental evaluations (VFSS/FEES) for their patients. Only 26.7% of SLPs conducted their own VFSS/FEES, and 66.7% stated that their primary practice locations lacked on-site VFSS availabilities.

In the barrier domain, Majority (60%) of SLPs reported insufficient funding and resource allocations at their facilities as barriers to care. Furthermore, 46.7% identified patient insurance issues such as denied claims or out-of-pocket cost as significant challenges.

Additionally, 33.3% of SLPs reported a lack of patient transportation, while 26.7% noted geographical location as a barrier to accessing dysphagia instrumentation. On asking about facilitators for accessing instrumental swallowing assessments, SLPs clearly stated that improving the availability of advanced diagnostic facilities and better insurance coverage are essential. Additionally, fostering strong interdisciplinary collaboration, utilizing telehealth

services, and providing enhanced training and certification for healthcare providers will further facilitate timely evaluations, ultimately benefiting patient outcomes.

**Summary & Conclusion:**

According to the study findings, the study highlights significant challenges faced by speech-language pathologists (SLPs) in the management of dysphagia. While a substantial majority (73.3%) utilize fiberoptic endoscopic evaluation of swallowing (FEES), the lower adoption rate of video fluoroscopic swallowing studies (VFSS) (33.3%) underscores a gap in access to comprehensive diagnostic tools. The reported difficulties in obtaining timely instrumental evaluations, coupled with logistical barriers such as insufficient funding, insurance issues, and patient transportation, further complicate dysphagia care delivery. The findings suggest that enhancing the availability of diagnostic resources, improving insurance coverage, and fostering interdisciplinary collaboration are crucial steps toward addressing these barriers.

Additionally, the potential of telehealth services and the need for advanced training for SLPs could significantly improve the accessibility and efficiency of dysphagia assessments. Overall, these strategies may not only streamline the evaluation process but also lead to improved patient outcomes in dysphagia management.

## A Rare Case Report of Conversion Aphonia: Successful Treatment through Advanced Voice Therapy Intervention

*Anjali Shrivastav, Kranti Acharya*

**Maharajgunj Medical Campus, Nepal**

### **Introduction:**

Conversion aphonia is a specific type of Conversion Disorder where a person suddenly loss their voice. Conversion aphonia is rare, with a prevalence of 0.001%. Females are three times more likely to develop it than males (Hamzeh Al-Balas,2021). This is believed to happen because of psychological stress or trauma rather than any physical problem affecting the vocal cords.

This case study explores the assessment and therapeutic process of a 29-year-old male patient with a sudden onset of complete loss of voice following arrhythmia, temporary loss of consciousness and difficulty breathing at work. Test showed aneurysmal contraction and left sided UMN type facial palsy.

### **Need for Study:**

Conversion aphonia is a rare condition, and as noted in various studies, it is often misdiagnosed or be challenging to diagnose. In some cases, diagnosis has been delayed by six months to two years. This delay can lead to prolonged distress and impaired communication for affected individuals.

### **Aim & Objectives:**

Consequently, this study aims to provide a comprehensive framework that may assist clinicians in recognizing the signs of conversion aphonia earlier, thereby facilitating timely diagnosis and intervention. Early identification is crucial in minimizing the psychological and social impact on patients and improving overall treatment outcomes.

### **Method:**

The intensive voice therapy followed a hierarchical approach guided by graded exposure and systematic desensitization principles. Initially, therapy focused on respiratory rehabilitation through diaphragmatic breathing techniques, followed by non- phonatory technique including manual therapy, postural adjustments and resonant voice therapy. Subsequently, phonatory

techniques such as semi - occluded vocal tract therapy with gradual vocalization were introduced. A total of fifteen sessions were administered, at first two sessions per week, each lasting one hour, were conducted. Later, this was reduced to one session per week. In addition, the patient received intensive psychological counselling from a psychologist.

**Results & Discussion:**

Initially, conventional digital manipulation techniques were attempted without success. Intensive treatment sessions were planned keeping in mind the client's need to return to his work as soon as possible. Within six days the patient achieved ventricular phonation. After the allocated therapy sessions were completed, the patient had fully regained phonation ability and resumed his duties.

Conclusion: The study emphasizes that conventional voice therapy is ineffective for managing conversion aphonia. However, employing intricate voice techniques alongside psychological counselling can significantly enhance therapeutic outcomes.

**Summary & Conclusion:**

The study emphasizes that conventional voice therapy is ineffective for managing conversion aphonia. However, employing intricate voice techniques alongside psychological counselling can significantly enhance therapeutic outcomes.

## **Scope of Higher Studies and Job Opportunities in the field of Audiology and Speech-Language Pathology: An Undergraduate Perspective**

*Utkarsh Naithani, Surbhi Kashyap, Mir Sahil, Wajid Ali & Anisha Sinha*

**AYJNISHD RC, NOIDA**

### **Introduction:**

To meet the growing demand for healthcare management, the field of audiology and speech-language pathology is rapidly expanding, necessitating the expertise of skilled professionals. An Audiologist and Speech-Language Pathologist' is a professional dealing with problems related to speech, language, communication, hearing, and balance disorders. The multitude of their roles incorporates prevention, assessment, and management of various disorders affecting speech, language, swallowing, hearing, and balancing. Bachelor of Audiology and Speech-Language Pathology (BASLP) in India is a four-year undergraduate program that offers an understanding of the principles and practices of audiology and speech-language pathology. The framework of the BASLP course aims to equip the students with the knowledge, skills, and attitudes that would enable them to become skilled experts in this area. The wide-based roots of the field require the course curriculum to include varied subjects not restricted to speech and audiology but also anatomy, physiology, psychology, acoustics electronics, neurology, research, statistics and many more related. Courses and training of rehabilitation professionals, including audiologists and speech therapists, in India are regulated and monitored by the Rehabilitation Council of India (RCI).

As per the latest updates, currently, 78 institutions are offering BASLP course, 27 institutions offering Masters in Audiology, and 25 institutions offering Masters in Speech-Language Pathology across the country (Rehabilitation Council of India. (2024).

List of approved institutions up to 24-09-2024. Retrieved from [https://rehabcouncil.nic.in/sites/default/files/approved\\_inst.pdf](https://rehabcouncil.nic.in/sites/default/files/approved_inst.pdf). Though the number of institutions offering BASLP course may be appealing, there is a visible gap in the number of institutes offering graduate and post-graduation opportunities. Still limited is the number of institutes offering doctorate programs in the core area. Trainees at undergraduate levels are variously motivated for their future approach and that plays an instrumental role in building their professional careers.

**Need for Study:**

The researchers of the present study felt a significant need to explore the knowledge of these undergraduate trainees about the scope of the field and their interest in higher studies, along with their major-related professional concerns. This understanding will help in filling the gap between theoretical and need-based knowledge of the undergraduate trainees and can pave new ways in their preparedness for their professional success.

**Aim & Objectives:**

The study aims to explore the existing knowledge about the scope of the field and perceptions toward higher studies among undergraduate trainees pursuing BASLP.

Objectives:

1. To explore the current knowledge of undergraduate trainees pursuing BASLP course about the scope of the field of audiology and speech-language pathology.
2. To explore the practical interests and knowledge of undergraduate trainees pursuing BASLP course for the scope of higher studies
3. To explore the major concerns related to the professional career among the undergraduate trainees pursuing the BASLP course.

**Method:**

**Participants:** A total of 163 undergraduate trainees were included in this study comprising of 120 females and 43 males across Delhi/NCR, Punjab, Haryana, Kolkata, and Mumbai.

**Instrument:** A questionnaire was constructed and validated comprising of 7 open-ended and 18 close-ended questions under for categories: demographic data, general awareness regarding the field of speech and hearing, the scope of higher studies, major concerns.

**Procedure:** Utilizing a purposive sampling method, surveys were conducted in both online and offline modality. Responses were collected and analyzed using descriptive statistics and thematic analysis.

**Results & Discussion:**

Result of the present study can be compiled under the following headings:

**Knowledge of the scope of the field -** The majority of respondents demonstrated a good awareness of the primary roles of ASLP, clinical audiologist, and speech-language pathologists in various set-ups, though their roles in the management of balancing and swallowing difficulties are less commonly known. Further participants preferred hospitals/clinics; interests

in initiating private practice were still preferred.

Interest and opportunities for higher studies - Nearly 104 (63.8%) participants strongly indicated a willingness to pursue higher education and only 2 (1.2%) showed a complete lack of interest. The most common reasons cited for pursuing higher education included acquiring specialized knowledge 114(69.9%) and improved financial gains 106(65%). A higher preference (62.6%) towards Master's in Speech-Language Pathology in comparison to Master's in Audiology (49.1%) was indicated.

Major concerns of the participants - Distant locations and relative scarcity of the institutions offering post-graduation posed an important concern for nearly 66.2% of the respondents and only 6.1% considered location as "not important. Nearly 97% of the participants desired for more guidance regarding higher studies, while 95.7% needed support in job placement and career guidance.

The present research throws significant light on the existing gaps between the theoretical knowledge and practical requirements of the profession at the ground level. The findings indicate that there is a strong general awareness of the primary roles and job settings particularly for clinical audiologists and speech-language pathologists at hospitals and clinics likely due to their visibility and awareness among other professionals. However, their specialized roles such as the assessment and management of swallowing difficulties, tinnitus, balance disorders, etc are gradually becoming familiar. The fact that over 63% of respondents strongly expressed willingness to pursue higher education as a pathway for growth and opportunity indicates strong need for more number of institutions offering postgraduate programs closer to their home towns for both financial and personal reasons.

### **Summary & Conclusion:**

The field of speech and hearing holds great potential for specialized expansion, requiring both educational institutions and regulatory bodies to address the gaps in awareness, accessibility, and support to meet the challenges and opportunities of the profession. Strengthening these areas will contribute to the continued development of highly skilled professionals who can meet the growing demands of healthcare management in the field of speech-language pathology and audiology.

## **Influence of Cognitive and Motor activities on Rate of Speech**

*Sarthak Nehra, Swati Sharma, Manisha kumari, Arun Kumar & Ravi Patel*

**Amity University, Haryana**

### **Introduction:**

Fluency in speech is typically assumed in regular, low-stress environments. However, as cognitive demands increase, disfluencies such as repetitions, pauses, and interjections often emerge, disrupting verbal flow. Research has demonstrated that higher cognitive loads negatively affect speech production, as multitasking consumes cognitive resources that would otherwise be allocated to linguistic processing.

In the realm of speech and communication, fluency is often taken as a given in regular, low-stress conditions. However, when individuals are subjected to increasing cognitive loads, their speech can become disfluent, featuring phenomena such as repetitions, pauses, and interjections. Understanding how multitasking impacts verbal fluency can provide critical insights into the human cognitive processing system, particularly in real-world situations where individuals often perform multiple tasks simultaneously.

This study focuses on assessing the impact of increased cognitive load on speech characteristics like repetition, pause duration, interjections, and speech rate.

### **Need for Study:**

Limited studies related to spoken word corpus in the Indian context are available in the literature. To fulfil the demands of the spoken word frequency database in Hindi for advance task on psycholinguistic and cognitive studies.

### **Aim & Objectives:**

The primary aim of this study is to examine the effect of multitasking, specifically cognitive and motor tasks, on Fluency characteristics such as repetition, pauses, interjections, and speech rate.

1. To analyse changes in repetition, pauses, interjections, and speech rate during normal reading.
2. To evaluate how solving cognitive tasks (mathematical problems) while reading influences speech characteristics.
3. To assess the impact of performing a motor task (cutting paper) while reading on speech



disfluencies.

4. To compare the severity of speech disfluencies across the three multitasking conditions.

**Method:**

Ten subjects were sampled who were native young adult Hindi speakers out of which 4 were males and 6 were females of the age range between 18-25 were selected. To gain a representative selection of participants, Participants who were able to read and write in Hindi (basic 12 years of school education), Participants should not have any premorbid neurological/psychological history or any known structural deficits and should have normal sensory, speech, language, and hearing sensitivity.

The study involved a group of individuals performing three tasks aimed at testing the impact of multitasking on rate of speech. Each participant's verbal output was recorded and analysed for four speech characteristics: repetition, pauses, interjections, and speech rate.

Tasks:

1. Task 1 - Reading the Rainbow Passage: In this task, participants read a standard passage (the Rainbow Passage) allowed under normal conditions. This task served as the baseline for speech characteristics.
2. Task 2 - Reading the Grandfather Passage while solving a mathematical problem: Participants read the Grandfather Passage while simultaneously solving a standard set of mathematical addition problems. This task was designed to introduce cognitive load and assess its impact on speech.
3. Task 3 - Reading the Rainbow Passage while cutting paper into shapes: This task involved reading the Rainbow Passage while cutting paper into specific shapes provided to the participants. It aimed to introduce a motor task that would compete with verbal fluency.

Repetition: The number of words or phrases repeated during the task.

Pauses: The frequency and duration of pauses in speech.

Interjections: The number of filler words such as "um" or "ah" used.

Speech Rate: Measured in words per minute (wpm).

**Results & Discussion:**

Ten participants have performed the tasks and shown a significant normative values on different designed tasks.

The average speech rate in Task 1 was 159.2 words per minute (wpm), with repetitions

averaging 1.9, pauses at 0.5, and interjections at 1.3. These values indicate that participants exhibited a relatively high speech rate with minimal disfluencies. Repetitions, pauses, and interjections were at their lowest across all tasks, reflecting the simplicity of the task. Task 1 served as a baseline for speech fluency under low cognitive load conditions.

In Task 2, participants' average speech rate dropped significantly to 88.4 wpm, a decrease of over 70 wpm compared to Task 1. Repetitions increased to 4.6, pauses to 1.6, and interjections to 3.2. This marked a clear disruption in speech fluency as participants engaged in the dual task of reading while solving math problems. The higher number of repetitions and interjections indicates that cognitive multitasking imposes a significant burden on verbal fluency.

Task 3 showed an average speech rate of 104.4 wpm, higher than in Task 2 but still lower than in Task 1. Repetitions were notably high at 5.4, suggesting that even a manual task, though less cognitively demanding than solving math problems, still strained verbal fluency. Pauses averaged 1.5, and interjections were at 3.1, values that were comparable to Task 2. This indicates that while the manual task of cutting paper was less disruptive to speech rate than cognitive multitasking, it still resulted in notable disfluencies.

Speech rate was highest in Task 1, where participants read the passage without any secondary task. As cognitive load increased during Task 2, the speech rate plummeted. In Task 3, where participants performed a manual task, the speech rate recovered somewhat but remained significantly lower than in Task 1. Repetitions were lowest in Task 1 and progressively increased in Tasks 2 and 3, indicating that multitasking particularly manual tasks leads to higher repetition rates, likely due to divided attention. Pauses and interjections were more frequent during multitasking tasks (Tasks 2 and 3), but the difference between cognitive and manual multitasking was minimal. Both types of multitasking disrupted speech fluency more than simple reading.

For male participants, the average speech rate during the Rainbow Passage (Task 1) was 155.2 wpm, with repetitions at 2.6, pauses at 0.8, and interjections at 1.4. During Task 2, the average speech rate dropped to 93.4 wpm, with 4.6 repetitions, 1 pause, and 3 interjections. Task 3 showed a further decline in fluency, with a speech rate of 101.8 wpm, 6.4 repetitions, 1.6 pauses, and 2.6 interjections.

Female participants exhibited a higher average speech rate than males, with 165.2 wpm in Task 1, 1.4 repetitions, 0.2 pauses, and 1.2 interjections. However, during Task 2, their speech rate dropped to 83.4 wpm, with 4.6 repetitions, 2.2 pauses, and 3 interjections. In Task 3, the speech rate rose to 107 wpm, with 4.4 repetitions, 1.4 pauses, and 3.4 interjections.

Male participants showed greater disruption in speech fluency during multitasking, particularly with more repetitions and interjections compared to females. Males exhibited higher disfluency rates, especially in Task 3, where their repetition count increased more significantly. Female participants, on the other hand, managed to maintain a higher overall speech rate, but they experienced more pauses during the more complex multitasking tasks, particularly in Task 2. This suggests that while females were able to maintain speech rate under increased task demands, their fluency was affected by longer pauses.

The results demonstrate that cognitive load has a profound impact on rate of speech, with solving mathematical problems causing the most significant increases in repetition, interjections, and speech pauses. Motor tasks also affect speech, but to a slightly lesser extent. This suggests that cognitive multitasking imposes a greater strain on verbal fluency compared to motor multitasking.

These findings align with the theory that verbal fluency and cognitive load are closely linked, and as the cognitive load increases, speech disfluencies become more frequent. The results could have important implications for fields where multitasking is common, such as air traffic control, emergency response, and therapeutic practices for individuals with communication disorders.

### **Summary & Conclusion:**

This study highlights the significant impact of multitasking on speech fluency, with cognitive tasks leading to more pronounced speech disfluencies than motor tasks. The findings underscore the importance of understanding how different types of multitasking affect communication, particularly in professions that require high verbal precision under pressure.

Future research could expand upon these findings by exploring other types of cognitive and motor tasks, as well as examining how these effects differ across different populations, such as individuals with communication disorders or those working in high-stress environments.

## Impact of Left Basal Ganglia Lesion on Speech and Voice Parameters

*Neha Yadav, Grace Mariam Mathew & Vijay Kumar*

**Amity University Haryana**

### **Introduction:**

Speech production in humans is a highly complex Oro muscular process which requires precise neural control. Any lesion or impairment in the neuromuscular regulating centres or the pathway may lead to severe impact on the qualitative output of speech. With advancement of state of art neuroimaging techniques, understating of the structural and functional role of various neural centres become more evident.

Neuroanatomical based investigation has facilitated the opportunity to associate it with its function control on speech production. Impact of basal ganglia (BG) lesion has been observed on word fluency, and sentences construction (Maria, 2014). The purpose of this review is to determine what neural mechanisms may be dysfunctional in speech production(Christy L.Ludlow, 2015) and voice after damaged left basal ganglia due to stroke. Emotion Activity selection, Activity switching Movement Motivation. The BG are responsible for the planning and refining of slow, continuous movements (Giacomo Ariani et al, 2021). Most of them seem to be caused by dysfunction in the BG and they all produce involuntary movements that interfere with normal speech production. The workings of the BG are very intricate. In general, the BG seems to act as a filter that prevents unwanted movements. If the basal ganglia have a hyper or hypo movement problem then a person's speech can be delayed, have trouble stopping, leading to a fast rate of speech or starting their speech (Kris Tjaden, 2009). The voice parameter is also regulated by basal ganglia. One of the reasons behind this problem is basal ganglia damage because BG consists of clusters of nerve cells deep inside the brain that help coordinate movement of the muscle throughout the body.

### **Need for Study:**

Though in literature the impact of BG damage on word count, rate of speech and speech intelligibility are documented. However, it is not clearly mentioned whether the damage of BG is unilateral or bilateral. In addition to this, no study was found highlighting the role of unilateral BG damaged on voice parameters. As we know, voice production is regulated by the neuromuscular control of various intrinsic and extrinsic muscles. Thus, it is hypothesized that unilateral BG damage can uniquely influence the rate of speech as well as vocal parameters

**Aim & Objectives:**

The primary aim of the study was to investigate the impact of left basal ganglia damage on the rate of speech. Secondly, to investigate the impact of left basal ganglia damage on voice parameters

**Method:**

An ex post facto research design was used in present study. Four individuals in the age range of 13 to 60 years participated in which three male and one female were present. As per the MRI findings participant A reports indicated left basal ganglia contusion intra ventricular extension with onset history of two months. Participant B reports indicated abnormality in basal ganglia and bilateral thalamic structures with onset history of two months. Participant C showed left basal ganglia contusion with onset history of nine months. Participant D the lesion is compressing & rotating the brainstem with e/o edema in the midbrain pons and effacement of 4th ventricle basal cisterns. Two out of four individuals are still under medication (levera500 movicol). The etiology of participant A, B and C was stroke while participant D had traumatic brain injury (TBI) with fall from the second floor.

The MMSE based screening of neuropsychological was done. Rate of speech was measured using the number of syllables uttered per minute. Speech intelligibility was assessed using SIA (speech intelligibility assessment). Instrumental and perceptual analysis of voice was done using Praat and CAPEV. Descriptive method was used to analyse the obtained data.

**Results & Discussion:**

The Neurophysiology investigation was done using MMSE and it was found that participant A, C and D scored 19, 13, and 19 respectively and it was interpreted as the moderate cognitive impairment while participant B scored 4 and he was levelled as with severe cognitive impairment. The rate of speech was calculated by counting the number of syllables per unit time (per minute). The rate of speech for B, C, D were 300, 375 and 532 respectively. However, the rate of speech was not analysed for participant A as his speech was featured with restricted and repetitive bi or tri syllabic repetitions, and even those utterances were highly unintelligible. Instrumental voice assessment was done using PRAAT software. The fundamental frequency, intensity, jitter, shimmer and HNR were measured. The fundamental frequencies of participants of A, B, C and D are 430Hz, 350Hz (female), 129 Hz and 143.16Hz respectively. The intensity of participants A, B, C and D are 70dB, 62dB (female), 76dB and 75dB respectively. The jitter values for participants A, B, C and D are 19.301%,

4.24%(female),6.244%and 1.873% respectively. The shimmer values for participants A, B, C and D are 19.301%,13.02% (female), 20.013% and 18% respectively. The HNR values for the participants A, B, C and D are 0.6322 ,0.4218 (female),0.2789872 and 0.438245 respectively. Perceptual analysis of voice was done using CAPE V. mild to moderate breathy voice was reported for participants A and B. Furthermore, speech intelligibility score was evaluated using SIA and it was noted that the speech intelligibility of participant B was 82-100%, participant A was 60-80% and participant C and D were in the range of 0-20%.

Based on the obtained data analysis it was found that in person with left BG lesion the MMSE score was affected in all the four participants. The rate of speech was also higher in two participants compared to the normal range of approximately 300 syllables per minute. Similarly fundamental frequency, intensity, jitter, shimmer and HNR was higher. The rationale behind higher rate of speech could be associated with dysfunction in the BG, wherein BG loses the ability to produce timing cues for the initiation of the next motor segment in speech. The speech intelligibility affected is due to higher rate of speech production. The individual faces problems in initiation and inhibition of the motor movements. Neurological disorder affects the voice muscle in the larynx therefore, muscle inside the vocal cord experiences sudden involuntary movement which tamper the normal vocal fold movements. Hence the voice produced is jerky, hoarse or tight. Based on the data obtained for this small cohort group, it could be interpreted that unilateral basal ganglia impairment can lead to impairment in speech as well as the voice parameters.

### **Summary & Conclusion:**

The present study highlighted the adverse consequences of unilateral basal ganglia damage on rate of speech and various voice parameters. Though the number of participants in this study were limited yet the focused lesion of basal ganglia is the highlight of the present study. In future authors aim to investigate and compare the speech characteristics across unilateral and bilateral BG lesion groups using suitable sample size. Clinically present study fosters the need for speech as well as voice assessment in case BG lesion.

## A Comparative Analysis of Voice Quality Changes in Heavyweight Lifters vs. Non-Lifters

*Aarya Sinha, Manav Dhir, Bhavika Kabeer & Arun Kumar*

Amity University Haryana

### **Introduction:**

Voice is a complex physiological function influenced by a variety of factors, including lifestyle, environmental exposure, and physical activity. Among these, intense physical activities such as weightlifting may have a distinct impact on vocal production, given the high levels of exertion, breath control, and pressure regulation involved in such activities. This opens an avenue for examining how specific athletic activities, particularly those that involve significant strain on the respiratory and muscular systems, might influence vocal parameters.

Acoustic voice analysis is a non-invasive method to assess vocal function by measuring parameters such as fundamental frequency (F0), jitter, shimmer, and harmonic-to-noise ratio (HNR). These acoustic markers are key indicators of vocal quality and are often used to detect subtle changes in vocal function that may not be perceptible during normal speech. While several studies have explored the impact of physical activity on respiratory and vocal function, there is limited research focusing specifically on weightlifters, whose routines involve high-intensity exercises and significant respiratory control.

Weightlifting, an activity that often requires holding breath (a technique known as the Valsalva maneuver) and managing internal pressures, could potentially lead to differences in voice production when compared to non-weightlifters. The strain on the laryngeal structures, diaphragm, and thoracic muscles during heavy lifting might influence the vibratory behavior of the vocal folds, altering the acoustic characteristics of the voice.

In contrast, non-weightlifters who engage in more moderate or different forms of physical activity might exhibit distinct vocal patterns. Comparing the two groups weightlifters and non-weightlifters through acoustic voice analysis may shed light on whether prolonged exposure to weightlifting has a measurable impact on voice quality.

### **Need for Study:**

Understanding the impact of physical activity, particularly heavyweight lifting, on voice quality is crucial for several reasons. First, athletes, especially those engaged in strength training, might experience physiological changes that could affect their vocal function due to

increased intra-abdominal pressure and altered breathing patterns. Additionally, heavyweight lifters often engage in vocal exertion during training, which may lead to unique voice quality changes compared to non-lifters.

This study is needed to identify and compare these effects systematically, providing insights into how different training regimens influence voice quality. Such knowledge is essential for coaches, trainers, and speech-language pathologists to develop appropriate voice care strategies for athletes. Furthermore, exploring these differences can contribute to the broader understanding of the relationship between physical fitness and vocal health, ultimately promoting better vocal practices among individuals in physically demanding sports.

### **Aim & Objectives:**

#### **Aim**

The aim of this study is to conduct an acoustic and aerodynamic voice analysis to assess differences in vocal parameters between heavyweight lifters and non-weightlifters, exploring how regular weightlifting may influence vocal production.

#### **Objectives:**

1. To compare acoustic and aerodynamic voice parameters between heavyweight lifters and non-lifters.
2. To investigate the potential impact of physical exertion on vocal production and voice health in both groups.

### **Method:**

The study involved 20 participants in the age range 18-30 years, divided into two groups: 10 heavyweight lifters and 10 non-lifters. Inclusion criteria for participants included: individuals aged 18-35 years, with no history of voice disorders, no current respiratory conditions, and a minimum of two years of weightlifting experience for the lifter group. Exclusion criteria included individuals with a history of upper respiratory infections, known vocal pathologies, allergies affecting voice quality, or those who had undergone vocal training or therapy.

Acoustic parameters such as mean pitch, minimum pitch, maximum pitch, jitter percentage, shimmer percentage, noise-harmonic ratio, and harmonic-noise ratio were assessed using PRAAT software, while aerodynamic parameters were measured through maximum phonation duration (MPD). Additionally, a questionnaire was administered to the weightlifting group to gather insights about their training regimens, vocal habits, and any perceived voice issues. Participants were seated comfortably in a quiet environment and instructed to take a deep breath



and phonate the vowel sounds /a/, /i/, and /u/ for as long as possible at a comfortable pitch and intensity. Voice data were recorded and analyzed with PRAAT software to extract the relevant acoustic and aerodynamic parameters. Statistical analyses were then conducted to compare these vocal parameters between the two groups, identifying any significant differences. This methodology aims to provide a comprehensive evaluation of the impact of weightlifting on vocal quality, enhancing our understanding of the relationship between physical exertion and voice production.

### **Results & Discussion:**

The study aimed to analyse voice quality changes between heavyweight lifters and non-lifters, focusing on various acoustic and aerodynamic parameters. The results indicate notable differences in specific vocal characteristics between the two groups. A significant difference was found in the maximum fundamental frequency, with heavyweight lifters exhibiting lower values ( $t(16) = -2.454, p = 0.026$ ). This suggests that weightlifting may influence the higher pitch range of voice. No significant difference in minimum fundamental frequency was observed ( $t(16) = 1.095, p = 0.290$ ). While there was a trend towards lower jitter in non-lifters, the difference was not statistically significant ( $t(16) = -1.696, p = 0.109$ ). A significant difference was noted, with lifters showing higher shimmer values ( $t(16) = -2.172, p = 0.045$ ), indicating potential instability in vocal quality. In aerodynamic analysis, no significant differences were found for phonation durations for the vowels /a/ and /i/ ( $t(16) = -0.052, p = 0.959$ ;  $t(16) = 0.313, p = 0.759$ ).

### **Summary & Conclusion:**

The findings indicate that heavyweight lifters may experience distinct vocal characteristics compared to non-lifters, particularly in terms of maximum fundamental frequency, shimmer, and noise-to-harmonics ratios. These differences highlight the impact of physical exertion on vocal production, warranting further investigation into the mechanisms behind these changes and their implications for voice health in athletes.

**SP1049**

**A Survey of Practice Patterns and Instrumental Use on Patients with  
Dysphagia Among Speech-Language Pathologists in Tamil Nadu**

*Mahima Evelyn, Deva Dharshini.S.S, Hasmithaa Balaji, Sowbakkiya D & Sharon Iwin*

**Holy Cross College, Tiruchirappalli**

**Abstract Not Available**

## Prevalence and Risk Factors of Speech and Language Delays in Children: A Study of Manesar, Haryana

*Riya Raj, Kuber Singh & Shivam Singh*

Amity University Haryana

### **Introduction:**

Speech and language development plays a crucial role in a child's overall growth, underpinning their ability to communicate, interact socially, and learn effectively. Delays in this area can significantly affect academic performance, social integration, and emotional well-being. The prevalence of speech and language delays can differ among populations, influenced by various risk factors such as socioeconomic status, parental involvement, and the richness of the language environment.

Recent studies have shed light on the prevalence of these delays in India. For instance, research by Nivedita Mondal et al. (2016) conducted study in Puducherry found a significant prevalence of speech and language delays among children aged 2 to 36 months. Their study revealed a strong association between developmental screening outcomes and the likelihood of delays, with an odds ratio of 8.6 for children showing delays on the Trivandrum Development Screening Chart (TDSC). Similarly, Trisha Sundarajan and Sujata V. Kanhere (2023) conducted a study in Mumbai's pediatric outpatient department and found that 2.53% of children aged 1-12 years experienced speech and language delays. This study also identified comorbidities such as autism, cerebral palsy, and hearing loss in some cases.

Based on these findings, it is vital to explore speech and language delays in different regions of India to gain a broader understanding of this developmental issue among children. Manesar, a rapidly growing area in Haryana that combines urban and rural communities, presents a unique opportunity to study these delays. This study aims to assess the prevalence of speech and language delays among children in Manesar and identify the associated risk factors, contributing to a deeper understanding of these developmental challenges within the Indian context.

### **Need for Study:**

The increasing global prevalence of speech and language delays underscores the need for localized research to identify specific regional trends and risk factors. In Manesar, Haryana, a rapidly urbanizing area with significant socio-economic and cultural diversity, there is an

urgent need to address developmental challenges among children. Currently, there is a notable lack of data on the prevalence of speech and language delays in this region. Understanding how widespread these delays are is crucial for designing effective public health interventions tailored to the local context. Moreover, Manesar's unique socio-economic and environmental conditions may contribute to speech and language delays in ways that differ from other regions. Identifying these specific risk factors is essential for developing targeted strategies to address the root causes of these delays. This study aims to establish baseline data on prevalence and associated risk factors, providing a foundation for future research and community health initiatives. By doing so, it will pave the way for developing tailored interventions to support early childhood development and address the specific needs of children in Manesar.

### **Aim & Objectives:**

The aim of this study is to determine the prevalence of speech and language delays in children aged 1 to 12 years in Manesar, Haryana, and to identify associated risk factors

1. To determine the prevalence of speech and language delays in children aged 1 to 12 years in Manesar.
2. To identify and analyze risk factors associated with speech and language delay in children.

### **Method:**

This study was a retrospective analysis conducted over the past five years, focusing on the prevalence and risk factors associated with speech and language delays in children. The study analyzed records of 162 children aged 1 to 12 years who were evaluated at the Department of audiology and speech language pathology Amity University Haryana over the five-year period. The inclusion criteria encompassed children diagnosed with speech and language delays. Data was selected based on completeness and relevance to the study objectives.

The data was collected from the Department of Audiology and Speech-Language Pathology (ASLP) at Amity University, Haryana, specifically targeting children reported from Manesar, Haryana. The collected information comprised several key components. Demographic details were recorded, including the children's age, gender, and place of residence. Clinical histories were thoroughly documented, highlighting any perinatal or postnatal complications experienced by the children. The speech and language assessments provided detailed documentation of the nature and severity of speech and language delays. Additionally, associated conditions were noted, encompassing any other relevant diagnoses such as autism

spectrum disorder or hearing impairment. The statistical analysis of data involved both quantitative and qualitative methods: Statistical techniques were used to determine the prevalence of speech and language delays among different age groups and genders. Descriptive statistics summarized the frequency and percentage of various complications and associated conditions.

### **Results & Discussion:**

The study analyzed data from 162 children aged 1 to 12 years, using both quantitative and qualitative approaches. Of these children, 52.36% had experienced complications during the perinatal period, while 19.13% had issues following birth. Among the children who sought help at the outpatient department (OPD), those aged 5-6 years were notably more likely to have speech delays, representing 26.54% of the cases. There was also a significant gender difference in the rates of speech delay: 70.37% of the affected children were male (114 children), compared to 29.62% who were female (48 children). For perinatal causes of language delay, delayed birth cry was the most common, found in 37.03% of the cases (60 children), followed by premature birth at 11.72% (19 children) and post mature birth at 3.70% (6 children). Postnatal causes included seizures (11.72%, 19 children), ear discharge (3.08%, 5 children), and jaundice (2.46%, 4 children). The study also identified autism spectrum disorder as a significant associated condition, affecting 14.19% of the children (23 children), and hearing impairment, which was present in 9.25% of the cases (15 children).

### **Summary & Conclusion:**

In conclusion, the study underscores the significant prevalence of speech delays among children aged 1 to 12 years, particularly among those who faced perinatal complications and postnatal issues. The findings reveal a notable gender disparity, with males being disproportionately affected. Key perinatal factors such as delayed birth cry, premature birth, and post mature birth emerged as primary contributors to these delays. Additionally, postnatal complications, including seizures and ear discharge, complicate speech development further. The association with autism spectrum disorder and hearing impairment highlights the critical need for early screening and intervention strategies. Overall, these insights emphasize the necessity for a comprehensive approach to addressing speech delays, aiming to enhance outcomes through targeted support and resources tailored to the needs of affected children. This is particularly vital in rural regions like Haryana, where access to timely interventions can significantly impact child development and overall well-being.

**SP1051**

**Exploring Phonological Awareness in Tamil Speaking Children with  
Cleft Lip and Palate - A Single Case Study**

*Shamithra Sridhar, Violet Priscilla S, Aishwarya Nallamuthu, Krupa Venkatraman &  
Dharshini H*

**Sri Ramachandra Institute of Higher Education and Research**

**Abstract Not Available**

**SP1053**

**Silent Suffering: LPR And GERD in Passive Smokers and Their Vocal  
Consequences**

*Priyadarshini M, Reena A & A Vinnarasi*

**Holy Cross College Tiruchirappalli**

**Abstract Not Available**

## Exploring the Impact of Neurobrucellosis on Speech and Swallowing

### Function: A Case Study

*Stuti Amith, Kiara Costa & Maya Varma. R.*

**Manipal College of Health Professionals, Manipal**

#### **Introduction:**

Neurobrucellosis is a rare form of systemic brucellosis which is acquired through ingestion of unpasteurized dairy products. Neurobrucellosis can be acquired from goats, sheep and camels. The pathogenesis of this condition still remains unknown. Literature shows that it may spread through the bloodstream or via phagocytosis as *Brucella* is adapted for intracellular survival. VirB operon which is part of a type IV secretion pathway activated by phagosomal acidification could play a role in pathogenesis. *Brucella* can also cause cytotoxic damage to cerebral white matter through its endotoxins potentially leading to demyelination. There are more than 500,000 new cases reported annually worldwide. In countries like the USA incidence is 1 per 1000 people and in the UK it is 0.3 per 1,00,000. Among these, developing countries like India have also reported many studies, the results ranging from 0.8% in Kashmir and 26.6% in Ludhiana. Human brucellosis is a multisystem disease which presents a broad spectrum of clinical manifestation, and the neurological symptoms may appear at any stage of the disease. This makes it more difficult to make a diagnostic criterion for this condition.

Diagnosis of neurobrucellosis can be done by isolation of *brucella* from CSF and/or positive anti-*Brucella* antibodies in CSF. Clinical studies indicate low mortality rate but neurological sequelae remain frequent after neurobrucellosis because it depends on the type of neurobrucellosis. Neurobrucellosis can be of three types including acute meningoencephalitis, chronic peripheral form and chronic CNS infection. Nearly 20 - 30% of patients with neurobrucellosis develop neurological sequelae. These neurological sequelae will include complications like polyneuropathy/ radiculopathy (7%), cranial nerve (6th, 7th and 8th) involvement (19%), paraplegia (4%), depression (5%), stroke (3%), and abscess formation (3%). The primary treatment of neurobrucellosis is by different combinations of ceftriaxone, rifampicin and doxycycline for a minimum of 4 months. In some cases, ciprofloxacin, trimethoprim-sulfamethoxazole and streptomycin are also given.

**Need for Study:**

Brucellosis is an infectious, febrile disease affecting animals as well as humans. This globally common zoonosis is caused by the bacteria of several *Brucella* species. Brucellosis-free countries have seen re-introductions of the disease associated with the movement of *Brucella* infected livestock. Brucellosis in humans presents a diverse clinical picture by different cranial nerve involvement. Depending on this, the neurological sequence also varies. In India, there are case reports with neurobrucellosis but the effect of neurobrucellosis on speech and language skills are not reported till now. This brings to the need of this case study to highlight on the speech and swallowing characteristics of an adult with neurobrucellosis.

**Aim & Objectives:**

The study aims to highlight the speech and swallowing characteristics of Neurobrucellosis

**Method:**

this retrospective study design, a 59-year-old male came to the hospital with the complaint of altered sensorium, loss of consciousness, vomiting and fever. Neurological investigations and Radiological findings confirmed the diagnosis of Left Hemispheric Transient Ischemic Attack Neurobrucellosis and was referred to the Department of Speech and Hearing for detailed speech and language evaluation. A bedside evaluation using Bedside Western Aphasia Battery (WAB) in Kannada and Water Swallow Test (WST) (Hughes and Wiles, 1996) shows there was evident speech and swallowing problems. Oro-motor skills and speech functions were profiled using Frenchay Dysarthria Assessment (FDA) (Enderby, 1983). Swallowing evaluation was done using The Mann Assessment of Swallowing Ability (MASA) (Mann et al., 2002) and Swallowing Ability and Function Evaluation (SAFE) (Kipling and Swain, 2003)

Following a detailed evaluation intervention was given focusing primarily on improving the oro-motor function and dysphagia. All these subjective evaluations were repeated after the intervention to monitor the progress from intervention. During the withdrawal of intervention, a home training program was given to improve the speech intelligibility.

**Results & Discussion:**

Radiological evaluation indicated Acute Infarct involving Left Insular Cortex, corona radiata, lentiform nucleus and external capsule, Few focal small vessel ischemic changes as well as age-related cerebral atrophy. Based on the histopathological and radiological investigation, the Department of Neurology confirmed the diagnosis as Left Hemispheric Transient Ischemic Attack Neurobrucellosis.



Detailed speech and language evaluation using FDA, SAFE and MASA concluded as severe dysarthria with oral phase dysphagia. Severe dysarthric (anarthria) characteristics were profiled using FDA and intervention goals were focussed to improve the oro-motor functioning and swallowing skills. Intervention was given during the hospital stay (8 sessions) and as out-patient (3 sessions).

Post discharge the patient reported improvement in lip seal, tongue movement, tongue strength and oral transit of bolus. Ryle's tube was removed and oral intake recommended. Home training program was recommended to improve oro-motor exercises and follow-up after one month. Home training program was recommended to improve the speech intelligibility. Neurobrucellosis is an important complication of systemic brucellosis infection. In the present case study, the patient has a history of altered sensorium, loss of consciousness, vomiting and fever. These symptoms indicate that he had chronic peripheral and chronic CNS infection. The client clinically presented with weakness on the oral musculature indicating severe dysarthric and dysphagia characteristics.

Clinical case studies conducted in India reported hearing loss. There are no case studies which highlight the speech and swallowing skills of neurobrucellosis. The clinical manifestation of neurobrucellosis is wide and probably that is why there is a scarcity of case studies about speech and swallowing characteristics in neurobrucellosis. The patient was early identified with neurobrucellosis and the pharmacological management using ceftriaxone was initiated as soon as the symptoms appeared. The rehabilitation for swallowing and speech skills focussing on improving the strength of oral musculature was vigorously given at the early stage of the condition. A suitable primary investigation, appropriate treatment along with the rehabilitation from a speech-language pathologist can contribute to the prognosis in the swallowing skills. However, speech intelligibility is still compromised due to the neurological complication of the condition and long term management as a team approach is necessary for the wellbeing of the individual.

### **Summary & Conclusion:**

Neurobrucellosis is a serious disease if not diagnosed early. Clinical manifestations show heterogeneous neurological symptoms and therefore the management is always individual specific. There are limited case studies that address the clinical manifestation of speech and swallowing functions in neurobrucellosis. Therefore, more clinical empirical studies are warranted to confirm and understand speech and swallowing characteristics in neurobrucellosis.

**SP1055**

**Parental Survey on Eating Behaviours in Children with Autism  
Spectrum Disorder in Tamil Nadu**

*Deva Dharshini. S.S, Mahima Evelyn, Priyadarshini M & Swati Solanki*

**Holy Cross College, Tiruchirappalli**

**Abstract Not Available**

## Feeding outcomes in GDD Children: A Survey on Parental Awareness

*Pawar Janhavi Bhaskar*

**Ali Yavar Jung National Institute of Speech and Hearing Disabilities (D)**

### **Introduction:**

According to DSM-V, Global Developmental Delay (GDD), of the DSM V, is a diagnosis reserved for individuals under the age of 5 years who are unable to undergo clinical testing, yet fail to meet particular benchmarks in intellectual functioning. GDD is a group of disorders of the development of movement and posture, causing activity limitation, that is attributed to non-progressive disturbances that occurred in the developing fetal or infant brain. The motor disorders of GDD are often accompanied by disturbances of sensation, cognition, communication, perception, and behavior, and by a seizure disorder.

The primary problems associated with GDD are neurodevelopmental, challenges with growth and nutrition are also common in affected children. As a group, children with GDD are underdeveloped and malnourished than their typically developing peers. Adequate nutrition during infancy and early childhood is essential to ensure the growth, health, and development of children to their full potential. Feeding a child is one of the most fundamental caregiving tasks of parenting. Feeding problems may include but are not limited to food refusal, disruptive mealtime behavior, rigid food preferences, suboptimal growth, and failure to master self-feeding skills commensurate with the child's developmental abilities. Children with GDD may have feeding disorders and swallowing problems that may put them at risk for aspiration with oral feeding and due to this reduced nutrition/hydration status and prolonged stressful mealtimes are seen. Continual feeding problems can result in deficits in cognitive, emotional, and physical development (Manickam & Perman, 2000).

### **Need for Study:**

Fung and colleagues (2002) reported that feeding difficulties in children with moderate to severe GDD resulted in poor nutritional status and health; a finding that was also confirmed by Rogers (2004) who reported that children with GDD are at high risk for feeding and swallowing disorders that can have significant health implications, including limited caloric intake and acute and chronic malnutrition.

There is a need to determine the magnitude and nature of feeding difficulties in children with GDD, to assess parental and SLP awareness about the feeding problems, nutritional status of

these children, and extent of growth retardation in comparison to normal children, and to evaluate the response of nutritional and therapeutic interventions on feeding problems and nutritional status of these children.

### **Aim & Objectives:**

1. To create awareness about the feeding difficulties in GDD.
2. To understand the magnitude and nature of feeding difficulties in children with GDD.
3. To assess parental awareness about the feeding problems and nutritional status of these children and their nutritional status.

### **Method:**

The Children's Feeding Questionnaire (CFQ), developed by Leann L. Birch in 1998, is a tool designed to assess parental attitudes and behaviors regarding children's eating and weight management. It explores various dimensions, including parents' concerns about their children's weight, their feeding practices, and how they perceive their child's eating habits. The CFQ helps identify factors that may influence a child's dietary patterns and overall health, making it useful for research and clinical settings focused on childhood nutrition and obesity prevention. This questionnaire was administered to parents whose children with GDD with ages ranging from 2-7 years.

### **Results & Discussion:**

Based on the data obtained from 50 parents of children with GDD, the responses on the 6 domains can be represented as:

**Feeding:** The first domain primarily focussed on the feeding of children and questions regarding the feeding schedule, portion size as well as nutritional value of food were asked. The parent's responses were noted as: 43.8% of the parents were responsible for feeding their child most of the time, 53.1% of the parents were responsible for deciding their child's portion size, 40.6% of the parents were responsible for deciding their child is consuming the right kind of food with appropriate nutrients.

**Parental weight:** as per the second domain parental weight across different milestones of their life was determined and most of the parents reported their weight to be average across all milestones

**Child weight:** as per the third domain, the child's weight at different milestones such as first year, as a toddler, pre-schooler, kindergarten to 2nd grade, and 3rd grade to 5th grade of their life was noted, most of the parents reported that their child's weight was average during the

initial years of their life, however, they were markedly underweight during their preschooler and kindergarten years.

Parental concern: the fourth domain primarily focused on the parental concern on the child's feeding patterns, which are further subdivided as: Most of the parents were not very much concerned regarding their child eating too much and becoming overweight. Most parents were slightly concerned about their child having to diet to maintain a healthy weight.

Parental safety measures: the fifth domain primarily focused on the safety measures taken by parents to ensure their child is eating appropriately, which are further subdivided as:

- Most of the parents agreed that they have to be sure that their child does not eat too many sweets
- Most of the parents were on the fence about letting their child too much high-fat food and their favorite food
- Most of the parents are neutral about the fact that they intentionally keep some food out of reach and give sweets or the child's favorite food as a form of reinforcement
- Most of the parents slightly disagreed that if they did not guide the child might eat too much junk food however most of the parents were neutral that if they didn't stop the child might eat too much of their favorite food
- Most of the parents slightly agree that the child must finish the food on their plate and 50% of parents said that they have to be careful their child eats enough
- Most of the parents slightly agreed that they must feed their child even if they are not hungry and most agreed that they have to guide their child's eating so that he/she eats enough

Tracking meal patterns: the sixth domain primarily focussed on the meal patterns of the child and most of the parents sometimes kept track of the amount of sweets, snacks, and fat foods their child consumed.

As can be understood from the above-stated data, a significant percentage of parents were involved in scheduling mealtimes, regulating what their child is consuming, and ensuring that their child is acquiring an adequate amount of nutrients.

### **Summary & Conclusion:**

From the above study, it can be understood that parents play a key role in providing their children with appropriate and adequate nutrition in their formative years to ensure overall growth and development of the child. In the case of children with GDD, it becomes even more important that parents are well aware and concerned regarding the diet and nutrition of their child. For this purpose, parents must be provided with much-needed knowledge so that they

can make well-informed decisions for their children. This can be ensured when parents are involved in making treatment plans and are a part of the team formulated.

In conclusion, it can be stated that a multidisciplinary approach is required to substantiate all habilitation of a child with GDD with the parents playing an important part in the team. Also, regular parental training programs or seminars should be held as well and parental support groups should be formed to provide them with appropriate guidance.

## **Impact of Vocal Warm-Up and Cool-Down Techniques on acoustic voice Parameters of Call Center Operators**

*Shashi Ranjan*

**Amity University Gurugram, Haryana**

### **Introduction:**

Effective voice use is a critical component of professional performance in occupations such as teaching, singing, and particularly in call center environments where employees rely heavily on their vocal abilities. The nature of call center work involves prolonged speaking, often in challenging acoustic and environmental conditions, which can lead to vocal fatigue and potential voice disorders. The career prevalence of voice problems in Call Center operators varied from 33% to 68%, whereas point prevalence was at 27%. hoarse/rough voice was the most prominent symptom reported by most of the studies. Vocal fatigue, effortful voice, and breaks in voice were the other reported vocal symptoms. [1,2] Maintaining vocal health is paramount for call center employees to ensure optimal job performance and long-term vocal well-being. Vocal warm-up and cool-down exercises are established practices in voice training, aimed at preparing the vocal apparatus for intensive use and aiding in recovery post-usage, respectively. These exercises are designed to improve vocal efficiency, flexibility, and endurance while minimizing the risk of vocal strain and injury. Warm-up exercises typically involve gentle phonation, stretching of the vocal folds, and resonance exercises, which help in reducing vocal fold stiffness and improving phonatory stability. Cool-down exercises, on the other hand, focus on relaxation and gentle lowering of vocal fold activity, thereby promoting recovery and reducing vocal fatigue [3,4,5]

### **Need for Study:**

Several studies have highlighted the benefits of vocal exercises for professional voice users. Despite the known benefits of vocal exercises, there is limited research specifically addressing their impact on call center operators. This is a significant gap in the literature, given that call center workers are at a high risk of developing voice problems due to prolonged speaking in often stressful conditions.

### **Aim & Objectives:**

The aim of this study is to evaluate the impact of vocal warm-up and cool-down exercises on

the acoustic voice parameters of call center operators working in customer service departments.

The objectives of this research are threefold: The objectives of this research are threefold:

1. to assess the baseline vocal quality of call center employees,
2. to evaluate the impact of vocal warm-up exercises on their vocal performance, and
3. to determine the effectiveness of cool-down exercises in promoting vocal recovery and reducing vocal fatigue.

### **Method:**

This research employed a randomized controlled trial design to evaluate the impact of vocal warm-up and cool-down exercises on the voice quality of call center employees. The study was conducted over a period of four weeks and involved a total of 60 participants, divided equally into two groups: an experimental group and a control group, each consisting of 30 subjects.

Participants were recruited from a pool of call centre operators working in the customer service department. The age of the participants were 21 to 45 years, with at least one year of experience in a call centre environment. Participants had no history of any vocal pathology, including chronic cough, cold, or any diagnosed vocal disorders. Smokers and individuals with any acute or chronic respiratory conditions were excluded from the study to prevent confounding effects on the vocal parameters.

Voice of all participants were recorded four times while uttering the vowel [a] for at least 5 seconds. The first two recordings were collected before and after the vocal warm-up session and the last two before and after the vocal cool-down session. Subjects underwent a structured regimen of vocal warm-up exercises in the morning before work (Table 1) and vocal cool-down exercises in the evening after work (Table 2) and between the warm-up and the cooldown the participants underwent a routine vocal activity. The recording was obtained through omnidirectional condenser microphone (Frequency Response 20 Hz-20 kHz) connected to a PC by a USB cable and positioned at an angle of 45° and 10 cm away from the subject's mouth. The recordings were carried out by the same person, in a quiet room with a background noise inferior to 40 dB, as measured by a digital decibel meter with a sampling rate of 22,050 Hz.

### **Results & Discussion:**

We measured the fundamental frequency (F0), jitter, shimmer, and harmonics-to-noise ratio (HNR) in both an experimental group, which performed the exercises, and a control group, which did not, across four time points: before and after the warm-up (R1 and R2), and before and after the cool-down (R3 and R4). The following results were observed:



For fundamental frequency (F0), Among males in the experimental group, the F0 increased significantly after the warm-up. Before the warm-up, the mean F0 was 110.00 Hz, which rose to 120.00 Hz after the warm-up. This increase was statistically significant, indicating that vocal warm-up led to a higher vocal pitch for males. After a full day of work, the F0 increased even further to 130.00 Hz, suggesting that prolonged vocal use raised vocal pitch due to vocal fatigue. However, after the cool-down exercises, F0 decreased back to 115.00 Hz, reflecting vocal recovery. Among females, a similar trend was observed. The mean F0 increased from 205.45 Hz before the warm-up to 217.00 Hz after the warm-up and further increased to 237.32 Hz after the workday. Following the cool-down, the F0 decreased to 211.58 Hz, again showing recovery.

Jitter values also showed a marked reduction in the experimental group following the vocal warm-up. Before the warm-up, jitter averaged 0.30% (SD = 0.05), which decreased significantly to 0.25% (SD = 0.03) after the warm-up. This reduction indicates more stable vocal fold vibration after warming up. Although there was a slight increase in jitter to 0.26% (SD = 0.03) after the workday (R3), it remained significantly lower than in the control group. Following the cool-down (R4), jitter in the experimental group decreased again to 0.28% (SD = 0.04), reflecting the beneficial effect of the cool-down in reducing vocal fold tension. In contrast, the control group exhibited an increase in jitter after the workday.

For shimmer, the experimental group showed a substantial reduction after the warm-up, with mean shimmer values decreasing from 2.91% (SD = 0.51) in R1 to 2.07% (SD = 0.56) in R2, indicating more consistent voice amplitude. However, after the workday, shimmer increased to 2.32% (SD = 0.74) in R3 and further to 2.55% (SD = 0.76) after the cool-down (R4). While shimmer increased slightly after the cool-down, it remained lower than the pre-warm-up level. The control group exhibited no significant variations in shimmer values throughout the study.

### **Summary & Conclusion:**

In conclusion, the study demonstrated that vocal warm-up exercises significantly enhance voice quality by reducing jitter and improving vocal stability among participants. The experimental group, which performed warm-up and cool-down exercises, exhibited a notable decrease in jitter levels, indicating improved control over vocal fold vibration. In contrast, the control group, which did not engage in vocal exercises, experienced higher jitter levels after work, suggesting that continuous vocal use can lead to instability in voice quality. These findings underscore the importance of incorporating vocal warm-up and cool-down exercises into the routines of individuals who rely heavily on their voices, such as call center employees,

to maintain vocal health and performance.

**SP1058**

## **Parental Perspectives on the Use of Digital Therapy Materials for Home Follow-Up**

*Chitra Rejoy Thadathil*

**Dimensions Centre for Child Development**

### **Introduction:**

This study investigates parental viewpoints regarding the use of digital therapy materials for continuing speech and language therapy at home. With the rise in the number of children with speech and language delays and lack of available clinicians, digital resources offer a potential solution for families to bridge therapy gaps and support their children's progress in the comfort of their homes.

### **Need for Study:**

Access to speech and language therapy services remains a challenge, in cities as well as rural areas with the growing number of children exhibiting delays in achieving age adequate speech and language milestones and clinician shortages. Digital therapy materials present a promising solution to this issue, offering families a way to follow up on therapy sessions from home. However, there is limited research on how effectively parents can use these digital tools to support their children's progress. Understanding parental perspectives is crucial to developing better digital interventions that are user-friendly and effective in improving therapy outcomes. Exploring how parents perceive the utility of digital materials, and identifying barriers to their use, will help clinicians refine digital therapy materials for home programs. By addressing parental preferences and challenges, this study will contribute to the development of more accessible, efficient, and impactful interventions for children with speech and language disorders.

### **Aim & Objectives:**

To explore parental perspectives on the use of digital therapy materials for home follow-up in children with receptive and expressive language delays.

### **Method:**

A cross-sectional study was conducted with 31 parents of children aged 0-10 years attending a clinic in Bangalore. The cohort included parents of children with speech and language delays

(64.5%), autism (32.3%), and Down Syndrome (3.2%). Parents completed an online survey through Google Forms, and the data were analyzed using descriptive statistics and correlation coefficients. The questionnaire was created based on parent interviews, s and collaborative discussion with professionals working among pediatric population.

### **Results & Discussion:**

The results reveal mixed findings. While 51.6% of children were recommended three sessions per week, only 25.8% were able to attend the full number of recommended sessions due to factors such as clinician unavailability (38.7%) and school schedules (41.9%). Among the parents, 41.9% used digital therapy materials, reporting a positive correlation between these resources and their child's progress. Conversely, 35% of parents had never used digital materials, while 19.4% used them 2-3 times weekly and found them beneficial.

Interactive apps and parent training guides were considered the most useful digital tools. Although only 16.1% of parents believed digital therapy materials could fully compensate for clinician shortages, 35.6% were unsure. Notably, 67.7% of parents preferred parent coaching over digital materials, yet 61.3% expressed openness to trying digital resources for home follow-up.

Parents generally perceived digital therapy materials as beneficial. However, the preference for parent coaching indicates the need for better integration of digital tools with parent education to ensure effectiveness. The study suggests that digital materials, when appropriately supported, can serve as an important tool to catalyse the progress along with in-person therapy sessions.

### **Summary & Conclusion:**

This study highlights the potential of digital therapy materials to complement traditional speech therapy, especially in bridging accessibility gaps. However, enhancing parental guidance and providing clear instructions are essential to maximize the benefits of these tools.

**SP1059**

**Analysis of Voice in Parents of Children with Autism Spectrum Disorder**

*Sri Danvi, Harshitha R S, Varunisha G & Swati Solanki*

**Holy Cross College (Autonomous) Tiruchirappalli**

**Abstract Not Available**

**SP1060**

**Adaptation of Self- Rating Tool of Seaking Situations by Individuals with  
Stuttering**

*Vedha Sorubini K*

**Lewis University, Romeoville Illinois, USA**

**Abstract Not Available**

## **Listener Perceptions of Indian English Speakers with and Without Influence of a Marathi Accent**

*Shaya M Sanghvi, Pallavi Kelkar & Priya Kapoor*

**Bharati Vidyapeeth (Deemed to be university), Pune**

### **Introduction:**

Accents can evoke a wide range of attitudes and biases in listeners. These biases can vary depending on cultural context, societal norms, and the specific characteristics of the accent in question. In a linguistically diverse country like India, where English is spoken with various regional influences, the way English is spoken varies greatly across different regions, influenced by local languages and dialects. This gives rise to regional variants of Indian English (IndE), each with its own unique features. The perception of these accents can be influenced by the listener's and the speaker's linguistic and socio-cultural backgrounds.

### **Need for Study:**

Studies from India conclude that there is a covert prestige attached to having a standard IndE accent in contrast to its regional variants (Bernaisch & Koch, 2016). However, the perceptions of listeners towards speakers with variants of the standard IndE accent do not seem to be strongly negative based on reports from a few recent studies (Kachru, 1976; Bernaisch & Koch, 2016). There is no study reported till date along similar lines from urban areas of the state of Maharashtra.

As there is a regular influx of individuals from smaller towns of Maharashtra into urban areas for education, employment, there is a need to document public perceptions of speakers who exhibit variants of the standard IndE accent in order to make informed decisions about awareness building and public education if necessary. If speech of speakers with a Marathi variant of IndE is perceived as difficult to understand, it could indicate the need for working towards improving speech intelligibility in this population.

### **Aim & Objectives:**

To compare listener perceptions of speakers with an Indian English (IndE) accent and its Marathi variant.

1. To compare perceptions of male listeners about a male with an IndE accent and its Marathi variant.

2. To compare perceptions of male listeners about a female with an IndE accent and its Marathi variant.
3. To compare perceptions of female listeners about a male with an IndE accent and its Marathi variant.
4. To compare perceptions of female listeners about a female with an IndE accent and its Marathi variant.

**Method:**

Speech stimuli about 1.5 minutes long were prepared with four speakers, a male and a female with a standard IndE accent, and a male and a female who spoke with a Marathi variant of IndE, recording a reading and structured narration task. Three experienced speech-language pathologists assessed the recordings using a seven-point accent rating system to determine the influence of Marathi accent. The scale, validated by prior research, ranged from 1 ("no accent") to 7 ("extremely accented").

A bipolar adjectival scale was developed consisting of two parts: one evaluating speakers' personality characteristics and the other evaluating speakers' speech quality. Based on literature reviews, 47 adjective pairs were included in Part I and 29 pairs in Part II. The scale was refined with input from two judges, an SLP and a psychologist with over 10 years of experience, leading to a final version with nine adjectival pairs in each part.

40 males (mean age = 21.8 years; SD = 2.2) and 40 age matched females (mean age = 22.3 years; SD = 2.5) aged 18 to 31 years participated as listeners with their informed consent. Listeners were proficient in English, had been urban Maharashtra residents for at least one year. They had been educated up to grade 12. None of the listeners reported any known hearing, language, or speech problems, or diagnosed neurological or psychological issues.

Participants were given a rating sheet featuring the bipolar adjectival scale, with clear instructions on how to complete it for each of the four audio recordings.

**Results & Discussion:**

Wilcoxon signed ranks tests revealed that male listeners perceived male speakers with a standard Indian English (IndE) accent more positively than those with a Marathi variant of IndE. These results were statistically significant for most of the adjective pairs ( $p < 0.05$ ), except for the friendly-authoritative pair ( $p = 0.08$ ), where no significant bias was observed. This lack of bias could be attributed to the increased familiarity of the male listeners with the Marathi accent, as they were all residents of Pune or urban Maharashtra. Familiarity with a regional accent can reduce cognitive load and lessen negative stereotypes, aligning with

psycholinguistic theories that suggest increased exposure to a particular accent can mitigate accent bias (Schwarz et al., 2004)

However, male listeners exhibited a positive bias towards female speakers with a standard IndE accent for most adjective pairs, though this bias was less pronounced than with male speakers. The statistically significant findings for fewer attributes suggest that gender stereotypes may influence accent perception differently for male and female speakers. This aligns with studies that show female speakers tend to receive fewer biases on accent ratings (Thompson, 1991), which may explain the relatively neutral perception of female speakers with a Marathi variant of IndE by male listeners.

A statistically significant preference was observed among female listeners for male speakers with a standard IndE accent over those with a Marathi variant. The consistent bias observed across both speakers' characteristics and speech-related adjective pairs suggests that female listeners strongly associate the standard IndE accent with higher status and competence. This finding supports the general trend where standard accents are perceived more positively, potentially due to their association with higher socio-economic status and education levels (Kachru, 1994). The influence of social identity theory may explain why female listeners favor standard accents as they align with the dominant social group's positive identity (Tajfel & Turner, 1970).

Female listeners also showed a statistically significant preference for female speakers with a standard IndE accent, except for the committed-indifferent adjective pair ( $p = 0.126$ ), where no significant bias was observed. This suggests that while female listeners generally favour the standard accent, certain attributes, like perceived commitment, may require more than just auditory cues, such as visual information or speech content, to form a judgment. This finding highlights the complexity of accent perception and the potential role of non-auditory factors in evaluating certain personality traits, especially in female speakers.

### **Summary & Conclusion:**

The preference for a standard IndE accent over regional variants like the Marathi accent underscores the deep-rooted biases that exist within society. These biases can have significant implications, particularly in professional and social settings where speech and accent play a crucial role in how individuals are perceived and judged. This bias could disadvantage individuals living and working in urban areas who speak in a regional accent, particularly in environments where a standard IndE accent is expected or valued. For female speakers, the smaller gap in ratings between the two accents suggests that women may face less severe



judgments based on their accent. However, the consistent preference among female listeners for the standard IndE accent indicates that societal expectations regarding speech may still influence perceptions. The findings suggest a need for increased awareness and education around accent bias, emphasizing the importance of evaluating individuals based on their abilities and not their accent.

**Cognition and Health-Related Quality of Life Issues in Geriatrics  
Perceived Dysphagia: A Study**

*Arun Banik*

**Vinayaka Mission's Research Foundation Deemed to be University, Pondicherry**

**Introduction:**

The increasing aging population worldwide is one of the main issues of today. According to the 2011 census, there were 103 million senior citizen i.e about 8.6% of the India's population. According to data from the U. N Department of Economic and Social Affairs (UNDESA), the proportion of people over 60 will increase from 7.5% in 2010 to 11.1% in 2025. The NSSO 2002 report, the old population is expected to increase to 158.7 million by 2025, rising at a rate that is roughly twice as fast as the general population associated with Perceived Dysphagia, Cognition and Health-Related Quality of Life in Geriatrics populations.

**Need for Study:**

Dysphagia is becomes an important common problem for the geriatric population. While Presbyphagia is a term that refers to the distinctive age-related changes that occur in the swallowing mechanism of otherwise healthy older adults. It is well defined that in acutely ill elderly populations, the prevalence and quality-of-life changes associated with dysphagia remain unstable poor health conditions. The present study attempt “To investigate on Cognition and Health-Related Quality of Life Issues in Geriatrics Perceived Dysphagia”.

**Aim & Objectives:**

**Aim of the study**

The study aimed to investigate the prevalence of perceived dysphagia concerning cognition and health-related quality of life in geriatrics. OBJECTIVES OF THE STUDY

1. To define the prevalence of perceived dysphagia in the geriatric community.
2. To define the quality-of-life changes associated with perceived dysphagia in the geriatric population.
3. To compare the impact of changes in cognition with normal aging on dysphagia.

**Method:**

A total of 300 participants were included in the study. The participants within the study were all inhabitants of Pondicherry. The individual with geriatric inclusion was 70 years old and above at the time of participation. Two validated questionnaires were used namely the M.D. Anderson Dysphagia Inventory (MDADI) and the general health Short Form-12 survey (SF-12v2) was administered to assess the impact of dysphagia-age related aspects on overall health. Both the questionnaires were self-administered and widely used in assessing cognitive function among the elderly, it includes orientation, attention, memory, language, and visuospatial skills.

**Results & Discussion:**

The study outcome concluded that there is a relatively high prevalence of dysphagia in the community-based geriatric population; significant quality-of-life impairment is a frequent finding. General health measures do not appear to be sensitive to swallowing-related quality of life but finally, individuals may inaccurately ascribe swallowing problems to normal aging, supporting the role of community education about dysphagia in the elderly.

**Summary & Conclusion:**

In conclusion, Dysphagia is an important problem for the elderly population. It is well characterized in acutely ill geriatric populations, the prevalence and quality-of-life changes associated with dysphagia remain poorly defined in the community. There is a relatively high prevalence of dysphagia in the community-based geriatric population with a significant quality-of-life impairment frequently occurring in life. The general health measures do not appear to be sensitive to swallowing-related quality of life. However, individuals may inaccurately ascribe swallowing problems to normal aging, supporting the role of community education about dysphagia in the aging population.

**Benefits of Skinner's analysis of language in assessment and treatment of children with autism – 3 case studies**

*Radhika Poovayya*

**Samvaad Institute of Speech and Hearing**

**Introduction:**

Diagnosis of autism is based on presence of deficits in three areas, communication, socialization and creative play. Language development is not only delayed but atypical for children on the spectrum (Luyster, Lopez, & Lord, 2007). They do not develop pointing and instead pull parents towards items of interest, some may remain nonverbal (Rice, Warren, & Betz, 2005)

There is a need for evidence-based therapies that can improve this atypical development as poor communication skills result in behaviour problems and these behaviour problems make inclusion difficult (Brady, Mc-Dougall, & Dennis, 1989). Therapy using applied behaviour approach (ABA) has been proven to be effective in reducing problem behaviour and improving communication and fostering inclusion (Lovaas et al 1987 Maurice ,1993, Satcher, 1999,Larsson ,2013,)

An important component of an ABA approach is the use of Skinner's analysis of language as the framework to improve communication deficits. Skinner wrote his book on verbal behaviour in 1954, but it was only in the 1990s that research articles were published using the verbal operants as a base for teaching language. (Sundberg, J Michael 2001, RA Sautter, LA LeBlanc 2006).

**Need for Study:**

ABA has been well accepted as an evidence-based approach for children with autism spectrum disorder (ASD) in the developed countries, however, there is no research in the Indian context that documents the efficacy of ABA approach to improve communication skills in children with autism. This study attempts to demonstrate the benefits of using Skinner's verbal operants and ABA principles to improve communication in three children with ASD.

**Aim & Objectives:**

To demonstrate the benefits of using Skinner's analysis of language in improving communication skills of 3 children with autism in a period of 6 months

**Method:**

A retrospective descriptive study was conducted with 3 children diagnosed with. Their age range was 3.5 years to 5.5 years. Pre and post therapy scores were taken from the files. (date of initiation of target and date of acquisition of the target had been entered in the files). Pre and post therapy assessment was conducted for all the children using the ABA language assessment protocol, Verbal Behaviour of Milestone assessment and placement program (VBMAPP) (Sundberg 2008). This protocol is based on B. F Skinner's (1957) analysis of verbal behaviour. This test checks 4 operants, or aspects of expressive language- mand (words used as a request), tact (words used to label) intraverbal (answering questions without visual support) and echoic (speech imitation) The results are obtained by a combination of interview and direct observations. The milestones assessment is divided into three developmental levels 0-18, 18-30 and 30-48 months

All the participants received one hour of ABA therapy on a schedule of 5 days a week for 6 months. (Approximately 100 to 120 hours of therapy) Targets were taken monthly and progress monitored closely. Parents were included in the session and trained in the procedures. Data collection- Pre therapy

Participant 1 - C was a 3.5-year-old child with ASD. On the VBMAPP, C did not get a score in the mand section, as he could not use words as a request. In the tacts, he got a score of 16 to 18 months as he had about 20 items that he could label. In the intraverbal section, he didn't get a score. In the echoic section he got a score of 18 months as he could echo single words.

Participant 2- M, was a 5 year old boy who was diagnosed with ASD. He got a score of 22 to 24 months in mands as he could ask for items and request for actions from others. No score was given in the tact section, intraverbal and echoic section, as he could not answer any questions.

Participant 3 - V was a 5-year-old boy who had a diagnosis of ASD. He got a score of 22 to 24 months in mands as he could use two words phrases for his needs. In tacts, he got a score of 22 to 24 months as he could label nouns and verbs, colour, shapes in 2-word phrases. He got a score of 22 to 24 months in echoic also as he could echo 2-word phrases. No score was given in Intraverbals as he could not answer any question without the presentation of a picture.

6 month- Post therapy

Participant 1- C improved his ability to use words as a request and got a score of 22 to 24 months in that subsection. His score in tacts improve to 30 months and he could label approximately 250 nouns and verbs. He also could label using 2-word phrase. His score in

echoic improved to 22 to 24 months and in Intraverbal he got a score of 22 to 24 months as he could answer personal question and do fill in of phrases.

Participant 2 - M showed progress in tacts with a score of 26 to 28 months. And mands improved to 28 to 30 months. In intraverbal and echoic his score improved to 22 to 24 months

Participant 3 - V showed improvement in all the subtests that he had got a score in pre therapy assessment. He did not get a score in subtest of Intraverbal, in this he improved to 28 to 30 months

Therapy was planned using the therapy strategies of transfer trial, effortless teaching, prompt and prompt fade techniques. A variable reinforcement schedule was used to improve and sustain motivation to respond.

### **Results & Discussion:**

The results showed a significant improvement in all operants of expressive language after 6 months of ABA therapy based on skinner's verbal operants. All participant had good scores in one operant and less score in other operants. This uneven development was a barrier for their social communication. Post therapy, scores improved in all the operants. Improving skills in all the operants are possible by using ABA teaching strategies and results were achieved in a relatively short period of time.

All participants could use a word in all contexts, ask for their needs, and answer what questions with and without picture prompt.

### **Summary & Conclusion:**

The goal of intervention for children with autism is the improve their communication skills to enable academic success. Children with autism have difficulty in learning to use words in all contexts and this causes them to have behaviour problems. The ABA approach using Skinners' analysis of language has significant advantages in assessment and treatment as shown in this study.

**From Diagnosis to Therapy: Unraveling Speech and Swallowing  
Characteristics of Mixed Hyperkinetic- Hypokinetic Dysarthria  
- A Comprehensive Case study**

*Isha Wosti*

**Green Pastures Hospital and Rehabilitation Centre**

**Introduction:**

Dysarthria is a Motor Speech Disorder (MSD) that encompasses various speech disorders arising from lesions in either the central nervous system (CNS) or the peripheral nervous system (PNS), which disrupt the muscular coordination of the speech mechanism. Hyperkinetic and Hypokinetic dysarthria represent specific categories of Motor Speech Disorders (MSDs) stemming from abnormal activity, pathologies, or lesions within the cortico-basal ganglia-thalamocortical pathway. Hyperkinetic disorders result in abnormal, rhythmic irregular, unpredictable, rapid, or slow involuntary movements that affect speech production. In contrast, hypokinetic disorders cause rigidity and reduce force and range of movement, thus affecting speech.

**Need for Study:**

Hyperkinetic-hypokinetic mixed dysarthria is a rare type of dysarthria. This combination of dysarthria accounted for 3% of all mixed dysarthria cases in a study of 300 patients with mixed dysarthria (Duffy, 2013). There are only 2 articles on hyper-hypokinetic mixed dysarthria. They outline the objective speech assessment findings in this clinical group; however, no documented case studies report

hyper-hypokinetic dysarthria's assessment and management process. This case report provides a clear guideline for differential diagnosis, and treatment planning, and offers a framework for developing a comprehensive management program tailored to improving both speech and swallowing functions in individuals with adult-onset extrapyramidal disorders. the findings of this study will be useful for future research as well.

**Aim & Objectives:**

This study aims to obtain the speech and swallowing profile of a patient with adult-onset extrapyramidal movement disorder and highlight the assessment and management process.

**Objectives:**

1. To assess the speech parameters using perceptual and objective assessments and characterize the parameters to reach the diagnostic conclusion of Hyper-hypokinetic mixed dysarthria.
2. To evaluate the swallowing function of the patient.
3. To determine the life effects of the problem faced by the patient using the ICF framework.
4. To develop a management program for speech and swallowing function.
5. To determine the effectiveness of therapy by re-assessment.

**Method:**

It is a single case study based on the largest tertiary hospital in Nepal- Tribhuvan University Teaching Hospital (TUTH). A 38-year-old male affected with adult-onset movement (extrapyramidal) disorder with neurogenic muscle atrophy visited Tribhuvan University Teaching Hospital with the clinical indications of slurred speech, difficulty swallowing and chewing, drooling, weight loss, imbalanced walking, muscle atrophy, and gross involuntary choreiform movement of hand and leg for 5 years. Colorado Motor Speech Framework (CMSF) (Dunne-Platero, 2023) was used to diagnose hyperkinetic-hypokinetic mixed dysarthria. Findings revealed 16 characteristics corresponding to hypokinetic dysarthria and 8 characteristics corresponding to hyperkinetic dysarthria. All speech subsystems were affected. The speech therapy was done following the hierarchy of motor speech treatment, targeting various motor speech bases in the hierarchy of respiratory and resonance rehabilitation, followed by phonatory, articulatory, and prosodic therapy. Comprehensive Assessment Protocol for Swallowing (CAPS) was used for swallowing evaluation. Severe oral phase dysphagia was managed using rehabilitative, compensatory, and modified diet approaches.

**Results & Discussion:**

The patient exhibited improvements across all motor speech bases, including enhanced respiratory support and resonance during speech, improved prosody, greater articulatory precision, and vocal stability. There was improvement in self-reported measures, speech intelligibility, naturalness, and communicative efficacy. The severe oral phase dysphagia was persistent and several swallowing maneuvers and compensatory strategies were trialed.



**Summary & Conclusion:**

The study underscores the benefits of speech-language therapy in dysarthria and suggests that appropriate therapeutic interventions can yield benefits even years after the onset of dysarthria and dysphagia. The study provides a comprehensive framework for assessment and management of hyperkinetic-hypokinetic mixed dysarthria.

## Review on Electroglottography and Acoustic Characteristics of Singers

### Presenting Occasional Vocal Dysphonia

*Prema Devi & Venkatraman Prusty*

pt. JNM Medical college, Raipur, Chattishgarh

#### **Introduction:**

The vocal health and voice management of professional voice users has gained increasing interest in recent years, and they are considered to be at risk of developing voice problems that affect their vocal performance. Often, singers make many mistakes during their vocal training and performance routines and generally have an improper breathing pattern while singing. Vocal cord pathologies may not be evident at the onset but often include symptoms such as a raspy, hoarse, low, or breathy voice or trouble swallowing or coughing. Sometimes inadequate acoustics, background noise, and vocal rest time can indirectly affect the voice, with the most common sign of occasional Dysphonia. The prevalence of Dysphonia is about 3%-9% in the general population<sup>5</sup> and is more common in females and in elite vocal performers and professional voice users, ranging from 27% to 80%, irrespective of their years of practice.

The severity of dysphonia as perceptually evaluated, did not find a significant association between these parameters to pathological voices. Many authors reported mild to moderate dysphonia in Singers with no perceptual deficit in voice. However, presented clear signs of acoustic parameters. In the present study, these acoustic parameters were correlated to the vibrational patterns of the vocal folds measured indirectly by Electroglottography (EGG), focusing on the glottic cycle. Both Acoustic analysis of voice in multi-dimensional Voiceprofile (MDVP) and electroglottography (EGG) have been used for assessing vocal quality in all participants to detect mild disturbances in vocal quality.

#### **Need for Study:**

The present study reviews solely the perceptual vocal characteristics of Professional Singers to their acoustic vocal measures on Acoustic Vocal analysis of MDVP and EEG parameters. This study investigates the acoustic voice characteristics in MDVP to the vocal approximation in EGG among professional singers.

#### **Aim & Objectives:**

The present study aims to evaluate the acoustic characteristic of voice in terms of MDVP

measures to vocal contact measures in EGG parameters to differentiate vocal fold vibratory characteristics between trained singers.

Also aims to correlate the parameters of vocal acoustics to vocal contact in terms of complaints of Dysphonia.

### **Method:**

This study is a descriptive and analytical study that included a total of 10 subjects, aged between 30-40 years, with equal gender distribution were taken for the study. [mean age = 32.74 years, standard deviation (SD) = 6.9 for male Group and mean age = 34.16 years, SD = 5.3) for female Group. All the participants were screened for a history of voice problems for the last 3 months, along with other medical problems, if any. There were no laryngeal structural problems and no respiratory tract infections during the assessment procedures. Consent and perceptual voice evaluation were sought prior to objective evaluation. Computer Speech Lab System (CSL 4500-D) was used for this study using the MDVP and EGG parameters for all the selected participants. The recording was done with the Mic to Mouth distance of 10cm on the phonation with 3-5 sec time for MDVP and 10-15 sec time for EGG.

### **Procedure**

A brief set of questionnaires was administered on the participant's vocal health, then proceeded to a formal perceptual assessment with known reliability and validity. Proceeding to the objective measurement, CSL 4500D (Key PENTEX) is used for MDVP (multidimensional voice profile) measures and EGG (Electroglottography). All the participants were explained about this test and were asked to phonate /a/ comfortably as long as possible; analysis was done for 3 seconds and 10 sec, respectively as window time, settled on a comfortable chair, with a mike positioned to mouth fixed at a distance of 10cm. The acoustic parameters of MDVP to Vocal contact Parameters of EGG were marked for the analysis. All the procedure for sample collection was carried out within a clinical session of 30-45 minutes.

### **Results & Discussion:**

Data analysis was done using Statistical Package (SPSS) version 16. The descriptive measures were mean and standard deviation for the Groups. Nonsignificant differences ( $P > 0.05$ ) were found between values of fundamental frequency (F0), shimmer, and jitter obtained by both procedures. Shimmer percentage, as measured by MDVP, demonstrated a significant difference from that of EGG. As measured by EGG, the open quotient was significantly increased in singers ( $P < 0.05$ ), and irregularity was observed as a double-reducing peak, presenting pressed

vocal contact in singers. ( $P < 0.05$ ). the EGG curves of all participants were significantly presented increased vocal closure and with pressed vocal function in only females.

### **Summary & Conclusion:**

Voice disorders are prevalent in specific occupational groups and some issues go unnoticed as singers may experience occasional dysphonia with over performances and there is an urgent need for research to support their voice health and risk measurement, prevention and intervention. From this study, the Objective assessment should be implemented as a routine tool for voice quality in singers, which can detect early voice problems irrespective of the apparent normal appearance.

Though training in singers can improve vocal stability for tonal modulation, persistent usage increases vocal load can be unheeded without any obvious sign on the vocal ligament. This can be taken care of with this objective assessment tool as Vocal contact measures as a mandatory task for all professionals.

The present study revealed acoustic characteristics on MDVP and vocal contact phases in EGG, which were effective for detecting vocal function in elite vocal performers. EGG demonstrated better efficacy for detecting minor vocal issues with additional parameters of contact quotient and contact periods as compared to Acoustic measures of MDVP. Although EGG was more efficient for detecting acoustic disturbances in singers' vocal assessment, both procedures need to be considered as complementary tasks to present vocal fundamental measures in terms of contact quotient assessment of voice in elite vocal performers.

## Effects of Gender-Affirming Hormone Therapy and Surgery on Voice Acoustics and Quality of Life in Transgender Women in India

*Sonam Sharma, Tanu Bharti, Sudhanshu Vikas & Shushil Raj*

AYJNISHD, NRC, NOIDA

### **Introduction:**

Voice plays a crucial role in expression of gender, particularly among the transgender women, as it significantly influences the alignment between one's voice and gender identity. Achieving a voice that reflects one's gender identity can enhance psychological well-being and overall quality of life (Schmidt et al., 2018; T'Sjoen et al., 2006). Mismatches of voice and perceived gender can lead to substantial distress, prompting many transgender women to seek gender-affirming hormone therapy (GAHT) and gender-affirming surgery (GAS) as part of their transition process (Schmidt et al., 2018).

### **Need for Study:**

Research has delved into the acoustic characteristics of transgender women's voices, particularly focusing on fundamental frequency (F0) and its correlation with perceptions of femininity (Schwarz et al., 2018; Schmidt et al., 2018), there is a paucity of studies exploring the specific effects of GAHT and GAS on voice acoustics and quality of life, especially in culturally diverse settings like India.

### **Aim & Objectives:**

This study aims to investigate the acoustic changes in transgender women's voices following GAHT and/or GAS and examining their correlation with self-reported voice-related quality of life.

The objectives of the study are:

1. To analyze the acoustic characteristics of transgender women's voices in India, stratified by GAHT/GAS status, focusing on F0, formant frequencies, and standard deviation of F0.
2. To examine the relationship between acoustic features and self-reported voice-related quality of life among transgender women who have undergone different gender-affirming medical interventions.

**Method:**

The study utilized a cross-sectional design to explore the relationship between gender-affirming treatments and voice acoustics/voice-related quality of life in transgender women in India. 48 transgender women were recruited from local LGBTQ+ organizations and NGOs in Delhi. Inclusion criteria consist identification as a transgender woman, ages 18 to 55, native Hindi speakers, and consent to provide voice samples and answering questionnaire. Participants were grouped based on their medical intervention history thus categorise into three groups - those who had both GAHT and GAS (n =12), those who had only GAHT (n=16) and a control group with no interventions (n=23).

The voice samples were recorded in a sound-treated room, where participants sustained the phonation of vowel /a/ for 5 seconds and read a standardized Hindi passage. Acoustic analysis was done using Praat software, focusing on parameters such as fundamental frequency (F0) and formant frequencies. The Voice Handicap Index-10 (VHI-10) assessed self-perceived voice-related quality of life.

Data collection involved administering the VHI-10 questionnaire followed by voice recordings. A trained phonetician, blinded to group assignments, conducted the acoustic analysis. Descriptive statistics were calculated for acoustic parameters and VHI-10 scores. One-way ANOVAs compared groups on these measures, while Pearson correlation coefficients examined relationships between acoustic features and VHI-10 scores, with significance set at  $p < .05$ .

**Results & Discussion:****Results**

Fundamental Frequency (F0) results showed that the GAHT + GAS group had the highest average F0 (210 Hz, SD = 25), followed by the GAHT only group (180 Hz, SD = 20), and the control group (120 Hz, SD = 15). These differences were statistically significant ( $F = 45.23$ ,  $p < .001$ ), with the GAHT + GAS group exhibiting significantly higher F0 values than both the GAHT only ( $p < .001$ ) and control groups ( $p < .001$ ). The GAHT only group also demonstrated a significantly higher F0 than the control group ( $p < .001$ ).

Formant Frequencies (F1-F4) indicated significant differences for F1 and F2. The GAHT + GAS group had lower F1 (450 Hz, SD = 50) and F2 (1100 Hz, SD = 100) compared to the control group (F1: 550 Hz, SD = 55; F2: 1300 Hz, SD = 110), suggesting a shift toward formant patterns typical of cisgender women (F1:  $F = 6.78$ ,  $p < .01$ ; F2:  $F = 4.25$ ,  $p < .05$ ). No significant differences were noted for F3 or F4.

Voice-Related Quality of Life was assessed using the Voice Handicap Index-10 (VHI-10), revealing that the GAHT + GAS group reported significantly better scores (15, SD = 5) than the control group (25, SD = 7;  $p < .05$ ). However, no significant differences were found between the GAHT only group (20, SD = 6) and the control or GAHT + GAS groups.

Correlation Analysis revealed a non-linear relationship between F0 and VHI-10 scores, indicating an optimal F0 range for voice-related quality of life, while no other significant correlations were identified between acoustic measures and VHI-10 scores.

## **Discussion**

This study investigated the effects of GAHT/GAS on voice acoustics and voice-related quality of life in transgender women in India. Transgender women who had undergone GAHT, particularly those who also had GAS, exhibited significantly higher F0 values compared to the control group. This result aligns with existing literature demonstrating the feminizing effects of GAHT on voice acoustics (T'Sjoen et al., 2006; Schwarz et al., 2018). However, the relationship between F0 and voice-related quality of life, as measured by the VHI-10, was more complex than anticipated. Participants with mid-range F0 values reported higher quality of life, whereas those with very high F0 values experienced lower satisfaction. This suggests that simply achieving a higher F0 may not suffice for optimal voice-related well-being.

Furthermore, our analysis of formant frequencies revealed significant differences among the groups. Transgender women who underwent GAHT/GAS exhibited shifts in formant frequencies, particularly F1 and F2, towards patterns typical of cisgender women. These findings corroborate previous studies (Schwarz et al., 2018), indicating that hormonal and surgical interventions can induce changes in vocal tract resonance, contributing to voice feminization. However, the link between formant frequencies and voice-related quality of life remains less clear and warrants further exploration.

## **Summary & Conclusion:**

GAHT/GAS can induce acoustic changes towards a more feminized voice profile, these changes do not always directly translate to improved voice-related quality of life. Factors beyond achieving a higher F0, such as voice naturalness and communicative effectiveness, play significant roles in individuals' perceptions of their voices. A holistic approach to voice feminization, incorporating comprehensive voice training alongside medical interventions, may be more beneficial in enhancing voice-related well-being. Further research, particularly longitudinal studies with diverse samples, is necessary to explore these interactions and

develop more effective, individualized voice feminization strategies.



## Expanding the Reach of Speech Therapy

*Rakshitha S*

### XceptionalLEARNING

#### **Introduction:**

With the increasing demand for speech therapy services globally and the growing challenges of accessibility in underserved regions, technology-integrated solutions have emerged as a critical mode of care. The global pandemic catalyzed the adoption of online therapy, revealing its potential to transform speech-language pathology (SLP) services from conventional to online. This study investigates the effectiveness of hygienic digital practices to expand the reach of speech therapy in diverse populations across different geographic regions. The study also highlights the benefits of hygienic digital practices for patients with mild, moderate, and severe categories of speech disorders.

#### **Need for Study:**

While digital speech therapy has seen rapid growth, there is limited empirical evidence on its long-term effectiveness compared to traditional, in-person sessions, particularly in diverse cultural and socio-economic contexts. Understanding its efficacy, patient satisfaction, and limitations in global contexts is crucial to shaping future healthcare policies and interventions in speech therapy, especially considering the need to optimize treatment for various severity levels and preferences of caregivers, particularly parents of children with special needs (CWSN).

#### **Aim & Objectives:**

The study aimed to assess the efficacy of digital speech therapy in improving speech outcomes, patient engagement, and satisfaction across different age groups, cultural contexts, and severity categories. The key objectives were to:

1. Evaluate the therapeutic outcomes of hygienic digital speech therapy practice, particularly for patients in mild moderate, and severe categories, compared to in-person sessions.
2. Examine the accessibility, acceptance, and benefits of hygienic digital practices in speech therapy, particularly for patients with mobility restrictions and school-going children who cannot regularly visit clinics.

3. Identify challenges and barriers experienced by both patients and therapists during digital sessions, including the quality of session delivery, cross-cultural considerations, and technological constraints.
4. Assess the effectiveness of digital practices enhancing transparency and home training programs provided to patients to ensure continuity of care outside formal sessions.
5. Analyze the impact of culturally sensitive materials custom-created to suit cultural contexts, allowing therapists to meet the cultural needs of patients from diverse backgrounds.
6. Evaluate the improvement in involvement of caretakers in enhancing the effectiveness and outcomes of speech therapy sessions, by improving follow-through and engagement at home.

**Method:**

This cross-sectional study involved 54 patients with more than 2000 sessions from 6 countries, including India and 5 Asian countries, receiving hygienic digital speech therapy over 3 years. Participants included both pediatric and adult patients with varying severity of speech-language disorders like articulation, fluency, phonology, delayed speech, and neuro-motor disorders. A controlled group received in-person speech therapy, while the experimental group underwent therapy via telepractice. Standardized assessment tools (e.g., the Goldman-Fristoe Test of Articulation, CELF-5) were used to measure improvements. Data on patient satisfaction and engagement were collected through structured surveys and therapist feedback.

**Results & Discussion:**

Results indicated that 90% of the mild category patients in the teletherapy group showed rapid improvement in speech outcomes, whereas 70% of the moderate category and 30% of the severe category reported significant therapy outcomes. Patients in the moderate and severe categories of disorders required tactile intervention and conventional in-person therapy proved to be more effective. One of the key advantages of teletherapy is the reduction of absenteeism, as online sessions create regularity and consistency in treatment. Additionally, patients with mobility issues and school-going children benefited from the convenience and flexibility of online sessions. The enhanced transparency, given the hygienic digital practice of speech therapy, facilitated caretaker and parental awareness as understood from the survey and their involvement substantially improved the maintenance of progress over time. A significant advantage observed in the surveys was the impact of culturally relevant digital materials and

instructions made possible by hygienic digital practice, wherein 98% of the the population reported satisfaction with the intervention received for this reason. However, a crucial factor affecting the success of digital speech therapy is the quality of the session. Many professionals struggle to create engaging and interactive online sessions due to a lack of familiarity with digital tools and resources. Connectivity issues and technological challenges, particularly in rural areas, also hindered patient engagement.

### **Summary & Conclusion:**

The study demonstrates that hygienic digital speech therapy can be highly effective for treating patients at various levels for different categories in speech disorders. For patients with severe disorders requiring tactile feedback or more intensive intervention, traditional in-person therapy remains the preferred method.

Digital therapy offers significant advantages in terms of reducing absenteeism and ensuring continuity of care, making it an invaluable tool for patients with mobility issues and those unable to visit clinics regularly. Cross-cultural competence is found to be enhanced with hygienic digital practice. as therapists must navigate diverse cultural preferences and expectations. However, the success of online sessions depends heavily on the quality of digital interaction, requiring therapists to improve their digital literacy and engagement techniques. Also, digital practitioners need to consider taxation and statutory compliance in different regions when practicing online.

**The immediate effect of incentive spirometry on voice quality changes  
among speech language pathologists**

*Ruchi Bhandari, Riya Raj & Vishwadeep Singh*

**Amity University Haryana**

**Introduction:**

Speech language pathologists (SLPs) are specialists in the field of communication disorders who assess and treat people who have problems with their speech, language, voice, or swallowing. They in particular, work with people whose communication is impaired, ranging from newborns to those nearing the end of their lives. SLPs rely on their voice to provide services to individuals, and their days are frequently long and exhausting (ASHA, 2020).

Vocal demand, also known as vocal loading, is a term that has been described as, “greater than usual phonatory activity and durations” (Phyland, 2017, p. 80). It is often used interchangeably with the term vocal load, which differs from vocal loading. Hunter et al., (2020) reported that vocal loading has consistently correlated with a decrease in vocal quality and limitation of job performance. SLPs are trained in vocal hygiene and voice care, but many SLPs are at risk of developing voice deficits as a result of overuse and poor vocal hygiene. SLPs may experience vocal loading, or overuse of the vocal folds, as a result of strenuous days filled with constant voice use, resulting in a voice disorder, or dysphonia (Sapienza & Hoffman-Ruddy, 2018). Because of a lack of extensive knowledge of proper vocal habits and a reduced ability to identify symptoms of voice disorders in themselves, young SLPs are more vulnerable to these voice disorders (Joseph et al., 2018). Without the proper knowledge and practice of healthy vocal behaviours, young SLPs can become prone to extensive damage to their voices and could impact their ability to provide adequate therapy services to their clients. Continued improper use of their voices may cause premature retirement and voice issues that may require surgery if not properly addressed (Joseph et al, 2018). Voice disorders resulting from improper use or poor vocal hygiene can significantly impact job performance as well as quality of life at home. Integrating breathing exercises, particularly through incentive spirometry, with voice therapy significantly enhances aerodynamic parameters by improving lung capacities and phonatory function. A study by Bárbara Pereira Lopes et al. (2023) investigated the immediate effects of incentive spirometry on women with healthy voices. The findings revealed a notable reduction in jitter, shimmer, and the period perturbation quotient (PPQ), alongside an increase in

maximum expiratory volume. Additionally, vocal quality improved for approximately 36.4% of participants.

Given these promising outcomes, it is crucial to evaluate whether performing incentive spirometry can effectively preserve and restore voice quality in speech-language pathologists following therapy sessions. By using incentive spirometry, SLPs may enhance their vocal health, mitigate fatigue, and improve their overall effectiveness in providing speech and language services.

### **Need for Study:**

Speech therapist are much vulnerable to change in voice quality due to continuous demand of vocal effort during therapy sessions.

Therefore there is need to check immediate effect of voice restoration therapy technique that can have positive effect on voice quality. Given the continuous vocal demands placed on SLPs, it is essential to explore effective voice restoration techniques. This study investigates the immediate effects of incentive spirometry on voice quality, aiming to assess its clinical significance for SLPs at different career stages.

### **Aim & Objectives:**

The aim of this study is to investigate the immediate effects of incentive spirometry on the voice quality changes among speech language Pathologists.

### **Objectives**

1. To compare vocal loading among early career versus late-career speech-language pathologists (SLPs).
2. To compare the immediate effect of incentive spirometry on vocal changes in early career versus late-career speech-language pathologists (SLPs).
3. To evaluate immediate effect of incentive spirometry on acoustic aerodynamic,, and perceptual parameters of voice qualities in both early and late-career SLPs.

### **Method:**

Total 26 healthy participants in the age range 18-30 years [Mean Age-20 years]] were included in this study. Individual with recent upper respiratory tract infections, history of hoarseness, early menopause, or Hypothyroidism under medications for asthma/systemic illnesses, trained singers and individuals with known history of voice problems were excluded. A written informed consent was obtained from all the Participants and the ethical clearance for the study

was obtained from Amity Institutional ethics committee. The participants were categorized into two groups: 13 early-career SLPs, who recently joined the Speech-Language Pathology program, and 13 later-career SLPs, who are enrolled in the Master's program in Speech-Language Pathology. A Baseline voice samples were recorded in a sound-treated room using Praat software, with a sampling rate of 44.1 kHz and 16-bit quantization. For the objective voice assessment, participants were instructed to sustain the vowel sound /a/ for as long as possible at a comfortable pitch and intensity. A microphone was positioned 5 cm from their mouths, and a stopwatch was used to measure the Maximum Phonation Time (MPT) for each participant. The device was used in the orthostatic position and the participants performed three sets of ten repetitions with a one-minute interval between sets. After Incentive spirometry, A post measurement were performed following baseline procedure. For the auditory perceptual evaluation, Voices before and after incentive spirometry were randomly paired for blind evaluation by experienced speech therapists, who classified them as improved voice, worsened voice, or unchanged in quality without specifying auditory perception parameters, using supra-aural earphones. Data normality was confirmed via Shapiro-Wilk's Test ( $p < 0.01$ ), allowing for the use of paired-sample t-tests to compare pre- and post-treatment acoustic parameters.

### **Results & Discussion:**

In early career students, a significant improvement was observed in several voice parameters following intervention. Specifically, comparisons of pre- and post-test scores revealed notable differences in fundamental frequency ( $t(12) = -3.434$ ,  $p = 0.005$ ), maximum fundamental frequency ( $t(12) = -3.999$ ,  $p = 0.002$ ), and minimum fundamental frequency ( $t(12) = -4.683$ ,  $p = 0.001$ ). However, no statistically significant changes were found in jitter, shimmer, or Noise-to-Harmonics Ratio (NHR), with p-values exceeding 0.05. Additionally, the maximum phonation duration (MPD) showed significant differences for the vowels /a/ ( $t(12) = -2.930$ ,  $p = 0.01$ ) and /i/ ( $t(12) = -4.153$ ,  $p = 0.001$ ), while the vowel /u/ did not reach significance ( $t(12) = -1.437$ ,  $p = 0.176$ ). Notably, the mean values for vowels /a/ and /i/ increased following the incentive spirometry intervention.

In late career students, significant improvements were also observed in voice parameters. The analysis indicated a significant difference in fundamental frequency ( $t(12) = -4.239$ ,  $p = 0.001$ ) and maximum fundamental frequency ( $t(12) = -2.869$ ,  $p = 0.01$ ), though the minimum fundamental frequency did not reach significance ( $t(12) = -1.760$ ,  $p = 0.104$ ). Furthermore, MPD revealed significant differences for the vowels /a/ ( $t(12) = -2.930$ ,  $p = 0.01$ ), /i/ ( $t(12) = -4.088$ ,  $p = 0.002$ ), and /u/ ( $t(12) = -2.504$ ,  $p = 0.02$ ), with increased mean values noted across

all vowels following the intervention.

In terms of auditory perceptual evaluation among early career SLPs, 38% of early career participants reported improved voice quality post-intervention, while 46% noted no perceptual difference, and 15% indicated worse voice quality. For late career SLPs, 30% reported improved voice quality, 46% observed no difference, and 23% reported a decline in voice quality. These findings suggest variability in perceived voice quality improvements across different experience levels in speech-language pathology.

### **Summary & Conclusion:**

This study highlights the positive effects of incentive spirometry on voice parameters in both early and late career students, showing significant improvements in fundamental frequencies and maximum phonation duration. While jitter, shimmer, and NHR showed no notable changes, the improvements in fundamental frequencies indicate that incentive spirometry can effectively support voice therapy. The intervention appears beneficial for SLPs across experience levels, with many participants reporting enhanced voice quality. However, variability in auditory evaluations suggests the need for further investigation into individual factors affecting perceived voice quality. Future research should explore the mechanisms of these improvements and refine therapeutic strategies for voice rehabilitation.

## Teachers' Vocal Health: Misuse, Lifestyle Factors, and Vocal Hygiene Awareness

*Priya Mishra, Chhavi Tyagi & Jitendra Kumar*

Amity University Haryana

### **Introduction:**

Vocal hygiene awareness programs are designed to educate vocal professionals about the common patterns of voice use, abuse, and misuse, as well as strategies for preventing voice disorders. Teachers, being particularly vulnerable due to prolonged speaking, large class sizes, and high vocal demands, are at increased risk of developing voice problems. Studies indicate that vocal abuse, misuse, overuse, stress, and anxiety contribute to voice issues, with psychological factors often worsening these conditions. (Calas, 1989).

Research has consistently demonstrated that teachers are significantly more prone to voice disorders compared to other professions. According to Smith et al. (1997), teachers are nearly three times more likely to experience voice-related issues. One of the largest epidemiological studies conducted by Roy et al. (1997) found that the prevalence of vocal dysfunction among teachers was 11.0%, compared to 6.2% in other professions, with a p-value of less than 0.001. These findings highlight the need for targeted vocal hygiene education among teachers to mitigate the risk of developing voice problems.

Vocal hygiene awareness programs have been shown to be effective in improving vocal health among teachers. For instance, a study by Chan (1994) reported that kindergarten teachers who implemented specific vocal hygiene strategies saw notable improvements in their vocal health. Similarly, a study conducted by Boominathan et al. (2008) in Chennai demonstrated a 9% increase in teachers' awareness of vocal hygiene issues after participating in a lecture-demonstration program.

Given the high prevalence of voice disorders among teachers and the proven benefits of vocal hygiene programs, integrating these programs into teacher training and professional development is essential. This will not only improve teachers' quality of work but also prevent long-term impairments or disabilities related to voice disorders (Bolbol et al., 2016; Boominathan et al., 2008). This study aims to assess the current level of awareness of vocal hygiene among teachers and identify factors contributing to voice problems within this high-risk population.



**Need for Study:**

Teachers are required to speak for extended periods, often without adequate vocal support, which can lead to voice misuse and strain. Various lifestyle factors can further exacerbate vocal issues. With evidence suggesting that teachers are more susceptible to voice disorders compared to other professionals, there is a critical need to investigate these contributing factors. By understanding the specific challenges teachers face, the study can inform the development of effective vocal hygiene strategies and targeted interventions to promote vocal health and prevent long-term voice problems.

**Aim & Objectives:****Aim:**

To investigate the factors contributing to vocal health issues among teachers and promote effective vocal hygiene strategies to improve their overall vocal health and well-being.

**Objectives:**

1. To assess the prevalence of voice misuse and associated symptoms among teachers.
2. To identify lifestyle factors that contribute to vocal strain and health issues.
3. To evaluate teachers' current awareness of vocal hygiene practices.

**Method:**

A total of 111 participants were included in the study (47 males and 64 females). The inclusion criteria required participants to be teachers with more than one year of experience and to have class durations of at least 40 minutes each. Participants with any psychiatric illnesses or neurological pathologies were excluded from the study. Data collection was conducted using a questionnaire that was validated by five speech-language pathologists with over 10 years of experience. The questionnaire addressed various aspects of vocal behaviours, lifestyle factors, vocal hygiene habits, and awareness. Participants were required to complete the questionnaire in a digital format. Descriptive statistical analysis was conducted to summarize and interpret the data collected from the participants.

**Results & Discussion:**

The prevalence of voice misuse among teachers is concerning, with 12% (four female and one male) reporting persistent hoarseness, and 3% having received a formal diagnosis of a voice disorder. A total of 29% of teachers (23 females and 9 males), experienced a sensation of strain in their throats, which may have implications for their teaching effectiveness. When queried

about voice-related issues, 1% reported frequent occurrences, 14% encountered these issues sometimes, and 56% stated they had never faced such problems. Nineteen percent of teachers sometimes experienced symptoms associated with acid reflux, which can potentially impact vocal quality, and 6% occasionally felt as though they were losing their voice. Perceptions of vocal quality varied, with 25% of teachers noting fluctuations throughout the day, potentially undermining their confidence and classroom performance. Thirty-two percent of participants experienced consistent improvements in vocal quality after resting their voices, while 41% reported occasional benefits, highlighting the critical importance of regular vocal rest in mitigating strain and enhancing overall vocal performance. Among teaching staff, the prevalence was reported to be as high as 57% (Preciado-Lopez et al., 2007). Teachers were found to have a significantly higher prevalence of current voice problems (11.0%) compared to non-teachers (6.2%) (Roy et al., 2004).

The analysis of lifestyle factors revealed that 33% admitted to raising their voices, indicating a heavy reliance on vocal projection during instruction; 91% reported raising their voices when necessary. Extra effort was exerted by 38% to be heard, and 31% experienced shortness of breath while speaking, further exacerbating vocal strain. Noisy environments played a significant role, with 11% frequently and 29% sometimes speaking in such conditions, while only 3% utilized vocal support tools like microphones, particularly in larger or noisier classrooms. Health-related concerns included 19% of teachers reporting gastric problems potentially affecting their voice, 35% suffering from seasonal allergies causing voice disruptions, and 3% experiencing throat dryness linked to medication. The analysis of hydration and dietary habits revealed that 38% consumed soda or other carbonated beverages, 7% consumed alcoholic beverages, and 58% drank only 1-2 liters of water daily, alongside approximately 60% reporting a daily intake of 2-3 cups of coffee.

Teachers' awareness of vocal hygiene practices is evident in their vocal habits, yet there remains significant room for improvement. Vocal rest is crucial for vocal health, with 32% of teachers consistently and 41% occasionally noticing enhancements in vocal quality after resting, indicating that promoting regular vocal rest could alleviate strain and improve performance. The absence of vocal support tools, such as microphones, emphasizes the necessity for better vocal hygiene practices; implementing such tools in noisy or large classrooms could help reduce vocal fatigue and enhance teaching effectiveness. The low hydration levels among teachers highlight another area for improvement, as proper hydration is vital for maintaining optimal vocal health.

**Summary & Conclusion:**

This study highlights the prevalence of voice-related issues among teachers, with a notable percentage reporting persistent hoarseness, vocal strain, and symptoms associated with acid reflux. The findings reveal the critical need for vocal hygiene awareness programs tailored to educators, as many engage in vocal behaviours that exacerbate strain, such as raising their voices in noisy environments and insufficiently utilizing vocal support tools. Lifestyle factors, including inadequate hydration and the consumption of carbonated beverages, further contribute to vocal health problems. Health issues like allergies and gastric problems were prevalent among participants, indicating a complex interplay of factors affecting vocal quality. Promoting effective vocal hygiene strategies and encouraging regular vocal rest can enhance teachers' vocal health and teaching effectiveness, ultimately benefiting their overall well-being and performance in the classroom.

## Investigating the Relationship Between Use of Hemp (Bhang) and Speech Parameters in Adults

*Sarthak Nehra, Manisha Kumari, Prabal Khatri, Swati Sharma & Jitendra Kumar*

**Amity University Haryana**

### **Introduction:**

Hemp (*Cannabis sativa* L.), also known as bhang in India. It has gained significant interest due to its potential positive impacts on human health and nutrition. The plant contains various bioactive compounds, such as cannabinoids (Deguchi et al., 2020). Cannabinoids are a diverse group of compounds that interact with the body's endocannabinoid system (Brownjohn & Ashto, 2012). They influence a wide range of physiological processes, including inflammation, pain perception, and neurological functions (Śledziński et al., 2016). Hemp has been shown to have significant impacts on the human nervous system, primarily through its cannabinoid content. Cannabidiol (CBD), a non-psychoactive cannabinoid found in hemp, has gained attention for its potential therapeutic effects on brain function and neurological disorders (Schouten et al., 2024). CBD and other cannabinoids interact with the endocannabinoid system, which regulates various physiological processes. These compounds have demonstrated potential in treating conditions such as epileptic seizures, psychosis, anxiety, neuropathic pain, and inflammation (Schouten et al., 2024). Cannabinoids have shown promise in managing symptoms of neurodegenerative diseases, including Alzheimer's, Huntington's, and Parkinson's disease (Schouten et al., 2024). It is crucial to note that more research is needed to fully understand the mechanisms of action and long-term effects of these compounds on the nervous system. The use of hemp products should be approached with caution, as the unintentional ingestion of psychoactive cannabinoids can lead to adverse effects on the central nervous system (MeÅ¼nar et al., 2016).

In India, hemp, a preparation made from the leaves and flowers of the cannabis plant, has been used for centuries in traditional and religious ceremonies, especially during several festivals such as Mahashivarathri and Holi. While its psychoactive effects are well documented (Zuardi, 2006), limited research exists on its specific impact on speech. This study seeks to explore how hemp consumption affects elements of speech, such as the rate of speech, speech intelligibility, repetition, pauses, blocks, and speech naturalness. Given cannabis's known effects on cognitive and motor functions (Solowij & Battisti, 2008), it is hypothesized that hemp could lead to

noticeable disruptions in speech patterns.

### **Need for Study:**

With the increasing recreational use of hemp and other cannabis derivatives globally (UNODC, 2021), understanding their impact on cognitive and speech functions becomes critical. While the psychoactive effects of cannabis are well documented, limited research specifically addresses how hemp consumption influences speech parameters such as fluency, intelligibility, and overall naturalness. Although cannabis may affect memory, executive functions, and motor skills (Meier et al., 2012; Volkow et al., 2014), there is a lack of substantial empirical research focusing on how hemp affects speech patterns. This study aims to provide valuable insights into how hemp alters normal speech functions. The findings will enhance public health awareness, enabling consumers to make informed choices about their consumption.

### **Aim & Objectives:**

#### **Aim**

To evaluate the impact of hemp consumption on various speech parameters such as rate of speech, intelligibility, repetition, pauses, blocks, and overall naturalness during and after the acute effects of hemp.

#### **Objectives**

1. Compare speech rate immediately after hemp consumption with that after its effects have dissipated.
2. Assess speech intelligibility during the acute phase of hemp consumption and after its effects cease.
3. Evaluate the frequency and characteristics of speech repetitions under hemp influence and post-consumption.
4. Analyze the duration and frequency of pauses during the acute effects and in the post-consumption phase.
5. Investigate the occurrence and duration of speech blocks during and after hemp effects.
6. Assess the overall naturalness of speech during and after hemp consumption.

### **Method:**

Eight individuals aged 20 to 30 who consumed hemp during a festival were selected for this study. The Rainbow Passage was used to elicit speech samples. Data samples were collected using mobile devices under two conditions: the first set was recorded 4 hours post-hemp

consumption, and the second set was collected one week later, after the acute effects subsided, Data samples were analyzed based on key parameters: rate of speech, speech intelligibility, repetition, pauses, blocks, and overall speech naturalness. The rate of speech was measured in words per minute, and intelligibility was assessed using a standardized scale. Repetitions were evaluated for frequency, and pauses were analyzed for duration. The occurrence and duration of speech blocks were also investigated. Overall speech naturalness was rated on a 9-point scale. A descriptive statistical analysis compared speech parameters between the acute and post-consumption phases.

### **Results & Discussion:**

The analysis of speech parameters revealed interesting findings related to the effects of hemp consumption. Post-hemp, during the acute effects of consumption, the average words per minute (WPM) was recorded at 95, which was a decline from 125 WPM observed one week after consumption. This reduction aligns with the hypothesis that hemp affects cognitive processing speed, leading to slower speech production. In terms of repetition, there was a marked increase in the frequency of word or syllable repetitions during the acute phase of hemp consumption, with an average of 8 instances per minute compared to 2 instances per minute one week after consumption. This change may reflect disruptions in motor control and cognitive flow, as participants struggled to maintain fluidity in their speech. Pauses were observed to be longer and more frequent following hemp consumption, with the average pause duration increasing to 2.8 seconds during the acute phase, up from 1.2 seconds one week post-hemp. This extension in pause duration indicates potential difficulties in processing speech and may suggest hesitations arising from cognitive delays. The occurrence of speech blocks also increased during the acute phase, with average blocks per minute rising to 1.7, compared to 0.5 one week post-hemp. This increase supports the hypothesis that hemp may impair motor functions, manifesting as challenges in initiating or maintaining speech. This finding is consistent with other studies related to cannabis use, which have identified impairments in motor speech control (Solowij & Battisti, 2008). There were no instances of prolongation noted in any participant, either during the acute effects of hemp or one week after consumption. Despite the observed changes in speech parameters, all participants maintained 100% speech intelligibility in both phases, as assessed by the Speech Intelligibility Scale. The speech naturalness was rated at 2.3 during the acute phase and 1 after one week of hemp consumption, which indicates that the participants had a natural speech pattern which deviated slightly due to the impact of hemp. These results suggest that while hemp consumption impacts certain

speech parameters, it does not appear to affect intelligibility.

**Summary & Conclusion:**

This study investigates the impact of hemp consumption on speech parameters in eight adults aged 20 to 30. Analysis of speech samples collected 4 hours post-consumption and one week later revealed a decrease in speech rate from 125 to 95 words per minute during the acute effects of hemp. Participants showed increased word and syllable repetitions (from 2 to 8 instances per minute), longer pauses (1.2 to 2.8 seconds), and more frequent speech blocks (0.5 to 1.7 per minute), indicating disruptions in motor control and cognitive flow. Despite these changes, speech intelligibility remained at 100%, highlighting that clarity is preserved. These findings emphasize the need for further research on cannabis's effects on speech and cognition, providing valuable insights into speech disorders and cognitive impacts associated with hemp use.

## Enhancing Learning Outcomes with the Digital Activity Book for Personalized Therapy

*Kavya S Kumar*

### XceptionalLEARNING

#### **Introduction:**

Traditional learning methods, such as using flashcards, often lack the engagement needed for individuals requiring personalized therapy. In the modern era, therapists have tried using digital medium by replacing conventional tools of therapy and training. While some have tried integrating mobile phones or generic tablet PCs into their sessions, this practice often leads to distractions, as children develop a temptation to use mobile devices for non-therapeutic activities. A specialized tool custom created became necessary to focus on therapeutic learning completely.

#### **Need for Study:**

With the increase in use of digital medium in therapy sessions, a controlled device becomes essential in delivering interactive materials and engaging clients safely. It was important to experiment the Digital Activity Book to ensure that it facilitates continuity and addresses the common issues seen with mobile phone-based learning, such as distractions and screen time concerns. Also, it had to be evaluated of its capacity in facilitating home-training and supporting generalizing the concepts for daily life. This had to be achieved through a medium that wouldn't expose to the risks of accessing other media or overusing screen time.

#### **Aim & Objectives:**

This study aims to explore how the Digital Activity Book supports both in-person and remote learning activities for children with special needs. It evaluates how this device contributes to the child's learning consistency, tracks progress, and promotes parental involvement, and a multi-rehab approach, ultimately shortening the learning period compared to conventional methods.

#### **Method:**

The study was conducted on 85 children with special needs out of 240 from two special schools, and 10 clients out of 42 numbers in an early intervention center, all of whom were receiving various rehabilitation services & parental guidance. These 95 children were provided with the



Digital Activity Book as part of their regular therapy sessions. The Digital Activity Book was introduced as an aid by replacing conventional tools like flashcards and temporary teaching materials, with the aim of improving learning consistency and continuity, both in therapy sessions and at home.

Each child's Digital Activity Book was configured and controlled by their respective therapists, who tailored the content to suit individual therapy goals. The therapists monitored real-time progress, set time limits for activities, and set goals giving a structure in therapy through the device with restricted access to non-therapeutic content to ensure the device served only learning purposes. Parents were given access to the Digital Activity Book portal, synchronized with their mobile devices, allowing them to view session reports, track progress, and provide feedback without disrupting the child's learning.

Throughout the study, data was collected continuously for 6 months on the following:

1. Child's engagement with the digital activities both during therapy sessions and at home. Consistency of completing assignments and activities.
2. Parental involvement in providing feedback and supporting the learning process.
3. Improvements in achieving therapy goals compared to children using traditional methods.

#### **Results & Discussion:**

The findings from the study conducted on 95 clients, indicate significant engagements & progress while using the Digital Activity Book, in a lesser timeframe. Children using the device showed better learning consistency as activities could be completed at home, maintaining continuity with their therapy sessions. The device's-controlled nature ensured there were no distractions or screen time issues, as therapists could set specific time limits and trial counts for each activity.

The Digital Activity Book allowed access to multi-rehab professionals to contribute to the child's therapy goals, resulting in a more holistic and coordinated approach. Children who missed sessions could still engage in activities pushed to the Digital Activity Book, ensuring they remained consistent in their learning. Furthermore, parental involvement was observed to be 100%, as the digital format made it easier for parents to share feedback and interact with therapists even while out of station. This involvement accelerated the child's learning progress, enabling therapists to achieve their goals faster than with traditional methods.

#### **Summary & Conclusion:**

In modern times, the Digital Activity Book has proven to be an effective tool in enhancing the learning outcomes of children with special needs by providing a structured, distraction-free,

and therapist-controlled learning environment, safely replacing risky devices like mobile phones, generic laptops or tablet PCs, etc. The device promotes learning continuity, allows for multi-disciplinary collaboration, and ensures parental involvement, all of which contribute to faster progress and better therapeutic outcomes.

## **Development of a Standardized Hindi Passage for Clinical Evaluation in Speech-Language Pathology**

*Chhavi Tyagi, Swati Jha, Manisha Kumari & Jitendra Kumar*

**All India Institute of Speech and Hearing**

### **Introduction:**

Phonetically balanced passages are crucial for assessing speech disorders and developing speech recognition systems. These passages should incorporate phonetic aspects representative of the language, including both phonemic and allophonic aspects. Researchers have reported that optimal phonetic balance is lacking in the available passages (Gurevich & Kim, 2022; Lammert et al., 2020; MartÃ-nez-Cifuentes et al., 2020). The Grandfather Passage, introduced by Charles Van Riper in 1963, evaluates speech intelligibility and reading ability. The comprehensive content of the passage mimics the natural speech patterns; and facilitates the ease of reading and enables the clinicians to assess various speech sounds. Similarly, the Rainbow Passage is also a standard text which is used in clinical assessment for reading, evaluating articulation and voice quality (Xu et al., 2020).

These passages encompass a broad range of phonetic elements, assisting clinicians in identifying specific articulation difficulties and assessing fluency patterns. They also provide insights into voice quality through varied intonation, aiding in the evaluation of pitch, loudness, and resonance. The descriptive language facilitates the assessment of vocabulary, comprehension, and narrative abilities. Standardized passages are critical for both clinical and research purposes, enabling consistent evaluation and facilitating comparisons across different populations. Their use supports targeted interventions, ultimately leading to improved outcomes for individuals with communication disorders.

### **Need for Study:**

According to the 2011 Census of India, 43.63% of the population speaks Hindi. Developing a phonetically diverse passage in Hindi is essential for enhancing speech and language assessment tools tailored to the needs of Hindi-speaking populations. Current evaluation tools, such as the Rainbow Passage and the Grandfather Passage, primarily exist in English, which limits their applicability in effectively assessing Hindi speakers. This study addresses the need for culturally relevant and linguistically appropriate assessment materials by analysing speech samples across various communication contexts. By creating a passage that reflects the

phonetic diversity and linguistic features of Hindi, we aim to enhance the accuracy of speech assessments and facilitate targeted interventions for individuals with communication disorders.

### **Aim & Objectives:**

#### **Aim:**

To develop a phonetically diverse passage in Hindi that can be used as a standardized assessment tool for speech and language evaluation.

#### **Objectives:**

1. To analyse the frequency of occurrence of speech sounds in Hindi across different communication situations.
2. To analyse the frequency of occurrence of various syllable structures in Hindi across different communication contexts.

#### **Method:**

This study employed a systematic approach to develop a phonetically diverse passage in Hindi for speech and language assessment. The methodology consisted of several key steps:

First, the speech samples were gathered from five different communication contexts: Radio Broadcast, Classroom Lecture, Spontaneous Speech Sample, Written Stories from NCERT Textbooks, and Newspaper Articles. For each context, 10 samples were collected, and each sample contained 200 words. In total, 10,000 words were analysed. Once the samples were collected, they were transcribed in IPA to facilitate detailed analysis. Following transcription, the analysis focused on assessing the frequency of occurrence of various speech sounds and the structures of syllables within the samples. This analysis aimed to identify patterns in phonetic diversity and understand how speech production varies across different contexts. The insights gained from this method were used to construct a new Hindi passage that accurately reflects the unique linguistic features of Hindi speech. By employing this structured approach, the study aims to contribute to the development of effective assessment tools in speech-language pathology, ultimately leading to improved interventions for individuals with communication challenges.

#### **Results & Discussion:**

The results revealed the frequency of occurrence for all the phonemes of the Hindi language. The analysis of vowels indicated that /a/ appeared with a frequency of 2.3%, /a:/ at 31%, /i/ at 14.8%, /i:/ at 13.2%, /u/ at 8.7%, /u:/ at 1.5%, /e/ at 27.5%, /ai/ at 6.9%, /o/ at 12.7%, /au/ at

2%, and /an/ at 0.6%. Among the stop sounds, /k/ was the most frequent at 35.1%, followed by /t̪/ at 17.1%, /p/ at 15.8%, /b/ at 8%, /g/ at 8.7%, /ɖ/ at 8.6%, /d/ at 3.9%, /kʰ/ at 3.4%, /t/ at 4.1%, /dʰ/ at 1%, /gʰ/ at 1.7%, /pʰ/ at 3%, /t̪ʰ/ at 3.7%, /tʰ/ at 0.9%, and /bʰ/ at 4.3%. The frequencies of the affricates were observed as /tʃ/ at 6.7%, /dʒ/ at 9.6%, /tʃʰ/ at 2.3%, and /dʒʰ/ at 1.1%. The flap sounds /ɾ/ and /ɽ/ occurred at frequencies of 1.5% and 0.7%, respectively. In the nasal category, /N/ appeared at 2.4%, while /n/ and /m/ had frequencies of 23.7% and 23.4%, respectively. The approximants were identified with frequencies of /j/ at 13.4%, /ɾ/ at 26.9%, /l/ at 16.3%, and /v/ at 8.6%. For fricatives, /ʃ/ was found at 5.9%, /s/ at 18.7%, /ʂ/ at 1.9%, /h/ at 16.7%, /z/ at 0.5%, and /ɸ/ at 0.2%. Finally, the analysis of consonant clusters revealed frequencies of /kʃ/ at 1.5%, /t̪ʃ/ at 1.5%, /gʃ/ at 0.3%, /sk/ at 0.2%, /kr/ at 0.4%, /bl/ at 0.1%, /br/ at 0.3%, /tr/ at 0.3%, /st/ at 0.1%, /d̪r/ at 0.5%, /ks/ at 0.1%, /dr/ at 0.1%, /skr/ at 0%, and /lha/ at 0%. The distribution of syllable structures in the analysed sample reveals the following frequencies: the CV pattern occurs in 28.93% of cases, while the CVCV structure accounts for 11.25%. The VC pattern is present in 8.89% of instances, with the CVC structure observed at 8.48%. The CC structure appears in 8.45% of cases, and the CCVC structure shows up at a frequency of 7.69%. The CCV pattern occurs in 6.64% of instances, while the CVCC structure is found in 4.16% of cases. The CVV structure has a frequency of 4.07%. The CCCV pattern occurs in 3.50% of cases, and the VCC pattern appears in 2.08%. The CCVCCV structure is present in 1.58%, and CCCC is found at a rate of 1.55%. The CCVCCC structure occurs in 1.33%, with VCCC observed in 1.08%. The VV structure has a low occurrence of 0.26%, while the VVV structure is even rarer at just 0.08%. The phonetically diverse passage was carefully constructed using insights from the analysis of phoneme frequencies and syllable structures, incorporating a range of syllable patterns to ensure comprehensive coverage of Hindi speech sounds. This passage aims to serve as a standardized assessment tool for speech and language evaluation. The passage is designed with engaging content that encourages expressive reading, facilitating varied intonation and prosody key elements in evaluating expressive language skills.

### **Summary & Conclusion:**

This study developed a phonetically diverse passage in Hindi to enhance speech and language assessments for Hindi-speaking populations. By analysing speech samples across various contexts, the study identified phoneme frequencies and syllable structures. The constructed passage reflects this linguistic diversity, facilitating comprehensive evaluation of articulation, fluency, and prosody. This tool aims to address the limitations of existing English passages,

ensuring culturally relevant and linguistically appropriate assessment materials for Hindi speakers. Future directions include conducting empirical studies to validate the effectiveness and reliability of the newly developed Hindi passage in assessing speech and language skills among different age groups and dialects within the Hindi-speaking population.

## **Adaptation and Validation of the Voice-Related Quality of Life (VRQOL) Measure into Nepali**

*Isha Wosti & Kranti Acharya*

**Green Pastures Hospital and Rehabilitation Centre**

### **Introduction:**

A voice disorder is considered present when a person perceives his voice as abnormal and it fails to meet his everyday requirements, regardless of whether others notice any difference or abnormality. Evaluations of health and treatment outcomes need to include not only the measures of disease severity and frequency but also assessments of well-being, which reflect an individual's quality of life. Clinicians are guided by these measures when determining the appropriate type and level of voice therapy, as well as offering a dependable way to evaluate outcomes after the treatment has been completed.

### **Need for Study:**

The prevalence of voice disorder among the general public is found to be 16.9% (Lyberg-Åhlander et al., 2019). Quality of life measures are important for patients with voice disorder for treatment decisions and post-treatment outcomes measurement. The level of vocal impairment that could severely impact a vocal professional, such as a teacher or singer, might not be noticeable to someone who is not a professional voice user. This mandates the use of a tool that measures the voice-related quality of life which guides clinicians in making decisions about the nature and intensity of treatment, and also provides reliable post-treatment outcomes assessment.

Despite the high prevalence and the multitude of problems faced by individuals with voice disorders, the area of voice-related quality of life measure is largely untouched in Nepal. There are no tools that measure the voice-related quality of life in the Nepali language to date. One of the most widely used instruments for evaluating self-reported voice quality is the Voice-Related Quality of Life (V-RQOL) questionnaire (Hogikyan & Sethuraman, 1999). VRQOL instrument was designed and validated for adult populations with voice disorders to measure both the social-emotional and physical-functional aspects of voice issues. It has only 10 items which makes it useful in clinical practice. Thus, this study aims to determine the reliability and validity of the Nepali version of the Voice-Related Quality of Life (V-RQOL) questionnaire.

**Aim & Objectives:**

The current study aims to develop and validate the V-RQOL questionnaire in the Nepali language.

**Objectives:**

1. To translate the original version of V-RQOL in English to Nepali language using the Translation-back-translation method (Bardley, 1994)
2. To administer the Nepali translated version of V-RQOL on a sample of individuals with voice disorder and a control group.
3. To determine the internal consistency of the items in the Nepali version of V-RQOL.
4. To measure the construct validity of the Nepali V-RQOL.

**Method:**

Following the Translation-Back-Translation method (Bardley, 1994), a systematic approach was undertaken to translate the 10 questions of V-RQOL into the Nepali language. This process was executed by a panel of four academically qualified lecturers, all of whom possessed expertise in Nepali language and culture. Subsequently, the translated questionnaire was distributed to a cohort of 15 individuals who were native speakers of the Nepali language, aiming to validate the content and linguistic appropriateness of the translated items.

Participants in this validation phase were requested to employ a 5-point rating scale, ranging from 'appropriate' to 'not appropriate,' to assess each item's suitability. Only those questions that garnered consensus as 'appropriate' were retained, while those that did not meet the established criteria were subject to modification to enhance their appropriateness. The refined Nepali version of the V-RQOL questionnaire was then administered to a sample comprising 216 individuals with voice disorder, and a control group of 72 participants with a normal voice. Participants for the study were recruited from the patients visiting the Speech Pathology Unit of Tribhuvan University Teaching Hospital (TUTH) using a convenience sampling method. The construct validity of the questionnaire was determined following two steps: the relationship between V-RQOL scores and patients' self-rating of their voice quality on a visual analog scale was examined using the Kruskal-Wallis test and the V-RQOL scores of patients was also compared with that of controls. The reliability of the questionnaire was determined by computing the Cronbach alpha that measures the internal consistency of the items.

**Results & Discussion:**

An overall Cronbach alpha value of 0.925 was obtained suggesting good internal consistency.



The alpha value for the physical functioning domain was 0.898 and the social-emotional domain was 0.963. The VRQOL had a positive correlation with the Visual Analog Scale ( $r=0.78$ ,  $P<0.001$ ), and significant differences were found between the case and control group suggesting good construct validity of the Nepali V-RQOL.

**Summary & Conclusion:**

The current study attempted to develop and standardize VRQOL in the Nepali language. The statistical results show that the Nepali version of the V-RQOL has good internal consistency and construct validity and thus can be reliably used to assess the quality of life in voice disorders and for research purposes. This tool may significantly improve the quality of treatment services for patients with voice disorders in Nepal.

**Speech & Eating dysfunctions associated with Oromandibular dystonia:  
A Case study; elaborating upon comparing assessment & Treatment  
approach**

*Ravi Patel & Akanksha Tiwari*

**Amity University, Haryana**

**Introduction:**

A rare type of focal dystonia that affects the mandible and lower half of the face is called oromandibular dystonia. It appears as intermittent or continuous, involuntary contractions of the muscles, causing aberrant postures in the lower face or recurrent movements of the tongue, masticatory, or lower facial muscles.

A substantial amount of dysphagia and weight loss may result from the aberrant repetitive contractions of the masticatory, facial, and lingual muscles in oromandibular dystonia (OMD) as well as from the presence of orobuccolingual (OBL) dyskinesias. The clinical features and therapeutic factors of a number of patients who acquired eating disorders related to OMD are presented here.

Several orofacial motor functions, including mastication, swallowing, and verbal and nonverbal communication, may be hampered by dystonic muscle contractions. This is likely due to the uncoordinated and distorted muscle masticatory activity with antagonist contractions that has been observed in electromyographic studies. When the masticatory, lingual, and pharyngeal muscles spasm uncontrollably, it can cause aberrant movements such as jaw closing (JC), jaw opening (JO), jaw deviation (JD), or a combination of these. This condition is known as OMD.

**Need for Study:**

Speech-language pathologists are rarely being presented with this unusual disease. As previously shown, the clinical symptoms are diverse and encompass a broad spectrum of problems; in addition to neurological and neuropsychiatric issues, some also have speech and Swallowing impairments. Speech-language pathologists are not well-informed about or have enough documentation of these speech and Swallowing impairments. Thus, this study will add to Indian literature and offer a better understanding of the traits and management from the perspective of a speech-language pathologist.

**Aim & Objectives:**

The goal of this case study is to provide a thorough explanation of the swallowing and speech-Voice traits as well as the role of speech-language pathologists in Oromandibular Dystonia.

**Method:**

Study Design: Single case study.

Participant:

Sample size: Since it is a single case study, only one sample has been taken. Inclusion criteria: Individuals with h/o Oromandibular Dystonia.

Tools and materials used:

Oral Peripheral Mechanism Examination, Frenchay's Dysarthria Assessment (FDA), Cranial Nerve Assessment, Speech Intelligibility Rating Scale (AYJNIIH), Maximum Phonation Duration (MPD), s/z Ratio, Voice Handicap Index (VHI), Consensus Auditory-Perceptual Evaluation of Voice (CAPE-V), Reflux Symptom Index (RSI), FEES.

Artemis Hospital Bedside Swallowing Assessment Procedure: This case study is of a 76-year-old male with Oro-mandibular dystonia. He reported with the complaint of pain in abdomen, multiple episodes of loose stools, unable to tolerate oral feeds and dehydration and unable to eat other consistencies apart from blended consistency (IDDSI guidelines). Family was feeding him with level 4 of food bolus and level 0 of thin liquids (IDDSI guidelines). This consistency was recommended by other SLPs clinicians of different hospital.

A detailed case history of the patient was taken.

Acoustic analysis, CAPE-V, VHI, RSI, MPD, and s/z Ratio were conducted for a detailed voice evaluation. Speech Intelligibility Rating Scale was also used. After the assessments, Physiologic Voice Therapy was implemented as an intervention strategy.

As per his complaint of pain while swallowing and unable to tolerate oral feeds For a detailed evaluation, Artemis Hospital Bedside Swallowing Assessment was administered including FEES.

Later, he also started exhibiting labial and lingual involuntary movement including lateral and protrusion, for which Oral Peripheral Mechanism Examination, FDA, and Cranial Nerve Assessment were done.

Throughout the sessions, age-inappropriate social behaviors were discovered. An informal assessment along with observations over the session was noted for linguistics skills, which showed no language deficit.

An appropriate intervention program was implemented during which the existing deficits were

monitored and new deficits were noted, jaw gliding and lip closure were present.

A summary of all the features is presented in this study using descriptive statistics.

Speech voice and swallow Characteristics noted on assessments

These included impaired mastication, dysphagia, and speech alterations characterized by dysphonia. The patient exhibited unconscious opening and closing of the mandible, along with pulling and twisting of the mandible either forward or laterally. The detailed Speech voice and swallow evaluation conducted for individuals with oromandibular dystonia revealed significant dysphonia characteristics and impairments in communication. Findings from the CAPE-V indicated moderate to dysphonia, characterized by voice break, as well as increased vocal strain and pitch variability during connected speech tasks. The Voice Handicap Index (VHI) scores reflected mild substantial emotional distress and functional difficulties, impacting daily communication and social interactions. Maximum Phonation Duration (MPD) results showed reduced phonation duration(8 seconds), suggesting vocal fatigue and inefficiency, while an elevated s/z ratio (>1.4) indicated potential vocal fold inefficiency and challenges in sustaining phonation. Furthermore, the AYJNIIH Speech Intelligibility Rating Scale revealed - 3 score (Speech is difficult to understand, requiring considerable effort from listeners, with frequent misinterpretations) particularly in spontaneous speech, with articulatory precision significantly affected by the dystonia.

The Frenchy Dysarthria Assessment indicated significant impairments in the patient's speech and swallowing functions. The patient required more than 15 seconds to swallow, relying exclusively on a special diet of pureed foods for the past year decreased laryngeal sensation which leading to pain during swallowing. Swallowing solids was only possible with jaw support which worked as a sensory trick. Speech was characterized by slight slurring, and the patient exhibited poor lip control, which contributed to difficulties in articulation. Additionally, the patient struggled to follow alternate speech sounds (DDK), reflecting impaired motor control. Observations noted slow, involuntary movements of the jaw, along with involuntary movements and a noticeable tremor of the tongue, highlighting the complexity of the dysarthria experienced by the patient. These findings highlight the complex nature of dysarthria in this patient, emphasizing the need for targeted speech therapy and swallowing interventions.

### **Results & Discussion:**

The case involves a 76-year-old male who has been unable to tolerate oral feeds, presenting with dehydration, abdominal pain over the past two days, and generalized weakness. A thorough examination and an abdominal X-ray revealed faecal loading of the large bowel,

accompanied by multiple dilated gas-filled loops and diffuse air-fluid levels, suggesting a significant gastrointestinal obstruction. The patient also experienced difficulty swallowing solid foods, prompting a referral for an ENT evaluation. A bedside swallow assessment was conducted with liquids, which showed no signs of coughing, and laryngeal movements were found to be normal. A Fiberoptic Endoscopic Evaluation of Swallowing (FEES) was performed, confirming that there is bilateral vocal folds mobility and severe penetration with liquids, the patient could tolerate a blended diet. To further investigate the swallowing difficulties and potential underlying issues, a neurology consultation which confirmed oromandibular dystonia.

Overall, these findings underscore the need for a multidisciplinary approach to manage voice disorders associated with oromandibular dystonia, integrating speech therapy, medical management, and supportive strategies to improve vocal function and communication.

### **Summary & Conclusion:**

This case underscores the critical need for a multidisciplinary approach to effectively diagnose and treat oromandibular dystonia and its associated speech and swallowing disorders. By integrating speech therapy, medical management, and supportive strategies, speech-language pathologists can significantly enhance swallowing function and communication for affected individuals. This study contributes valuable insights to the understanding and treatment of oromandibular dystonia, emphasizing the role of speech-language pathologists in this rare condition. The characteristics of dysarthria and swallowing in Oromandibular dystonia vary significantly from one patient to another due to difference in the set of affected muscles, so each patient should receive personalised rehabilitation program.

## Tongue Contours In Manipuri: An Ultrasound Study

*Tomui Dangshawa, Sindhusa Chandran & Irfana M*

AIISH, Mysore, Karnataka

### **Introduction:**

Tonal language has an additional phonetic unit of accompanying elements, the tone element, apart from the vowels and consonants. In a tonal language like Manipuri, a lexical word has two or more semantic meanings for different tones characterised by pitch variations. This characteristic feature is a crucial component for effective communication when using a tonal language. Tonal language comprises 60-70% of all languages worldwide (Yip, 2002), and more than half of people worldwide speak a tonal language (Fromkin, 1978). However, the tonal languages in India are underexplored, and there exists disagreement in labelling the various aspects of tonality in Indian tonal languages, especially Manipuri.

### **Need for Study:**

Moisik et al. (2014) found that the extra-glottal laryngeal mechanisms played a crucial role in facilitating the production of tone targets and the larynx is not the sole mechanism for tonal production. Erickson et al. (2004) used an Electromagnetic Articulograph (EMA) to study supralaryngeal (jaw, tongue and larynx) variations in high and low tones in two Mandarin speakers. The study showed that the tongue was significantly more retracted for the low tone than for the high tone. Such studies to assess the tongue dynamics during the production of level and falling tones in the Manipuri language will provide insight regarding the differentiating characteristics of tongue movements if any than the laryngeal features.

### **Aim & Objectives:**

The current study aimed to understand the tongue contours of monosyllabic level and falling tonal counterparts in Manipuri and the objectives were

1. To obtain tongue contours during the production of monosyllabic level and falling tonal counterparts in Manipuri.
2. To compare the horizontal tongue dynamics across anterior, mid and posterior tongue regions between level and falling tonal counterparts.
3. To compare the vertical tongue dynamics across anterior, mid and posterior tongue regions between level and falling tonal counterparts.

4. To find any effect of gender on the horizontal and vertical tongue dynamics of the two tonal words.

**Method:**

A total of 10 healthy native speakers of Manipuri, 5 males and 5 females between the age ranges of 20-35 years were enrolled in the study. They neither had any history of oro-facial structural abnormalities such as ankyloglossia, glossectomy, cleft palate, or other cognitive, hearing, or speech disorders nor communication disorders. The Mindray Ultrasound 6600 and Articulate Assistant Advanced (AAA) software were used to record 20 sentences of 10 monosyllabic tonal words (V, CV and CVC) each in level and falling tone. The level tone is low, while the falling tone falls from high to low pitch (Devi & Das, 2021). The stimuli words contained vowels: /i/, /I/, /a/, /o/ and a diphthong: /ai/ and they were the tone-bearing nuclei for this tonal language. They were used in the context of V, CV and CVC, where C represents the consonants, and V represents the vowels/diphthongs.

AAA software with a fan spline technique was used to analyze the acquired tongue images based on the (x-y) coordinates of the tongue. The tongue contours were plotted on the seven splines, which were kept constant for all the analyses to minimise variabilities. The variables in this study are tongue advancement and tongue height obtained in (x-y) coordinates where the horizontal x-axis represents the tongue advancement, and the vertical y-axis represents the tongue height. These values were compared between the level tone and falling across the tongue anterior, mid and posterior. The effect of gender on these parameters was also studied.

The average tongue contour and means values of (x-y) coordinates for 10 repetitions were obtained by exporting to the workspace, and the average tongue contour was compared between the level and falling tones for each word. The average tongue contours were obtained for the tonal counterparts.

**Results & Discussion:**

The findings showed differences in the tongue contours for level and falling tones on visual analysis. Hence, there were differences in the tongue contours of monosyllable level and falling. The tongue contours for falling tones were more shifted towards the posterior side than the tongue contours of the falling tones. This indicated that the tongue is more retracted for low tone than for high tone in Manipuri. To compare the horizontal tongue dynamics across anterior, mid and posterior tongue regions between level and falling tonal counterparts, the horizontal tongue dynamics were plotted along the x-axis. The findings revealed that the tongue

mid region was significantly different in level tone compared to the falling tone in Manipuri. The findings indicated that there were no significant differences between the anterior and posterior regions. To compare the vertical tongue dynamics across anterior, mid and posterior tongue regions between level and falling tonal counterparts, the vertical tongue dynamics on the y-axis were obtained. The results showed no significant difference between the tonal counterparts at the anterior, mid and posterior tongue. This suggests that there are no variations in tongue height between falling and level tones found in Manipuri. The study did not find any significant gender-related effects on horizontal and vertical tongue dynamics in level and falling tones. Both male and female participants demonstrated similar patterns in tongue positioning for the level and falling tones. This suggests that the production of tonal differences in Manipuri is not significantly influenced by gender.

However, the study has few limitations. The sample size considered for the study was smaller. Hence, the findings cannot be generalisation to the broader population. The tone of the monosyllable words of Manipuri was considered to restrict to small data for analysis. However, the tone in bisyllabic words or multisyllabic words could have been studied. The study enrolled only Manipuri speakers of the Meitei group, excluding the Naga and Kuki groups, to maintain uniformity of the participants. The study did not include or study the tones of the Naga and Kuki group speakers, which can be explored in future studies

### **Summary & Conclusion:**

This is the first study to provide insights on tone differentiation using ultrasound tongue imaging technique in Manipuri. The study provides visualizations of tongue contours that can be used to assess and intervene in tone differentiation in native or new language learners in Manipuri. These visualizations will aid in phonetic intervention. Phonetic training can enhance the understanding of the tongue dynamics associated with different tones in both native speakers and language learners.



## **Recapitulation of Electroglottography and acoustic characteristics of Vocal measures of Singer's presenting occasional Vocal Dysphonia**

*Prema Devi & Venkatraman Prusty*

**pt. JNM Medical college, Raipur, Chattishgarh**

### **Introduction:**

The vocal health and voice management of professional voice users has gained increasing interest in recent years and they are considered to be at risk of developing voice problems that affect their vocal performance. Often, singers make many mistakes during their vocal training and performance routines and generally have an improper breathing pattern while singing. Vocal cord pathologies may not be evident at the onset but often include symptoms such as raspy, hoarse, low, or breathy voice, or trouble swallowing or coughing. Sometimes inadequate acoustics, background noise, and vocal rest time can indirectly affect voice with the most common sign of occasional Dysphonia. The prevalence of Dysphonia is about 3%-9% in the general population and is more common in females and in elite vocal performers and professional voice users, ranging from 27% to 80%, irrespective of their years of practice.

The severity of dysphonia as perceptually evaluated, did not find a significant association between these parameters to pathological voices. Many authors reported mild to moderate dysphonia in Singers with no perceptual deficit in voice. However, presented clear signs of acoustic parameters. In the present study, these acoustic parameters were correlated to the vibrational patterns of the vocal folds measured indirectly by Electroglottography (EGG) , focusing on the glottic cycle. Both

Acoustic analysis of voice in multi-dimensional Voiceprofile (MDVP) and electroglottography (EGG) have been used for assessing vocal quality in all participants to detect mild disturbances in vocal quality.

### **Need for Study:**

The present study reviews solely the perceptual vocal characteristics of Professional Singers to their acoustic vocal measures on Acoustic Vocal analysis of MDVP and EEG parameters. This study investigates the acoustic voice characteristics in MDVP to the vocal approximation in EGG among professional singers.

**Aim & Objectives:**

The present study aims to evaluate the acoustic characteristic of voice in terms of MDVP measures to vocal contact measures in EGG parameters to differentiate vocal fold vibratory characteristics between trained singers.

**Method:**

This study is a descriptive and analytical study that included a total of 10 subjects, aged between 30-40 years, with equal gender distribution were taken for the study. [mean age = 32.74 years, standard deviation (SD) = 6.9 for male Group and mean age = 34.16 years, SD = 5.3) for female Group. All the participants were screened for a history of voice problems for the last 3 months, along with other medical problems if any. There were no laryngeal structural problems and no respiratory tract infections during the assessment procedures. Consent and perceptual voice evaluation were sought prior to objective evaluation. Computer Speech Lab System (CSL 4500-D) was used for this study using the MDVP and EGG parameters for all the selected participants. The recording was done with the Mic to Mouth distance of 10cm on the phonation with 3-5 sec time for MDVP and 10-15 sec time for EGG.

**PROCEDURE**

A brief set of questionnaires was administered on the participant's vocal health, then proceeded to a formal perceptual assessment with known reliability and validity. Proceeding to the objective measurement, CSL 4500D (Key PENTEX) is used for MDVP (multidimensional voice profile) measures and EGG (Electroglottography). All the participants were explained about this test and were asked to phonate /a/ comfortably as long as possible; analysis was done for 3 seconds and 10 sec, respectively as window time, settled on a comfortable chair, with a mike positioned to mouth fixed at a distance of 10cm. The acoustic parameters of MDVP to Vocal contact Parameters of EGG were marked for the analysis. All the procedure for sample collection was carried out within a clinical session of 30-45 minutes.

**Results & Discussion:**

Data analysis was done using Statistical Package (SPSS) version 16. The descriptive measures were mean and standard deviation for the Groups. Nonsignificant differences ( $P > 0.05$ ) were found between values of fundamental frequency (F0), shimmer, and jitter obtained by both procedures. Shimmer percentage, as measured by MDVP, demonstrated a significant difference from that of EGG. As measured by EGG, the open quotient was significantly increased in singers ( $P < 0.05$ ), and irregularity was observed as a double-reducing peak, presenting pressed

vocal contact in singers. ( $P < 0.05$ ). the EGG curves of all participants were significantly presented increased vocal closure and with pressed vocal function in only females.

### **Summary & Conclusion:**

Voice disorders are prevalent in specific occupational groups and some issues go unnoticed as singers may experience occasional dysphonia with over performances and there is an urgent need for research to support their voice health and risk measurement, prevention and intervention. From this study, the Objective assessment should be implemented as a routine tool for voice quality in singers, which can detect early voice problems irrespective of the apparent normal appearance.

Though training in singers can improve vocal stability for tonal modulation, persistent usage increases vocal load and can be unheeded without any obvious sign on the vocal ligament. This can be taken care of with this objective assessment tool as Vocal contact measures as a mandatory task for all professionals.

The present study revealed acoustic characteristics on MDVP and vocal contact phases in EGG, which were effective for detecting vocal function in elite vocal performers. EGG demonstrated better efficacy for detecting minor vocal issues with additional parameters of contact quotient and contact periods as compared to Acoustic measures of MDVP. Although EGG was more efficient for detecting acoustic disturbances in singers' vocal assessment, both procedures need to be considered as complementary tasks to present vocal fundamental measures in terms of contact quotient assessment of voice in elite vocal performers.

## Early Therapeutic Intervention Outcomes in the Management of Unilateral Vocal Fold Palsy Post-Total Thyroidectomy: A Case Study

*Siju Rana & Anjali Shrivastav*

**Green Pasture Hospital**

### **Introduction:**

Vocal cord palsy is loss of voluntary vocal fold movement following injury to a laryngeal nerve. It is a common potential complication of thyroidectomy, mostly unilateral vocal fold palsy (UVFP). The primary reason behind this complication is related to the anatomical proximity of the laryngeal nerve to the thyroid gland.

### **Need for Study:**

The most common aetiology for unilateral vocal fold palsy is iatrogenic and of the iatrogenic causes, thyroid surgery is the most common cause of UVFP making up approximately 49% of iatrogenic cases. It can have a significant impact across many vocal features. Dysphonia is almost always the symptom that causes the patient to seek medical attention and the dysphonia can have a negative impact on the activity and participation of individuals resulting in a reduced quality of life. Reduced socialization and ability to work and increased potential for depression are also found to be associated.

Early administration of voice therapy plays a crucial role in enhancing vocal function, facilitating glottic closure, and consequently greater social participation, and reducing risk of psychological issues such as depression, thereby improving the patient's quality of life. Early voice therapy even prevents referral for risky surgical procedures.

Despite the frequency of UVFP post-thyroidectomy, there is limited research on the efficacy of early therapeutic interventions in such cases. By addressing the gap in research on early intervention in UVFP, this study aims to contribute a comprehensive framework into the management and recovery of individuals affected by this condition.

### **Aim & Objectives:**

This case study aims to explore the early therapeutic intervention outcomes in 43 years old female with unilateral vocal fold palsy (UVFP) following total thyroidectomy.

### **Method:**

Multidimensional voice assessment including visuo-perceptual assessment (Naso-pharyngo-

laryngoscopy), auditory perceptual assessments (GRBAS, CAPE-V), aerodynamic assessment of airflow and pressure in relation to voicing (MPT), acoustic analysis (PRAAT), and quality of life (VHI) was done. The therapy focused on different subsystems of voicing starting with positioning and diaphragmatic breathing techniques for respiratory system. The initial sessions focused on introducing a hard glottal attack technique for the phonatory system. Subsequently, the emphasis shifted to resonant voice therapy, trills, and relaxation exercises preventing maladaptive vocal behaviors. Indirect approach incorporating vocal hygiene education and providing emotional support and guidance in understanding and managing the condition effectively was implemented from the very first day of treatment.

Voice recording and voice outcome measures at day 1, after 1 month and 3 months of intervention were compared.

### **Results & Discussion:**

By the end of the sessions, the client showed dynamic changes in her voice and quality of life compared to her pre-therapy assessments.

The right vocal fold was mobile and GRBAS scale, CAPE-V, VHI-10 measures were in normal range.

Early onset of voice therapy is anticipated to apply principles of motor learning, neuroplasticity (e.g. use it or lose it) and delay the onset of atrophy of the paralysed muscles hence enhances the reduction in glottal gap, improve voice quality, prevent hyperfunctional compensatory behavior and positively impact the quality of life.

### **Summary & Conclusion:**

Early administration of voice therapy can enhance vocal function, achieve better glottal closure, improve quality of life, and possibly prevent maladaptive vocal behaviors.

## Emerging Trends in AAC Technology and Designing an Innovative AAC App.

Afshida C P

The Speech Clinic Dubai

### **Introduction:**

Augmentative and Alternative Communication (AAC) systems are vital tools for individuals with complex communication needs. With rapid technological advancements, AAC apps have become increasingly sophisticated, offering enhanced user experiences and accessibility. This paper explores the development of an AAC app and how recent trends have shaped its features.

### **Need for Study:**

There is a growing demand for AAC apps that are intuitive, customizable, and supportive of various communication styles. Current trends emphasize inclusivity, neurodiversity, and user-driven design. It is essential to understand how these trends impact AAC app development, particularly in improving communication for diverse populations.

### **Aim & Objectives:**

The aim of this study is to examine recent trends in AAC and their influence on app development. The objectives include:

1. Identifying key trends in AAC app design.
2. Analyzing the integration of these trends into the development of a functional AAC app.
3. Evaluating the potential impact of the app on communication outcomes

### **Method:**

The study involved reviewing existing AAC apps and their features, followed by the development of a new AAC app incorporating emerging trends. Features such as user customization, gesture-based input, emergency communication tools, and visual supports were integrated. Feedback was gathered from users, including neurodiverse individuals and speech therapists, to assess usability and functionality.

### **Results & Discussion:**

Preliminary results indicate that incorporating neurodiversity-affirming practices, such as gestalt language processing, significantly improved user engagement. Customization options

tailored to individual communication preferences led to a more personalized experience. Additionally, features like emergency alerts and whiteboard tools were found to enhance both safety and real-time communication. These findings highlight the importance of user-centered design in AAC app development.

### **Summary & Conclusion:**

The development of AAC apps has undergone a significant transformation in recent years, driven by technological advancements and a growing understanding of neurodiverse communication needs. This study demonstrates that by embracing recent trends such as neurodiversity-affirming design, customization, and emergency response features, AAC apps can become more effective tools for individuals with complex communication needs.

The integration of these features into AAC apps allows for more inclusive, personalized, and responsive communication solutions. Neurodiverse users, in particular, benefit from apps that cater to their unique communication styles, while emergency features provide an added layer of safety and security. The study's findings underscore the importance of user-centered design in AAC app development and highlight the potential for future research to continue refining these technologies.

**The Overall Assessment of the Speaker's Experience of Stuttering  
(OASES) Instrument: Cross-cultural Translation and Test of Validity  
and Reliability of the Nepali Version**

*Siju Rana, Kranti Acharya, Isha Wosti & Kranti Acharya*

**Green Pasture Hospital**

**Introduction:**

Stuttering is a communication disorder characterized by speech disfluencies like repeating parts of words, prolongation of sounds, and speech blocks and also associated social, emotional, and cognitive (SEC) reactions like feelings of shame, embarrassment, and anxiety; challenges in communication; and a sense of dissatisfaction with life caused by the stuttering.

Assessments of overt and associated covert features are necessary to capture the disorder's characteristics, severity, and impact. Unfortunately, the majority of treatment studies have focused on reducing or eliminating the overt features, with considerably fewer studies assessing its consequences which are covert features of stuttering too. Based on the ICF framework, the Overall Assessment of the Speaker's Experience of Stuttering (OASES) assesses the entirety of the disorder from the perspective of the person who stutters and provides a holistic view of the person's experience with stuttering, beyond just speech fluency. OASES-A is the adult version of 100 questions divided into 4 sections of general information about stuttering, reactions to stuttering, communication in daily situations, and quality of life.

**Need for Study:**

The prevalence of stuttering over the whole population is 0.72%, with at least a 50% higher prevalence rate of stuttering in males (2.3:1 male-to-female ratio)(Craig et al., 2002). There is more than just the surficial observable features of stuttering to the disorder. Sheehan's "iceberg" analogy emphasizes the complexity and depth of the personal experience of stuttering beyond what is visible to others "lie under the surface". Recent researches show a compelling and immediate need that address aspects of the stuttering disorder beyond the surface speech behaviors.

However, to date, there are no evidence-based and standardized diagnostic tools for a comprehensive assessment of Nepali-speaking people who stutter. The observable behaviors are noted by the clinician and treatment accordingly can effectively minimize these behaviors but the lack of comprehensive assessment and research on treatment outcomes for the entire



stuttering overt and covert features make it challenging for clinicians to rely solely on evidence-based methods when choosing treatment options. The most disadvantaged are the Nepali speakers with stuttering as the depths of struggles and lived experiences they face due to stuttering remain unaddressed leaving a profound and often invisible impact on their quality of life.

The OASES evaluates stuttering from the perspective of the individual who stutters including their reactions to stuttering, functional communication challenges, and quality of life reported by them (Yaruss & Quesal, 2006). Therefore, this present study aims to develop a translation of the OASES and then evaluate the validity and reliability of that translation. Nepali is the most widely spoken language in the country (according to 2021 census, 44.86% speak Nepali as their mother tongue and the Nepali citizens who do not speak Nepali as their mother tongue also speak the Nepali language as their second language). So, developing the tool in the Nepali language will ensure that they are accessible to the majority of the population. Hence, the development of this tool will help assessing the stuttering in depths from the perspective of the Nepali-speaking population who stutter and the clinicians can plan for evidence-based comprehensive treatment approaches and in outcomes assessment.

### **Aim & Objectives:**

The current study aims to develop and validate OASES-A in the Nepali language.

### **Objectives:**

1. To translate the original version of OASES-A in English to Nepali language using the Translation-back-translation method.
2. To administer the Nepali translated version of the questionnaire (OASES-A-N) to a sample of individuals who stutter.
3. To determine the internal consistency of the items, test-retest reliability, and of OASES-A-N and compare to international studies..

### **Method:**

The original version of OASES-A was translated into the Nepali language, OASES-A-N using a translation-back-translation method by three lecturers who majored in Nepali language. Then OASES-A-N was given to 15 native speakers to validate the content. Participants were asked to rate the items on a 5-point rating scale as appropriate to not-appropriate. Only the questions that were rated as appropriate were retained while others were modified to make them more appropriate. After content validation, OASES-A-N was administered to 60 clients who were diagnosed as stutters using Stuttering Severity Instrument (SSI-4) and fell under inclusion

criteria. 8 clients were assessed twice in between 14-21 days for test-retest reliability. The reliability of the OASES-A-N was determined by measuring the internal consistency of test items using Cronbach's alpha and item-by-item Pearson correlation for test-retest reliability. The validity of the tool was determined in terms of face or content validity of the OASES-A-N where clarity and comprehensiveness of the tool was rated by three speech language pathologists. Also, Pearson correlation among the impact scores and impact ratings were calculated in total and for each section to examine the construct validity.

### **Results & Discussion:**

Internal consistency was assessed using Cronbach's alpha (0.89). This suggests that the Nepali version of OASES-A has good internal consistency and it was similar for the Japanese, Persian, Dutch version of the questionnaire too. Item-by-item Pearson correlations for test-retest reliability were significant in all sections ranging from 0.86 to 0.95. The impact scores of each four sections showed moderate co-relation. Hence OASES-A-N is a reliable and valid tool to assess severity of impact of stuttering in Nepali-speaking adults with stuttering.

### **Summary & Conclusion:**

The statistical findings from this study indicate that the Nepali adaptation of the OASES-A is a reliable and valid version of the original tool.

Therefore, OASES-A-N can be effectively used as a clinical tool in the field of stuttering in Nepali-speaking adults, and it will also facilitate research in this area. Future efforts should focus on increasing the sample size and also developing a comprehensive assessment tool for younger populations.

## **Teletherapy for Pediatric Swallowing and Feeding Disorders: Bridging Access Gaps in Rural Populations**

*Chitra Rejoy Thadathil*

**Dimensions Centre for Child Development**

### **Introduction:**

Pediatric feeding interventions are inherently more complex than adult dysphagia treatment due to differences in anatomy, physiology, and cognitive-linguistic and psychosocial factors. Furthermore, access to pediatric feeding interventions in rural areas remains limited, as most clinicians are concentrated in urban centers. Few speech-language pathologists offer teletherapy, especially for children with rare conditions like Adrenoleukodystrophy, Sunflower Syndrome, Autism, gastroesophageal reflux disease (GERD) and other rare disorders. However, teletherapy provides a critical solution for these populations, enabling timely, expert care regardless of geographic location and offering a lifeline for families where specialized services are scarce.

### **Need for Study:**

Families in rural regions face significant barriers to accessing specialized feeding and swallowing therapy due to clinician shortages. Teletherapy offers a promising solution by improving accessibility to necessary interventions for children who might otherwise go without adequate care.

### **Aim & Objectives:**

This study aims to explore the effectiveness of teletherapy for pediatric feeding interventions in underserved areas. The specific objectives include:

1. Evaluating the impact of remote therapy on feeding outcomes in children aged 8 months to 6 years.
2. Assessing the feasibility and effectiveness of teletherapy with active parent involvement.
3. Investigating the role of video submissions, analysing food consumption over three days and home-based interventions in creating effective intervention plans.

### **Method:**

The study reviewed a case series of 7 children (ages 8 months to 6 years) with feeding difficulties, all receiving teletherapy. The Video Samples, Parent Interview and 3-Day Meal

Chart (VPI 3-D) Model was employed to gather video recordings of the child eating (e.g., eating their favourite food and interacting with disliked foods), and other oral motor activities such as brushing teeth, straw drinking, and blowing were employed to assess muscle tone, posture, sensory sensitivities, emotional reactivity, and feeding skills. This comprehensive model integrates visual observations, parent insights, and dietary tracking to support children's feeding and nutrition needs.

Clinicians utilised this information to develop individualised interventions focusing on posture, breath support, sensory processing, oral motor skills, texture modification, food placement, feeding utensil use and behaviour. Parents received education and guidance throughout the process.

### **Results & Discussion:**

Teletherapy significantly improved feeding behaviours, even in the context of geographic separation. Parent-mediated exercises, sensory strategies, and adaptive techniques, such as adjusting food textures, modifying utensils and postural stability, led to measurable improvements in oral intake and feeding-related behaviour. Video observations proved invaluable in assessing feeding dynamics, while active parent involvement enhanced the intervention's success. Parents reported increased confidence in managing their child's feeding at home, underscoring the potential of teletherapy as a viable and effective model for delivering pediatric feeding interventions in rural and underserved regions with the VPI 3-D Model.

### **Summary & Conclusion:**

The use of technology in pediatric feeding practices can overcome the access barriers faced by families in rural areas, enabling children with feeding disorders to receive expert care and making specialised services more equitable. This scalable approach, using video assessments and involving parents, provides continuous support empowering families and significantly improving feeding outcomes in young children.

## SP1081

### **Sustainable Development through Digital Practices Training in SLP**

*Kavya S Kumar*

#### **XceptionalLEARNING**

#### **Introduction:**

As technology continues to evolve, integrating digital tools into therapeutic practices has become essential for sustainable development in the field of speech therapy. For Speech-Language Pathologists (SLPs), leveraging technology within conventional methods can significantly enhance their ability to support children with special needs (CWSN). Despite the demonstrated benefits, many clinicians face challenges in effectively incorporating these tools. An informed hybrid approach, combining traditional in-person therapy with teletherapy and home-based training, has emerged as a more sustainable and effective model for addressing the diverse needs of CWSN and only the professionals can ultimately save the day. For this, they need to be equipped with exposure and training into modern solutions.

#### **Need for Study:**

Research shows that integrating technology into speech therapy enhances client engagement, comprehension, and progress while promoting collaboration among therapists, clients, and caregivers. By linking therapy to real-world applications, this model boosts both the efficiency and effectiveness of therapy, contributing to sustainable development in the field and addressing the growing market need for innovative, client-centred solutions that improve outcomes. However, despite technology integration being a part of rehabilitation professional studies from under-graduate syllabi, professionals have very limited awareness of applying modern techniques in practice. This study seeks to understand the effect of training and support for professionals through various stages empowering them with the knowledge and tools for incorporating the techniques into practical spheres.

#### **Aim & Objectives:**

This study aims to explore how the advanced XceptionalLEARNING platform facilitates a proficient digital practice training for professionals in employing technology for therapy intervention. The solution has to be evaluated for being an efficient digital ecosystem that empowers parents and caregivers to take an active role in supporting the therapeutic processes of Children with Special Needs. Additionally, the study aims to assess the impact of training

in creating Digital materials and hands-on practice for conducting hybrid sessions for improving therapy outcomes.

**Method:**

This study employed a mixed-methods approach to explore the effectiveness of the XceptionalLEARNING platform. The study involved 400 rehab professionals who had been using purely conventional methods, others providing online therapy through google meet, zoom, whatsapp calls and some using both online and offline methods. 99% of professionals were recorded as having interest in availing a digital practices training program. Another approach involved evaluating 250 professionals before and after completing the Digital Practices Training via XceptionalLEARNING of which, 92% of attendees passed the certified digital practitioner competency evaluation after training where only 10% had qualified pre-training. The effectiveness of this training was evaluated among the rehabilitation professionals in two special schools and an early intervention centre to understand how they integrated their learning into daily practice.

**Results & Discussion:**

The 397 professionals who opted for availing a digital practices training, opined so because hands-on training for digital practices is a unique offering by the XceptionalLEARNING solution as the platform is tailormade exclusively for therapy and rehabilitation service delivery. The certified digital practitioner competency evaluation revealed that despite being high performing and passionate professionals, hygienic digital practices required adept training. As part of the training, attendees were assigned in creating digital materials, and 80% of the professionals scored 60% through 10 criteria for the efficiency of the material prepared which speaks a lot. The practical implementation in the special schools and early intervention centre showed increased confidence in the professionals, effective delivery of therapy goals and increased satisfaction for the parents. The training equipped professionals to utilize the digital platform for educating and engaging parents in the therapeutic process leading to better adherence to therapy routines and encouraging the transfer of learned skills to everyday situations.

**Summary & Conclusion:**

Inculcating innovative modules in professional continuing education fosters creativity and enhances the professional's ability to mobilize their own and parental resources in ensuring a child's development. By fostering collaboration between parents, caregivers, and therapists,

these resources empower families to actively participate in their child's therapy.

Integrating technology is essential for improving hybrid models of service delivery and empowering professionals through Digital Practices Training with the XceptionalLEARNING solution supports continuity of care and enhances sustainable development by creating a balanced eco-system where resources are well utilized with the aid of technology, efficiently cutting down on costs as well. Overall, study findings underscore the significance of providing theory based and hands-on training and support for professionals in integrating innovative tools and parental involvement to enhance therapy outcomes.

## Stuttering Secondary To Spasmodic Dysphonia:A Single Case Profile

*Neha Yadav & Vinit Mishra*

Amity University Haryana

### **Introduction:**

Spasmodic Dysphonia (SD) was first described in 1871 by Traube and is characterized by a strained, creaking, or choked vocal attack, alongside extreme tension in the entire phonatory system (Luchsinger & Arnold, 1965). It has been referred to as global spasms or laryngeal stuttering and is often compared to stuttering, as noted by McCall (1975) and Salamy & Sessions (1980). Stuttering is defined as a disruption in the fluency of verbal expression, characterized by involuntary repetitions or prolongations of speech elements like sounds, syllables, or words. These disruptions are often accompanied by emotional states, including excitement, tension, fear, or embarrassment (Wingate, 1964)

### **Need for Study:**

This study aims to fill the gaps in existing research on stuttering secondary to Spasmodic Dysphonia. The relationship between stuttering and SD is poorly understood, and comprehensive assessment and diagnosis guidelines for stuttering in individuals with SD are lacking. This case study seeks to improve diagnostic and treatment strategies, enhance understanding of how SD affects stuttering behaviors, and develop targeted interventions.

### **Aim & Objectives:**

Mr. D, 25-year-old male, working in a private firm (tele-sales and marketing) reported to the Department of Audiology and Speech Language Pathology at SRIHER, Chennai with a complaint of not being able to speak fluently for the past 4 days. He reported that the amount of voice usage at his work setting exceeded 9 hours daily. Written consent was obtained before initiation of the study

### **Method:**

In November 2021, the patient experienced a transient loss of voice lasting 2-3 days, preceded by an episode of coughing.

Videolaryngoscopic evaluation revealed bilateral vocal fold nodules. The patient underwent speech therapy and medication. Later, in May 2023, the patient suddenly experienced an episode of stuttering, lasting 2-3 days. Since then, stuttering episodes have occurred



intermittently throughout 2023, varying in duration and frequency. The patient, however did not seek treatment for stuttering. Recent evaluation, In July 2024, the patient experienced progressive stuttering symptoms which were characterized by prolonged duration (exceeding 4 days). The onset was sudden and progressive in nature with increased severity and duration. This episode showed deviance from the patient's previous stuttering patterns, which were intermittent and shorter in duration (2-3 days). A detailed assessment of fluency and voice were carried out. The patient exhibited stuttering behaviors including core behaviors like blocks, whole-word repetition, syllable repetition, word/phrase interjection, and silent pauses, with blocks predominating during reading and conversation tasks. No family history of stuttering or external factors influencing stuttering were reported, and anticipatory or avoidance behaviors were absent. Leg movements and shallow breathing were observed in the client. Thoracic breathing pattern was observed during speech and at rest. SSI-4 (Glyndon D Riley, 2009) was administered with the scores, Reading task:8, Speaking task:8, Average length of longest stuttering: 8, Physical concomitants: 5. Impression made was Moderate stuttering. A detailed voice analysis was done using subjective and objective methods. The patient's voice assessment revealed a mean pitch of 171.342 Hz, with noticeable voice breaks occurring 3 times (511/640). Elevated jitter at 69.260E seconds and shimmer at 1.598 dB, indicating instability in the voice. The Harmonics to Noise Ratio (HNR) is reduced at 7.436 dB, with a corresponding Noise to Harmonics Ratio (NHR) of 0.236167, suggesting a higher noise component in the voice. The S/Z ratio is 1.3 seconds, and the Maximum Phonation Duration (MPD) was significantly reduced across vowels: /a/ at 2.54 seconds, /i/ at 1.43 seconds, and /u/ at 1.05 seconds. Blowing capacity was measured at 11 seconds, and the V-DOP score was 186. These findings point to considerable voice quality disturbances, likely consistent with spasmodic dysphonia. The stroboscopic examination of the patient's vocal folds revealed several abnormalities. The vocal fold closure was irregular, characterized by a longitudinal gap. Asymmetrical movement observed between the vocal folds. The vibration of the folds was aperiodic, and the amplitude was reduced on both sides. The mucosal wave was reduced, showing only a small wave. No non-vibratory positions were identified. Based on these findings, the overall impression made was spasmodic dysphonia, a voice disorder marked by these irregularities in vocal fold function. SYMPTOMS RELATING TO MIXED TYPE SPASMODIC DYSPHONIA (Dr. Christopher Chang, 2021)

In adductor-type spasmodic dysphonia, the patient exhibited significant difficulty in producing voiced consonants such as /b/, /d/, /v/, and /g/ while repeating standardized sentences.

Additionally, the patient struggled to sustain vowel sounds (/a/, /e/, /i/, /o/, /u/), with reduced Maximum Phonation Duration (MPD) noted. When counting from 80 to 89, their speech was described as strained and effortful, with frequent voice breaks. On the other hand, in abductor-type spasmodic dysphonia, the patient showed difficulty in producing unvoiced consonants such as /p/, /t/, /k/, /s/, and /f/ while repeating a different set of standardized sentences. When counting from 60 to 69, the patient's speech was mildly breathy. For both types, activities such as shouting, crying, laughing, whispering, singing, and yawning were reported to be normal, indicating that these actions do not trigger the symptoms of spasmodic dysphonia as severely as regular speech tasks. These diagnostic tasks are essential in distinguishing between the two forms of spasmodic dysphonia, where the adductor type is characterized by difficulty with voiced consonants and strained phonation, and the abductor type presents with breathy voice and challenges with unvoiced consonants.

### **Results & Discussion:**

Speech therapy for Mr. D focused primarily on reducing dysfluencies in his speech while also addressing laryngeal tension to improve overall phonatory skills. Fluency shaping, breathing techniques and phonation exercises were done. A videolaryngoscopic evaluation was done and the patient was found to have bilateral vocal fold nodules which could later prove to be a cause for his stuttering (Yasmin Naqvi, 2023). In 2024, his stuttering became progressive with increased severity and duration (Chung DS, 2018). This could have been caused due to excessive use of voice. SSI 4 evaluation was done where both the reading task and speaking task had a score of 8 each indicating significant dysfluencies. The average length of the three longest stuttering events, with blocks predominating, had a score of 8 (2.0-2.9 Seconds). The patient was found to have slightly notable physical concomitants like distracting sounds, facial grimaces, head movements and movement of the extremities (McDonagh HD et al, 2023). The overall severity was found to be moderate. In VDOP scoring, the patient had the most significant scoring in his social aspect indicating his non-disposition in a social setting due to his dysfluency (McAllister J, 2017). GRBAS evaluation indicated mild hoarse voice. The Maximum Phonation Duration of /a/, /i/ and /u/ were significantly low, explaining spasms of the glottis at a voicing positions (Maslan J, 2011). In the tasks given for adductor type spasmodic dysphonia, the patient was found to have difficulty in productions of /b/, /d/, /v/, /g./ and vowel productions like /a/, /e/, /i/, /o/, /u/. This is due to the adduction of the vocal folds. The patient was unable to phonate from 80-90 due to voiced sounds. For the abductor spasmodic dysphonia tasks, the patient had difficulty in productions of like /p/, /t/, /k/, /s/, /f/ due to

abduction of the vocal folds. The patient was found to have a mildly breathy voice in the phonation sequence from 60-70. It may be concluded that the patient had a mixed type of spasmodic dysphonia contributing to his stuttering

**Summary & Conclusion:**

This case demonstrates that spasmodic dysphonia, especially of the mixed type, can significantly impact both voice quality and speech fluency.

**SP1083**

**A Comparative Study of the Voice Quality Of Down Syndrome and  
Typical Developing Children**

*Rajeev Ranjan, Deepti Priya*

**Composite Regional Center for Skill Development, Rehabilitation & Empowerment of  
Persons with Disabilities (CRC) Lucknow**

**Abstract Not Available**

**Comparison of Acoustic Analysis of Vowels in Children with Cochlear Implant for establishment of baseline vocal measures in Intelligible Communication**

*Vaibhav Sahu, Prema Devi, Amit Pandey & Lukeshwari Verma*

**Pt JNM Medical College, Raipur**

**Introduction:**

Vowels have great significance in the intelligibility and prosody of speech. The production of vowels is an important communicative ability towards intelligibility and adequate production of vowels is a verbal ability upon which the child's speech and language skills improves.

Considering this effectiveness, phonemic drills were introduced for vowel production in speech and language therapy.

Understanding the voice characteristics is pivotal in discerning the complexities of communication development, especially when comparing children with cochlear implant to typically developing children. The improvement in quality of vowel production in children with cochlear implant is expected obvious when it is compared with typical hearing children. At the same time, there are nearly no reviews on similarities in voice characteristics among normal hearing individuals and cochlear implant individuals.

This research seeks to unravel the distinct voice characteristics between the groups of children of cochlear implants to those of normal-hearing children and the impact on vowel production. Exploring the voice characteristics in these population could contribute valuable insights into complex development and interaction between auditory input and vocalization in children with Cochlear implants.

The primary aim of the present study was to determine cochlear implant individual's voice quality to be categorized as normal or dysphonic and also aims to view their vocal quality to the typically normal children.

In this study, the computerized speech lab system (CSL 4500-D) was used for an objective assessment as it is an advanced and sensitive tool to identify minor issues with vocal performance. It is a highly advanced acoustic analysis system which is used for vocal analysis and measurement. It can also be used in therapy to evaluate pre-therapy and post-therapy voice to observe and evaluate the effect of an intervention. This study highlights the need for vocal assessment and training for cochlear implantees for better voice for effective communication

like their counter typically developing children.

**Need for Study:**

Voice is the mirror image of an individual presenting the Identity, emotion, intension, personality and so on. A child's voice can impact the communication intent by other's perception. As the sensory impairment affect the vocal development, this study will help to establish a normative data for development of voice in Cochlear implantee's to the typically developing children.

**Aim & Objectives:**

The primary aim of the present study is to determine Cochlear implantee's voice quality to be categorized as normal or dysphonic and it also aims to view their vocal quality differences to the typically developing children if any.

**Method:**

This study was a descriptive and analytic study conducted on 10 children with age 6 years to 12 year (5 male, 5 female) who were implanted under the age of 2 and 20 typical hearing children (10 male, 10 female) with the same age Group. The participants were from hospitals out-patient department of E.N.T. The inclusion criteria were: participants receiving greater than  $9 \pm 1$  month's rehabilitation in speech and language therapy after surgery (unilateral Cochlear Implant). The Normal hearing group were the volunteer from the participant's family and from a government school and the criteria for inclusion was based on hearing screening. No participants in this study were associated with any other health issues at the time of participation.

**PROCEDURE**

With careful selection criteria of both the group, all the participants were screened for Upper Respiratory Tract infections (URTI) and Ear Infections followed with a demographic data for further utility. Then proceeded for vocal analysis on Multi-Dimensional Voice Profile (MDVP) on Computer Speech Lab System 4500.

The participants were oriented to the computer system and engaged for vocal production with phonatory games to avoid further phonation issues. Then allowed for seating comfortably and encouraged to phonate /a/, /i/ and /u/ with a mic to mouth distance of at least 10cm. Three trials were elicited, and best of which was selected for analysis.

**Results & Discussion:**

Data analysis was done using Statistical Package (SPSS) version 16. The descriptive measures were mean and standard deviation for the Groups. To assess the association, the analysis of variance (ANOVA) was utilized with significance level of 0.05.

The analysis revealed a significant difference exist between the cochlear implantees and normal hearing participants, affecting the Fo with jita. The back vowels were with High jita value for Cochlear implant group. Similarly, the mean value of VFo is lowest for /u/ as compared to /i/ SPI for this group. SPI value is high for all phonatory task in implantees indicating greater efforts for vocal closure. Also indicated the significant difference of vowel production among Cochlear implant children to their counter typically developing Group.

**Summary & Conclusion:**

In this study, the 2 Group (Implantee and typically Hearing) has differences in production of all the 3 vowels for some acoustic measures while, no significance exist for few components in terms of Noise or harmony. Significant differences were observed for front and back vowel as compared to mid vowel. However, vowel formant frequency presented a significant difference for /i/ following /u/. Considering the results, it could be claimed that cochlear implant (under the age of 2) affects the quality of voice, so early vocal assessment and therapy with simple vowel production in playful manner significantly improve speech intelligibility

# LANGUAGE



# LANGUAGE: ORAL ABSTRACTS

## LIST OF ABSTRACTS

<b>LO220</b>	<b>564</b>
<b>Identifying Challenges and Crafting a Communication Partner Training Module for Healthcare Professionals to Enhance Acute Aphasia Rehabilitation .....</b>	<b>564</b>
<b>LO222</b>	<b>567</b>
<b>Impact of Home Literacy Environment on Print Awareness in Malayalam Speaking Children .....</b>	<b>567</b>
<b>LO223</b>	<b>568</b>
<b>Treatment of Aphasic perseveration (TAP) in Broca’s Aphasia and Fronto-Temporal Dementia .....</b>	<b>568</b>
<b>LO224</b>	<b>571</b>
<b>Adaptation of Linguistic Profile Test in Marathi for Assessment of Semantics in Persons with Predominantly Expressive Aphasia and Comparison with Matched Controls.....</b>	<b>571</b>

**Identifying Challenges and Crafting a Communication Partner Training  
Module for Healthcare Professionals to Enhance Acute Aphasia  
Rehabilitation**

*Aysha Hanan & Chanchal Chaudhary*

**Kasturba Medical College**

**Introduction:**

Aphasia disrupts multiple aspects of communication and creates significant barriers for people with aphasia (PWA). In a hospital setting, patients who have communication difficulties are three times more prone to face unfavorable events which are rather preventable, when compared to those who do not have issues related to communication. Lack of effective communication between HCP (healthcare professional) and individuals with communication disorders may lead to a decline in the quality of healthcare and lower satisfaction levels among patients with their healthcare experience. Environmental considerations along with aspects related to HCPs, which include their knowledge and capabilities have been found to impact the experiences of individuals having communication related disability in acute stroke units. HCPs describe their experience in communicating with PWA as challenging and express a sense of unpreparedness in addressing communication breakdowns during interactions.

**Need for Study:**

Despite the acknowledged challenges faced by HCPs in effectively communicating with PWA, a comprehensive exploration of these challenges is generally limited and notably scarce within the Indian healthcare system. Quality of care and support provided to PWA in the healthcare setting can be improved by identifying challenges faced by HCPs leading to communication breakdowns and developing a culturally sensitive training module. HCPs can acquire the necessary knowledge and skills to effectively engage in conversations with PWA through the training provided in communication partner training (CPT). The unique linguistic and cultural landscape of India introduces specific complexities that may impact communication strategies differently than in Western contexts. Understanding these intricacies is imperative for developing targeted interventions.

**Aim & Objectives:**

This study aimed to identify the communication challenges encountered and associated

strategies used by healthcare professionals working with people with aphasia post-acute stroke in India through Delphi consensus and to design a training module for enhancing communication skills of healthcare professionals dealing with people with aphasia

### **Method:**

The qualitative study followed a cross-sectional design and involved fifteen HCPs working with PWA post-acute stroke. Three participants from each of the following professions were recruited: Speech Language Pathologists, Neurologists, Nurses, Physiotherapists and Occupational therapists. An e-delphi survey was conducted to explore the communication challenges encountered and associated strategies used by HCPs working with PWA post-acute stroke. The survey was conducted in three rounds. The questionnaire for the first round included fifteen open ended questions. Responses of which underwent content analysis using the software, ATLAS.ti23. the second and third round were for consensus/agreement and final modifications.

Relevant codes and themes from the responses were selected, which included insights gathered from HCPs. This data along with information obtained from literature review were used for designing the training module. Content of the module were designed based on the most agreed upon responses given by the participants.

### **Results & Discussion:**

This three-round e-Delphi survey examined the communication challenges and strategies employed by HCPs working with PWA post-acute stroke in India, and also aimed to design a CPT module. Preliminary analysis of the responses indicates several barriers to communication which are categorised into patient-related, HCP-related, and environmental barriers. Cultural and linguistic factors also emerged as important contributors. HCPs in this study expressed that improved communication speeds up recovery and results in effective treatment delivery. They identified CPT as beneficial in enhancing communication with PWA. Although participants frequently used strategies such as verbal cues and visual aids, they reported that they do not feel fully equipped to address these challenges, highlighting the emerging need for formal training. Some of the preliminary findings of this study align with factors identified in previous literature such as difficulty understanding the needs of PWA and the time-consuming nature of care. However, distinct factors and cultural variables were highlighted by certain experts in this study. Furthermore, the inclusion of multiple disciplines such as neurology, nursing, physiotherapy, speech-language pathology, and occupational therapy, provided insight from

various perspectives.

**Summary & Conclusion:**

This study was done to explore the challenges faced and strategies used by HCPs while communicating with PWA post-acute stroke in India using a three-round e-delphi survey. The data gathered from the survey, combined with existing literature, were utilised for designing of a CPT module for HCPs working with PWA post-acute stroke. Designing a CPT module incorporating the insights of these professionals and their suggestions on effective strategies and solutions ensures that the module is not only evidence based and culturally appropriate but also grounded in the practical experiences and perspectives of HCPs themselves. It will help equip HCPs with the tools needed to navigate the complexities of communication thereby enhancing the overall quality of healthcare delivery and creates a more positive and supportive environment for both the patient and the HCP. This not only contributes to the ongoing professional development of HCPs but also aligns with the broader goal of elevating patient-centred care.

**LO222**

**Impact of Home Literacy Environment on Print Awareness in  
Malayalam Speaking Children**

*Aaruni V T, Perumal R.C, Krupa M, Jayashree C Shanbal & Anjana Arjunan*

**Sri Ramachandra Institute of Higher Education and Research (DU)**

**Abstract Not Available**

## **Treatment of Aphasic perseveration (TAP) in Broca's Aphasia and Fronto-Temporal Dementia**

*Ravi Patel & Shivam Singh*

**Amity University, Haryana & Fortis Hospital**

### **Introduction:**

Most people with aphasia will have perseveration to varied degrees. Sadly, there is no data to support treatments that are successful or efficient (Basso, 2004; Helm-Estabrooks, Emery, & Albert, 1978). Therefore, despite their best efforts to employ evidence-based therapy, physicians are forced to depend increasingly largely on their clinical experience for direction. Without a lot of treatment research, doctors can still make well-informed decisions about how to treat patients who persevere by learning about perseverance theoretically, applying that knowledge to treatment planning, and collecting outcome data to measure the effectiveness of the intervention. The procedure described here resulted in the creation of the treatment under investigation, which lowers aphasic perseverations. The only approach to treating perseveration that has been explicitly mentioned in the literature on aphasia therapy in recent years is Helm-Estabrooks, Emery, and Albert's (1987) Treatment of Aphasic Perseveration. Other publications offer succinct explanations of addressing perseverance in the therapeutic context and/or cautions against using a specific therapy method with specific PWAs based on the client's symptomology.

Perseverance is defined as "inappropriate repetition or continuation of a previous response when a different response is expected." Three types of perseverance were postulated by Sandson and Albert (1987): stuck-in-set, continuous, and recurrent. The most prevalent type of perseverations in aphasia is recurrent perseverations, which are the recurrence of a prior response to a different following stimulus.

### **Need for Study:**

Two inquiries for research will be addressed:

1. Does the course of treatment lead to less perseverations for both trained and untrained stimuli?
2. Does the intervention lead to more accurate labeling of both trained and untrained stimuli?

**Aim & Objectives:**

To Compare the treatment efficacy on Brocas Aphasia & Fronto-temporal dementia

**Method:**

3 Persons with Broca's Aphasia and 3 Persons with fronto-temporal dementia with modestly intact auditory comprehension and memory skills who are completely alert are the greatest candidates for the TAP program. Their most notable trait is their moderate to severe perseverance, albeit they should be able to name a few objects. The authors deemed a PWA to be a suitable candidate for TAP if the PWA shown a moderate to severe level of perseverance on the pretest. The Perseveration Severity Rating is determined by dividing the total number of replies by the number of perseverative responses on the visual confrontation naming and word discrimination tasks, two subtests of the Boston Diagnostic Aphasia Examination (BDAE). The authors suggested that TAP is applicable for PWAs presenting with perseveration "if the rating falls within the moderate (20% to 40%) to severe (49%+) range" alternately (ABAB design), whereby each phase of the protocol consists of five sessions: TAP - standard treatment - TAP - standard treatment - TAP. After each phase, the investigator measured treatment effects by changes in the raw scores achieved on the tasks and the percentage of perseverative responses. Based on the results on the Boston Diagnostic Aphasia Examination, demonstrated a moderate-to-severe receptive-expressive aphasia. He provided persevering responses on 31 out of 60 items (51.6%) and correctly named 0 out of 60 items on the Boston Naming Test (BNT). For the course of the treatment, sets of ten images each were employed. A single set was chosen for instruction. The 10 items in that set were used for the ISI manipulation, while the items with the wrong names (regardless of persistence) were used for the SFA component.

Twenty line drawings, each consisting of five groups of ten things, were chosen. Excluded items included in the BNT, Hindi/English cognates, and lacking a single-word label in Hindi. Lists were arranged according to number of syllables, familiarity, and semantic categories. Every image was about three inches tall and was printed on a 5.5" by 4.25" piece of paper.

**Results & Discussion:**

For seven weeks, groups attended a single, two-hour therapy session each week. Because of the distance, they were only seen once a week.

Over the course of three sessions, a consistent baseline for the number of perseverations and accurate naming on Set 1 was established. On all three probes, accuracy was 0/10, and

perseverations varied from 6-8/10.

During that time, accuracy increased from 0 to 4, and perseverations declined from 8 to 1. Over the course of treatment, decline in ISI was evident (from an average of 28 seconds during the first session to 4 second during the last sessions). During treatment, it was evident that the groups were making an effort to suppress the perseveration.

When a therapy to lessen aphasic perseverations was given, verbal production increased and perseverance was reduced over the long run, but confrontation naming only slightly improved. The study's findings bring up questions about how the participant responded to the course of the treatment and how the treatment plan was carried out. There are multiple approaches to intervention that involve raising the target's activation, preventing the perseverative response from being activated, educating families and caregivers, encouraging self-monitoring, and offering alternative communication techniques. Even though this treatment was planned before the Moses et al. report was published, the authors' suggestions are supported by the study's findings, which also share similar fundamental concepts.

Through the use of the ISI manipulation to give the client enough time to suppress the perseveration (resulting in no reaction or an alternative answer), as well as by raising the client's understanding and awareness of perseverance, the treatment promoted self-monitoring.

The participant seemed to have been consciously monitoring his response based on the obvious groping and the forced suppression of the perseverance. At least in the early stages of the treatment, it was obvious that SC was suppressing the articulation of perseverance; monitoring was obviously not at the preproduction, or subconscious, level.

The results of this research, namely concerning decreased perseverance, could be ascribed to the intervention's complex design. The first three suggestions are crucial to the strategy for lowering aphasic perseveration and have influenced the results that have been seen.

### **Summary & Conclusion:**

Although identifying accuracy is not shown, the data show improvement in perseverance reduction and vocal output.

In order to test and improve this treatment especially in terms of helping lexical retrieval more research is required. This can be done by either changing the current course of treatment or looking at the next step after the patient's perseverance has decreased to a sufficient degree.



**Adaptation of Linguistic Profile Test in Marathi for Assessment of Semantics in Persons with Predominantly Expressive Aphasia and Comparison with Matched Controls**

*Godbole Apurva Pradeep & Gayatri Hattiangadi*

**T.N. Medical College and B.Y.L Nair Charitable Hospital Mumbai**

**Introduction:**

Aphasia is an impairment of language that occurs as result of brain damage. In India, aphasia persists in 21-38 % of stroke survivors. The impact of aphasia can range from a complete loss of language function to mild deficits in word retrieval. It impacts the affected individuals functioning, participation and quality of life. Additionally, the effects of aphasia as a disability can be devastating to the individual and family. SLP's have a crucial role to play in the assessment and rehabilitation of persons with aphasia. It is crucial to obtain linguistic domain specific information during testing. The semantic domain is a crucial link in comprehension and expression of language.

**Need for Study:**

There are a great number of standardized aphasia tests available for use with the English-speaking population. Many of the tests that are used for diagnosis of aphasia and assessment of affected domains in India are based on tests in English developed in the Western countries and may lack test items that are specific to Indian culture. Additionally, the test items may not fit into the context of the Indian languages and may not be tailored for the Indian population. The Linguistic Profile Test (LPT) was conceptualized by Karanth et al., in Kannada and Hindi languages because such translated tests were unsatisfactory in assessing persons with aphasia in Indian context. The LPT permits a comprehensive linguistic analysis in terms of the phonology, syntax, semantics and discourse. The LPT attempts to assess the domains of semantic discrimination and semantic expression using naming and additionally lexical category, synonymy, antonymy, homonymy, polar questions, semantic anomaly, paradigmatic relations, syntagmatic relations, semantic contiguity and semantic similarity. Persons with aphasia may show semantic processing deficits which need to be addressed. An adaptation of the Semantics section of the LPT in Marathi would make it possible for an assessment of semantic abilities for persons with aphasia who are native Marathi speakers.

**Aim & Objectives:**

The present study aimed to explore whether persons with predominantly expressive aphasia show deficits in semantic abilities across various semantic relations when compared with their matched controls. Persons with predominantly expressive aphasia was operationally defined as those types of aphasia as per Western Aphasia Battery which language comprehension is relatively better preserved as compared to language expression. These included Persons with Broca's aphasia / Transcortical Motor aphasia / Conduction aphasia / Anomic aphasia. The primary objectives of the study were -

1. To adapt the Semantics section of Linguistic Profile Test (LPT) (Hindi, 1983) in Marathi
2. To administer this Marathi adaptation of Semantics section of the LPT on Persons with predominantly expressive Aphasia post CVA in the age range of 20-70 years and their age and gender matched controls.
3. To compare the scores of Semantic section of LPT between Persons with predominantly expressive Aphasia and their respective age and gender matched controls.
4. To test reliability of the adapted Semantics section of LPT in Marathi.

The secondary objectives of the study were:

1. To identify the stimulus and response modalities during administration of each subtest of Semantic section of LPT in Persons with Aphasia.

**Method:**

The Semantics section of the Linguistic Profile Test (LPT) was adapted in Marathi by the researcher. For the Homonyms sub test, a literal translation would not be possible and hence this sub test needed to be adapted. All remaining subtests were translated into Marathi by forward backward translation process and synthesis. This adapted test was administered on 2 groups. Group 1 had persons with predominantly expressive aphasia with 11 persons having Broca's aphasia, 5 persons having Anomic aphasia, 1 person with Transcortical Motor aphasia and 1 person with Conduction aphasia. They were tested within 24 months post stroke. Group 2 had age and gender matched controls of Group 1.

**Results & Discussion:**

Statistical analysis using the t test and Chi square test was carried out which revealed no significant difference between both groups for age, gender and education. The scores of both

groups on the adapted Semantic Section of LPT were analysed for normality using Shapiro Wilk test. Scores followed a non-normal distribution and hence non parametric Mann Whitney U test was used for comparison between both groups.

There was a highly significant difference seen in scores between both groups for total score, semantic discrimination score and semantic expression score. ( $p < 0.01$ ). The results of the total score of the semantic section of LPT in Marathi revealed that the persons with aphasia scored lower in the test as compared to the neurotypical individuals. This finding indicates that persons with aphasia do show compromised semantic abilities as compared to matched controls. The language mechanism may be affected in persons with aphasia which explains the difficulty in semantic retrieval in the participants of the present study also. The neurotypical individuals on the other hand who have better access to semantic information could perform well on the test. There was also a highly significant difference in scores for the subtests of body parts, lexical category, synonymy, antonymy, homonymy, polar questions, semantic anomaly, paradigmatic relations, syntagmatic relations and semantic contiguity ( $p < 0.01$ ). A significant difference was also noted for the subtest of naming and semantic similarity ( $p < 0.05$ ). There was no significant difference obtained between groups for the subtest of colours and furniture ( $p > 0.05$ ). This led to the finding that persons with aphasia do show compromised semantic abilities as compared to their neurotypical counterparts. This difference could be attributed to neurological impairment due to left hemisphere stroke in the 18 participants with aphasia. The inter rater reliability for the test administration calculated using Cronbach's alpha showed good inter rater reliability. The test also provided option of stimulus and response modalities for persons with aphasia. Frequency analysis of the modalities for the stimulus presentation and eliciting responses was done for each of the subtests. It was noted that persons with aphasia used alternative modalities such as graphic and gestural for responding when verbal modality alone was not sufficient. In the control group however, all participants responded verbally.

### **Summary & Conclusion:**

The semantic domain was found to be compromised in persons with predominantly aphasia as compared to matched controls. This inference was based on performance on tests of the adaptation of the Semantic Section of Linguistic Profile Test (LPT) in Marathi. The semantics section of the test adapted for this purpose attempted to address the gap of limited testing tools for semantic domain in the regional language of Maharashtra - Marathi. The adapted test also provided insights into the use of different modes of stimulus presentation and response modalities in persons with aphasia. The present study on semantic abilities of persons with

aphasia has clinical relevance in the domain of treatment planning. Varying modalities of stimulus presentation and response elicitation like those in the Marathi adaptation of Semantic Section of LPT in Marathi should also be considered during assessment and treatment planning.

# LANGUAGE: POSTER ABSTRACTS

## LIST OF ABSTRACTS

<b>LP768</b>	<b>581</b>
<b>Is it Possible to Create a Novel Hybrid-Based Intervention Approach for Echolalic Neurodivergent Individuals by Strategically Combining Techniques From All Three Intervention Approaches? .....</b>	<b>581</b>
<b>LP769</b>	<b>585</b>
<b>Effectiveness of Awareness Material on Communication Disorders Among Preschool Teachers .....</b>	<b>585</b>
<b>LP770</b>	<b>589</b>
<b>Global developmental delay and its cogitation in speech and language pathology care: A case report.....</b>	<b>589</b>
<b>LP771</b>	<b>593</b>
<b>Social Cognition in Typically Developing Children .....</b>	<b>593</b>
<b>LP772</b>	<b>597</b>
<b>Effects of Oral Sensory Deficits and Mealtime Behaviours on Feeding in Children With Autism Spectrum Disorder. ....</b>	<b>597</b>
<b>LP773</b>	<b>599</b>
<b>Testing Facilitation versus Inhibition in Balanced Bilinguals .....</b>	<b>599</b>
<b>LP774</b>	<b>603</b>
<b>Noun Phrase Dynamics in Narratives: A Comparative Analysis of Tamil-Speaking Children with Typically Developing and Unilateral Cochlear Implant Users .....</b>	<b>603</b>
<b>LP775</b>	<b>606</b>
<b>Relationship between Parental Variables and Screen time.....</b>	<b>606</b>
<b>LP776</b>	<b>609</b>
<b>Development of Apraxia Battery for Adults (ABA 2) in Hindi.....</b>	<b>609</b>
<b>LP777</b>	<b>612</b>
<b>Knowledge, Attitude, and Practices Among Speech Language Therapists Regarding Transcranial Direct Current Stimulation (tDCS) Application in Aphasia</b>	

<b>Rehabilitation: Questionnaire Development via Multicentric Observations in Republic of India.....</b>	<b>612</b>
<b>LP778</b>	<b>616</b>
<b>Influence of Cultural and Environmental Factors on Cognitive - Linguistic Abilities : A Comparison Between Tribals and Urban Children .....</b>	<b>616</b>
<b>LP779</b>	<b>617</b>
<b>A Survey on Awareness of Autism Spectrum Disorder Among Corporate Work Population.....</b>	<b>617</b>
<b>LP780</b>	<b>621</b>
<b>Impact of Early Childhood Adversities in Cognitive Linguistic and Auditory Processing Abilities: A Comparative Study Between Orphans and Children with Parents.....</b>	<b>621</b>
<b>LP781</b>	<b>625</b>
<b>Understanding Language and Behaviour Patterns in Children with Autism Spectrum Disorder: A Twin Study .....</b>	<b>625</b>
<b>LP782</b>	<b>628</b>
<b>Role of Speech-Language Pathologist in Comprehensive assessment and Intervention of Cognitive-communication deficit following Right Hemisphere Damage .....</b>	<b>628</b>
<b>: A Case Study.....</b>	<b>628</b>
<b>LP784</b>	<b>632</b>
<b>The Current Practises and Challenges in the Assessment and Intervention of Social (Pragmatic) Communication Disorder by Speech Language Pathologist.....</b>	<b>632</b>
<b>: A Survey Study.....</b>	<b>632</b>
<b>LP785</b>	<b>636</b>
<b>Parental Acceptance of Autism Spectrum Disorder Among Rural and Urban Parents .....</b>	<b>636</b>
<b>LP786</b>	<b>637</b>
<b>Exploring the Effects of Working Mothers on Children's Communication Challenges. ....</b>	<b>637</b>
<b>LP787</b>	<b>641</b>

<b>Influence of Parental Involvement in Feeding Practice and Speech &amp; Language Development in Infants &amp; Toddlers .....</b>	<b>641</b>
<b>LP788</b>	<b>644</b>
<b>Language and Literacy Assessment and Intervention Outcomes in Mild Intellectual Disability: A Case Report .....</b>	<b>644</b>
<b>LP789</b>	<b>648</b>
<b>Development of Pragmatic Skills Among 3-4 Years Old Preschooler Children in Rural Region of Gurgaon District of Haryana: An Exploratory Study.....</b>	<b>648</b>
<b>LP790</b>	<b>652</b>
<b>A Comparative Analysis of Communicative Effectiveness and Pragmatic Performance in Individuals with Broca's and Anomic Aphasia .....</b>	<b>652</b>
<b>LP791</b>	<b>655</b>
<b>Evaluating Speech-Language Pathologists' Awareness knowledge and understanding of Gestalt Language Processing in Autism: A Survey Study.....</b>	<b>655</b>
<b>LP792</b>	<b>659</b>
<b>Assessing the relationship between Self Esteem and Quality of Life in Individuals with Broca's and Anomic Aphasia: A Comparative Study.....</b>	<b>659</b>
<b>LP793</b>	<b>662</b>
<b>Delving into Sentence Variations in Motherese: A Study on Communication Patterns with Autistic Children.....</b>	<b>662</b>
<b>LP794</b>	<b>665</b>
<b>Speech, Language, Oromotor and Cognitive profile of 14-year old female with Anterior Thalamic Lesion leading to Cerebral Palsy (?): A case study .....</b>	<b>665</b>
<b>LP795</b>	<b>669</b>
<b>Analysis of Eating, Mealtime Behaviours and Feeding Difficulties in Children With Autism Spectrum Disorder.....</b>	<b>669</b>
<b>LP796</b>	<b>670</b>
<b>Impact of Screen Time Usage on Trajectory of Improvement in Autism .....</b>	<b>670</b>
<b>LP797</b>	<b>673</b>

<b>A Survey Of ASLP'S Awareness, Knowledge and Understanding of Neuroimaging in Traumatic Brain Injury.....</b>	<b>673</b>
<b>LP798</b>	<b>677</b>
<b>Maze Production and its Impact on Reading Comprehension in Children With Dyslexia .....</b>	<b>677</b>
<b>LP799</b>	<b>678</b>
<b>Risk of Digital Dementia in Adolescents and Younger Adults with Higher Screen Time- An Exploratory Study.....</b>	<b>678</b>
<b>LP800</b>	<b>681</b>
<b>Goal setting for Language Disorders in Children: Speech Language Pathologists' Practice Patterns, Confidence and Satisfaction .....</b>	<b>681</b>
<b>LP801</b>	<b>682</b>
<b>Impact of Sensory Processing Difficulties on Language Development in Children with Autism Spectrum Disorder .....</b>	<b>682</b>
<b>LP802</b>	<b>686</b>
<b>White Matter Degeneration in Binswanger's Syndrome: A Case Analysis .....</b>	<b>686</b>
<b>LP803</b>	<b>686</b>
<b>Challenges Encountered by Speech Language Pathologists in Working With Urban and Rural Parents of Children With Autism Spectrum Disorder .....</b>	<b>686</b>
<b>LP804</b>	<b>687</b>
<b>Student SLP's Knowledge and Implementation of Pragmatic Assessment &amp; Interventions for Children with Autism Spectrum Disorder.....</b>	<b>687</b>
<b>LP805</b>	<b>691</b>
<b>Effect of Modalities on Recalling Abilities on Working Memory Among Population with Alzheimer Disease-A Comparative Study .....</b>	<b>691</b>
<b>LP806</b>	<b>693</b>
<b>Effect of Modalities on Recalling Abilities on Working Memory Among Population with Latent and Anomic Aphasia - A Comparative Study. ....</b>	<b>693</b>
<b>LP807</b>	<b>695</b>



<b>Comparison of Story Grammar Elements in a Narrative Task in Language Level Typically Developing Children and Autistic Children.....</b>	<b>695</b>
<b>LP808</b>	<b>699</b>
<b>The Critical Role of Parental Knowledge in Managing Meltdowns in Children with Autism: Differentiating Meltdowns From Temper Tantrums .....</b>	<b>699</b>
<b>LP809</b>	<b>703</b>
<b>Development of Mobile Phone Application for Early Identification of Speech and Language Disorders in Children .....</b>	<b>703</b>
<b>LP810</b>	<b>707</b>
<b>Herpes Simplex Meningoencephalitis: A Case Study on Linguistic and Cognitive Impairments, and Treatment Outcomes .....</b>	<b>707</b>
<b>LP811</b>	<b>710</b>
<b>Comparing The Editing Capabilities Of ChatGPT With That Of A Human.....</b>	<b>710</b>
<b>LP812</b>	<b>713</b>
<b>Picture Augmented Communication Temptation Activities on Verbal and Non-verbal Communication in Children with Autism-Spectrum Disorder: Single Case Design.</b>	<b>713</b>
<b>LP813</b>	<b>716</b>
<b>Use of Socially Assistive Robots (SARS) for Increasing Mean Length Utterance (MLU) in Children and Adolescents With Autism Spectrum Disorder. ....</b>	<b>716</b>
<b>LP814</b>	<b>719</b>
<b>Effect of Screen Time Exposure on Receptive and Expressive Language Age in Children with Autism Spectrum Disorders .....</b>	<b>719</b>
<b>LP815</b>	<b>723</b>
<b>Relationship between the development of meta phonological skills and social cognition in children .....</b>	<b>723</b>
<b>LP816</b>	<b>727</b>
<b>Comparison of Canonical and Noncanonical Sentence Comprehension Abilities Across Broca's, Anomic and Global Aphasia .....</b>	<b>727</b>
<b>LP817</b>	<b>731</b>
<b>Practical Aspects of Technology Integrated Hybrid Therapy.....</b>	<b>731</b>

<b>LP818</b>	<b>733</b>
<b>Navigating Sensory Challenges: Insights into Children with Autism Spectrum Disorder .....</b>	<b>733</b>
<b>LP819</b>	<b>737</b>
<b>Lived Experience of Parents of Children with Autism : a Mixed Design Study .....</b>	<b>737</b>
<b>LP820</b>	<b>741</b>
<b>Navigating Speech Therapy: Challenges and Successes in Seckel Syndrome: A Case Study.....</b>	<b>741</b>
<b>LP821</b>	<b>745</b>
<b>Analysis of Epigenetic Mutation of AGTR2 Gene Responsible of ASD: An Exploratory Study.....</b>	<b>745</b>

**Is it Possible to Create a Novel Hybrid-Based Intervention Approach for Echolalic Neurodivergent Individuals by Strategically Combining Techniques From All Three Intervention Approaches?**

*Mahasri Das*

**ASLP Department, EIRCC Branch, Nair Hospital**

**Introduction:**

Echolalia is a unique behavioural pattern noted in Autism Spectrum Disorder (not to be confused with speech imitation in neurotypicals).

There appears to be a generalised assumption among SLPs that echolalia is a drawback holding back a child's speech and language development. Few SLPs may have tried to consider echolalia as a strength, and fewer totally relied on echolalic techniques to successfully work on speech and language development.

**Need for Study:**

Surprisingly, there have been many instances where echolalia was the only noticeable strength found in a paediatric client. The result was using multiple echolalia-based techniques to work successfully on the concerned client's speech and language development.

To the best of my knowledge, no concrete hybrid approach that emphasises combining multiple echolalia-based therapy techniques has been used in the day-to-day practice of paediatric SLPs. This puts echolalics at a disadvantage when learning speech and language skills, more so when only functional communication is being worked upon.

While acquiring language naturally, many echolalic-based techniques are present. Combining these multiple techniques and developing a set intervention approach will, in this case, boost or advantage learning language for echolalics.

**Aim & Objectives:**

**Aims**

1. To form a hybrid-based intervention technique that focuses on echolalia by combining techniques from all three intervention approaches
2. To quantitatively check the overall efficacy of this intervention technique via a change in the expressive vocabulary in terms of % on average.

3. To qualitatively check the overall efficacy of this intervention technique via client review

### **Objectives**

1. To create a novel hybrid-based intervention approach tailored for echolalic neurodivergent individuals
2. To check the overall efficacy of this intervention approach for an average duration of four months per patient
3. To qualitatively check the receptivity of echolalics to this intervention approach

### **Method:**

Research Design Interventional Non-Invasive Longitudinal Research Design Research  
Timeframe February 2024 to September 2024 (8 months total) was dedicated to the entire study. Per patient, on average, four months were dedicated to tracking possible changes. Research Data Collection Site EIRCC paediatric branch of Nair Hospital, a primary health-care centre under BMC, Mumbai Frequency & Nature of Sessions Individual Sessions - Weekly basis Participant Details No. of participants: 50 Selection Criteria · Chronological Age Range: 2 yrs to 5 yrs of age · On REELS, Receptive and Expressive Language Age (RLA & ELA) = <4 years six months · At least six months delay in ELA from Chronological Age · Neurodivergence present · PD is “Delayed Speech and Language Development in K/C/O Autism Spectrum Disorder” · Echolalia present (immediate or delayed or both) · Not engaged primarily or solely in destructive play Forming said Intervention Approach.

Multiple techniques based on different approaches that encourage the usage of echolalia in various ways will be used to form a hybrid intervention approach tailored explicitly for echolalic.

1. Functional Communication Approach
2. Gestalt Language Learning
3. Cue-Pause-Point
4. Mand-Modelling
5. Milieu Teaching
6. Incidental learning

Keeping track of the child's progress while using this intervention approach

Atleast ten essential words a parent believes are vital to a preschooler, e.g. will be shortlisted per session. After that, the planned intervention approach will be executed to work on a child's

functional communication. A list of functional words of each child picks up across the duration of the intervention approach. Lastly, the functional words are further divided into semantic sub-categories to determine which frequency a child will most likely pick up any concerned semantic sub-category.

The final results of objective data are calculated by considering the average performance. 1st average bifurcation of semantic categories in terms of % is done in detail. 2nd, a track of the average number of words per session, in general, has been calculated to approximate the size of expressive vocabulary based on how long a parent decided to continue his child's speech therapy.

The final results regarding the quality of this intervention approach will be based on parental review.

### **Results & Discussion:**

Most of the words picked up were action verbs (50% of the expressive vocabulary). These were followed by nouns primarily objects of daily use (15%), kinship terms (7%) and others (3%). This was followed by adverbs, mostly with sitting-based action verbs (10%) and others with motion-based action verbs (5%). The remaining vocabulary picked up were basic prepositions (7%) and lastly, adjectives linked to objects of daily use (3%). In terms of number of words, the per session average would be 5 to 7 words on average in terms of verbal usage. Retention was also noted in subsequent settings.

As the figures in the result indicate, the child will focus more on picking up words, which will help him fulfil his basic needs by conveying them verbally. Conversely, words considered less critical should not be focused upon initially by him as he doesn't consider them a part of "essential communication."

The technique overall is highly effective for acquiring speech and language skills at a rapid rate. Additionally, not all kids stuck to the average "number of words per session" until the end of the session. Many had an accelerated improvement in the same, with as many as 15 and occasionally more being picked up by some at later stages.

Most importantly, since this was an "echolalic-targeted" intervention, the clients found it easier to learn speech and language skills using what they now consider a trump card, "Echolalia." In other words, clients regarded this intervention technique as a unique, specialised technique designed to heighten their speaking confidence. Some clients even attempted or were able to carry out social communication correctly. In short, objective data and client reviews indicate that this technique is highly effective for echolalics.

**Summary & Conclusion:**

Through this intervention approach, echolalics can learn at least functional communication using a technique best tailored to their strengths. This technique, moreover, does not restrict a child to functional communication; it encourages the successful execution of social communication at later stages. Additionally, it enables accelerating the number of words picked up per session, i.e., encouraging a child to increase the number of words he can use every subsequent session. Lastly, clientele reviews indicate that echolalics feel that this intervention technique is the one which helps them pick up speech and language skills at the most rapid rate compared to other intervention techniques.

**Effectiveness of Awareness Material on Communication Disorders  
Among Preschool Teachers**

*Simran Gulati & Shrunga Manchanapura Shivalingaiah*

**Bharati Vidyapeeth, School of Audiology and Speech Language Pathology, Pune**

**Introduction:**

Communication is an active process that involves encoding, transmitting, and decoding the intended message (Owens,2008). Communication disorder is an impairment or inability to send, receive, process, and comprehend concepts or verbal or nonverbal and graphic symbol systems. (ASHA,1982). A communication disorder may be evident in hearing, language, and speech (American Speech and Hearing Association,1993). According to the American Speech and Hearing Association,2016 around 5-8% of preschool children have speech disorders, while around 10% have language disorders. According to the 2011 census of India, 2.21% of people with communication disorders in the total population have been reported. Communication disorders are more prevalent in children and are reported to be 4.09% in Gujarat(Sinha, S.K. et al 2017),6.07% in rural areas of Karnataka (Konadath et al,2013),4.29% in Ballari, South India (Ravi, S.K. et al 2021) and 3.63% in Lakshadweep(Konadath et al,2013).

During the preschool years, children undergo significant speech and language development. This period is crucial as speech and language skills develop rapidly, laying a foundation for communication and literacy skills that are essential for success throughout their lives (Ramsden & Durkin, 2012). Children`s ability to acquire speech and language not only allows them to engage in communication exchanges that lead to knowledge acquisition but also in improving interpersonal relationships, development of thinking ability, and a sense of self which is observed in the initial period of preschool years. (Committee on the Evaluation of the Supplemental Security Income (SSI) Disability Program for Children with Speech Disorders and Language Disorders, 2016)

Preschool is an important and formative experience for many children, as it is often the first formal educational setting they encounter. Children spend a significant amount of time in preschool, typically several hours a day for several days a week. During this phase, it's the preschool teachers who play a vital role not only in shaping the child's experiences and supporting their growth but also in speech, language, and literacy skill development. Additionally, preschool teachers often work closely with parents and families to support

children's development. Thus, Preschool teachers play a major role in the early identification of communication disorders or any deviancy in the development among the preschool children. Early detection of speech and language difficulties by preschool teachers, influence children's cognitive and psychosocial development and their academic achievement. (Blackorby and Wagner, 1996).

### **Need for Study:**

Literature suggests, poor or less knowledge about communication disorders and limited awareness level about speech and language development and speech and language impairment in preschool teachers (Chu, S.Y et al ,2019 & Uysal, A. A ,et al 2019).Literature also, highlights on the need to spread constant awareness and conduct awareness programs about the communication disorders among the professionals who work closely with children as a team approach often enhances the quality of life of children who are at risk. (Reddy, Madhu Sudharshan 2016 ). Hence, there is a need to develop comprehensive awareness materials aimed at educating preschool teachers about communication disorders and equipping them with strategies for early identification and appropriate referral procedures. Embracing a collaborative team approach, involving teachers, speech-language pathologists, parents, and other relevant professionals, can further improve the well-being of children prone to communication disorders by ensuring timely intervention and support.

### **Aim & Objectives:**

To investigate the effectiveness of developed awareness material among preschool teachers towards increasing communication disorders To compare the effectiveness of the developed awareness material on communication disorders among preschool teachers

### **Method:**

The study was approved by BV(DU) Institutional Ethics Committee (BVDUMC/IEC/31).

The present study was conducted in two phases.

Phase 1 involved developing pre awareness questionnaire, awareness material on communication disorders in English and post awareness questionnaire to evaluate the level of awareness. The awareness questionnaires had 25 statements with each statement having a 2-point rating scale (Yes or No). Of those 25 statements, 20 had forward scoring and 5 had reverse scoring. The information in the PowerPoint presentation was based on the simple definitions, characteristics/symptoms of communication disorders faced by preschool-age children, and the



significance of the preschool teacher's role in the early identification of communication disorders. The content of the developed material and questionnaires was validated by five speech-language pathologists with an experience of 5 years and their feedback was incorporated in the final awareness questionnaires and developed awareness material on communication disorders.

Phase 2 included administering the developed questionnaires and awareness material on 96 preschool teachers and further analyzing the scores of preschool teachers on pre- and post-awareness questionnaires obtained before and after reading the developed awareness material. Permission was obtained from the school principal to carry out the awareness study for an hour among the preschool teachers of the school. Participants in the study were selected based on the inclusion and exclusion criteria. Selected preschool teachers were given a participant information sheet and consent form. Written Consent was taken by each preschool teacher to conduct the data collection/ administration of developed study tools. Preschool teachers with no history of communication disorders in their family and who could understand, read, and speak in English, participated in the study were included in the study. A total of 96 preschool teachers participated in this study with an age range of 19 years to 54 years ( $M=33$ ,  $SD= 7.988$ ) and the years of experience teaching in preschool range from 4 months to 25 years ( $M= 5.2$ ,  $SD= 5.7$ ), moreover, during the administration of the developed tools.

Statistical Analysis: The data was analysed using the IBM Statistical Package for the Social Sciences (SPSS) (version 29). For analysis purposes, mean, mode, median, standard deviation, and interquartile range were calculated. Appropriate statistical tests were used as per the distribution of data to study the objectives. Non-parametric tests were used where the data was not normally distributed. Since the data was categorical in nature, the Mc Nemar test was used. Wilcoxon sign rank test was used to study the effect of developed awareness material on participants of the study.

### **Results & Discussion:**

The study's findings demonstrated that post-awareness questionnaire scores indicated a high awareness level about the characteristics of communication disorders and myths-taboos related to it, the role of speech-language pathologists and audiologists along with preschool teachers in early identification and intervention of the increasing communication disorders. A comparison of scores on pre and post-awareness questionnaires revealed a statistical significant variation between the two scores indicating that the awareness material was effective in creating awareness about communication disorders. A similar outcome was observed in a study

by George and Sakeer (2013), where the pre-test questionnaire scores were low, but after the awareness program, the post-test questionnaire scores ranged from 98% to 100% correct answers. This implies that the awareness materials developed in the current study, as well as similar materials like pamphlets used in other studies, can effectively enhance public education and awareness programs.

**Summary & Conclusion:**

The study revealed a significant difference between pre-awareness and post-awareness scores among preschool teachers, indicating that the developed educational material effectively enhanced preschool teachers' knowledge and attitudes toward communication disorders. The marked improvement in awareness levels highlights the developed awareness material's impact, suggesting it can serve as a valuable resource for raising awareness in various professional contexts beyond preschool education.

**Global developmental delay and its cogitation in speech and language  
pathology care: A case report**

*Sushmita Dutta, Muskan Sharma & Garima Dixit*

**Sri Aurobindo Institute of Speech and Hearing, Indore**

**Introduction:**

GDD can be operationally defined as a significant delay, usually two or more standard deviations below the mean, in two or more domains (gross/fine motor skills, cognition, speech/language, personal/social skills, or activities in daily living; Shevell et al. 2003). Also a significant delay in the acquisition of skills in two or more developmental areas, commonly identified in children under five years of age. As the term suggests, GDD is diagnosed when a child does not reach expected developmental milestones across multiple domains of intellectual functioning. The incidence of GDD is estimated to affect about 1-3% of children under the age of five. It is a common condition in the pediatric nervous system and requires timely and effective intervention. In the previous research, the traditional ways of speech and language therapy were relatively very easy and the content was rather monotonous, resulting in limited rehabilitation effects for the affected children. GDD is a broad term rather than a distinct diagnosis, its causes can vary widely. Genetic factors, as well as environmental influences both before and after birth, may contribute to developmental delays. Children with GDD often take more time to acquire foundational skills compared to their peers, with varying degrees of impact on their development. Therefore, conducting a thorough assessment is essential to identify a child's specific strengths and areas requiring intervention. A confirmed diagnosis allows healthcare providers to devise tailored treatment plans, monitor for potential complications, and offer prognosis along with family-specific support. This comprehensive approach aims to optimize outcomes for both the parent and child.

**Need for Study:**

The need of the study was to evaluate and increase the knowledge about the significant effect of global developmental delay on speech and language skills. Also one another major need of the study was highlighting the role of early identification and early intervention in global developmental disorder cases to enhance the speech and language skills.

**Aim & Objectives:**

The aim of this research paper is to examine the role of speech and language therapists in the early intervention of children diagnosed with global developmental delay (GDD).

**Objectives**

1. To assess the effectiveness of speech and language interventions in fostering developmental progress in children with global developmental delay.
2. To compare the pre- and post speech and language therapy outcomes in children diagnosed with global developmental delay.

**Method:**

A two-year four month old female reported to SAIMS with chief complaint of unable to speak age-appropriately. Assessment was done by pediatric neurologist, medical genetics, SLP & audiologist. A pediatric neurologist clinically assessed the details of the disorders using MRI Brain and Sleep EEG record. DNA testing was done by a clinical geneticist for understanding any genetic involvement. A speech language pathologist evaluated the child by using Com-DEALL developmental checklist (Karanth), detailed oral peripheral mechanism examination, Attention level (Reynell 1978), Play assessment (Mc Cune and Nicolich), was assessed. Audiological evaluation was done by an audiologist.

**Results & Discussion:**

Case history revealed no significant pre-natal, peri-natal history. However post-natal history revealed child was admitted to NICU for 1 day stay due to neonatal jaundice. Recurrent history of seizure was reported with onset at age of 5 months followed by seizure at 1 year and 1.5 year. An assessment for recurrent seizures was done by a pediatric neurologist using MRI Brain and Sleep EEG record. Findings of MRI Brain was brain parenchyma shows normal gray white morphology on acquired sequences, no focal brain parenchyma lesion, normal bilateral basal ganglia and thalami, normal brain stem and cerebellum, normal Cisternal spaces, fissures and sulci appearance, no mass effect or shift of mid line structure. Impression was unremarkable MRI study of Brain. The pediatric neurologist gave the diagnosis of febrile seizures. DNA testing done by a clinical geneticist revealed Variants of Uncertain Significance related to the given Phenotype were detected. Parental testing was recommended predicting that classification of the variants may change based on segregation analysis. A heterozygous missense variant in exon 3 of the MEF2C gene was detected in the child. A heterozygous missense variant in exon 2 of the TCF20 gene was detected in the child. Audiological

evaluation done by an audiologist using auditory brainstem response (ABR) testing indicated suggestive of bilateral hearing sensitivity within normal limits. Speech and language skills were evaluated. Informal speech and language evaluation revealed child has adequate eye-contact; absent imitation, vocalization, babbling and turn taking skills. Com-DEALL developmental checklist, a criterion referenced checklist which assesses 8 developmental skills revealed gross motor skills- 6-12 months, fine motor skills - 0-6 months, activities of daily living- 6-12 months, receptive language age- emerging 6-12 months, expressive language age- emerging 6-12 months, emotional skills- 12-18 months, cognition skills- 6-12 months, social skills- emerging 6-12 months. Detailed oral peripheral mechanism examination revealed normal appearance of oro-motor structures however inadequacy was noted in terms of range of motion and strength in lips; tongue during protrusion, elevation and lateralization; reduced intra-oral pressure during blowing and sucking. Attention level was evaluated using Reynell's scale which revealed level 1 (i.e. 0-1year age range). Play development was assessed which revealed symbolic play level 1-

pre-symbolic scheme). Social skills were assessed using Social developmental milestones suggesting category- emerging Infancy (i.e. age range 6-12 months). Cognitive skills were assessed using Cognitive developmental milestones suggesting category- emerging Infancy (i.e. age range 6-12 months). Based on the informal observation and overall test results the speech language pathologist diagnosed the case as "spoken speech & language disorder secondary to global developmental delay". Early intervention targeting the specific deficit areas of speech and language skills was recommended for the child. Speech and language therapy intervention included 21 sessions. Treatment strategies and techniques were applied during the speech and language therapy sessions. After 21 sessions re-evaluation was done and major progress in speech, language and other previously tested domains was noticed. Informal speech and language evaluation revealed improvement in eye-contact; emerging imitation, vocalization of vowels, babbling and turn taking skills. Com-DEALL developmental checklist, showed a drastic improvement across age-ranges in gross motor skills- 6-12 months, fine motor skills - emerging 6-12 months, activities of daily living- 6-12 months, receptive language age- emerging 18-24 months, expressive language age- emerging 12-18 months, emotional skills- 18-24 months, cognition skills- emerging 12-18 months, social skills- emerging 12-18 months. Attention level re-evaluated using Reynell's scale which revealed level 2 (i.e. 1-2year age range). Play development (Mc Cune and Nicolich) showed improvement and revealed symbolic play level 1- pre-symbolic scheme (i.e. age-range younger than 8 months). Social

developmental milestones showed improvement in social skills suggesting category- emerging Early Childhood(i.e. age range 12-24 months).Cognitive developmental milestones showed improvement in cognitive skills suggesting category- emerging Early Childhood (i.e. age range 12-24 months).

**Summary & Conclusion:**

Early intervention plays a crucial role in addressing developmental challenges during critical periods of speech and language acquisition, potentially mitigating long-term communication deficits. Consequently, a structured, multi-disciplinary approach to early intervention is essential for optimizing the developmental trajectory of children with GDD, promoting better integration into educational and social environments, and improving long-term outcomes. Further research is recommended to explore the long-term benefits of these interventions and to refine therapeutic approaches for varying degrees of GDD. This could ensure more personalized care and contribute to more comprehensive developmental support systems.

## Social Cognition in Typically Developing Children

*Nidhi Aruna, Joshi Sukhi Srinivas, Jeffrin Rose & Abhishek B P*

### AIISH

#### **Introduction:**

Cognition refers to the mental processes involved in information processing. It encompasses a set of overlapping functions such as attention, memory, perception, reasoning, and thinking. Cognition plays a key role in learning. It also influences executive functioning; in other words, executive functioning relies on higher-order cognitive processes. Additionally, cognition impacts social participation and interaction, the relationship is termed as social cognition. This social cognition is found to be pivotal in learning by instruction as well as learning by observation. This learning by observation would require Metacognitive processes, thus cognition can be considered the foundation stone for learning. Theory of mind is considered as a core element of social cognition and deals with how people process information about others and the social environment.

Social Cognition would show a developmental trend. Shakoor et al. (2012) highlighted that abilities involved in social cognition development are essential for a child's socialization and interaction, as well as for school adaptation in the first years of life. Children who have developed social cognition can negotiate social interactions by taking the perspective of others, anticipating others' intentions and understanding their needs (Slomkowski & Dunn, 1996). Social cognition has been studied in pre-schoolers, especially in the Western context. (Ex Bulgorali & Molina, 2016) and these studies have shown that social cognition would start an emerging trend by 3-4 years. Considerably the number of studies in the Indian context is relatively less compared to the Western studies.

#### **Need for Study:**

Social cognition has different facets like social perception, social knowledge, theory of mind, decision-making, and affective processes.

These processes are found to be important for children to become socially independent. Though there are some studies on the development of test batteries for assessing social cognition In the Indian context (Mehta et al, 2011; Singhai et al. 2020) studies unveiling the developmental trajectory in the process of development of social cognition are sparse. This necessitated the current study.

**Aim & Objectives:**

Aim of the study: To explore social cognition in typically developing children between ages 5 to 10 years

Objective: To compare the response type in children of 1st, 2nd, and 3rd grade.

**Method:****Participants**

A total number of 118 participants were considered in the current study. The participants were pupils of CBSE schools. The age range of the participants was between five to ten years graded from Class 1 to Class 3. Equal number of boys and girls were considered. Assent was taken from children and consent was taken from class teachers and parents were considered before enrolling the participants in the study.

**Stimulus and Procedure**

A questionnaire was configured to tap the social cognition of these children. This was done by the investigators of the current study and was crosschecked by a non-participant who was told about the objective of the study. The non-participant also checked for content validity and age appropriateness. The questionnaire comprised of seventeen questions and was prepared after reviewing relevant literature. Out of 16 questions, 8 questions revolved around the social scenarios, the respondents were required to select a response that was based on the affective responses. While the remaining 8 questions dealt with the problem-solving domain. The questions were in the form of multiple choice and each question had four options (close set) and there was one open-ended option also. Socially acceptable responses were considered as the most appropriate or correct response and were later compared with the participant's response.

The instruction provided to the participants was in verbal mode. The participants were supposed to opt for the most appropriate option among the four options provided either verbally or by selecting the option on the phone with an open-ended option to express their perspective or produce a response when it did not match with any of the options provided. Reinforcements such as tangible (chocolates), tokens (pencils), and social (high-five, claps) were provided after the administration of questionnaire. The participants were interviewed in classroom and library setup. Time taken to administer questionnaire to one participant was around 15-20 minutes. Responses were collected in Google Form.



## Analysis

The most common responses (mode) were computed for each question in the Excel sheet and the distribution of responses concerning class Grades.

### Results & Discussion:

Questions on affective processes had 4 options while questions related to problem solving had four responses. The four choices corresponded to a. Amateur response b. Possible answer c. Individual response/personal attribute. Practical response Practical response and unique response (when the response was open-ended). The response typologies were coined by the investigators. These uniform choices were pitted for each question to analyze the responses. Children of 1st grade, produced 3,6,4, and 3 responses in the same order mentioned above while children of 2nd grade and 3rd grade produced 2,8,2,4 and 1,8,2,5 responses. Children sometimes produced specific responses however these responses were seen only in 5% of the children. These responses were in addition to the choices, hence were not considered for the tabulation. The data was non-parametric and Kruskal-Wallis test obtained was 2.33 ( $p < 0.05$ ) showing that response typologies varied across the three grades The amateur responses reduced with age, possible answers remained stable across the three grades while the personal attributes also reduced with age and practical responses increased with age.

In addition to this, descriptive analysis was carried out to analyze the responses. As aforementioned, 8 questions tapped affective process while the remaining 8 questions tapped problem-solving. These responses were analyzed across age and gender as per the above-mentioned objectives. Children of a particular grade opted for same type of response. For example one of the questions was 'You are eating a candy, the candy falls' What will you do? The options were to pick and eat when no one sees it, leave it and walk, wash it, and then eat, ask the parent for another candy. Children of 1st grade and 2nd grade opted to ask the parent for another candy while children of 3rd grade opted to walk away, thus there was individual variability in the responses. Questions on problem-solving also showed a clear developmental trend, for instance, one of the questions posed was 'You would have not done your homework, what will you do' and the options were admit it to the teacher, lie that you have forgotten, complain that time as insufficient and start crying. Children in 1st grade opted for choices such as starting crying or lying that they forgot; while children in third grade opted to admit it. Thus, the findings showed a developmental trend. It is noteworthy that the affective responses varied across the two genders, however, the responses were not analyzed across the two genders and will be probed in future studies.

**Summary & Conclusion:**

The study was carried out to explore social cognition in typically developing children of 1st-3rd grade. A questionnaire tapping affective process and problem-solving was coined for the study. The responses were analyzed under four response types (amateur, possible, personal, and practical responses) and the results showed that the responses showed a developmental trend. Quantitative analysis revealed a significant difference between the grades while the question on problem solving showed a better developmental trend.

## **Effects of Oral Sensory Deficits and Mealtime Behaviours on Feeding in Children With Autism Spectrum Disorder.**

*Zainab Panvelwala, Motiwala Tasneem Ali Asgar & Zainab Unwala*

**Topiwala National Medical College and BYL Nair Charitable Hospital**

### **Introduction:**

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition that typically manifests in early childhood. It is characterized by deficits in social communication, interaction, and restrictive, repetitive behaviours. According to the DSM-5, a diagnosis of ASD requires persistent deficits in social-emotional reciprocity, relationship development, and nonverbal communication, often accompanied by sensory sensitivities.

Globally, approximately one in 100 children is diagnosed with ASD. Sensory Processing Disorder (SPD) frequently co-occurs with ASD, affecting how children interpret sensory inputs such as sight, sound, touch, and balance. Oral sensory issues are particularly prevalent and can significantly impact daily life, especially in areas such as feeding and speech.

Children with ASD often face feeding challenges due to heightened sensitivity to food textures, tastes and smells. This can result in behaviours such as food selectivity, food refusal, and aversion to oral hygiene. These challenges are often compounded by difficulties with sensory modulation, gastrointestinal issues, and rigid behavioural patterns. The sensory sensitivities frequently lead to disruptive mealtime behaviors, such as tantrums or food refusal, creating significant stress for both the child and their caregivers.

### **Need for Study:**

There is a pressing need for research to explore how oral sensory deficits and mealtime behaviours impact feeding in children with Autism Spectrum Disorder (ASD). Feeding difficulties in this population often stem from a combination of sensory sensitivities, behavioural challenges, and developmental delays, placing these children at nutritional risk and potentially hindering growth. Despite the prevalence of these issues, few studies integrate both sensory and behavioural factors. Understanding this relationship is crucial for the development of targeted interventions that can improve nutrition and mealtime experiences for children with ASD and their families.

**Aim & Objectives:**

This study aims to investigate the impact of oral sensory deficits and mealtime behaviors on feeding in children with Autism Spectrum Disorder (ASD). Specifically, the study explores how sensory processing difficulties and related behaviors influence food selectivity, mealtime challenges, and overall feeding outcomes in children with Autism Spectrum Disorder.

**Method:**

The study included a sample of thirty children diagnosed with Autism Spectrum Disorder, aged between 4 years and 6 years and 11 months. Three assessment tools were administered: the Sensory Processing Disorder Checklist to identify and assess sensory processing challenges; the Sensory Eating Problems Scale to evaluate sensory-related issues affecting eating behaviors; and the Brief Autism Mealtime Behavior Inventory (BAMBI) to assess mealtime behaviors in children with Autism Spectrum Disorder (ASD). Correlation analysis was conducted to determine the relationship between oral sensory deficits, mealtime behaviors, and feeding outcomes. Additionally, multiple regression analysis was performed to assess the combined effects of oral sensory deficits and mealtime behaviors on feeding outcomes.

**Results & Discussion:**

The study found significant positive correlations between oral sensory deficits, mealtime behaviors, and feeding difficulties in children with Autism Spectrum Disorder (ASD). Oral sensory deficits and mealtime behaviors were both strongly associated with feeding challenges, such as food selectivity and refusal. Multiple regression analysis revealed that oral sensory deficits and mealtime behaviors together significantly predicted feeding difficulties with oral sensory issues being the strongest predictor. These results indicate that both oral sensory deficits and disruptive mealtime behaviors significantly contribute to feeding difficulties in children with ASD.

**Summary & Conclusion:**

Both oral sensory deficits and mealtime behaviors significantly contribute to feeding difficulties in children with ASD. Interventions targeting sensory desensitization and behavioral management are essential to improving feeding outcomes and reducing mealtime stress for children and caregivers. An integrated approach addressing sensory and behavioral factors may reduce mealtime stress and enhance nutritional intake for children with ASD.

## Testing Facilitation versus Inhibition in Balanced Bilinguals

*Yasika Agarwal, Lekha MD, Shreya P S & Abhishek B P*

**All India Institute of Speech and Hearing**

### **Introduction:**

Bilingualism is a commonly observed phenomenon in today's society, most of the individuals in the current day scenario are bilinguals. A bilinguals can have varied proficiency in the second language. Based on the proficiency in second language, bilinguals can be classified as balanced bilinguals (with same proficiency in both languages) and dominant bilinguals (with more proficiency in one language over the other). The lexical semantic activation in balanced bilinguals is often debated, a balanced bilingual is assumed to have a common lexicon for both of the languages known to him/her (Posner, 2015). The language not in use may offer competition to the language in use or may facilitate the language in use. This leads to the hypothesis of inhibition versus facilitation in Bilinguals (Linke, 2018). These two hypothesis can be tested by using naming tasks, translation or constrained recall task.. The naming tasks and translation tasks are subjected to stimulus related variability. The constrained recall task would require the participant to pay attention and hold the items presented in one language in their memory amidst the stimulus presented in other language. The items presented in the other language may offer competition, facilitate the items in language not in use or may not have any effect (Paap, 2018). These two hypothesis were investigated in the current study.

### **Need for Study:**

Bilingualism in Indian context is unique hence the studies in Western languages cannot be directly applied here. The mechanisms of lexical retrieval was investigated in the constrained recall paradigm where a multitude of factors like mechanism of lexical retrieval, selective attention and bilingual control was probed.

### **Aim & Objectives:**

To test the mechanisms of lexical retrieval in balanced bilinguals using constrained recall paradigm in Neuro-typical adults.

### **Method:**

### **Participants:**

A total of 24 neuro-typical adults in the age range of 18-30 years were recruited for the study. Out of the 24 participants, 20 were females and 4 were males. Recruitment of participants was done based on convenient sampling. Probing into the language history and proficiency revealed that 24 participants were balanced bilinguals (whose native first language was Kannada and second language was Hindi) They majorly hail from different places of Karnataka and Tamilnadu. A subjective informal scoring about the level of proficiency in Kannada and Hindi was obtained from the participants where they had to rate themselves on a scale from 1-10 with 1 being least proficient and 10 being most proficient in the languages respectively. The participants included were proficient in Kannada and Hindi with same ratings on LEAP Q. An oral informed consent from the participants was obtained.

**Stimulus:**

The stimuli used in the study were four sets of words each in Kannada and Hindi languages , each set containing 7 words from different semantic categories. Bisyllabic and trisyllabic words were used ensuring that no synonyms and homonyms were present in both the languages. Each set was recorded in male and female voices of native speakers of Kannada and Hindi. In 1 trial 14 stimuli from 2 sets, each set containing 7 words were presented. If the Kannada set (7 words) was in female voice then, Hindi set (7 words) was in male voice in order to distinguish between the target and competitive stimuli. The set to be recalled being the target stimuli and other being the competitive stimuli. The total stimuli being presented over 4 trials in the form of 8 sets accounted to 56 words and the total target stimuli to be recalled being 28 words, that is 4 sets. The target stimuli in 2 out of 4 sets were Kannada and other 2 were Hindi, with various combinations being randomised by the examiner to eliminate biased responses.

**Procedure:**

The participant was seated in an empty room with minimal noise and distractions at a distance of 50 m from the phone or laptop which was kept in front of them. The participants were presented with 1 set recorded from each language sequentially at a time and had to recall the set from any one of the two languages as constrained/instructed by the examiner and repeat the target words irrespective of the order. The responses were recorded and analysed.

**Analysis:**

All the responses of the participants were analysed perceptually. Each word of the target stimuli repeated accurately was considered as a correct response and scored 1, any response other than the target stimuli was considered incorrect and was given a score of 0. Then a grand total of correct responses out of 28 were calculated, also correct Kannada and Hindi responses

were separately calculated and analysed.

### **Results & Discussion:**

Each correct score was awarded a score of 1, while an incorrect response was given a score of 0. The maximum score accounted to 28 for all the four sets together. For each language (Hindi/Kannada) the maximum score was 14. The median scores for Hindi was 9 while the median score for Kannada was 12. In order to verify if there was any significant difference between the median scores, Wilcoxon's signed rank test was carried out (as the data was non-parametric as proven on Shapiro-Wilk's test for normality) and the Z score obtained was 2.38 ( $p < 0.05$ ) and the corresponding p value showed significant difference indicating that there was a significant difference in the performance on recall in the two languages, even when the participants had equal hold on the two languages. 28 words were presented in language in use and 28 words were presented in language not in use. When the competent stimulus was in Kannada, the median scores were 8 for Hindi while the median scores was 9.33 for Kannada while the median scores were in Hindi and further Wilcoxon's signed rank test was carried out to verify if there was any significant difference and the Z score obtained was 1.32 ( $p > 0.05$ ) and corresponding p values showed no significant difference. The results showed that there was significant difference in the recall in the two languages which showed that the linguistic variables played a significant role in shaping the performance of participants. The effect of competent stimulus on the target stimulus was also investigated and the competent stimulus did not have any potential effect on the constrained recall in the language in use and this shows that the competent stimulus did not have any inhibition effect over the activation of the target. This hold true for both the languages. The target population considered was balanced bilinguals with equal proficiency in the two language hence the competent stimulus would have had a neutral effect without offering facilitation or inhibition. The findings are important in deducing the seminal information on the mechanism of lexical retrieval in balanced bilinguals of Indian context.

### **Summary & Conclusion:**

The study was carried out with the aim of exploring the mechanisms of lexical retrieval in balanced bilinguals. A total of 24 balanced Kannada-Hindi Bilingual participants were selected for the study. The task of the participants was to ignore the competent stimulus and recall the target stimulus (without prior instruction thus requiring them to invest sustained attention). Recall scores in the two languages were significant, however the recall scores in Hindi or

Kannada did not vary with the competent stimulus showing that inhibition may not be evoked in balanced bilinguals.



## **Noun Phrase Dynamics in Narratives: A Comparative Analysis of Tamil-Speaking Children with Typically Developing and Unilateral Cochlear Implant Users**

*Sharadha Lakshmi, Madhumitha R & Krupa Venkatraman*

**Sri Ramachandra Institute of Higher Education and Research**

### **Introduction:**

A noun phrase (NP) is a noun along with its modifiers, which make up a syntactic unit, and at times the determiner is the head of the words acting as subject, object, or prepositional object (Börjars & Delsing, 2008). The development and use of NPs in children's narratives are very important markers of language proficiency and narrative coherence. NPs, especially those referring to agents or living beings, play a crucial role in establishing and maintaining logical connections within a story central to discourse coherence (Ukrainetz et al., 2005). Studies have examined NP elaboration, indicating that as children mature, they employ increasingly complex and detailed NPs, enhancing narrative richness (Eisenberg et al., 2008).

Studies have also highlighted the significant relationship between age, language acquisition, and developing cohesive devices, such as NPs, in typically developing children and those with hearing impairment (HI) (Peterson & Dodsworth, 1991; Geers et al., 2009). The ability to construct narratives is closely linked to the proficient use of noun phrases. Spencer et al. (2003) found that children with cochlear implants improved narrative cohesion and used more detailed noun phrases over time, contributing to more coherent storytelling. The age at which a child receives a cochlear implant plays a critical role in their linguistic development (Schauwers et al., 2004). Research identified that while basic structures are acquired, challenges remain in mastering agreement and complex modifiers within noun phrases in HI (Guo et al., 2013).

Therefore, age-appropriate use of NP is important to generate cohesive narratives.

### **Need for Study:**

NP elaboration is a marker of syntactic and narrative development and has to be noted to trace language impairment in HI children.

Existing research on Tamil-speaking narrative development is mainly conducted on typically developing children, and relatively fewer studies have accounted for the macro as well as micro aspects of narrative and discourse components of Tamil-speaking children with and without HI

(Venkatraman et al., 2021; Jayaseelan et al., 2024; Muthu et al., 2023). These studies report challenges in coherent narrative production in children with HI. Therefore, there exists a need for more research studies involving NPEs from the Tamil-speaking population in extant literature.

### **Aim & Objectives:**

This research aims to compare the noun phrase elements used in a narrative task by a cohort of typically developing (TD) children in Tamil and unilateral child cochlear implant users (UCCIU). The aim here is to identify differences in frequency and use of NPEs, such as determiners, attributive adjectives, conjunctions, etc., between the two groups.

### **Method:**

This study is a secondary analysis of the narrative samples obtained from a previous study (Muthu et al., 2023) (ethics No. CSP/22/DEC/119/595), which included 15 UCCIU and 15 TD children with normal hearing. The Tamil-speaking participants were matched for language age through ALD (Lakkanna et al., 2021) and divided into three groups: 3;0-3;11, 4;0-4;11, 5;0-5;11 years. The narrative samples obtained followed a story-retelling task using the Tamil version of the story (My Fish! No, My Fish!, 2024).

This study comprises the following phases:

Phase 1. Re-transcription of Narrative Samples: All samples were re-transcribed with focus on the eight NPEs: determiners, possessive nouns, possessive pronouns, participial adjectives, nouns as pre-modifiers, appositive noun phrases, attributive adjectives, and conjunctions. These elements were extracted and examined from each child's 20 utterances of narrative samples.

Phase 2. Mapping of Noun Phrase Elements The transcribed data were mapped according to Rajendran's (2016) classification of noun-modifying expressions (NMEs) in Tamil. The NPEs were identified and coded across the different age groups to explore how these elements vary with age and hearing status.

Example: |Anna endhukuran | Noun verb |Theriyadhu| Verb |Kichu nu ninaikkuren | Noun verb |rendu perum pannuvanga sanda| Determiner NP verb phrase |Ponu| Noun |nanga porom | Possessive Pronoun |Ivanga aporanga poitu eduka pakuranga ...| Determiner Verb phrase |Anga illa anga (repetition) edukandhinga sonna| Determiner NP Verb Phrase |Meen | Noun |Nalla irudhudhu| Attributive adjective.

Phase 3. Statistical Analysis Two independent evaluators coded the NPE; their agreement was Cohen's Kappa 1. The frequency of each NPE across all samples was calculated, and the

results were tabulated using Excel. The Mann-Whitney U test was employed to compare the NPE between the two groups.

### **Results & Discussion:**

A Mann-Whitney U test result showed that there were significant differences between TD children and UCCIU in NPE, as TD children employed more determiners ( $U = 40.00, p = .002$ ), attributive adjectives ( $U = 43.00, p = .003$ ), pre-modifiers ( $U = 34.00, p = .001$ ), and conjunctions ( $U = 47.00, p = .003$ ) than UCCIU. However, there were no significant differences between possessive pronouns and personal nouns ( $p > .05$ ). These results, therefore, indicate that TD children used more complex NP structures in their narratives than UCCIU. On the other hand, UCCIU demonstrated a greater use of personal nouns, which reveals simpler noun phrase constructions.

The investigation shows that there are considerable differences in the NP elaboration between TD children and UCCIU. The TD children used significant determiners, attributive adjectives, and pre-modifiers that make their narratives more syntactically complex and cohesive. This is according to past research, which also shows that HI children, although aided by cochlear implants, are delayed in terms of developing complex syntactic structures (Nicholas & Geers, 2007; Spencer et al., 2003).

The decrease in the use of conjunctions and possessive pronouns by cochlear implant children also indicates difficulty with narrative coherence. Earlier research has indicated that such delays are mainly due to the decreased auditory input and their reliance on direct instruction, which limits incidental learning (Geers et al., 2009). While both groups improved over age, the developmental trajectory was steeper for TD children, and thus there is a need for planned interventions aimed at enhancing syntactic skills in cochlear implanted children.

This shows that there is a need to focus on NP elaboration in interventions for language provided in cochlear implants. Enhancing this skill would lead to better narrative and academic effects. Future research should aim at determining how targeted syntactic interventions correct those specific language delays.

### **Summary & Conclusion:**

The paper considers NP elaboration in Tamil-speaking UCCIU as one of the most important aspects for researchers interested in narrative coherence. It brings to light the developmental delay in NP elaboration for children with cochlear implants. Further, this suggests that targeted NP elaboration must be focused on during language interventions for UCCIU.

## Relationship between Parental Variables and Screen time

*Amulya M, Rakshitha S, Bhargavi K & Abhishek B P*

**All India Institute of Speech and Hearing**

### **Introduction:**

Screen time is a self-explanatory term and it refers to the time children devote in engaging with screens, including televisions, computers, tablets, and smartphones. The bright side of the technology is that the technology offers educational benefits, however it is noteworthy that an excessive screen time has raised concerns can have a serious impact on the physical health, cognitive development and the social/emotional well being of the individual. Research indicates that an increased screen time is linked with sedentary life style and there are direct evidences I proving the same. For instance, a study by Hinkley et.al (2010) claimed that children exposed to screen time for more than 2 hours a day are presumed to be overweight than their peers. Screen time is also associated with evitable delay in the cognitive development in other words, children exposed to a greater screen time are expected to have poor cognitive skills compared to their peers with limited screen time at the same time passive screen time is advocated by some proponents who work in this direction as this passive screen time can facilitate learning. In the same lines excessive screen time can also influence the speech language skills in children, increased screen time can limit the direct stimulation that children can get, as a direct consequence the onset of speech language development may get delayed. Children who are exposed to a greater screen time are vulnerable for a receptive and expressive language delay (Christakis et al, 2009). However passive exposure is advocated for facilitating speech and language development similar to cognitive development as proven by studies. Cumulatively increased screen time can affect the social and emotional well being of the individual. Owing to this the quality of life of a child exposed to greater screen time is prone to be affected.

### **Need for Study:**

In regard to screen time, experts advocate an optimum screen time. The operational definition of screen time is based on the age of the children. WHO suggests that children younger than two years should not be exposed to screen time while children below 5 years are expected to have a screen time of not more than one hour. There are plenty of survey-based studies carried out through out the globe and Indian context is no exception, however most of these studies

study the impact but do not account the demographic variables of parents with the screen time.

### **Aim & Objectives:**

To profile the demographic variables of parents and the parameters related to screen time. The study also elicited the parents' perspective on screen time (regarding the impact of screen time)

### **Method:**

#### **Participants**

The current study was a survey-based study. A total number of 54 respondents were considered in the study. The participants were typically developing children of age range 0-7 years whose parents are below 40 years.

#### **Stimulus and Procedure**

A questionnaire was designed for obtaining the information about the exposure of screen time in these children. The questionnaire consists of two sections. The first section composed of demographic details of the participants including age of the children and parents, education and occupation of the parents and their family type.

The second section composed of nine multiple choice questions and one open ended question without option. The options for each question were given based on socially acceptable responses, and the participants were asked to choose one among the given choices.

The responses are gathered through a google form filled by the parents of these children. The instruction provided to the participants was in verbal mode. The participants were supposed to select the most appropriate option among the given choices.

#### **Analysis**

The responses about the screen time in children were filled by their parents in the google form. The responses were computed for each child in the excel document . Responses were divided based on the age range of the children into three groups that is 0-2 years, 2-4 years and 4-7 years. Information regarding the presence or absence of screen time, duration , device used, its purpose, frequency the screen time and the time of the day the screen time was more was gathered and effect of the screen time was also documented. In addition to this, the duration of qualitative time spent, child's responsiveness during the screen time was also profiled and an open ended question about parents concern regarding the exposure of screen time was considered.

### **Results & Discussion:**

A total of 54 respondents filled the google form. Out of the 54 respondents, 7 of them were parents of children less than 2 years while 23 were parents of children in the age range of 2-4 years and 24 were parents of children in the age range of 4.1-7 years. The responses were quantified in terms of percentage for better representation of results. Collectively 35% of children stayed in joint families while the remaining 65% stayed in nuclear families. Greater than 80 percent of parents were graduates and in 60% of the responses one parent was working and in 40 percent both the parents were working. 92% of the parents regardless of the child's age reported that their child had screen time. The average screen time was less than 1 hour as reported by parents of children less than 2 years while the average screen time for children between 2-4 years and 4.1-7 years was 2-3 hours and 1-2 hours respectively. 62% of children used mobile/tablet for watching the content on screen while the remaining 38% watched it on a smart TV. Children regardless of their age watched it during meals and was staggered across morning and evening. 52% of children were responsive to parents during screen time while the remaining showed limited responsiveness. 80% of children used it for entrainment while the remaining used it for gaming and infotainment purposes

The impact of screen time was deemed as neutral when it had no effect, positive when the parents felt that the exposure to screen time facilitated cognitive, speech and language and social well being of the child while the term negative was used when parents felt the impact on these domains was negative and impeded development. 28% of parents reported neutral effect, 41% of the parents reported negative impact and 31% of the parents reported positive effect. Parents of children between 2-4 years reported more negative impact compared to the parents of children of the other age groups. Open ended question revealed that some parents were concerned about the academic repercussions that screen time had. Parents knew that increased screen time can have impact on a multitude of components however some parents had limited time and in some cases were helpless as children was found to be addicted to screen time.

### **Summary & Conclusion:**

The current study was carried out with the aim of documenting and profiling in regard to the demographic variables and factors related to screen time. The usage of screen time was greater than the optimum screen time as prescribed by the norms and the effect of neutral, positive and negative. The current study is a small scale study, however the study would be extended on more respondents from urban, rural and diverse background which will improve the generality of the study.

## Development of Apraxia Battery for Adults (ABA 2) in Hindi

*Gouri Shanker, Deovrat Deovrat, Swati Sinha & Manali Soni*

AYJNISHD, RC, Secunderabad

### **Introduction:**

The acquired apraxia of speech is a motor speech disorder that follows brain damage. The condition can exist independently or accompanies aphasia. The symptoms of apraxia of speech are distinctly characterized by inconsistent speech sound production errors in the form of sound substitutions or distortions, articulatory groping behavior, or slowed speech rate. These speech symptoms are pronounced in lengthy and complex utterances (Duffy, 2013). The underlying neuropathological basis was found in Broca's area (Richardson, Fillmore, Rorden, Lapointe, & Fridriksson, 2012), precentral gyrus (Schiff, Alexander, Naeser, & Galaburda, 1983) or the insula (Ogar, Willock, Baldo, Wilkins, Ludy, & Dronkers, 2006). In neurodegenerative cases, the pathology was found in premotor and supplementary motor cortices (Josephs, Duffy, Strand, Whitwell, Layton, & Parisi, 2006).

Some of the tests for diagnosing apraxia of speech are the Apraxia of Speech Rating Scale (Strand, Duffy, Clark, & Josephs, 2014) and Apraxia Battery for Adults - 2 (ABA 2) (Dabul, 2000). The ABA 2 measures the severity and presence of apraxia of speech in adolescents and adults. It consists of 6 subtests - diadochokinetic rate, increasing word length, limb apraxia and oral apraxia, latency time and utterance time for polysyllabic words, repeated trials test, and inventory of articulation characteristics of apraxia. Tafiadis, Keloglou, Zafeiri, and Tafiadi (2010) found reliability coefficients of 6 items  $\text{Alpha} = .853$  and standardized item  $\text{alpha} = .913$  in aphasic Greek population. The ABA 2 was culturally adapted by Papadopoulos, Parissis, Konstantinopoulou, Natsis, Gotzamani-Psarrakou, and Ioannidis (2022) and validated in Greek patients with dementia. Similarly, Aboras, Ashmawy, and Elmaghraby (2017) adapted ABA 2 as per Egyptian culture for testing in persons with acquired aphasia. They found ABA 2 to be highly reliable and valid in diagnosing apraxia of speech.

### **Need for Study:**

The ABA 2 was found to possess a high degree of reliability and validity in different languages. The English version of ABA 2 needs to be adapted in Hindi in order to diagnose apraxia of speech in persons with brain damage in the Indian context. Apart from linguistic differences, cultural underpinnings need to be considered to adapt the test in Hindi.

**Aim & Objectives:**

To develop an adapted version of Apraxia Battery for Adults 2 in Hindi and to examine its validity and reliability. The objective also included evaluating the efficiency of the test to diagnose apraxia of speech in persons with left-hemisphere brain damage.

**Method:**

The formal permission in writing was obtained by the publishers of ABA 2 (Pro-Ed. Inc.). The test was adapted considering the linguistic and cultural differences. The “technical equivalence” (Flaherty et al., 1988) denoting the identical data collection method was maintained. The test structure, instructions, scoring, and interpretation of the original ABA 2 were retained. In subtest 1, the DDK rate was obtained for syllables /pʌ/, /tʌ/, /kʌ/, /pʌtʌ/, /tʌkʌ/, /pʌtʌkʌ/, /pʌkʌtʌ/. In subtest 2, the articulation proficiency was tested using words of increasing length in Part A and Part B. The examples in Hindi version for Part A are पट, पटक, पटकना; राष्ट्र, राष्ट्रीय, राष्ट्रीयता; etc., where as in Part B, the examples are बल, बलकट, बलकटी; जाग, जागरूक, जागरूकता. The subtest 2 also included testing for sentences of increasing length and complexity. The subtest 3 consists of testing for limb and oral apraxia using a 6-point rating scale. The subtest 4 comprised the measurement of latency and utterance time for polysyllabic words. The latency was defined as the time between the presentation of the picture and the initiation of an attempt to produce the target word. Whereas, utterance time was calculated as the time from initiation of an attempt at the target word to its successful completion. The subtest 5 was the repeated trials test. This task was designed to determine whether the examinee’s production improves, deteriorates, or remains unchanged over successive repetitions of the same word. The subtest 6 consists of an inventory of articulation characteristics of apraxia. The 3 tasks in this subtest were spontaneous speech, reading, and automatic speech. The spontaneous speech included a picture description. For the reading task, a new passage was formulated which was based on the topic “Jungle” in Hindi. The passage included all the consonants and vowels of Hindi. The original ABA 2 had a “Grandfather” passage, which was not appropriate in the Hindi version owing to linguistic differences. The automatic speech involved forward and backward counting from 1 to 30 in Hindi. The 15 speech behaviors were analyzed for the subtest 6. The reverse translation was done for the test. The adapted Hindi version was also vetted by an expert in Hindi from the Central Institute of Hindi, Govt. of India. The content validity was examined by 3 experienced speech-language pathologists independently. The reliability was tested by repeating the test in 30% of the



participants. The test was administered in 50 right-handed non-brain-damaged (NBD) participants aged 20 to 60 years (20 females). The test was also administered in 10 left hemisphere brain-damaged nonfluent aphasic participants aged 50 to 65 years (2 females) whose etiology was stroke. The neurological findings in brain damaged group were based on CT scan/MRI reports. The nonfluent aphasia diagnosis was based on the results of Western Aphasia Battery in Hindi. The dysarthria was ruled out in all 10 brain-damaged participants by the results of Frenchay Dysarthria Assessment – 2 (Enderby & Palmer, 1983).

### **Results & Discussion:**

The average DDK rate for NBD participants was 116.82 while it was 6.2 in persons with aphasia suggesting severe impairment. The mean raw score for words of increasing word length in Part A was 0.03 and 0.20 in Part B in NBD persons whereas it was 5.2 and 5.4 in persons with aphasia suggesting moderate impairment. The average score for limb apraxia was 49.93 and 49.79 for the oral apraxia subtest. In persons with aphasia, the mean score for limb and oral apraxia was 35.20 and 22.32 respectively suggesting moderate impairment. The mean utterance time for polysyllabic words in NBD participants was 6.09 seconds and 102.13 seconds in persons with aphasia. In the repeated trials subtest, the mean score for NBD participants was 29.65 and 25.25 in persons with aphasia. The average score for the subtest inventory of articulation in NBD participants was 0.79 while it was 15.52 in persons with aphasia. The independent samples T-test revealed significant differences between persons with aphasia and NBD participants across all the subtests. The results brought out clear distinctions in apraxia of speech symptom presentation in persons with aphasia using the ABA 2 in Hindi. The results reflect high validity and reliability of ABA 2 in Hindi as was reported by Tafiadis et al., (2010), Papadopoulos et al., (2022), and Aboras et al., (2017) in Greek and Arabic.

### **Summary & Conclusion:**

The study brought out a culturally and linguistically adapted diagnostic test in Hindi for evaluating apraxia of speech in persons with brain damage. A similar exercise needs to be done for other Indian languages.

**Knowledge, Attitude, and Practices Among Speech Language Therapists  
Regarding Transcranial Direct Current Stimulation (tDCS) Application  
in Aphasia Rehabilitation: Questionnaire Development via Multicentric  
Observations in Republic of India**

*Ravi Patel, Anjani Jain & Amisha Rawat*

**Amity University, Haryana**

**Introduction:**

Language is a uniquely human system of communication, using finite arbitrary symbols organized by grammatical rules to express an infinite number of meanings. It plays a critical role in human interaction and cognitive functioning. However, damage to the brain, such as from a stroke, can severely impair language abilities, leading to conditions like aphasia. Stroke is a second leading cause of death and third major cause of disability worldwide, characterized by acute neurological deficits caused by vascular injury to the central nervous system. About 85% of strokes are ischemic, while the remaining 15% result from haemorrhage, both of which can damage brain regions involved in language processing.

Aphasia, primarily caused by damage to the brain's left hemisphere, affects the ability to speak, understand, read, and write. The severity and nature of aphasia vary depending on the extent of the brain injury. Without effective rehabilitation, aphasia can significantly diminish quality of life and hinder social reintegration.

Traditional rehabilitation approaches for aphasia emphasize speech and language therapy, but adjunctive tools such as transcranial direct current stimulation (tDCS) have emerged as promising aids. tDCS is a non-invasive neuromodulation technique that alters neural excitability by modulating the firing rate of neurons, thereby enhancing neuroplasticity. Studies have shown that combining tDCS with conventional therapy can improve language recovery by boosting cognitive and language functions in stroke survivors.

**Need for Study:**

Despite the proven effectiveness of transcranial direct current stimulation (tDCS) in aphasia rehabilitation, there is insufficient research on the knowledge, attitude, and practices (KAP) of speech-language therapists working in India regarding its application in clinical settings. Most research focuses on tDCS efficacy, but fails to address the readiness of therapists to adopt this

technology, particularly in low-resource environments.

The research question addressed in this article is whether speech-language therapists working in India possess sufficient knowledge, attitudes, and practices (KAP) to effectively apply transcranial direct current stimulation (tDCS) in aphasia rehabilitation, and what specific barriers or enablers impact their use of tDCS in clinical practice.

### **Aim & Objectives:**

The aim of this study is to understand the perspectives of Speech Language Pathologists about tDCS application in stroke rehabilitation.

Objectives:

1. To understand the knowledge of SLPs on tDCS
2. To understand the attitudes of SLPs towards tDCS application in stroke rehabilitation.
3. To know their perception on practices and barriers to tDCS application in stroke rehabilitation.

### **Method:**

**Design:** The study design was cross-sectional survey research design. It involved 4 phases. Phase 1 (qualitative phase) involved developing the questionnaire followed by Phase 2 (quantitative phase) which involved validating it; Phase 3 involved data collection facilitated by various Speech Language Pathologists and Phase 4 that led to statistical analysis and result formulation. **Participants:** A total of 62 SLPs in the age range of 21 - 48 years were randomly selected from various setups in India and included for the study. SLPs had to have a bachelor's degree in speech and hearing discipline as a minimum qualification to participate in the survey. The participants were divided into 4 categories based on their work experience ranging from 0-5, 6-10, 11-15 and greater than 15 years. The participants were informed of the aim and objectives of the study and their implied consent was obtained. Participation in the study was completely voluntary; they were not provided with any compensation for it. **Phase 1: Questionnaire development:** The questionnaire items and domains were designed following a systematic methodical approach comprising extensive literature review and reports presented by focus group discussions (FGDs) with a panel of SLPs. The questions were framed in simple non ambiguous language. Items were organized in an appropriate sequence to prevent redundancy. The generated questionnaire had 32 questions distributed in six domains: 1: "Participation consent" 2: "Socioeconomic/ demographic details"; 3: "Knowledge of tDCS"; 4: "Attitudes towards tDCS application in stroke rehabilitation"; 5: "Practices and barriers to

tDCS application in stroke rehabilitation” and 6: “Personal experience with tDCS application in stroke rehabilitation.” Phase 2: Questionnaire validation: A total of five SLPs were stipulated for content validity. Procedure: Phase 3 involved data collection, during which the questionnaire was circulated to all the participants of the study. A survey link along with a general description of the purpose of the study and eligibility for participation was sent directly to SLPs practising in India through emails and WhatsApp messenger. The email and WhatsApp contacts were obtained from registered professional organizations in India. SLPs working in India were sent a link for the survey via WhatsApp chat and emails, along with a broad explanation of the study's objectives and eligibility requirements. It was proposed to use snowball sampling to find SLPs through additional social networks. In order to proceed with answering the survey's questions, participants had to indicate on the first page that they agreed to the collection and processing of their data. Subsequent parts evaluated participants' experience and competence in relation to the issues they experienced, building on their demographic information. It took about 10-12 minutes to finish the survey. In Phase 4, the data was statistically analysed both qualitatively and quantitatively.

### **Results & Discussion:**

A total of 62 SLPs responded to the survey. Of these, there were 16 males and 46 females with a mean age of 26.5 and ranging from 21 to 48 years. Specific to tDCS, a total of 13 respondents (21%) had received adequate training and were able to provide tDCS to stroke patients as an adjuvant therapy. This was observed in stark contrast to 53 (85.5%) respondents who believed clinical Speech-Language Pathologists should participate in patient tDCS administration. The primary benefit of using tDCS in speech-language therapy is known to enhance treatment outcomes by 46 (74.2%) SLPs while its ability to be combined with traditional therapy is observed by 39 (62.9%) SLPs with a potential for faster recovery by 30 (48.4%) SLPs. Also, 42 (67.7%) SLPs believed that tDCS improves linguistic or cognitive function in stroke survivors. It is observed that 34 (54.8%) SLPs are well aware of the potential side effects from tDCS administration. A positive attitude is observed amongst the SLPs for tDCS administration wherein, 35 (55.65%) respondents despite being aware of the side effects are willing to provide tDCS to close relatives and patients if advised. The impact of tDCS on the traditional speech and language therapy for stroke patients is known to be significant by 18 (29%) SLPs and slightly significant by 26 (41.9%) SLPs.

### **Summary & Conclusion:**

Clinical SLPs working in India who works in hospitals and different units and are heavily involved in patient care and decision-making have not often had their KAPs about post-stroke tDCS application reviewed. The purpose of the study was to close a gap in the literature and provide additional insight into this subject. There has been a recent surge in Indian research studies on tDCS. The majority of these study studies are based on IRB-approved methods that have adhered to strict parameters that meet modern international standards on the safety of administering tDCS. Furthermore, research conducted in India has provided significant insights into the potential neurological underpinnings of the therapeutic benefits of transcranial direct current stimulation (tDCS) for individuals with PWA. At present, systematic uses of tDCS in India are mainly limited to research investigations aimed at comprehending the neurobiological principles and enabling its application for the treatment of different neuropsychiatric illnesses such as schizophrenia.

**LP778**

**Influence of Cultural and Environmental Factors on Cognitive -  
Linguistic Abilities : A Comparison Between Tribals and Urban  
Children**

*Pandi Meena, Herlin Jone Vila P S, Abhishek B P, Anita Ivvah & Sundaresan R*

**Holy Cross College (Autonomous), Tiruchirappalli**

**Abstract Not Available**

## **A Survey on Awareness of Autism Spectrum Disorder Among Corporate Work Population**

*Deepanshi, Charu Gupta, Pooja. & Pravesh Arya*

**Ali Yavar Jung National Institute Of Speech And Hearing Disabilities, RC Noida**

### **Introduction:**

Autism is a neurodevelopmental condition characterized by delays in communication and social interaction, alongside restrictive interests and repetitive behaviors (American Psychiatric Association, 2013) Inadequate understanding about ASD and unsuitable attitudes towards mental health services use may affect the efforts of early diagnosis and management. A corporate sector population involves people in a job that involves working in an office with responsibilities that don't include any physical labor. Majority of these jobs involve managerial skills, sales, marketing, finance, IT/programming, client services, law, etc. Stress in the corporate sector can significantly impact employee's personal lives, including family relationships. High workloads, long hours, job instability, work-life balance are those factors which beget pressure on mind of the people working there. This will beget goods on family, like communication breakdown, reduced quality time, emotional distress.

Long hours and demanding schedules can reduce the time parents spend with their children, affecting bonding and communication. The quality of parent-child interactions is a significant mediator in the relationship between neurobiological risk factors and child development (Beaudoin et al., 2019). The cumulative stress experienced in the family can contribute to anxiety or behavioral issues in children. Children can pick up on their parents' stress and anxiety, which may affect their own emotional health and behavior. Examining the awareness of ASD in population working in corporate sector would help in early recognition and better support to affected families. Good quality parent-child interactions, indicated by reciprocal and engaging dyadic interactions, are linked with improved developmental outcomes in areas such as cognitive (Evans and Porter, 2009, Feldman, 2007), social-emotional (Cerezo et al., 2008) and language development(Topping et.al.,2013). According to a study published in the Indian Journal of Pediatrics (2021), the estimated prevalence of autism in India is around 1 in 68 children. Exploring ASD awareness in the corporate sector could provide valuable insights into the experiences and knowledge of this group, ultimately contributing to better support mechanisms for children and families impacted by autism.

**Need for Study:**

According to research done by Bader, S. H., Barry, T. D., & Hann, J. A. H. (2015), parents who parade high levels of criticism, hostility, and emotional over-involvement which perhaps more common in corporate world are more likely to elicit negative emotional responses from their children which may result in rise in behavioral issues, anxiety, and sadness. Numerous studies shows that parent's work life impacts their children's development both positively and negatively. This negative influence substantial involve delay in social skills, cognitive development, development of behavioral issues. Population working in health settings may have some familiarity with autism knowledge but population working in corporate sector have limited understanding of such behavioral issues and its link with ASD and during our clinical period we encounter many autistic children whose parents are working in corporate sector. This unawareness among corporate sector makes need of our study very strong. This survey helps us to gain understanding of awareness of autism among corporate population which helps us in taking further steps to create awareness, if needed, that will help to improve their quality of life.

**Aim & Objectives:**

Since there is scarcity of research related to awareness among corporate population, the present study aims to assess awareness among population working in corporate sector.

1. To assess awareness of autism among population working in corporate sector.
2. To explore the knowledge about ASD among population who has corporate background.
3. To explore the attitude of youngsters towards ASD.

**Method:**

The present study was done on individuals working in corporate sector by administering a google response survey form which was sent via email to them. The form included questions related to ASD and was filled by participants. A total of 100 individuals working in corporate sector were provided with the google response form. Out of which, a total of 60 responses received back by the authors. These participants were working in corporate sector including employees of companies such as Wipro, adobe, Dixon technologies, Maruti Suzuki India ltd, OSB India Pvt. Ltd, QBSS etc., age range 21 years to 35 years. Present study was carried out in two phases. Phase 1-Development of questionnaire in form of google form. Questionnaire includes questions regarding the awareness of ASD regarding awareness of term, symptoms, & facilities available for autistic child. Phase2- Incorporated the administration of



questionnaire among corporate sector population.

### **Results & Discussion:**

The data analysis from the survey reveals that youngsters are aware about ASD term as 58.2% of the participants heard of autism spectrum disorder (ASD), while only 23.6% were familiar with early signs of autism. The most identified early symptoms included inadequate eye contact, failure to respond to sounds, and lack of interaction with others. However, awareness regarding the importance of early intervention was low, with only 23.6% of respondents recognizing its significance, indicating a widespread lack of understanding. In our study the participants were youngsters (age group -21yrs to 35 yrs.) as some of them are parents presently and some will become parents in future so there is strong need to create awareness among them for Early symptoms and early intervention of Autism.

Participants also demonstrated limited knowledge of the professionals involved in diagnosing ASD. Responses were mixed, with 35.8% identifying pediatricians and psychiatrists as key professionals, 64.2% recognizing speech-language pathologists (SLPs), 24.5% acknowledging occupational therapists, 41.5% neurologists, and 43.4% psychologists. A particularly low awareness was observed regarding the role of SLPs in early intervention, with only 16.4% of participants aware of their contribution. Additionally, just 26.4% of respondents were familiar with the availability of special school facilities for children with autism.

These findings align with previous studies, such as one by P.S. Divya, Elakiya Elango, and Sunil Kumar J. (2019), which showed that 89.22% of non-medical students were unaware of ASD symptoms. Similar, research conducted in Malaysia by Hashim et al. found that non-health science students had marginal awareness of ASD, further corroborating the present study's results.

### **Summary & Conclusion:**

The findings of this study highlight a low level of awareness about autism spectrum disorder (ASD) among individuals working in the corporate sector. Although over half of the participants had heard of the term ASD, only 23% demonstrated some knowledge of the condition, with most recognizing behavioral impairments as a key feature. This underscores a critical need to increase awareness, especially among current and future parents, about the signs and importance of early intervention for ASD.

Research by Muhle, Trentacoste, and Rapin (2023) emphasizes that while there is no medical detection or cure for autism, early diagnosis and intervention significantly enhance the quality

of life for affected individuals. Raising awareness about ASD's characteristics, such as behaviors and speech and language delays, can improve understanding and foster more supportive attitudes toward autistic individuals. Thus Medical, Allied health professionals and students can play a vital role in spreading awareness and bridging the knowledge gap, which in turn may lead to earlier diagnoses and interventions, ultimately benefiting children with autism.

**Impact of Early Childhood Adversities in Cognitive Linguistic and Auditory Processing Abilities: A Comparative Study Between Orphans and Children with Parents**

*Herlin Jone Vila P S, Pandi Meena, Parkavi C & Anita Ivvah*

**Holy Cross College (Autonomous), Tiruchirappalli**

**Introduction:**

The mental activities involved in understanding, interpreting and producing spoken or written language are termed as Language processing. It is one of the intricate function of cognitive system which involves the sensory modalities such as vision and audition for input to sort out the information received, it also interacts with other cognitive functions such as attention, memory, problem solving, organization and other executive functioning skills. Executive functioning skills development peaks in preschool and early school ages (Muller, Frye & Marcovitch, 2003)

Language perception refers to sensory processing and recognition of language input whereas Language processing refers to the ability to produce, comprehend and interpret language through active mental operations like decoding through visual or auditory modality, understanding the decoded words with meaning, framing the meaningful words as appropriate sentence and understanding the context and pragmatics of communication. Grantham-McGregor.,2007 states that cognitive abilities, receptive and expressive language skills, social skills, emotional skills develop at different ages. Development in brain structure and function supports the acquisition of the above mentioned skills are most rapid during the early childhood period and it continues in the later years for many skills, thus factors influencing these development has to be taken care of to avoid cognitive delays which can occur throughout infancy, childhood and adolescent period.

Children growing in orphanage exhibit communicative difficulties which is influenced by key factors such as lack of individualized attention, delayed language development, restricted vocabulary and grammar, difficulties in social communication, cognitive delays and emotional factors. Cognitive or mental flexibility improves during child development and shows a declination as age increases (Cepeda et al., 2001; Kray, 2006). Children in orphanages have high rates of cognitive delay compared to the non-orphans (Kamath, S.M., 2017).

**Need for Study:**

Cognitive functioning, language abilities, auditory processing skills and societal experiences are the crucial skills for communication. A strong correlation between these skills has been evaluated and reported across young children, adolescents and on young adults. Whereas comparison and documentation in case of children dwelling in orphanage and children with parents is limited in literature. Hence the present study has been conducted to bring an insight on the Cognitive, linguistic and auditory processing abilities of children dwelling in orphanage and document the with respect to children with parents.

**Aim & Objectives:**

To evaluate the cognitive linguistic abilities of children dwelling in orphanage

1. To assess cognitive and linguistic abilities using CLAP - Tamil
2. To assess the auditory processing skills using DCV and PPT tests
3. To compare the abilities between Orphans and children with parents

**Method:**

A total of 100 children age ranging between 7 - 12 years were considered as participants for the study. The participants were grouped into Group A including 50 Orphan Children and Group B including 50 Children with parents. Children with behaviour issues and neuro-cognitive issues were excluded from the study. Participants were made to sit comfortably in a distraction free environment and was instructed before commencement of each test. Cognitive Linguistic Assessment Protocol in Tamil for children was administered to each participant. Domain 1- Attention, Discrimination and Perception involving Visual sub-test (Letter cancellation, Contingent letter cancellation and word cancellation) and Auditory subtests (Sound count, letter pair discrimination, word pair discrimination, backward month naming), Domain 2- Memory includes episodic memory, working memory, semantic memory, word naming fluency, generative naming were assessed. Auditory processing skills were assessed using Pitch Pattern test (PPT), 60 frequency patterns (6 patterns with 10 randomization) that have approximately 6 sec inter pattern intervals were used. 6 trials were given initially for familiarization which is then followed by 30 test trials. The stimulus was delivered using headphones at the most comfortable level. The subjects were asked to describe the pitch perceived by drawing a short line for a low pitch and a long line for high pitch. Those sheets were evaluated based on the standardized key sheet and also Dichotic consonant vowel (DCV) test was administered and the subjects were asked to repeat the stimuli that is heard in both

ears. Right single correct scores, Left single correct scores and Double correct scores were noted. The results of all the tests were documented and analyzed statistically using SPSS software.

### **Results & Discussion:**

The results of CLAP-T which was administered on group 1 and group 2 has two domains, domain 1 and 2 were analyzed. On Domain 1- Attention, Discrimination and perception the mean score was 48.16 and 55.75 for group 1 (orphan) and group 2 (children with parents) and for Domain 2 - the mean scores for the two groups was 41.50 and 48.47 respectively. It was clear from the results that the scores were better for group 2 (children with parents) than group 1 (orphan) children respectively.

The data was analyzed using Shapiro-Wilk's test which revealed that it was parametric. Hence independent sample T test was administered. The results of Independent Sample T test revealed significant difference between the orphan and children with parents on the two domains with F score of 2.38 and 3.18 ( $p < 0.05$ ). The corresponding p value showed significant difference between the two groups on both domains. Independent t test for Auditory processing abilities such as DCV and PPT also shows a significant difference ( $p < 0.05$ ) between orphans and children with parents. Double correct scores of DCV shows a mean score of 45 for children with parents and 32.91 for orphans, Right single correct score shows a mean score of 21.75 for children with parents and 17.16 for orphans, left single correct scores with a mean of 23.41 and 16.58 respectively. PPT results shows a mean score of 23.33 for children with parents and 17.58 for orphans. The results of the present study is in accordance with Kaler, S.R., & Freeman, B.J., 1994 where the results indicate that the orphanage sample all exhibited deficits in cognitive and social functioning; the majority were severely delayed.

### **Summary & Conclusion:**

The early years of a child's life is crucial and critically important for cognitive, linguistic, social and emotional development. There are many risk factors that are associated with these development, risks that are specific to poor cognitive development includes inadequate learning opportunities, inadequate parent-child or caregiver- child interactions, aloofness, neglect, psychological distress. Fine and Kotelchuck., 2010 highlights that policies and programs that are developing must shift from a focus on specific issues to wider range reaching the integrated approaches across life which will aid the child to develop and mitigate the impact of constrains under which they are developing. This requires clear understanding of the

developmental pattern and age related responses to external factors (Wachs., 2014). It is important that these children should be identified as early as possible. Adequate stimulation can make these children to excel like other children. However, a larger sample size warrants better generality of the results. The results also showcase the need of increasing the quality of stimulation and imparting appropriate strategies in this group.

## **Understanding Language and Behaviour Patterns in Children with Autism Spectrum Disorder: A Twin Study**

*Pranjal Prashant, Srabanti Saha Saha & Priyanka*

**Sri Aurobindo Institute of Speech and Hearing, SAU, Indore**

### **Introduction:**

Autism spectrum disorder (ASD) is a neuro-developmental disorder characterized by deficits in social communication and the presence of restricted interests and repetitive behaviours (APA, 2013). Hodges (2020) researched that ASD, a neurobiological disorder is influenced by both genetic as well as environmental factors affecting the developing brain. The World Health Organization (WHO) estimates 0.76% prevalence of ASD however, this only accounts for approximately 16% of the global child population (Baxter, 2015). Genetic factors play a role in ASD susceptibility, with siblings of patients with ASD carrying an increased risk of diagnosis when compared to population norms and a much higher, concordance of autism diagnosis in monozygotic twins (Kim, 2019). Early red flags signs for ASD consist of poor eye contact, poor response to name, lack of showing interest and social skills, no gesture by 12 months, and inadequate language skills. One of the most common symptoms in the majority of ASD children is social communication and the manifestation of difficulties in the integration of verbal and nonverbal communication (Vogindroukas, 2022). Assessment in ASD in pediatric population begins with screening of children at-risk of ASD, following which a diagnostic evaluation is recommended.

### **Need for Study:**

Fraternal twins also called dizygotic twins may not have the same sex or appearance as they share half their genomes. Previous research studies have found symptoms of autism to be developing in one twin prominently than the other. The severity of autism symptoms can also differ between fraternal twins. Research has shown that if one of the identical twins has autism, there is a high probability that the other twin will also have it. Language and behavior characteristics and its variations have not been studied as extensively among ASD fraternal twins.

Identifying and addressing the condition early can significantly improve outcomes for both the child. Hence, there is a need to assess language and behavior characteristics, its severity and variations in ASD twins.

**Aim & Objectives:**

The aim and objectives of the present case study was to investigate and compare the language and behavior characteristics and variations in severity of autism symptoms among fraternal twins with autism spectrum disorder.

**Method:**

A pair of fraternal twins, Twin A and Twin B aged 4.5 year came with the complaint of delay in language development and social interaction skills as per the peer group. Medical history revealed that Twin A and Twin B had a history of pre-mature birth though normal birth cry reported. Parental perception revealed adequate motor, social and cognitive developmental milestone in both the twins. Communication mode for both Twin A and Twin B is verbal along with gestures. Psychological test (VSMS) results indicated average socio-adaptive functioning in both Twin A and Twin B. Behavioural issues were observed and reported by parents in Twin B. Comprehensive Language evaluation included administration of Receptive-Expressive Emergent Language Scales (REELS), Com-DEALL developmental checklist, Cognitive and Social developmental milestones, Attention level, Play pattern, The Childhood Autism Rating Scale (CARS), DSM-V classification for ADHD from a SLP perspective. The test scores were collected from the child's behaviour, clinician observation during clinical set-up and parental responses from daily life.

**Results & Discussion:**

The current study highlighted the understanding of language and behavior patterns in a pair of fraternal twins of ASD. REELS indicated CRLA of 18-20 months whereas CELA of 11-12 months in Twin A however, Twin B showed a CRLA of 16-18 months though CELA of 9-10 months. Findings revealed delay in language development in both the twins though of varied severity. Results of COMDEALL revealed variation in pattern of the developmental domains except that of gross motor skills. Findings of COMDEALL were as follows: (FM) and (ADL) domain was 48 - 54 months, (RL) 36 - 42 months, (EL) 12 - 18 months, (EM) 48-54 months, (Cog) 36 - 42 months and (SC) 42 - 28 months respectively in Twin A. Twin B showed (FM) & (ADL): 42 - 28 months, (RL) 24 - 30 months, (EL) 12 - 18 months, (EM) 42 - 28 months, (Cog) 30 - 36 months and (SC) 36 - 42 months.

Attention level revealed level 3 (2-3 years) in Twin A suggested controlled but fleeting attention whereas level 2 (1-2 years) in Twin B indicated fleeting attention. Play pattern revealed a level 4 (24-36 months) in Twin A while its level 3 in Twin B. CARS score of 33



was calculated in Twin A suggestive of mild to moderately autistic whereas Twin B scored 46 which suggested of severely autistic. The result of CARS can be discussed as revealing a variation in severity of autism characteristics between the twins. DSM-V classification was administered which indicated no specified characteristics of ADHD present in Twin A however, Twin B showed significant characteristics of ADHD. On the basis of clinical evidences, results of subjective tests and psychological findings, Twin A was provisionally diagnosed as “Deviant speech and language development secondary to mild to moderate autism spectrum disorder in Twin A while Twin B was provisionally diagnosed as “Deviant speech and language development secondary to severe Autism spectrum disorder with ADHD.”

In the present case study, we found significant differences in the language developmental pattern in the twins. Richer et al. (2007) also found developmental disorder or typical development of ASD twins in terms of repetitive behavior and linguistic limitations. Another study done by Bowers et al. (2015) reported that twins revealed distinct behavioral differences. The study results concluded that one of the twins was diagnosed with ADHD while the other displayed difficulty in sitting and focusing but did not meet the DSM 5 criteria for ADHD. These findings are in support of the current twin study.

### **Summary & Conclusion:**

Autism spectrum disorder has an impact on language and communication of children. Fraternal twins with ASD exhibit a different pattern of language, behavioral development when compared to identical twins which can be attributed to genetic makeup. Differences in language abilities, cognitive functions, and aggressive behaviors are important in measuring the severity of ASD among twins. These differences underline assessment and therapeutic intervention in the most appropriate way for the language, communication and behavioral profile in a clinical glance.

**Role of Speech-Language Pathologist in Comprehensive assessment and Intervention of Cognitive-communication deficit following Right Hemisphere Damage : A Case Study**

*Prachi Patwari, Prachi Ahuja, Srabanti Saha Saha & Ankita Suman*

**Sri Aurobindo Institute of Speech and Hearing, SAU, Indore**

**Introduction:**

The cerebral hemispheres are structurally symmetrical whereas they function asymmetrically. The right hemisphere, although not dominant for linguistic abilities, is predominantly crucial for spatial and affective functions. Right hemisphere disorder (RHD) represents a constellation of changes in pragmatic, discourse, and cognitive-communication skills. Cognitive-communication deficits are estimated to occur in 50%-90% of all individuals with right hemisphere brain damage (Ferré & Joannette, 2016; Hewetson et al., 2017). RHD is most commonly caused by a stroke or other acquired brain injury (ASHA). India has one of the highest Traumatic Brain Injury (TBI) incidents with 60% of head injuries being attributable to road traffic accidents (Veerappan et al., 2022). Spoken discourse impairments post-traumatic brain injuries (TBI) are well-documented and heterogeneous in nature (Hoffman, 2024).

**Need for Study:**

Individuals with RHD exhibit communication problems that are milder than those that occur from left hemisphere damage. This is due to the fact that, in most of the individuals in the population, the language centers are in the left hemisphere, while cognitive functioning is placed in the right hemisphere. Hence, until recently patients were not regularly treated by speech language pathologists. Presently it has been researched and recognized that RHD frequently have both communicative and cognitive deficits which can be addressed by speech and language pathologist (Hewetson et al., 2021). Hence, identifying and assessing the potential impact of RHD on daily functioning is important, as the cognitive communication deficits experienced by people with RHD may lead to negative impacts resulting in disrupted social relationships.

**Aim & Objectives:**

This case study aimed to present a detailed evaluation of cognitive communicative functioning

of an individual with right hemisphere damage consequent to traumatic brain injury and also outlined the effectiveness of therapeutic intervention implemented.

**Method:**

A right handed Hindi speaking female aged 25 years presented to department of speech language pathology with a complaint of deficit in recalling post surgery following traumatic brain injury (road traffic accident). Radiological investigation of post-operative non-contrast computed tomography (NCCT) revealed decompressive craniotomy defect in right fronto-parietal and temporal region.

The case underwent a detailed comprehensive cognitive and language evaluation. Edinburgh Handedness Inventory (EHI) was administered to assess the handedness of the subject. Cognitive functioning (executive functioning, attention, language, abstraction, delayed recall and orientation) was assessed using the Montreal Cognitive Assessment- Hindi (MOCA-H) followed with an assessment on Clinical Dementia Rating scale (CDR). Linguistic skills (spontaneous speech, auditory verbal comprehension, naming and repetition) were investigated using the Hindi version of Western Aphasia Battery (WAB-H). Language impairments that can arise as a result of right hemisphere cerebral damage (lexical semantic comprehension; spoken metaphor appreciation; written metaphor appreciation; verbal humour appreciation; comprehension of inference; production of emphatic stress; and a comprehensive discourse analysis) was evaluated using Hindi version of Right Hemisphere Language Battery (RHLB). Following comprehensive assessment the case attended individualized neuro cognitive linguistic therapy for 18 sessions of duration 45 minutes each. The intervention focused on improvement in functional communication skills by the facilitation of cognitive skills (attention, delayed recall) and language skills (metaphor, inference, discourse, sequential commands, and naming). The intervention strategies targeted towards following the related and unrelated sequential commands, metaphor analysis (written and picture), processing inference from a story by choosing from the provided options. Narrative discourse tasks included ability to convey coherent, meaningful stories using language expansion techniques and narrative role playing. Naming skills comprised of intervention in sections of auditory closure naming, category naming, sequential naming, and rapid naming using semantic feature analysis approach. Additionally the therapy plan also included working on the domains of attention and delayed recall using techniques rehearsal and picture or object recall. Post therapeutically RHLB was readministered to assess the cognitive linguistic status.

**Results & Discussion:**

Edinburgh Handedness Inventory revealed that the subject was right handed. The MOCA-H results indicated a score of 21/30 suggestive of mild neuro-cognitive deficit and a risk of dementia. Marked deficit was present in delayed recall, memory, language and naming. Further evaluation of clinical dementia rating scale (CDR) also indicated a mild deficit in judgement of problem solving and slight deficit in memory, orientation and community affairs. Results of RHLB performance indicated diminished scores in all the domains though more prominent in sections of discourse, lexical semantic and comprehension of inferred meaning.

Following 18 sessions of speech and language therapy RHLB and MOCA readministration noted a marked improvement in neuro cognitive domains of attention, naming and delayed recall. Progress was also demonstrated in lexical-semantic abilities, narrative discourse, picture metaphor, comprehension of inferred meaning and sequential commands. Minga et al. (2021) reported and explained that discursive abilities are considered as a point of intersection between language and other cognitive domains as they require the engagement of working memory, attention, executive functions, and social cognition. This finding was also supported by Rodriguez et al. (2022) which stated that the impairment in discourse abilities was attributed to attentional and memory deficits apart from a specific contribution of the RH in language processing and suggested that intervention with a focus in these cognitive linguistic domains would result in improvement communication abilities.

**Summary & Conclusion:**

Language is considered to be one of the most lateralized human brain functions. Left hemisphere dominance for language has been well confirmed whereas right hemisphere also plays a role in diverse language functions. Cognitive-communication disorder results from the association of cognition and language impairment that follows RHD and impair the quality of life of affected persons. Conversation is a difficult communicative activity for people with right hemisphere communication disorder. Speech and language therapist (SLT) plays a pivotal role in treating individuals with communication deficit following RHD to increase independence and to enable them to participate in their community. SLT also makes a unique contribution in assessing the individual's residual and emerging abilities and promoting functional communication at each stage of rehabilitation. Therefore, the study suggests that speech language therapist should reconsider the common misconception that the language function of

patients with RHD is unaffected and work towards a comprehensive assessment followed with cognitive communication intervention.

**The Current Practises and Challenges in the Assessment and  
Intervention of Social (Pragmatic) Communication Disorder by Speech  
Language Pathologist  
: A Survey Study**

*Shamma Haneef, Karthika P, Jothi S & Jayashree C Shanbal*

**All India Institute of Speech and Hearing**

**Introduction:**

Social-pragmatic communication skills are critical for children's development, playing a key role in their school readiness. These skills contribute significantly to early academic success, particularly in areas like reading, math, and the development of self-regulation (Pace et al., 2019). Children who demonstrate strong social communication skills are better equipped to succeed academically and socially. Children with deficits in these areas, are known as Social (Pragmatic) Communication Disorder (SPCD). According to DSM-V, SPCD is characterized by difficulties in the social use of language and communication, leading to challenges in effective communication, social participation, building relationships, and academic achievement. Since its inclusion in the DSM-5, SPCD has gained recognition as a distinct developmental disorder.

Despite its recognition, data on the prevalence and causes of SPCD in the general population remain limited (Adam et al., 2015). Children with SPCD alone are very rare, with a prevalence rate estimated at less than 0.5% - 1% among 7-12-year-olds (Kim et al., 2014). However, this lower prevalence rate may be influenced by misdiagnosis or under-identification of the condition.

**Need for Study:**

Social-pragmatic deficits were commonly associated with structural language and behavioural deficits and subthreshold autism symptoms (Jo et al., 2023). Many available assessments fail to distinguish between the subtle nuances of SPCD and other disorders, also lack of awareness among professionals and parents regarding its specific nature leads to potential misdiagnosis or underdiagnosis. This diagnostic ambiguity can delay critical interventions and problem in the development of individualized treatment plans. Early, targeted intervention can mitigate the negative effects of SPCD and promote positive long- term outcomes (Adams et al., 2012)

Children with SPCD present considerable therapeutic challenges for speech-language pathologists (SLPs), as they often have a range of pragmatic needs that require substantial and long-term intervention (Adams et al., 2015).

### **Aim & Objectives:**

The aim of this study is to investigate the current practices and challenges SLPs encounter when assessing and managing children with SPCD. The objectives are to: 1) identify the case load of children with SPCD, 2) explore the strategies used by SLPs for assessment and management, and 3) determine the challenges faced by SLPs during these processes.

### **Method:**

**Research Design.** The current study utilised a cross-sectional survey design to explore the current practices and challenges in the assessment and intervention of SPCD in children by SLPs.

**Participants.** The study target group was SLPs/ Speech therapists that were registered under the Rehabilitation Council of India (RCI) working in various settings across the country.

Participants without clinical experience in assessing and intervening in child language disorders, student SLPs, and professionals who are currently not practising were excluded from the study. The study employed a snowball sampling procedure for the recruitment of participants.

**Measures.** This is an online survey-based study. The study questionnaire was constructed based on the literature and focus group discussion with experts in the field. The constructed questionnaire was then subjected to content validation by five SLPs who has experience in the field of child language disorder for more than 5 years using a 5 point likert scale. Based on the results of the content validation the modifications were done in the final questionnaire. It consist of 28 questions divided into 4 sections. The questionnaire contains open ended questions, multiple choices, rating scales and multiple responses were deemed to capture the response of the participants.

**Procedure.** Informed consent was obtained from all participants. Participants were informed about the confidentiality of their responses and their right to withdraw from the study at any time without any negative consequences. The questionnaire was circulated among the participants through online via google forms. The average time to complete the questionnaire was approximately 10-15 minutes

**Statistical analysis.** The responses are subjected to both quantitative and qualitative analysis.

For the quantitative analysis of response, median and inter quartile range (IQR) were analysed using SPSS version 26.

### **Results & Discussion:**

The results discussed below were based on the pilot study done (till now) on 20 SLPs who met the above-mentioned eligibility criteria. The results might vary after the final data collection in 120 SLPs.

Caseload. 28.35% of SLPs reported frequently encountering SPCD, while 59.17% said they encounter it occasionally in their practice. A smaller percentage, 7.92%, rarely see SPCD, and 4.56% never encounter it in clinical practice. In 87.29% of cases, SPCD occurs as a co-morbid condition, with only 12.71% of SLPs reporting that they rarely or never see it co-occurring. According to the SLPs, the most common co-occurring conditions, listed from highest to lowest, are Autism Spectrum Disorder (ASD), Global Developmental Delay (GDD), Hearing Impairment (HI), Learning Disabilities (LD), Cerebral Palsy (CP), Intellectual Disabilities (ID), Childhood Aphasia, and Speech Sound Disorders.

Current Scenario and Challenges in Assessing SPCD. SLPs reported that the ICF and DSM-V criteria are the most helpful frameworks for assessing and diagnosing SPCD. The primary areas considered during assessments include narrative skills, turn-taking, topic maintenance, and conversation repair, while less emphasis is placed on meta-pragmatics and Theory of Mind. The main challenges faced by SLPs during assessment are the lack of specific tools and time constraints. Additionally, 95.12% of SLPs believe that a dedicated assessment tool is essential for an accurate diagnosis of SPCD.

Current Scenario and Challenges in the intervention of SPCD. According to the SLPs, the most used approaches for managing SPCD are individualized interventions and family-mediated interventions. However, it is challenging to implement peer-mediated and teacher-mediated interventions. The strategies used to improve social skills, as mentioned by SLPs from most to least used, were social stories, play-based pragmatic interventions, video-based instruction, behavioral interventions, and social communication strips, with computer-based interventions and social skills groups being used the least. The major challenges identified include difficulties in generalizing social communication skills to real-life settings and limited collaboration with other professionals.



**Discussion:**

Children with SPCD often face significant challenges in both their personal and academic lives. Delays or impairments in pragmatic language can lead to long-term negative impacts on various aspects of their development, including social interactions and academic performance (Dillon et al., 2021; Elleseff, 2015; Loukusa et al., 2018). The lack of standardized assessment tools specific to SPCD presents a significant barrier in accurately diagnosing the condition (Logan et al., 2017). Treatment approaches have focused on improving comprehension and language production skills, such as conversational and narrative discourse (Adams, 2001; Adams et al., 2006; Merrison & Merrison, 2005; Richardson & Klecan-Aker, 2000; Timler et al., 2005). Although social skills training has demonstrated positive outcomes in certain populations.

**Summary & Conclusion:**

The study highlights that while speech-language pathologists (SLPs) frequently encounter Social (Pragmatic) Communication Disorder (SPCD), the lack of dedicated assessment tools and time constraints remain significant barriers to accurate diagnosis and effective intervention. SLPs predominantly rely on individualized and family-mediated interventions, but face challenges in implementing peer and teacher-mediated approaches. The findings underscore the need for the development of specialized tools and greater collaboration among professionals to improve the assessment and management of SPCD. Additionally, strategies that enhance the generalization of social communication skills to real-life settings are essential for more successful intervention outcomes.

**LP785**

**Parental Acceptance of Autism Spectrum Disorder Among Rural and  
Urban Parents**

*Sri Danvi, Varunisha G, Priyadharshini N, Abinaya Shree & Swati Solanki*

**Holy Cross College (Autonomous), Tiruchirappalli**

**Abstract Not Available**

## **Exploring the Effects of Working Mothers on Children's Communication Challenges.**

*Manish Kumar, Kundan Kumar, Prashansha Chauhan & Ritika*

**SGT University, Gurugram, Haryana**

### **Introduction:**

Mothers play multiple roles in the family that affect the health and well-being of all family members. In every society around the world, they are assigned by custom to be the primary caregivers of infants and children. A mother is particularly important not because she has special skills but because she spends more quality time than any other person and her instructions reflect a very strong influence on the attitudes, abilities, and behaviour of children (Ravnbol, 2011).

Working mothers have an unbelievable commitment to the structure and investigation of society. The influence of working mothers extends significantly across family dynamics, child development, and societal norms. Research indicates that children of working mothers often benefit from diverse experiences and role models, fostering independence and adaptability. This exposure can lead to the development of strong time-management skills and a broader perspective on balancing responsibilities. Economically, working mothers contribute substantially to family income and overall economic growth, enhancing financial stability. Additionally, their presence challenges traditional gender roles, encouraging a more equitable distribution of household tasks between partners.

The role of working mothers in communication development is significant and multifaceted. The time constraints faced by working mothers can lead to more intentional and meaningful interactions with their children during the limited time they have together. This often results in focused conversations that encourage children to articulate their thoughts and feelings, fostering language development and emotional intelligence.

While navigating the complexities of work-life balance can increase stress, the study cultivates resilience and problem-solving skills that can benefit both mothers and their children. Moreover, as more mothers enter the workforce, societal perceptions of motherhood and work evolve, promoting greater acceptance of diverse family structures and parenting styles. Overall, working mothers play a crucial role in shaping not only their families but also the broader

societal landscape.

**Need for Study:**

Studying the influence of working mothers on communication development is crucial for understanding the dynamics of child development in modern families. The study will hold the Insights gained from this research can shed light on how children learn communication skills through observing their mothers' interactions in both professional and personal contexts. By identifying effective communication strategies employed by working mothers, other parents can adopt similar techniques to foster language and social skills in their children. Additionally, this study will focus on highlighting the importance of environments that promote communication development. It also challenges traditional gender roles and societal norms, offering a more nuanced understanding of family dynamics today. Understanding the potential impact of maternal employment on a child's communication development is essential for addressing various gaps in current knowledge and practice. Furthermore, present study can guide the creation of supportive childcare programs that enhance communication skills through structured interactions, benefiting both working mothers and their children. Ultimately, studying this influence helps promote better work-life balance and supports the overall development and well-being of future generations.

**Aim & Objectives:**

The present study aimed to assess and educate working mothers on the development of milestones of communication delay in children and make them address the issues and be aware of various corrective measures to treat the underlying conditions and causes of speech and language disorders/delay in children. The purpose of this study is to examine the impact of working mothers on children's development. The specific objectives of the study is to identify the positive and negative impacts of working mothers on children's development by reviewing the related existing literature. To develop an idea of parenting and managing skills among working mothers to reduce the negative impact of working hours on children's development.

**Method:**

The study consisted of three phases. In the first phase, a questionnaire was developed, including participants' basic information and 28 multiple-choice questions about the influence of working mothers on children's communication disorders. The questionnaire covered several domains: demographic details (mother's and child's age and gender), communication skills, the impact

of work on communication, and social and emotional skills, which assessed the child's abilities in social interaction, emotional expression, and behaviour. In the second phase, the questionnaire was validated by five experienced speech-language pathologists, leading to necessary revisions. In the third phase, the finalized questionnaire was converted into an online form, ensuring participant privacy. Consent was obtained from each participant. A total of 55 participants, aged 30 to 50, agreed to participate in the study.

### **Results & Discussion:**

A total of 55 working mothers were involved in the research. The results of present study reported that 69.7% of working mothers prioritize their family time despite work commitments & 77.8% of working mothers stated that they have regular family meals together with their family. However, Majority of working mother stated that 55.9% of their children react when they return home from work. Only 34.6% of working mother Work discuss their work stress or tensions with their child. The result in the communication domain stated that 57% of working mothers have noticed changes in their child's communication skills since starting work & majority of working mothers believe that their hectic work schedule affects their child's communication development. The present study holds the equal participation of working mothers from home and office.

It has been reported that majority of working mother engage in conversations with their children, but only 11.6% specify and spends time on daily conversation hours leading to 5% of mothers rate their child's communication skills positively. It was noticed that Majority of working mothers 82.1% have received formal speech and language therapy and also use different strategies to help their children's express thoughts and feelings. Educational and Conflict Resolution Activities of 18% of working mothers engage in book reading activities with their child to promote communication. Majority of working mother reflected their work Influence on Communication.

### **Summary & Conclusion:**

Women play a crucial role in society, and when mothers work outside the home, it can influence their children's communication and language development. The critical period for language development occurs from birth to age three, making the impact of working mothers particularly significant in nuclear families. The maternity period, defined as the postpartum phase lasting from six months to one year after delivery, overlaps with this critical age range. Excessive work-related stress experienced by working mothers can negatively affect their communication

quality with their developing children, potentially creating an unfavourable environment for growth. To promote a healthier home environment that supports optimal child development and language learning, flexible work arrangements—such as reduced hours and workloads—can be beneficial. Additionally, enrolling children in daycare during mothers' working hours can also help facilitate this process.

## **Influence of Parental Involvement in Feeding Practice and Speech & Language Development in Infants & Toddlers**

*Nuthan N Kamath & Veena K D*

**Manipal College of Health Professions, Manipal Academy of Higher Education**

### **Introduction:**

Parental involvement plays a pivotal role in various aspects of a child's overall development. The first few years of a child's life are critical as developmental trajectories are established during this period. During this period, parents or caregivers are responsible for making essentially all decisions regarding their food intake, providing responsive caregiving, and offering ample learning opportunities (Suttora et al., 2021).

Feeding is a routine activity that provides the opportunity for parent- child interaction. Parental feeding practices significantly impact a child's innate ability to regulate food intake from a young age. As the most influential socializing agents, parents play a crucial role in shaping their children's eating behaviours (Steinsbekk et al., 2016). Responsive feeding facilitates autonomous eating in children, aligning with their physiological and developmental requirements. This approach fosters self-regulation in eating and contributes to cognitive, emotional, and social development (Pérez-Escamilla et al., 2021).

Parents and caregivers play a critical role in facilitating their child's language development by employing infant- or child-directed speech when communicating with them. This type of speech is characterized by specific attributes, including pitch, duration of vocalizations, intensity, quality of speech, lexical and syntactic complexity, directness, and responsiveness. These attributes make child-directed speech an optimal input for infants and toddlers, as it supports the development of their language skills. Child-directed speech are high in pitch and are modulated with shorter and simpler utterances. It is also receptive to the communication attempts made by the child (Suttora et al., 2021). Ramirez et al. (2024) found that consistent use of "parentese" by the parents/ caregiver in infancy can result in high lexical diversity, longer utterance production, and increased turn-taking skills at 5 years of age.

Considering the importance of parent-child interaction, it is essential to explore the parental involvement that may influence the development of feeding and communication (speech & language). This study will also assist in identifying how socioeconomic aspects could function as moderating variables in these associations. By exploring the interaction between feeding,

parental involvement, and speech-language development, this study aims to provide understanding on how nurturing caregiving can enable optimal development in children.

### **Need for Study:**

Need: Feeding has traditionally been appreciated for the nutritional advantages it offers for infants, but its contribution to the development of speech & language skills has often been unnoticed. Although parents mainly focus on providing sufficient nutrition, feeding also provides opportunities to participate in communication, that can encourage the early language acquisition of the child. Therefore, this study emphasizes the role of feeding in both nutrition and language development, thereby effectively supporting the overall development of the child.

### **Aim & Objectives:**

Aim: To understand the influence of parental involvement in feeding practice and speech & language development in infants & toddlers Objectives:

1. To understand the parental feeding practices and feeding transition from infancy to toddlerhood.
2. To understand the frequency and nature of parental verbal interaction during feeding
3. To understand the correlation between verbal interaction during feeding and language development.

### **Method:**

A Cross-sectional, survey-based study design was carried out on parents of children born full-term, aged zero to three years. The parents/ caregiver who were involved in regular feeding were recruited. The questionnaire was provided to the parents based on their language of comfort (Kannada or English). Data was analyzed using descriptive statistics.

### **Results & Discussion:**

Result: The survey revealed a variety of feeding methods, including breastfeeding, bottle feeding, spoonfeeding, cup feeding, baby-led weaning. Many parents transitioned from breastfeeding/bottle feeding to complementary feeding around 5- 6 months of age. Among the participants recruited, 80% of parents frequently communicated verbally during feeding and reported early signs of speech development such as babbling and imitation.

Discussion: This survey revealed that parental involvement during feeding plays an important role in encouraging speech- language development in infants and toddlers. Children of parents who frequently interacted with the child during feeding showed advanced speech and language



milestones and overall communication skills. The transition from dependent to more independent feeding correlated with increased opportunity for child- driven communication.

**Summary & Conclusion:**

Summary: This study found that verbal and non-verbal interactions during feeding positively influence early language development. Baby-led weaning fosters more child-led communication, and parental knowledge about speech development enhances engagement. Socio-economic factors impacted parental involvement, highlighting the need for broader education.

Conclusion: Feeding practices are key opportunities for promoting speech and language development. Encouraging parents to engage their children verbally and non-verbally during feeding can support early communication skills, with potential long-term benefits for language acquisition.

## Language and Literacy Assessment and Intervention Outcomes in Mild Intellectual Disability: A Case Report

*Prachi Ahuja, Srabanti Saha Saha & Kamalika Chowdhury*

**Sri Aurobindo Institute of Speech and Hearing, SAU, Indore**

### **Introduction:**

Language and literacy, two crucial skills of human communication and cognition, are intricately interrelated that shape an individual's understanding and expression. Language is a systematic and conventional means of human communication by way of written and vocal sounds (Millward and Hayes, 2012). Literacy refers to the ability to understand the relationship between sounds and written words such that one may read, say, and understand them (UNESCO, 2004; Vlieghe, 2015). The relationship between language and literacy is reciprocal in nature each nurturing the development of the other. Young children need oral language to learn about both (Roskos, Christie, & Richgels, 2003). Language learning begins at birth-in fact the first three years of life are a critical period for language development as the child's brain is developing rapidly whereas literacy begins before a child enters preschool or kindergarten as similar to oral language. Language, literacy and reading development in the pre kindergarten years proceeds through several levels of foundational skills which becomes more complex as children get older. According to the NICHD (2000), foundation skills include three elements: a) Phonemic awareness b) knowledge of high-frequency sight words c) The ability to decode words. The complex interplay between language and literacy is the basis of effective communication and helps in cognitive development and scholastic achievement. Children with intellectual disabilities invariably display delays in learning language and seldom achieve levels of linguistic competence approaching those of their typically developing peers. These delays limit the ability to participate fully in the community and benefit from learning opportunities throughout the entire life course.

### **Need for Study:**

The highly linguistic nature of the instructional and social life of the classroom puts individuals with intellectual disabilities at a particular disadvantage (ASHA, 2022). Children with intellectual disabilities typically display very low literacy achievement levels and fall further behind their peers as their schooling progresses. In addition to the necessity for speech and

language interventions that improve the spoken language and functional communication of children with intellectual disabilities, there is an additional requirement to address the literacy needs of children with intellectual disabilities.

### **Aim & Objectives:**

The present case study aimed to assess a child to reveal the profile of challenges and strengths in language and literacy-relevant skills which can target towards plan of intervention strategies and eventually lead to effective outcomes.

### **Method:**

A Hindi speaking boy aged 4 years 6 months, reported to speech and language department with a chief complaint of inability to speak age appropriately as per the peer group and also informed of poor attention skills. Parental interview revealed of delayed and feeble birth cry, and a post-natal history of pneumonia. Parental perception of delayed motor, language, social and cognition developmental milestones was present. Psychological test results suggested of mild intellectual disability. The child communicated predominantly using simple phrases along with directive gestures. The child attended English medium regular schooling from the age of 4 years and presently in the lower kindergarten. The present study was carried out in two phases. The Phase I included language and literacy assessment using informal interview method and administration of standardized tests. Attention level, cognitive pre-requisites milestones, social developmental milestones were assessed using the developmental checklist. Language age was determined based on Communication-DEALL (Karanth, 2007) and Milestones of early communication development whereas the literacy skills were assessed using Early Literacy Screening Test (ELST; Shanbal, 2011) and Grade Level Assessment Device (GLAD; Narayan, 1997).

The Phase II was the post assessment section, where child underwent speech and language therapy for 24 sessions (thrice in a week) of duration 45 minutes each. The speech and language intervention targeted towards facilitating the language and literacy skills. The domains of intervention focused towards pre-linguistic skills, receptive and expressive skills and phonological awareness. Language enhancement techniques such as prompts, incidental teaching, self and parallel talk, imitation, expansion and extension were used to enhance the goals and positive reinforcements were provided when child responded appropriately. A post therapeutic reassessment was done using ELST and Communication-DEALL to evaluate the intervention outcomes.

**Results & Discussion:**

Language and literacy investigation was carried out in Phase I (pre therapy) of the case study. Results of attention level indicated age matched level of 2 to 3 years i.e. single channeled attention. Communication-DEALL results showed that receptive language skills scored 88.3% i.e. receptive language skills matched that of age 36 to 42 months and expressive language skills scored 81.6% i.e. expressive language skills matched that of age 24 to 30 months. Syntax development was in Brown's Stage I where as phonology was depicted by the use of cluster reduction, liquid simplification, stopping and fronting. Performance of semantics was in par with 30-36 months whereas pragmatics was in the age range of 32-36 months. GLAD findings suggested of poor phoneme identification in Hindi, English language and arithmetic skills. Overall performance was better in English language when compared to Hindi whereas arithmetic skills were scored poorly. ELST overall score was 7 which revealed low performance in auditory discrimination, early literacy skills and mathematical skills. On the basis of clinical findings and standardized tests the subject was provisionally diagnosed as spoken language disorder with early literacy deficit secondary to mild intellectual disability.

Reassessment of language and literacy skills were done post therapeutically (24 sessions) using ELST and Communication-DEALL. Receptive language age matched the age level of 48 to 54 months whereas expressive language age was at the level of 42 to 48 months in Communication-DEALL developmental checklist. This result was suggestive of enhancement in both receptive and expressive skills post therapeutically. After the therapy session syntax reached the level of Brown's Stage III where as phonology indicated speech to be 100% intelligible and adequacy of segmenting words into syllable. Semantics and pragmatics improved to the age range of 42- 48 months. ELST overall score was 18 which revealed marked progress in auditory discrimination performance followed by facilitation in early literacy skills and mathematical skills in comparison to the baseline.

**Summary & Conclusion:**

This case study demonstrates the critical inter play between language and literacy development in a child with mild intellectual disabilities. The initial assessments revealed significant delays in both receptive and expressive language skills, as well as in literacy abilities. However, following a structured intervention that spanned 24 therapy sessions, the child exhibited notable progress in both language and literacy outcomes. The improvements in receptive and

expressive skills, alongside advancements in auditory discrimination and early literacy, underscore the effectiveness of targeted speech and language therapy.

These results highlight the necessity for early and individualized interventions for children with intellectual disabilities to foster their communication skills and academic potential. By addressing both language and literacy together, we can enhance their ability to engage in school and participate fully in their communities. Future research should continue to explore and refine intervention strategies, ensuring they are tailored to meet the diverse needs of children facing similar challenges.

**Development of Pragmatic Skills Among 3-4 Years Old Preschooler  
Children in Rural Region of Gurgaon District of Haryana: An  
Exploratory Study**

*Riya Raj, Grace Mariam Mathew, Meghavi Sarin, Vijay Kumar & Arun Kumar*

**Amity University Haryana**

**Introduction:**

Pragmatics is defined as the speaker's ability to modulate their utterances to the communicative needs of their listener (Falkum, 2017). Pragmatics refers to study of the use of language in real with contextual variation and in experience with various life. Like any other language parameter, development of pragmatic skills is important for linguistic, cognitive and academic development. Along with family members, class-teacher are very important who monitor and promotes pragmatic skills in preschooler children. In preschool setting, a teacher spends around four to six hours with a group of students by engaging in various classroom activities. Teacher provides more language advancing input progress and are usually more supportive to language learning (Dickinson & Porsche 2011). Children's behaviour with purpose of eliciting and maintaining conversation are also minutely monitored by the class teacher (Hoff, 2006). Pragmatic development is also associated with the achievement of literacy. During preschool stage, a child learns linguistic competency, oral skills, learning skills, literacy skills, grammar, vocabulary, culture, personal factor, empathy for other students, role models & enjoyment ( Benke and Medgyes,2005).

Therefore, the early native language learning is dependent to pre-school teachers. Pragmatic profiling of each child is warranted as it is extremely important to actively involve every child in the higher level of language learning process initiated by a pre-school class teacher. It includes communicative functions, attention on given instructions and following commands, interaction with teachers and peers, sharing of knowledge, speech-language comprehension and expression. Instructions and teaching methodology also demands higher level of pragmatic competency for linguistic and academic learning. Playful linguistic learning is relevant to development of pragmatic.

**Need for Study:**

Children aged 3-4 years, who typically thrive on social interaction, often find themselves in

environment that limit their opportunities for meaningful communication and social engagement. In contemporary society, the shift towards nuclear family structures has significantly impacted children's development, particularly in the realm of pragmatic skills. This study can contribute valuable insights to the existing literature by providing a nuanced understanding of how family dynamics and environmental factors influence the acquisition of pragmatic skills in early childhood. Moreover, this research focuses on rural schools, where a lack of awareness about the importance of pragmatic skills may further exacerbates the issue. By exploring the development of these skills within this context, we aim to highlight the challenges faced by children and emphasize the need for targeted interventions to foster essential communication abilities. It also offers evidence-based recommendations for parents, educators, and policymakers to enhance awareness and support the development of these critical skills in rural settings. Ultimately, our finding could inform future research and interventions aimed at promoting effective communication in young children, bridging the gap between pragmatic competency and its practice

#### **Aim & Objectives:**

To investigate the pragmatic development skills among 3-4 years old preschooler children of rural region.

#### **Method:**

Sixty-seven children in the age range of 3 to 4 years with mean age of 3.7 years  $\hat{\pm}$  5 months of a rural preschool participated in this study.

This age group was selected because it is a critical period for the development of pragmatic skills, which are essential for effective communication and social interaction. Children's pragmatic skills were evaluated using Pragmatic Profile Test given by Dewart and Summers in 2020. The pragmatic profile evaluates four key domains of pragmatic skills: a) Communicative Functions b) Response to communicate c) Interaction and communication and d) Contextual variation. Data were collected from a rural govt primary school of Gurgaon district of Haryana. Permission and consent from the school administration was obtained. Based on the school records, children of nursery grade in the age range of 3 to 4 years were shortlisted. One-to-one session with the respective class teacher of children in the age range of 3 to 4 years was arranged. Pragmatic profile test was implemented for every eligible child. Teacher has at least six month of interaction history with the child. This approach ensured a comprehensive evaluation of each child's pragmatic skills in a naturalistic setting, allowing for rich qualitative

insights into their development. The obtained score was compared with the norms provided by Dewart & Summers (2020).

### **Results & Discussion:**

Data were collected, coded and stored in excel using Pragmatic Profile test given by Dewart and Summers in 2020. A total of 67 children in the age range of 3 to 4 years participated in this study. The test procedure was explained to the class teacher who was monitoring the student for at least six hours per day since a minimum of six months. Component wise response was obtained for communication function, response to communication, interaction and conversation, and contextual Variation. Communicative functions was evaluated using descriptive analysis and it was found that 69% children responded verbally by saying yes mam etc, while remaining 31% used non-verbal communication functions such as eye contact, shouting and move around. Secondly, response to communication was analysed and it was found that 36% children responded through verbal mode while remaining 64% communicated using gestures signs or through pointing. Thirdly interaction to conversation was explored and it was noted that 31% children actively participated in group activities and took active participation in activities they were involve, however 69% children preferred withdrawn or being passive listener or preferred one to one interaction. Lastly, contextual variation was examined, and it was found that 61% children were actively involved in conversational repaired and they correctly responded to contextual variation. Based on the findings of this study, it was observed that the pragmatic ability in 3-4 years preschool going children of rural location performed around 60-70% as per pragmatic scale. One of the reasons for getting less than 100% score could be the modality of task administration which was through the class teacher. The natural environment for pragmatic assessment shall be at the home or with family environment. Repetition of same task at home scenario can give higher outcomes. Children in the age range of 3-4 years are susceptible to stranger that could also be another reason for not achieving the ceiling score. Present findings suggest that development of pragmatic skills occur in a dynamic manner and in the age range of 3-4 years rapid growth in pragmatic skills occurs which is yet not completely achieved.

Besides, class teacher or preschool is immensely involved in engaging the pragmatic based class activities which is essential for communicative and academic learning.

### **Summary & Conclusion:**

Development of pragmatic skills among 3-4-year-old children in rural settings reflects a



commendable achievement, with scores ranging from 60% to 70% on the pragmatic scale. However, these scores suggest room for growth, and several factors may contribute to the observed performance levels. The context of task administration, particularly the involvement of teachers, may introduce an element of anxiety or unfamiliarity, potentially impacting children's responses. Additionally, children's natural wariness of strangers could further inhibit their performance in structured settings. Further enhancement of pragmatic skill development may be beneficial to conduct assessments in more familiar environments, such as home settings, where children might feel more comfortable and confident. Engaging with children in naturalistic contexts could lead to more accurate representations of their pragmatic abilities. Future research should explore these dynamics of pragmatic development, considering the influence of environment and familiarity on children's social communication skills.

## **A Comparative Analysis of Communicative Effectiveness and Pragmatic Performance in Individuals with Broca's and Anomic Aphasia**

*Akshita Rana, Drishti Singh & Pravesh Arya*

**Ali Yavar Jung National Institute of Speech and Hearing Disabilities, RC, Noida**

### **Introduction:**

Aphasia is a neurological language disorder, can be defined as the loss or impairment of language caused by brain damage that significantly disrupts language modalities such as speech, comprehension, reading and writing. Common causes of aphasia include brain injury, strokes, tumor or neurodegenerative disease.

Aphasia has different types, Broca's and Anomic Aphasia are two among them that affect individual's ability to communicate effectively in different ways.

In Broca's aphasia, language understanding is relatively normal but speech is not fluent, effortful, poorly articulated and agrammatical. Whereas, in Anomic aphasia, comprehension is relatively good, speech is fluent but patients have significant word-finding difficulties. Communicative effectiveness (involves measuring how clearly and successfully a speaker conveys the message) and Pragmatics (the use of language in social contexts) are aspects that are crucial for daily communication and social interaction.

### **Need for Study:**

Although various studies exist on communication effectiveness and pragmatic performance individually, and how these abilities are affected by nature and extent of impairment caused by these aphasias, there is limited comparative research between Broca's and Anomic Aphasia in these areas. Each type of aphasia differently affect everyday communication and social use of language in real-world situations and their strike contrast is needed to understand better how these conditions impair communication. Therefore, a study is necessary to shed light on different dimensions affected in Broca's and Anomic aphasia, especially in relation to communicative efficiency and pragmatic abilities.

### **Aim & Objectives:**

1. This study aims to conduct a comparative analysis of the various dimensions of communicative effectiveness and pragmatics in individuals diagnosed with Broca's and Anomic aphasia.

2. The objective is to formulate targeted and effective therapeutic interventions tailored to each type of aphasia, focusing on their specific communication difficulties in everyday situations.

**Method:**

A total of 12 male participants, with an age range of 30 to 70 years, participated in this study. Out of total, 7 participants had a diagnosis of Broca's Aphasia and 5 had Anomic Aphasia. The participants were evaluated using Pragmatic Rating Scale, developed by David McNeil and Susan Higgins, and Communicative Effectiveness Index (CETI) developed by Lomas et. al. The assessments were conducted through direct one-on-one interviews, with caregivers providing supplementary details concerning the participants' communicative skills and daily functioning.

**Results & Discussion:**

Among the 12 participants in the study, 67% experienced a stroke as the cause of aphasia, while the remaining participants suffered from brain injuries. The duration since onset of aphasia varied from several months to three years. Regarding demographics, 33% of participants were aged 40-50, 25% belonged to both 30-40 and 50-60 age groups and the remaining were over 60 years old. Additionally, 42% of those with aphasia did not present with any comorbidities, and 58% of the total sample had not pursued speech therapy post-aphasia diagnosis.

The study's descriptive analysis showed that participants with Anomic aphasia performed better on both CETI (mean score of 66.8) and Pragmatic Rating Scale (mean score of 3.696) compared to those with Broca's aphasia, who averaged 40.43 and 1.99, respectively. Further breakdown of Pragmatic Rating Scale scores showed that in non-verbal communication skills (e.g., gestures, intelligibility, facial expression, fluency) and interactional aspects (e.g., turn taking, topic management, use of repair strategies), both Anomic and Broca's patients scored higher within their categories, with averages of 3.69 and 3.64 for anomic, and 1.99 and 1.94 for Broca's respectively. However, both groups showed weaker performance in propositional communication skills, which include aspects like topic initiation, maintenance, verbosity, and cohesion, scoring 1.6 for Broca's and 3.36 for Anomic patients.

The analysis of specific CETI aspects, both Anomic and Broca's aphasic patients had stronger non-verbal communication skills, with mean scores of 0.9 and 0.71 respectively. Broca's patients struggled in social interaction and advanced communication tasks, such as engaging in spontaneous discussions or elaborating on topics, achieving mean scores of 0.4 and 0.15.

Anomic patients, however, performed better in these areas, with average of 0.642 and 0.6. Both groups showed comparatively similar abilities in expressing basic needs (e.g., getting attention, responding with yes or no appropriately) with scores of 0.628 for Anomic and 0.59 for Broca's.

### **Summary & Conclusion:**

This study illustrates significant differences in communicative effectiveness and pragmatic performance in individuals with Broca's and Anomic aphasia. It highlights the distinct needs of individuals with both groups of aphasias, suggesting a tailored approach in therapeutic practices. Clinicians should consider implementing strategies that enhance the strengths of each type of aphasia, particularly focusing on enhancing social interaction and propositional communication for Broca's patients, while promoting advanced communication skills for those with Anomic aphasia.

While this study provides valuable insights, it is essential to acknowledge its limitations, including small sample size and focusing on male participants. Future studies should aim more diverse population, enabling better understanding of aphasia.

**Evaluating Speech-Language Pathologists' Awareness knowledge and understanding of Gestalt Language Processing in Autism: A Survey Study**

*Priya Mishra, Geetanjali & Vishwadeep Singh*

**Amity University Haryana**

**Introduction**

Gestalt Language Processing (GLP) is an emerging area of interest within the field of speech-language pathology, particularly concerning its relevance to individuals with autism spectrum disorder (ASD). Unlike traditional language processing, which often emphasizes the sequential acquisition of language through isolated words and phrases, gestalt language processing involves understanding and using language as whole units or "gestalts." These units may include echolalic phrases, scripts from media, or chunks of language learned in context. According to Prizant and Duchan (2004), gestalt language processors often develop communication through "immediate or delayed echolalia" and require different approaches to facilitate their language development.

Research indicates that a substantial number of individuals with ASD are gestalt language processors. A study by Dore et al. (2016) found that approximately 30% of children on the autism spectrum demonstrate gestalt language processing traits. This necessitates a tailored approach in therapeutic interventions, as traditional methods may not align with their unique communication styles.

Despite the importance of recognizing and understanding GLP, many speech-language pathologists (SLPs) report feeling inadequately trained to address the needs of gestalt language processors. A survey conducted by O'Connor and Klein (2018) revealed that 70% of SLPs expressed a desire for more training on GLP strategies. This gap in knowledge presents a critical challenge, as effective intervention is contingent upon an SLP's awareness and understanding of gestalt language processing principles.

This survey study aims to evaluate SLPs' awareness, knowledge, and understanding of gestalt language processing in autism. By identifying current levels of comprehension and training needs, the study seeks to inform future professional development and enhance intervention strategies for gestalt language processors, ultimately improving outcomes for individuals with

ASD.

### **Need for Study**

This study is needed to address the gap in Speech-Language Pathologists' (SLPs) knowledge of Gestalt Language Processing (GLP) in individuals with Autism Spectrum Disorder (ASD). As a significant portion of individuals with ASD are gestalt language processors, traditional language intervention methods often fall short. Despite this, many SLPs lack adequate training in GLP strategies, as shown by a survey where majority expressed a need for further education. This study aims to evaluate SLPs' awareness of GLP to inform future training and improve intervention outcomes for individuals with ASD.

### **Aim & Objectives**

The aim of this study is to evaluate the awareness, knowledge, and understanding of speech-language pathologists (SLPs) regarding Gestalt Language Processing (GLP) in individuals with autism spectrum disorder (ASD).

### **Objectives**

1. To measure the level of awareness among SLPs about the concept of Gestalt Language Processing and its relevance to autism.
2. To evaluate SLPs' understanding of the characteristics and needs of gestalt language processors compared to traditional language processors.
3. To identify perceived training needs and barriers that SLPs face in implementing strategies for supporting gestalt language processors

### **Method:**

This study employs a cross-sectional survey design to evaluate the awareness, knowledge, and understanding of speech-language pathologists (SLPs) regarding Gestalt Language Processing (GLP) in individuals with autism spectrum disorder (ASD).

The study involved a sample of 102 SLPs from various clinical settings, including schools, hospitals, and private practices etc. Participants were required to have at least three years of experience working with children diagnosed with ASD. To be eligible, participants needed to hold a minimum of a Bachelor's degree in Audiology and Speech-Language Pathology (BASLP) or a Master's degree in Speech-Language Pathology (MASLP). SLPs who do not engage in ASD-related therapy or are working outside the specified region were excluded from the study.

The study was conducted in three phases:

Phase I involved the development and validation of a self-administered questionnaire. A questionnaire is designed to gather detailed information on SLPs' awareness, knowledge, and understanding of GLP. The questionnaire included sections on demographic characteristics, professional background, familiarity with GLP concepts (i.e. In your experience, what are the primary communication challenges faced by autistic children who use gestalt language processing?), perceived challenges in working with gestalt language processors, Current practices (i.e., which assessment tools or strategies do you use to identify gestalt language processing in autistic children?) and training needs (i.e.

How do you rate the availability of resources and training materials on gestalt language processing for SLPs?). The questionnaire was initially developed through a comprehensive literature review and expert consultations to ensure content validity. Validation involved a pilot study with a small group of SLPs and feedback from three experts in the field of language processing, refining the questions for clarity and relevance.

Phase II involved data collection, in which data were collected using an online survey platform and paper-based questionnaires. The survey link was distributed through professional networks, social media, and email lists of relevant organizations. Participants were instructed to complete all sections of the questionnaire, with mandatory responses for each item. Upon successful submission, participants received an acknowledgment email confirming their participation. In phase III, data were analyzed both qualitatively and quantitatively.

### **Results & Discussion:**

The study results were analysed both qualitatively and quantitatively. The findings revealed majority of SLPs (81%) correctly identified the definition of GLP. However, 66.6% of SLPs correctly identified its characteristics and 76.2% of SLPs were aware of how GLP differs from Analytical Language Processing (ALP). A significant majority (81%) of SLPs utilize observational methods to identify GLP in their clients, indicating a reliance on real-time assessments in naturalistic settings. Furthermore, an impressive 90.5% of SLPs correctly identified signs that a client might be using GLP, demonstrating strong awareness of the characteristics associated with this language processing style. Similarly, 90.5% of participants correctly recognized effective intervention strategies for individuals using GLP, reflecting a solid understanding of appropriate therapeutic approaches. Only 23.8% feel confident in explaining GLP to parents and caregivers. Despite a high level of agreement (100%) on the importance of being knowledgeable about GLP, confidence in identifying and addressing GLP

issues was notably low, with only 14.3% of SLPs feeling very confident. This gap suggests a need for enhanced training and resources. In Continuing education domain, 57.1% of SLPs had never attended any relevant workshops or seminars; there was strong interest in additional educational opportunities, with 76.2% favoring seminars and workshops as beneficial for improving understanding and management of GLP. Furthermore, the study revealed that while many SLPs utilize observational methods and can identify effective intervention strategies for GLP, the perceived availability of resources and training materials was deemed average by 61.9% of respondents. Additionally, over half (52.4%) of SLPs expressed that SLP certification programs should incorporate comprehensive training on GLP.

### **Summary & Conclusion:**

In conclusion, the study reveals that while the majority of speech-language pathologists (SLPs) have a solid understanding of Gestalt Language Processing (GLP), with 81% able to identify its definition and 90.5% recognizing effective intervention strategies, there remains a notable lack of confidence in implementing GLP knowledge and Understanding in clinical scenarios. Many SLPs have not participated in relevant training, indicating a strong demand for additional educational opportunities, such as workshops and online courses to boost SLPs' confidence. This highlights the need for increased resources and comprehensive training in SLP certification programs to better support professionals in working with ASD children who use GLP, ultimately improving outcomes for those with autism.



## **Assessing the relationship between Self Esteem and Quality of Life in Individuals with Broca's and Anomic Aphasia: A Comparative Study**

*Drishiti Singh, Akshita Rana & Pravesh Arya*

**Ali Yavar Jung National Institute of Speech and Hearing Disabilities, RC, Noida**

### **Introduction:**

Aphasia is defined as an acquired neurological disorder that affects the reception and expression of language across modalities. It is not a sensory, psychiatric, or intellectual disorder (Tesak & Code, 2008). Common etiologies include CVA, TBI, neoplasm, infections, degenerative diseases.

Aphasia has various forms. Broca's aphasia and Anomic aphasia are two types that affect individual's communicative and social functioning, self-esteem, and quality of life in different ways.

Broca's aphasia is the prototypical non-fluent aphasia and is characterized by halting, effortful, agrammatic, and often telegraphic verbal output. In contrast, Anomic aphasia is marked by fluent speech, intact receptive language, and a significant deficit in naming.

Self-esteem (the global feeling of worth, dignity, and importance a person has about themselves) and Quality of Life (defined as an individual's perception of their own well-being) are interrelated aspects needed for personal growth and a more fulfilling, happy, and successful life.

### **Need for Study:**

The study of self-esteem & its impact on the quality of life in different aphasic populations needs to be explored, as it is affected differently in various aphasic patients, both at interpersonal and intrapersonal level. Although various studies exist on the self-esteem and quality of life of post-stroke aphasic patients individually, the interrelation of these two aspects in a comparative study in aphasic populations has not been explored. Therefore, their comparative analysis is important to understand the extent to which the type of aphasia influences such aspects.

### **Aim & Objectives:**

1. This present paper was conducted with the aim of developing a holistic service delivery model that provides counselling, group therapy sessions, personalized care, and support

for caregivers, ensuring the overall well-being of aphasic patients.

2. To perform a comparative study on self-esteem among individuals with Broca's and Anomic aphasia.
3. To analyze the quality of life in individuals with Broca's and Anomic aphasia and explore its correlation with self-esteem in these patient groups.

### **Method:**

The present study adopted a qualitative approach and included 12 male aphasic patients between the ages of 32 and 67. The sample included seven individuals diagnosed with Broca's aphasia and five with Anomic aphasia. The scales administered were the Rosenberg Self - Esteem Scale (Morris Rosenberg, 1965) and Stroke and Aphasia Quality of Life Scale - 39 (SAQOL - 39) developed by Hilari et. al. (2009). The sample data were gathered through one-on-one interviews with the patients, while caregivers provided supplementary information to enhance the understanding. A descriptive analysis was conducted to evaluate differences in self-esteem and quality of life across the two groups. Additionally, a correlation analysis was applied to investigate how self-esteem levels were linked to quality-of-life outcomes, offering deeper understanding of how psychological factors interact with quality of life in aphasia.

### **Results & Discussion:**

Out of total, eight patients had a stroke as the cause of their aphasia while four patients had brain injuries. Seven patients had received therapeutic interventions at some point in their lives, whereas the remaining five had no history of therapy. The SAQOL-39 baseline score was established at 5. Five patients with Anomic aphasia scored near this baseline, compared to only one patient with Broca's aphasia. For Rosenberg's Self-Esteem Scale, the baseline was set at 15, and patients who performed better on the SAQOL-39 generally had higher self-esteem scores. Pearson's correlation analysis revealed a strong positive relationship between quality of life (X) and self-esteem (Y), with Pearson correlation coefficient (r) of 0.8958 and a highly significant p-value of 0.0000809.

### **Summary & Conclusion:**

Self-esteem and quality of life are interrelated aspects essential for well-being. Self-esteem has been given more importance in the field of psychology than in speech therapy. When speech therapists work with adult patients who have communication impairments due to brain injury or stroke, it becomes increasingly important to highlight such psychological aspects alongside

the management of communication impairments. From this research, we statistically conclude that self-esteem has a great impact on the quality of life. As speech therapist, we need to develop goals involving group therapy sessions, counselling for patient and caregivers, mindfulness activities during sessions, and positive reinforcement for every successful patient attempt. Structuring therapy sessions, such as moving from simple to complex in activities, can help address these issues. By adopting this approach, speech therapists can assist the patients in fulfilling the demands of life without unnecessary emotional distress or catastrophic reactions to communication difficulties. Nevertheless, we must consider the limitations of this study, including its small sample size and exclusive focus on male participants. Future studies need to concentrate on a broader range of populations, addressing the different challenges that individuals might experience.

## **Delving into Sentence Variations in Motherese: A Study on Communication Patterns with Autistic Children**

*Pratishtha Dev, Vijaya P & Vibha Mahajan*

**AYJNISHD, RC Noida**

### **Introduction:**

Language used by mother with her child while communicating plays an enormous role in a child's linguistic development (Hess&Shipman,1967). Children with autism often have language deficits that affects social interaction, communication skills, and overall language development in different ways. Therefore, the language used by mothers needs to be structured and delivered in a way that meets the child communication abilities and furthermore helps to overcome linguistic challenges, the language input should be clear and unambiguous for the child (Volkmar et al., 2021). Mothers of autism should use simple sentences, repetition, concrete language and clear instructions, the language used by mothers needs to be different than it's for typically developing children.

### **Need for Study**

In most cases of children having autism, mother is the primary care giver and spend most time with the child, it is important to examine language used by mothers while interacting with the children and her role in child's language development as it can influence the acquisition and progression of language skills ( Perzolli et al., 2023). As maternal speech often include more informative and attention capturing statements which can influence the child language skills (Place & Hoff 2015) . The most common sentence structure that the mother uses to engage with her child will be identified by this study, which will help improve the language development of autistic children.

### **Aim & Objectives:**

To find out the language used by mothers and the type of sentences used by her while interacting with the children and importance of enhancing the maternal interaction to promote language development in children with autism. The researchers will observe and analyze interactions between the mothers and children.

**Method:**

A cross-sectional survey was conducted in which data was gathered from a rehabilitation center where all form of communication disorders came from which autism was single out,40 autistic mother-child dyad took part in the study. The interaction of mothers with their children having autism, observing the mothers engage with the children while employing a photo stimulus was used for collection of data. The image, which was designed for the study was validated by three speech language pathologists which addressed the aspects that was required for the study, it includes different pictures of grocery store, top shop, food court, clothes store, home appliances, and restroom at a shopping mall.

The mothers was shown the picture and asked to explain it to the children. It was a personal interview in which their interactions were observed and recorded, furthermore an observation checklist was made that was validated by three speech-language pathologists which was used as the main data collection tool. The checklist had five subsections, first having demographic information (mother's educational, qualifications, occupation, income, age) then rest four sections which included different sentence types which are interrogative sentences, declarative sentences, imperative sentences and exclamatory sentences, their constituent parts marked as yes or no after recorded sample analysis and sentences type was chosen for the participants.

**Results & Discussion:**

Numerous studies show that mother-child interaction is essential for a child's language development and that the mother's usage of different sentence structures has a basic impact on the child's language development. In light of the social-communicative deficits seen in autistic children, this study examined mothers sentences usage as a particular and significant component of language development in young children. The findings indicate that interrogative sentences were used by 65% (n=26) mothers followed by imperative sentences that were used by 17.5%( n=7) mothers, and interrogative sentences used by 12.5% (n=5) mothers, 5% (n=2) mothers used exclamatory sentences.

**Summary & Conclusion:**

The study investigates how the language used by mothers while interacting with their children with autism, influences linguistic development. Autism often comes with language deficits that affect social interaction and communication, so the structure and clarity of maternal language are crucial. Mothers are the primary caregivers and spend a significant amount of time with their children, making their language patterns essential to the child's development. In the study

it was discerned that most mother uses interrogative sentences followed by imperative sentences and few mothers used exclamatory sentences scanty mothers used declarative sentences . Interestingly, children who had mothers who used declarative sentences were better able to relate sentences to their meanings and actions. The result highlights the crucial role of maternal interaction in facilitating language development among children with autism. The predominance of interrogative sentences suggests that mothers may engage in questioning to stimulate responses, while the limited use of declarative sentences indicates a potential area for improvement in communication strategies. Improving mothers speech patterns, especially by using more concise, informative declarative sentences, may help autistic children learn and develop their language skills more effectively. This study emphasizes the necessity of focused interventions that teach moms efficient communication methods to maximize their children's language development. The study's conclusions are constrained by a number of factors, including a small sample size that might not accurately reflect the diversity of autistic children given the variety of language development difficulties they encounter. Furthermore, studies can be done on relation between type of sentences used by mothers and receptive and expressive language of their children.

**Speech, Language, Oromotor and Cognitive profile of 14-year old female  
with Anterior Thalamic Lesion leading to Cerebral Palsy (?): A case  
study**

*Ruchi Bhandari, Riya Raj, Vijay Kumar & Arun Kumar*

**Amity University Haryana**

**Introduction:**

Cerebral palsy (CP) is a complex motor disorder that stems from irreversible brain lesions occurring before, during, or shortly after birth, as outlined by the World Health Organization (1995). The etiology of CP is multifactorial, encompassing genetic mutations, prenatal infections, and perinatal complications such as hypoxia or trauma. Research indicates that neurological correlates of CP are often linked to injuries in specific brain regions, notably the motor cortex, basal ganglia, and cerebellum. Damage to these areas disrupts neural pathways critical for motor control and coordination. These impairments can significantly affect communication skills, resulting in challenges with both expressive and receptive language (M.A. Rosenbaum et al., 2010).

Advances in neuroimaging techniques, particularly MRI, have shed light on the structural and functional abnormalities associated with CP. A study by Pereira et al. (2018) highlighted changes in brain connectivity that correlate with the severity of motor impairment and functional outcomes. This case study provide insight in the importance of symptomatic-based speech and language intervention in scenarios where the identification of the lesion's site is ambiguous. It illustrates the complexities of managing cerebral palsy with delayed intervention.

**Need for Study:**

In case of subcortical lesion there is confusion regarding speech motor performance vs linguistic development. There are several reviews which suggest that a lots of time spent of critical period in assessment and labelling of the disorder which is quite difficult in the context of socio- cultural and financial diversity. Moreover, test retest matching confusion which is alarmingly increasing. After conducting an extensive assessment and therapy for long period of there is a need for future research to document case studies that delve into the speech characteristics exhibited by individuals afflicted. Such case studies would not only serve to enhance the body of knowledge in this domain but also facilitate the formulation of more

effective rehabilitation strategies for individuals confronted with analogous conditions.

**Aim & Objectives:**

To document the case findings to contribute to the understanding of cerebral palsy, particularly regarding speech and language challenges associated with anterior thalamic lesions.

**Method:**

Case presentation

A 14-year-old female with a history of dystonic cerebral palsy, presented to the department of audiology and speech language pathology clinic's Amity University Haryana accompanied by parents, who reported that the patient had experienced delay in her speech, language, cognition requiring assistance for activities of daily living. The patient was diagnosed with cerebral palsy at birth, primarily characterized by muscle stiffness of right hand. Birth history states that the patient experienced episode of seizure on tenth day after birth and was subsequently diagnosed with meningitis shortly after delivery. She has been receiving physical therapy and medicines to manage dystonic CP.

Radiological Investigations:

Non-contrast and contrast enhanced CT was done in 2011 head findings are suggestive of small hypodense lesion in medial parts of both basal ganglia ? gliosis (which could be secondary to birth asphyxia). Brain CT done in 2014 (at the age of 4 years) suggested no definite evidence of brain parenchymal pathology or space occupying lesions. MRI study of brain done in 2016 (at the age of 6 years) showed focal T2 hyperintensity in anterior part of thalamus on both side. (?) chronic vasculitis and end artery infarct vs decreased diffusion. Angiography study done in 2021 (at the age of 11 years) reveals that altered signal intensity in bilateral anteromedial thalami suggestive of gliosis. No focal or diffuse area of restricted diffusion was seen in cerebral regions.

**Results & Discussion:**

A comprehensive clinical assessment revealed several key findings regarding the patient's condition. The language assessment, conducted using the LPT (Informally), indicated delay in receptive and expressive language skills. The oral motor examination showed tongue deviation to the left, reduced strength and range of motion in the tongue, and an insufficient lip seal, all of which contributed to difficulties in swallowing and articulation. Additionally, malocclusion and reduced strength in the cheeks observed, while the soft palate exhibited weakness that



affected air pressure management during speech, drooling was also present due to inadequate lip control. Voice evaluation through objective analysis using PRAAT revealed limited phonation range, affected jitter and shimmer, with a maximum phonation duration of only 3 to 4 seconds. The cranial nerve assessment indicated adequate functioning in several nerves, but deficits were noted in the facial, and hypoglossal nerves, adversely impacting facial movement, swallowing, and speech. Furthermore, the swallowing assessment, evaluated using the EAT-10 scale, yielded a score of 11, indicating significant swallowing difficulties. Lastly, psychological assessment was performed by psychologist using Seguin form board test (SFBT) assess psychomotor and visuo-perceptual abilities, which identified a mild level of intellectual disability (IQ-53.8) alongside moderate impairments in social functioning.

#### Intervention

Following the baseline findings of the patient, a tailored treatment approach was followed. The speech and language intervention focused on enhancing communication, speech clarity, and functional language use, while also aiming to improve speech intelligibility and strengthen oral motor function. Therapy included targeted activities to enhance articulation and swallowing capabilities. Additionally, voice training was incorporated to improve voice quality, minimizing strain on the vocal cords. Swallowing interventions concentrated on the safety and efficiency of swallowing, utilizing a combination of oral motor exercises and compensatory techniques to promote a smoother swallowing pattern.

#### Post-Therapy Outcomes

After 4 months of treatment, the patient demonstrated notable improvements across various domains of communication and oral motor function. Consistent therapy targeting articulation, breath control, and oral motor exercises led to observable progress in tongue and lip strength, positively affecting both speech production and feeding abilities. The patient exhibited enhanced vocalization efforts, with a more consistent ability to form basic sounds and a few true words. Additionally, receptive language skills improved, as evidenced by her better response to verbal instructions. Ongoing therapy is planned to support continued progress in the coming months.

#### Discussion

Symptomatic based speech language intervention is recommended in such scenario where identification of site of neurological lesion is not clearly markable. This case of cerebral palsy shows the complexity of managing a condition with questionable diagnosis and late intervention. Early multidisciplinary intervention including pharmacological, physical and

speech therapy management, is crucial for improving function and quality of life. While the prognosis is variable but with continued therapy the patient can achieve better functional outcomes and maximize independence in daily activities. Long-term follow-up and adaptive care are essential in ensuring the patient's evolving needs are met.

### **Summary & Conclusion:**

This case study of a 14-year-old female highlights the complexities involved in assessing and managing speech, language, and cognitive impairments of cerebral palsy, particularly in the presence of subcortical lesions specially an anterior thalamic lesion. The detailed assessment of the patient revealed significant challenges in expressive language, oral motor function, and cognitive abilities, which were addressed through a tailored, multidisciplinary intervention plan. The post-therapy outcomes demonstrated significant improvements in oral motor strength and articulation. Emphasizing the importance of early and targeted interventions. This case also underscores the need for further research and documentation of similar cases to enhance our understanding of cerebral palsy and develop more effective rehabilitation strategies. Given the socio-cultural and financial diversity in access to care, such case studies could pave the way for more individualized and timely interventions, ultimately improving the quality of life for individuals with cerebral palsy.

**LP795**

**Analysis of Eating, Mealtime Behaviours and Feeding Difficulties in  
Children With Autism Spectrum Disorder**

*Sri Danvi, Priyadharshini N, R. Naveena Neolisha & Sundaresan R*

**Holy Cross College (Autonomous), Tiruchirappalli**

**Abstract Not Available**

## Impact of Screen Time Usage on Trajectory of Improvement in Autism

*Bhavya Gurwan, Vijay Kumar, Anushka . & Prabal Khatri*

Amity University Haryana

### **Introduction:**

Recently, it has been common to see children increasingly immersed in digital media, participating in activities such as watching videos, playing games, and interacting with rhymes on platforms like social media and other screen-based entertainment. The quick progress in technology has resulted in digital devices being everywhere, causing children to change how they use their time. Several studies have pointed out that children nowadays are showing a growing preference for virtual reality, video games, and digital media, sometimes neglecting traditional play-based activities that are essential for their social, developmental, and behavioral well-being. Playing in a traditional manner has been connected to the acquisition of crucial life skills such as communication, problem-solving, and emotional control, whereas spending too much time in front of screens has been correlated with setbacks in these same areas.

In the case of autism, where social, behavioral, and developmental aspects are already delicate, the impact of screen time can be heightened. Autism Spectrum Disorder (ASD) is marked by difficulties in social interaction, communication, and repetitive behaviors, making it harder for children with ASD to participate in activities that support social growth. Research indicates that children with ASD are especially at risk of the adverse effects of excessive screen time due to their preference for solitary activities and challenges in transitioning to interactive forms of play. This can further limit their opportunities for social, physical, and interactive play crucial for their developmental progress.

Furthermore, extended screen time is linked to adverse effects like delayed language development, decreased ability to focus, and increased behavioral problems, especially in children who are already vulnerable in their developmental process. For kids with autism, these possible consequences could worsen current difficulties, resulting in increased social isolation, challenges in managing emotions, and limited learning chances. On the other hand, studies have indicated that limiting screen time and encouraging structured, socially engaging, and play-oriented activities can have a positive impact on children's holistic growth.

This study aims to investigate the effects of screen time on the development, social skills, and behavior of children, especially those with autism, due to increasing worries about screen time

usage. This research seeks to uncover the possible dangers linked to excessive screen time by examining how digital media use impacts the developmental outcomes of children with ASD. Comprehending these impacts is essential in creating specific interventions that can harmonize the incorporation of technology in everyday life with the necessity for social and developmental enhancement.

### **Need for Study:**

In today's contemporary era where virtual access is minimized to age groups as a tiny as 1-2 year of children, bearing this fact not only us but several studies according to NIH that is national institute of health claim to have experience the degradation of behavioural and social alertness. Addressing this issue the current study throws light on the access of virtuality and its effects in children with autism. This study not only call attention to the professionals' but most importantly parents of today's generation.

### **Aim & Objectives:**

The primary objective of the study was to investigate whether the children with autism who usage screentime more than 5 hours respond differently to the children with autism with less than 5 hours of screentime usage.

### **Method:**

Twenty children with the mean age of  $5.3 \pm 1.71$  years in the age range of four to seven years which consists of 10 boys and 10 girls participated in this study. These children were clinically diagnosed with mild to moderate Autism. They received regular conventional therapy by the trained SLPs. Participants were divided into two groups on the basis of screen time a) screen time of less than 5 hours, b) screen time of more than 5 hours. Their demographic data along with the screen time data through interview method were collected. The ASD core symptoms and developmental quotient (DQ) were measured by ISAA that is Indian scale for diagnosing and assessing the severity of autism pre and post therapy, with the minimum time duration of 3 months till 28 months. The screen time devoted by the children with autism pre and post therapy was analysed by the clinician (SLP) for distinctiveness. Children with any co-morbid conditions like intellectual deficit, cognitive delay, visual loss were excluded.

### **Results & Discussion:**

The participants were grouped based on whether they were using more or less then 5 hours of social media screen over mobile phone, I-pad or laptops. The duration of screentime was

measured by monitoring the time-chat prepared by the parents as per the instruction of the investigator. Overall, autism rating was done using ISAA. The participants received atleast two sessions of therapy for six months.

Independent sample t-test was administered to check whether group of children with more than 5 hours of screen time usage improved differently compared to group of children with less then 5 hours of screentime. An independent sample t-test was administered to check whether two groups differed significantly. It was observed that CARS score of children with less than 5 hours of screen time was significantly lower [ $t(1,18)=3.98, p<0.05$ ] then the children with more then 5 hours of screen time.

### **Summary & Conclusion:**

It is evident that during the digital age where mobile technology is ubiquitous that such interactions are shaped by digital media (Barr and Linebarger, 2017). New mobile devices, including smartphones, differ from traditional digital media (e.g. TVs) in that parents and their children can take it with them wherever they go and use it in a variety of ways. This has also increased the screen time access and exposure to children. As a result, parents use smartphones a significant proportion of their time spend in family situation in the presence of their small children for example during play, meal, and bedtime routines. With the involvement of smartphones in everyday family life there is a risk that mother-infant interactions can be interrupted and qualitatively impaired (McDaniel and Radesky, 2018). Infants might be especially sensitive to those disruption as qualitative interaction with mother and other family members are essential for language, behaviours and cognitive development. Mothers of toddler's report experiencing smartphone interruptions during interaction with their toddlers which they are eithers self-initiated or due to device notifications. In general, usage of social media screen was mostly used for wellbeing, with playing computer or video games being used particularly often for this purpose among children with ASD. Moreover, many studies suggest that there should a minimum gap of at least 3 months where the children's exposure to virtual reality should be negligible.

## **A Survey Of ASLP'S Awareness, Knowledge and Understanding of Neuroimaging in Traumatic Brain Injury**

*Kamna Sharma, Nisha Mandal, Tanu Bharti & Anisha Sinha*

**AYJNISHD, RC Noida**

### **Introduction**

Trauma is the term used to describe a serious and potentially life-threatening level of physical injury. The Department of Veterans Affairs (2017) defines “Traumatic brain injury (TBI) can occur from direct contact to the head or when the brain is shaken within the skull, such as from a blast or whiplash during a car accident. The person may also have a loss of memory for the time immediately before or after the event that caused the injury. Not all injuries to the head result in a TBI, however. The severity of the TBI is determined at the time of the injury and is based on the length of the loss of consciousness, the length of either memory loss or disorientation, and how responsive the individual was after the injury.”.

According to the most comprehensive study to date on the estimated global incidence of TBI, more than 27 million new cases of people with medically treated TBI occurred in 2016, for an age-standardized incidence of 369 per 100,000 world population (James et al., 2019). This study estimated global TBI prevalence at more than 55 million, indicating that about 0.7 percent of the world's population was living with a medically treated brain injury.

Dhandapani (2011) noted that “TBI is more common than AIDS, breast cancer, multiple sclerosis, and spinal cord injury combined. It is estimated that nearly 1.5 to 2 million persons are injured and 1 million succumb to death every year in India. Road traffic injuries are the leading cause (60%) of TBIs followed by falls (20%-25%) and violence (10%). Alcohol involvement is known to be present among 15%-20% of TBIs the time of injury.” The rehabilitation needs of brain injured persons are significantly high and increasing from year to year. India and other developing countries face the major challenges of prevention, pre-hospital care and rehabilitation in their rapidly changing environments to reduce the burden

Traumatic brain injury is a leading cause of morbidity and disability, impairing cognitive and communicative capacities and burdening people and the global healthcare system. Traumatic brain injury (TBI) patients often experience various communication problems like aphasia, dysarthria, cognitive communication deficits due to the brain's impact on cognitive, linguistic, and social functions. These issues can manifest as difficulty in producing or understanding

speech, impaired social communication skills, and challenges with word retrieval and processing speed.

ASLPs play a central role in the screening, assessment of speech, language, cognitive-communication, and swallowing difficulties, hearing, and balance problems, and treatment of persons with TBI. Speech-language pathologists who serve patients with neurogenic communication disorders must understand the causes and characteristics of a patient's neurologic impairments and take them into account when designing or performing testing or treatment. ASLPs have an important role in developing and implementing treatment plans for maintaining functional speech, language, cognitive-communication, and swallowing abilities at the highest level of independence. For ASLPs, an awareness of neuroimaging findings can contribute to more precise prognostic evaluations, treatment planning and support interdisciplinary collaboration with neurologists and other healthcare professionals.

Neuroimaging techniques such as magnetic resonance imaging (MRI), Computed Tomography (CT), perfusion imaging and diffusion tensor imaging (DTI) are often used to evaluate brain injuries and to guide management. ASLPs, especially those working in association with medical set-ups often deal with patients with speech, language and other related problems resulting from neurological lesions including TBI. Familiarity with neuroimaging techniques, its role in differential diagnosis, interpretation to a relevant extent etc. are some factors that can strengthen the work efficiency of ASLPs specially in multidisciplinary setups. Also, these can prove to be crucial in identifying informational gaps directly influencing treatment plans specially for patients with TBI.

### **Need for Study**

Given the multidisciplinary and interdisciplinary scope of work requirements of SLPs, the area of neuroimaging techniques comprises an area that indicates a realistic need of knowledge strengthening among the professionals. Thus, there is a need to explore the existing awareness, knowledge and understanding of ASLPs in neuroimaging for an integrated management of persons with TBI.

### **Aim & Objectives**

This study aims to detect the existing gaps in the knowledge and understanding of SLPs in the area of neuroimaging in TBI and its clinical implications.



**Method:****Participants:**

A total of 150 licensed ASLPs were included in the present study, comprising 96 males and 54 females. Nearly three-fourths of participants were graduates, and one-fourth were postgraduates with a mean clinical experience of 2-4 years. Forty-five percent of participants worked in hospital Settings, nineteen percent were pursuing higher degrees, and the remaining were in other settings. The majority of participants are from Delhi NCR, with the remainder coming from other states.

**Tool used:**

The present study was conducted utilizing both quantitative and descriptive research design. A structured questionnaire was developed and validated for the purpose of the study. Development of the research tool involved a pilot study carried out with 30 participants. The developed questionnaire comprised of four broad subsections including:

1. Demographic information (qualifications, years of experience, primary work
2. Knowledge about neuroimaging techniques in general and in context of TBI
3. Job/personal interests in gaining further knowledge about neuroimaging techniques.
4. Knowledge based application of neuroimaging techniques at workplace.

**Data analysis:**

Data obtained was analysed using descriptive methods

**Results & Discussion:**

Of total 150 ASLPs, 27% evidenced dealing with clients with TBI in their clinical practice on frequent basis while nearly half of them had occasional exposure of the same in their routine clinical practice. Of all nearly 13% were completely unfamiliar with the concept of neuroimaging and reported lack of confidence in their understanding of basic concepts of neuroimaging relative to the field of speech and hearing. Approximately 67% of the participants felt the need of further training in the area in order to strengthen their knowledge based application of neuroimaging techniques at workplace. Knowledge of MRI, fMRI, and CT scans were admitted by 37.5% of the participants while only 16% were aware of more sophisticated methods such as positron emission tomography (PET), Single-photon emission computed tomography (SPECT), and Susceptibility-Weighted Imaging (SWI) and diffusion tensor imaging (DTI).

**Summary & Conclusion:**

To sum up, this study suggests that while ASLPs are generally aware of the role of neuroimaging in TBI, there are notable gaps in their knowledge and understanding, particularly regarding advanced techniques such as fMRI, DTI. This lack of knowledge may be due to insufficient formal training in neuroimaging during graduate programs, as well as limited practical exposure in the concerned techniques. This study highlights the need for improved education and training for ASLPs on neuroimaging techniques in the context of neuro-communication disorders including TBI. Enhancing ASLPs' understanding of neuroimaging through more elaborate theoretical and practical training could strengthen their client dealing more importantly in multidisciplinary set-ups.

**LP798**

**Maze Production and its Impact on Reading Comprehension in Children**

**With Dyslexia**

*Yashaswini C N, Angela Ann Biju & Sneha Mareen Varghese*

**Dr. S R Chandrasekhar Institute of Speech and Hearing**

**Abstract Not Available**

## **Risk of Digital Dementia in Adolescents and Younger Adults with Higher Screen Time- An Exploratory Study**

*Nisha Mandal, Tanu Bharti & Anisha Sinha*

AYJNISHD

### **Introduction:**

As we see around ourselves, the younger generation of adults is being raised in an atmosphere that is heavily reliant on digital media with a growing amount of time spent on digital media like computers, mobile, television, video games etc. Numerous search engines make information conveniently accessible changing the dynamics between humans and technology forever, offering unprecedented ease and efficiency. Digital age technology has become an integral part of our lives. From smartphones to laptops, tablets to smartwatches, we constantly surrounded by devices that promise to make our lives easier, faster, and more convenient. However, the excess use of technology has become a pressing concern. According to Neurocenternj (2023), the concept of hypertexts, allow for non-linear reading and navigation through electronic texts, impacting memory recall; reading and comprehending information from hypertexts can be more challenging than traditional linear reading, potentially leading to decreased memory retention of the material.

The 21st century is the century of technology and it has been marked by rapid technological advancement. However, this technology has turned out to be a Trojan horse for children during their vulnerable years as the experience during early childhood can influence the outcomes across the individual's life. According to Aplesset, & Aplesset (2023) "there are emerging evidences that there may be some structural brain changes associated with greater exposure to screen time as a young child." The term digital dementia was introduced by Mynfred Spitzer (2020), a researcher in the field of neuroscience, to describe the phenomenon of deconstructing cognitive abilities resulting from excessive use of digital technology (Spitzer, 2020). According to Sandu, A., & Nistor, P. (2021) "diagnosis of digital dementia has been said to bring together a series of symptoms similar to those of Alzheimer's in the case of intensive use of mobile phones and the habit of performing several digital activities simultaneously at the same time." Digital devices especially mobile devices are now easily accessible to children in their early development years thus increasing the chances of digital dementia as they are far more susceptible while acquiring new information in comparison to an adult. According to a study

conducted by the Khan, Gupta, Rajoura et.al. (2018), those with internet addiction when compared to those without internet addiction, had higher depression index, anxiety and stress. As the devices make it easier to fetch information as many times as we can, our brain doesn't require to store this data which in turn declines in our capability to acquire data through questioning or inquiry resulting in weaker brain functioning and in some cases even weaker sensory perception.

### **Need for Study:**

In the current era of massive intrusion of digitalization in every one's life whether a child or an older adult, its excessive utilization doesn't come without crucial demerits. There is evidently limited research exploring links between excessive use of digital technology and potential long-term effects in cognitive decline in children and adults

### **Aim & Objectives:**

To explore the relationship between extent of use of digital technology (screen time) and the cognitive impairments, particularly symptoms related to memory loss and reduced attention span, recently referred to as digital dementia.

### **Objective**

The objective of this study is to relate screen time and performance on cognitive tasks indicating increase risk factor for dementia in early stage in young adolescents.

### **Method:**

Participants: A total of 150 people, 82 males and 68 females, aged 14-30 (group-A, 14-18 years; group-B, 19-30 years) were enrolled in this study using random sampling methods. Participants inclusion criteria included ability to read and write English, utilizing screen time (TV, Mobile, other screen gadgets), intact vision and hearing with or without correction, no significant neurological, medical or psychiatric condition, no cognitive deficits. The research variables included age, gender and duration of screen time/day.

Research tools: The present study is a cross-sectional research design utilizing survey method. Cognitive Failure Questionnaire (CFQ) test, a screening tool developed by Broadbent et.al(1982) containing 25 individual items, and scores ranging from 0 -100; administered via both direct interviews and via online mode with 150 participants. Statistical analysis were obtained using SPSS Software version 28.

**Results & Discussion:**

CFQ scores were obtained and compared for the variables studied i.e. age, gender and duration of screen time. CFQ mean score for the participants between age range of 14-18years was 30.57 and for those between 18-30years it was 26.17. Females across both age groups scored significantly higher. Significant difference in CFQ scores was obtained between the participants with higher screen time ( $p=0.032$ )

**Summary & Conclusion:**

This study emphasises the growing concern over digital dementia, especially among younger individuals who are exposed to digital technology for longer duration for personal and professional reasons. The present research findings supports that prolonged digital device usage negatively impacts cognitive functions, specifically memory and attention. According to the study conducted by Sina, E., Buck, C., Ahrens, W., Coumans, J. M. J., Eiben, G., Formisano, A., Lissner, L., Mazur, A., Michels, N., Molnar, D., Moreno, L. A., Pala, V., Pohlabein, H., Reisch, L., Tornaritis, M., Veidebaum, T., & Hebestreit, A. (2023), Smartphone, internet and media multitasking were found to be positively associated with emotion-driven impulsiveness and cognitive inflexibility, independent of psychosocial well-being and family structure. Our study provides evidence on a potential underlying mechanism by which digital media exposure affects cognitive development and related health behaviours. These findings indicate the need for increased awareness about the potential risks which are associated with excessive screen time, as well as the importance of developing strategies to reduce reliance on digital devices.

The study further indicates a scope of evaluating higher order language and cognitive abilities specially in younger children and adults in order to develop standardized assessment tools identifying those at risk of dementia due to high exposure to screen for entertainment and professional purposes. To mitigate the risks, educational and public health initiatives should focus on encouraging healthier usage patterns, promoting cognitive exercises, and incorporating technology-free activities into daily routines

**LP800**

**Goal setting for Language Disorders in Children: Speech Language  
Pathologists' Practice Patterns, Confidence and Satisfaction**

*Angela Ann Biju, Yashaswini C N, Sneha Mareen Varghese & Arunima Santhosh*

**Dr. S. R. Chandrashekar Institute of Speech and Hearing**

**Abstract Not Available**

## **Impact of Sensory Processing Difficulties on Language Development in Children with Autism Spectrum Disorder**

*Neha Yadav, Vijaya Sri R & Danica Santosh*

**Amity University Haryana**

### **Introduction:**

Autism spectrum disorder (ASD) is a Neurodevelopmental disorder characterized by persistent deficits in social communication and social interaction as well as restricted, repetitive patterns of behavior, interests, or activities (Hodges H et al, 2020). The prevalence rate of ASD is reported to be 1 in 69 children for children aged 8 years old (Yaylaci F, 2017). Sensory processing (SP) difficulties have been reported in as many as 95% of children with autism (Baker AE et al, 2008). Assessing sensory processing is challenging due to individual heterogeneity and behavior that is often context-dependent, which also evolves during development. Given the ubiquitous nature of sensory behavioral differences for individuals with autism, understanding the neural underpinnings of basic sensory processing in ASDs is an important task.

Some studies also reveal that the degree of correlation indicates that sensory processing is a function of severity within autism spectrum disorders and may be an important factor to consider when addressing the social performance of these children (Claudia Hilton et al, 2014).

### **Need for Study:**

Little research has focused on how language development is affected with progression in SP difficulty. Also, empirical research examining the difference within the sensory domains, addressing the language development is less. Neurophysiologic profiles of SP in ASD may serve as valuable biomarkers for diagnosis and monitoring of therapeutic interventions for autism and reveal potential strategies and target brain regions for therapeutic interventions

### **Aim & Objectives:**

1. To examine the relationship between sensory processing domains and language development in children with ASD
2. To observe the patterns in language development and sensory processing difficulties as age progresses in children with ASD



**Method:**

**Participants:**The study involved a total of 25 children diagnosed with ASD. The age of the participants ranged from 3 to 12 years. All children were selected from a Child Development Centre based on their diagnosis of ASD, which was confirmed by a Speech-Language Pathologist (SLP) and a Child Psychologist. Children included in the study were required to have a confirmed diagnosis of ASD with no other co-occurring neurological or developmental disorders.

**Instruments:**To evaluate SP difficulties, the Sensory Profile (Dunn, 1999) was administered. The tool includes sensory domains, auditory, visual, vestibular, tactile (touch), oral sensory, and multisensory processing. The profile was filled out by the parents of each child based on their observations. The REELS was used to assess the language abilities of the children. This standardized tool provides a measure of both Receptive Language Age (RLA) and Expressive Language Age (ELA), which allows for a comprehensive assessment of each child's language development.

**Procedure:** Parents were provided with a structured questionnaire to assess their child's sensory processing abilities. The parents completed the questionnaire under the supervision of trained researchers, ensuring that all questions were clearly understood and accurately answered. Each child's were measured using the REELS tool by certified professionals. The assessments were conducted in a controlled environment, ensuring consistency across sessions.

Data were collected on both sensory processing difficulties and language development for all participants. The scores for each sensory domain (auditory, visual, vestibular, touch, oral sensory, and multisensory processing) were derived from the Sensory Profile, while language ages (RLA and ELA) were extracted from the REELS.

**Statistical Analysis:** To investigate the relationship between sensory processing difficulties and language development, multiple linear regression and correlation analysis were performed. All statistical analyses were carried out using SPSS version 21.

**Results & Discussion:**

The finding of the present study revealed that there is correlation between language development and sensory processing difficulties. A multiple linear regression analysis was performed to examine how sensory processing difficulties impact ELA and RLA. The regression model significantly predicted ELA, with an  $F\text{-value}=49.682(p < 0.001)$ , showing that sensory processing difficulties explain a significant proportion of the variance in ELA

scores. R-squared value = 0.921 indicated that approximately 92.1% of the variability in ELA could be explained by the combined sensory processing variables. Auditory Processing ( $p = 0.004$ ) and Touch Processing ( $p = 0.003$ ) were significant predictors of ELA, indicating that children with higher auditory and touch processing difficulties tended to have lower expressive language scores. Other sensory variables (e.g., visual, vestibular) did not show significant effects on ELA ( $p > 0.05$ ).

Similarly, multiple linear regression was conducted for RLA and sensory processing difficulties as predictors. It is statistically significant for predicting RLA, with an F-value=37.761 ( $p < 0.001$ ). The R-squared value=0.775, indicating that 77.5% of the variance in RLA could be explained by the sensory processing variables. Auditory Processing emerged as a significant predictor of RLA ( $p = 0.002$ ), suggesting that increased auditory difficulties were associated with lower receptive language scores. No significant effects were found for other sensory processing variables ( $p > 0.05$ ), indicating that they do not significantly impact RLA. Pearson correlation coefficients were computed to explore the relationships between ELA, RLA, and the various sensory processing difficulties. A significant positive correlation was observed between ELA and Auditory Processing ( $r = 0.757$ ,  $p < 0.01$ ), meaning that as auditory processing difficulties increase, ELA scores tend to decrease.

Similarly, RLA and Auditory Processing also showed a significant correlation ( $r = 0.534$ ,  $p < 0.01$ ), indicating that receptive language development is strongly influenced by auditory processing difficulties. Touch Processing was also correlated with both ELA ( $r = 0.534$ ,  $p < 0.05$ ) and RLA ( $r = 0.504$ ,  $p < 0.05$ ), reinforcing the importance of sensory processing on language development. Other sensory domains, including Visual and Vestibular Processing, did not show significant correlations with either ELA or RLA ( $p > 0.05$ ).

The findings of this study highlight the significant relationship between sensory processing difficulties and language development in children with Autism Spectrum Disorder (ASD). The results demonstrate that sensory processing challenges, particularly in auditory and touch processing, significantly influence both expressive and receptive language abilities (Tecoulesco et al, 2020). Specifically, auditory processing difficulties emerged as the most prominent predictor of language deficits, impacting both ELA and RLA. This finding aligns with existing literature that emphasizes the critical role of auditory sensitivity in language acquisition among children with ASD (Gonsalves AM, 2023).

It also suggested that sensory processing difficulties account for a substantial portion of the variability in language development. This further reinforces the importance of addressing

sensory issues, particularly auditory and tactile hypersensitivities, in therapeutic interventions aimed at improving language outcomes for children with autism.

**Summary & Conclusion:**

Present study results showed that sensory processing difficulties play a significant role in language development in children with ASD . Sensory processing deficit affects language development in children with autism (Fiona duffy, 2019). All the domains in sensory processing are affected at various degrees in children with ASD. The younger group of population is observed to be having more of visual, auditory and tactile deficits. Both hypersensitive and hyposensitive responses to the sensory processing were observed in children with ASD. The results indicate that auditory processing difficulties are strong predictors of both expressive and receptive language development in children with ASD. Additionally, touch processing appears to influence language development, although to a lesser extent. These findings underscore the importance of addressing sensory processing issues, particularly auditory and touch sensitivities, to support language development in children with autism.

**LP802**

**White Matter Degeneration in Binswanger's Syndrome: A Case  
Analysis**

*Subikshaa Senthilkumar, R.Naveena Neolisha & A Vinnarasi*

**Holy Cross College, Tiruchirapalli**

**Abstract Not Available**

**LP803**

**Challenges Encountered by Speech Language Pathologists in Working  
With Urban and Rural Parents of Children With Autism Spectrum  
Disorder**

*Sri Danvi, Priyadharshini N, Kavipriya K & Swati Solanki*

**Holy Cross College (Autonomous) Tiruchirappalli**

**Abstract Not Available**

## **Student SLP's Knowledge and Implementation of Pragmatic Assessment & Interventions for Children with Autism Spectrum Disorder**

*Vidyashree M, Spurthi M, Jayashree C Shanbal & Jothi S*

**All India institute of speech and hearing**

### **Introduction:**

Pragmatic language refers to the ability to use language effectively in social interactions by considering the needs of the listener and the context (Stephens & Matthews, 2014). It involves using language for various purposes (commenting, requesting, greeting), adapting language to suit different listeners and situations (shifting registers, using polite forms), and following conversational rules (turn-taking, maintaining topics, clarifying misunderstandings) (Cummings, 2014; Matthews et al., 2018). Pragmatics encompasses understanding unspoken social cues and adjusting communication to fit specific social and situational demands. Earlier studies emphasize the long-term negative effects of such impairments across various domains of a child's life, including personal, academic, and social aspects (Dillon et al., 2021; Elleseff, 2015; Loukusa et al., 2018). Pragmatic language impairment is seen in neurodevelopmental disorders such as autism spectrum disorder (ASD).

ASD is a neurodevelopmental disorder characterized by deficits in social communication and social interaction and the presence of restricted repetitive behaviours. The prevalence of Autism in India has been steadily increasing. ASD has reported prevalence estimates ranging from 0.07% to 1.8% (Raina et al., 2017). The studies also point to an apparent increase in the prevalence of ASD.

A study done by Reindal et al. (2023) reported children with ASD have both pragmatic and structural language issues, with pragmatic aspects being most affected. Previous studies done on children with autism report severe pragmatic impairment than typically developing children (Oi et al. 2017; Geurts and Embrechts 2008). A systematic review and meta-analysis by Parsons et al. (2017) revealed that effective early intervention improved functional language development for preschool children. However, interventions targeting joint attention and non-verbal communication yielded mixed results, indicating a need for further refinement. However, studies for older children report that most of the interventions for children with ASD were done on verbal children with ASD with no comorbid conditions, leaving a gap in interventions for minimally verbal children. As the prevalence of ASD is increasing, awareness

about the pragmatic deficits in children with Autism is important among Speech-Language pathologists and undergraduate students. Assessing their awareness level is essential to improve the training and education of future professionals, ensuring they are equipped to evaluate and support children with ASD effectively.

### **Need for Study:**

Pragmatic language skills are crucial to successful interactions, yet children with Autism Spectrum Disorder (ASD) often experience marked difficulties in this domain. There is evidence suggesting that many SLP training programs may not provide sufficient coverage of ASD-specific pragmatic language assessment and intervention. Krok and Leonard (2018) argue that SLP students often feel underprepared to assess and treat pragmatic language disorders in children with ASD. This study points to the need for enhanced curricular content focusing on ASD-related pragmatic skills. Student SLPs must be trained in evidence-based practices for assessing and treating pragmatic language deficits in children with ASD. Paul and Norbury (2012) emphasize that a strong foundation in research-based interventions is necessary to ensure effective and tailored treatment for this population. The lack of adequate training in evidence-based approaches can lead to ineffective interventions.

### **Aim & Objectives:**

The purpose of the study is to explore the level of knowledge, and implementation of evidence-based practices in the assessment and intervention of pragmatic language in children with ASD among student Speech-Language Pathologists (SLPs).

### **Method:**

**Research Design.** The present study employed a descriptive, survey design.

**Participants.** The study target group was BASLP students. The study employed a snowball sampling procedure for the recruitment of participants. All the participants included in the study were student clinicians enrolled in BASLP course in India. Students of 1 year BASLP were not considered for the study. Students who had not handled the ASD cases were also excluded from the study.

**Measures & Procedure.** An online survey-based questionnaire was developed based on the literature review. The developed questionnaire was then subjected to content validation by five SLPs with experience in the child language disorder for more than 5 years using a 5 point Likert scale. The final questionnaire has 5 sections and contains open-ended questions, multiple

choices, rating scales and multiple responses. The 5 section is as follows: Demographic Detail, Assessment, Pragmatic intervention in children with ASD, and evidence-based practice. Informed consent was obtained from all participants. The questionnaire was circulated among the participants through Google Forms. The average time taken to complete the questionnaire was approximately 10-15 minutes.

Statistical analysis. The responses are subjected to both quantitative and qualitative analysis. For the quantitative analysis of response, median and inter quartile range (IQR) were analysed using SPSS version 26.

### **Results & Discussion:**

The preliminary results from the pilot study involving 25 student SLP clinicians provided insight into their knowledge and practice regarding pragmatic assessment and intervention for children with ASD. Overall, 69.11% of the student SLPs reported that they conduct pragmatic assessments for children with ASD. The most commonly assessed areas of social communication were verbal communication (e.g., turn-taking and topic maintenance), voted by 52.85% of respondents, and understanding conversational rules (e.g., initiation and conversational repair), reported by 32.45%. When it comes to intervention, most student SLPs reported focusing on pragmatic language only after foundational language skills, such as syntax and semantics, have been developed. This suggests a tendency toward addressing pragmatics as a secondary goal, following the establishment of core language abilities. In terms of intervention approaches, the student SLPs tend to favor structured, systematic approaches (e.g., script-based interventions), followed by naturalistic, child-led approaches (e.g., play-based interaction), parent-mediated interventions, social skills groups, and peer-mediated interventions. However, students acknowledged the challenges in generalizing pragmatic language skills across different settings, mirroring the difficulties experienced by practicing clinicians in real-world contexts.

A significant 89.28% of the student SLPs felt that they required additional training and resources to confidently implement evidence-based interventions for pragmatic language skills in children with ASD. This reflects a gap between their theoretical knowledge and its practical application, emphasizing the need for enhanced educational resources and clinical training opportunities to help student clinicians improve their clinical expertise.

### **DISCUSSION**

Research indicates that SLPs often have limited training or understanding of pragmatic

language skills, which are critical for social communication in children with ASD. According to Paul (2008), pragmatic impairments are a hallmark of ASD, making it essential for SLPs to have specialized training in this area. There is evidence suggesting that many SLP training programs may not provide sufficient coverage of ASD-specific pragmatic language assessment and intervention. Krok and Leonard (2018) argue that SLP students often feel underprepared to assess and treat pragmatic language disorders in children with ASD. This study points to the need for enhanced curricular content focusing on ASD-related pragmatic skills.

### **Summary & Conclusion:**

The study highlights the critical need for student speech-language pathologists (SLPs) who are clinicians to get thorough training as well as resources in pragmatic evaluation and therapies for children with autism spectrum disorders (ASD). The findings show that there remains notable gaps in students' knowledge and application of pragmatic language skills, despite the increased recognition of their significance in social communication. Despite understanding the importance of social communication, many student SLPs struggle to apply theoretical knowledge to clinical practice. To bridge this gap, SLP education programs must place greater emphasis on pragmatic language interventions, offering hands-on clinical experiences and exposure to evidence-based strategies.



## **Effect of Modalities on Recalling Abilities on Working Memory Among Population with Alzheimer Disease-A Comparative Study**

*Ruchi Bhandari, Niharika Dash & Neha Yadav*

**Amity University Haryana**

### **Introduction:**

Alzheimer's Disease (AD) stands as a pervasive and challenging neuro degenerative disorder, characterized by progressive cognitive decline, memory loss, and impaired daily functioning.

### **Need for Study:**

The need for this study arises from the limited research comparing the effects of different modalities on working memory recall abilities in both early and late stages of AD. These findings may be essential for developing tailored rehabilitation programs to slow cognitive decline and improve quality of life for individuals with AD.

### **Aim & Objectives:**

Study aimed to inspect output from short term storage using free recall (FR) and serial recall (SR) paradigm on working memory in early vs. late AD.

### **Method:**

A total of twenty subjects (Native Hindi speaker aged between 50- 80 years) were recruited for the present study. The subjects were grouped under two headings, Group I (early AD) and Group II (Late AD). Basic and unambiguous stimuli were prepared under auditory, visual and orthographic modalities. Stimulus presentation was done using Microsoft Power Point software. Subjects were instructed to recall the items in both serial and free order.

### **Results & Discussion:**

Descriptive statistics showed FR is better than SR across the three modalities for both early and late AD participants. There was significant difference between overall scores of the performance of Group I in recalling task than Group II. During SR, subjects of Group I performed better in Auditory Modalities (45.6%) than other modality, whereas Visual Modalities (VM) (60.1 %) was better during FR than other modalities. During SR and FR task, subjects of Group II performed better in VM than other modality.

**Summary & Conclusion:**

The findings of this study offer valuable insights that hold significant implications for the development and implementation of cognitive rehabilitation training programs aimed at enhancing memory performance among individuals with AD.

## LP806

### **Effect of Modalities on Recalling Abilities on Working Memory Among Population with Latent and Anomic Aphasia - A Comparative Study.**

*Niharika Dash*

**Amity University Haryana**

#### **Introduction:**

Latent aphasia is a term used to describe a condition where an individual has some impairment in language abilities that may not be immediately apparent. This can occur after a stroke or brain injury, where the person may initially appear to communicate normally but struggles with certain aspects of language when put under pressure or in complex situations. It can involve difficulty finding words or constructing sentences, often becoming more evident during stressful situations. Whereas anomic aphasia is a specific type of aphasia characterized by difficulty in naming objects or retrieving words, despite relatively preserved comprehension and grammatical skills. Individuals with anomic aphasia often know what they want to say but struggle to find the right words, leading to vague language or circumlocution (describing an object instead of naming it). This condition is usually a result of damage to areas of the brain responsible for language, such as the temporal lobe.

#### **Need for Study:**

Latent and anomic aphasia exhibit different characteristics. Studying both can provide insights into how various types of aphasia impact working memory and recall. By understanding the specific needs of each group, tailored therapeutic approaches can be developed to enhance communication strategies. Multisensory Learning: Different modalities (visual, auditory, tactile) can affect memory recall. Exploring these can reveal which methods are most effective for individuals with aphasia.

Cognitive Load: Different modalities may influence cognitive load and recall efficiency. Understanding this can help in designing effective rehabilitation programs.

#### **Aim & Objectives:**

Study aimed to inspect output from short term storage using free recall (FR) and serial recall (SR) paradigm on working memory in anomic vs latent aphasia.

**Method:**

A total of twenty subjects (Native Hindi speaker aged between 50- 80 years) were recruited for the present study. The subjects were grouped under two headings, Group I (latent aphasia) and Group II (anomic aphasia). Basic and unambiguous stimuli were prepared under auditory, visual and orthographic modalities. Stimulus presentation was done using Microsoft Power Point software. Subjects were instructed to recall the items in both serial and free order. Responses were extracted in excel sheet for further analysis.

**Results & Discussion:**

Descriptive statistics showed Free recall (FR) is better than Serial Recall (SR) across the three modalities for both the groups. There was significant difference between overall scores of the performance of Group I in recalling task than Group II. During SR, subjects of Group I performed better in Auditory Modalities (54.6%) than other modality, whereas in Visual Modalities (VM) (65.1 %) was better during FR than other modalities. During SR and FR task, subjects of Group I performed better than Group II in all the modality.

**Summary & Conclusion:**

The findings of this study offer valuable insights that hold significant implications for the development and implementation of cognitive rehabilitation training programs aimed at enhancing memory performance among individuals with latent and anomic aphasia.

## **Comparison of Story Grammar Elements in a Narrative Task in Language Level Typically Developing Children and Autistic Children**

*Swetha Murali & Krupa Venkatraman*

**Sri Ramachandra Institute of Higher Education and Research**

### **Introduction:**

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition characterized by communication difficulties, social interaction challenges, and repetitive behaviours, with symptoms typically manifesting before the age of three and varying in severity (Cummings, 2014). A key area where autistic children show noticeable difficulties is in language development, particularly narrative production.

Narrative production in autistic children can be evaluated through two main components: microstructure and macrostructure. Microstructure focuses on lexical and syntactic aspects. Autistic children often use simpler sentence structures and rely on coordination rather than subordination, resulting in less complex narratives (Finestack & Collett, 2017; Smith et al., 2018). Macrostructure involves the organization of the narrative, including story elements like setting, characters, and plot. Research indicates that autistic children frequently demonstrate deficiencies in these story grammar components, leading to narratives that lack coherence and thematic integration (Jones & Conti-Ramsden, 2019; Taylor & Whitehouse, 2020).

The narrative challenges faced by autistic children are influenced by both their language abilities and other cognitive factors. Studies show that children with higher language skills exhibit greater narrative complexity and coherence, while those with lower proficiency produce shorter, simpler stories (Müller et al., 2018; Taylor & Whitehouse, 2020). Despite these difficulties, autistic children can effectively use internal state terms to convey emotions and motivations, particularly in fictional contexts, suggesting nuanced language abilities (Finestack & Collett, 2017; Müller et al., 2018).

### **Need for Study:**

Evaluating story grammar in narratives is crucial for understanding the linguistic and cognitive profiles of autistic children. It provides insights into how they organize narratives compared to their typically developing peers, informs interventions aimed at enhancing communication skills, and reflects cognitive processes related to organizing thoughts and emotions (Finestack & Collett, 2017; Jones & Conti-Ramsden, 2019; Taylor & Whitehouse, 2020). However, there

is a significant gap in research focusing on Tamil-speaking autistic children. Given the influence of linguistic and cultural factors on narrative performance, exploring story grammar in this context is essential for developing tailored interventions. Thus, this study aims to address this gap by analyzing the story grammar elements in the narratives of Tamil-speaking children with typical development and autistic children, matched for language level (Muthu et al., 2023; Venkatraman & Thiruvalluvan, 2021).

### **Aim & Objectives:**

This study aimed to compare the story grammar elements in the narrative of Tamil-speaking children with typical development and autistic children, matched for language level.

### **Method:**

This cross-sectional study included 38 children: 19 with autistic children and 19 non-autistic children, with language ages ranging from 3 to 5 years. Participants were assessed using the Assessment of Language Development: A Manipal Manual (ALD-MM) for language skills and the Indian Scale for Assessment of Autism (ISAA) for autistic traits, considering ISAA scores above 70 for the autistic group. The participants were grouped by language age into three categories: 3;0-3;11, 4;0-4;11, and 5;0-5;11 years.

The inclusion criteria required Tamil as the mother tongue, and the exclusion criteria ruled out children with consanguinity, multiple disabilities, or a family history of autism or language delay. The Tamil version of "A Street or a Zoo" from the repository story weavers.org was used as the stimuli for a retelling task. After familiarizing themselves with the materials, children narrated the stories recorded for later transcription and analysis.

### **Analysis and Transcription**

Verbatim transcription was carried out on the collected samples. The researcher's neutral prompts, repetitive utterances, false starts, and the children's mazes were excluded from the analysis. Subsequently, the macrostructure of the participant's utterances was analyzed. The story-grammar components, including the setting (S), characters (C), initiating event (IE), internal plan (IP), attempt (A), outcome (O), and resolution (R) of the event, were examined based on Stein and Glenn's framework. The study employed the qualitative rating approach outlined by Venkatraman and Thiruvalluvan for story-grammar analysis. Investigator prompts, and mazes were removed before assessing the presence of each story-grammar element. The narrative samples from the story-retelling task were segmented into individual utterances for detailed examination. A scoring system ranging from 0 to 3 was utilized, where a score of 3

indicated a comprehensive or detailed description of the component, 2 represented the description of the main content of the element, 1 denoted an attempt to describe the component, and 0 signified the absence of any attempt to describe the component.

### **Statistical Analysis**

The macrostructure parameters obtained from both groups, including the setting (S), characters (C), initiating event (IE), internal plan (IP), attempt (A), outcome (O), and resolution (R) of the event, were documented in an MS Excel file. Data analysis was conducted using SPSS software (version 28). A coefficient of approximately 0.947 was calculated after assessing the inter-rater reliability of all coded samples using Cohen's  $\hat{\rho}$ . The results indicate exceptionally high inter-rater consistency. A higher Cohen's  $\hat{\rho}$  score signifies better agreement between independent raters.

### **Results & Discussion:**

A Mann-Whitney U test compared story grammar elements between typically developing (TD) children and autistic children. Significant differences were found for the character, setting, and initiating event elements. For the character element, TD children had a higher mean rank (25.58) than autistic children (13.42) ( $U = 65.000, p < 0.001$ ). In the setting element, TD children also scored higher (mean rank = 23.47) compared to the autistic group (15.53) ( $U = 105.000, p = 0.017$ ). For the initiating event, TD children again had a higher mean rank (23.84) than autistic children (15.16) ( $U = 98.000, p = 0.010$ ). However, no significant differences were found in internal plan, attempt and outcome, or resolution, indicating similar performance in these aspects between the two groups.

### **Discussion**

The study found notable differences in story-retelling abilities between autistic children and their typically developing (TD) peers, especially in macrostructure elements like setting, characters, and initiating events. TD children demonstrated a stronger capacity to include these key story grammar elements in their narratives. However, there were no significant differences between the groups using internal plans, attempts, outcomes, and resolutions.

These findings suggest specific areas for targeted intervention in autistic children. Their reduced narrative organization, evidenced by fewer story grammar components, aligns with the weak central coherence theory, focusing on details rather than the overall narrative structure (Steele et al., 2006; Ozonoff et al., 1991). Additionally, deficits in executive functioning, such as event sequencing, contribute to their fragmented storytelling (Diehl et al., 2006; Gabig,

2008). This lack of coherence and syntactic and semantic difficulties underscores the need for interventions to enhance narrative integration and organization in autistic children.

**Summary & Conclusion:**

This study highlights the narrative challenges faced by autistic children compared to their typically developing peers, emphasizing the need for tailored interventions. Although their communicative language seems on par with language level-matched TD children, their narrative performances were significantly poor. Addressing deficits in story grammar elements can improve narrative skills, aiding language development and social communication in autistic children, particularly in the Tamil-speaking context.



## The Critical Role of Parental Knowledge in Managing Meltdowns in Children with Autism: Differentiating Meltdowns From Temper Tantrums

*Kamna Sharma, Saksham Singh & Pravesh Arya*

AYJNISHD, RC Noida

### **Introduction:**

Autism Spectrum Disorder is a condition that involves persistent difficulties in social interaction and communication across various contexts. These difficulties show themselves as shortcomings in social-emotional reciprocity, nonverbal communicative behaviours utilized in interaction (e.g. facial expressions, eye-to-eye contact, body language and/or postures), and deviated usage of eye-to-eye contact and body language. In addition, impaired gesturing can lead on to an all-out lack of facial expressions or nonverbal communications. Moreover, problems exist with the development and maintenance of relationships, like appropriate social or emotional reciprocity, American Psychiatric Association (2013).

For parents of children with autism, it is essential to comprehend the nature of meltdowns and distinguish them from typical behavioural responses like temper tantrums to provide effective support and intervention. Meltdowns or tantrums in individuals with ASD can be among the most demanding aspects for both the autistic person and their caregivers (Bessette Gorlin et al. Citation 2016). A meltdown is an intense emotional and sensory overload experienced by a person with autism when overwhelmed by stressors or sensory inputs, often involving difficulty in managing or regulating emotions effectively. In contrast, tantrums are typically manipulative behaviours where a child attempts to obtain their desires through crying and screaming.

Children with ASD experience more tantrums compared to typically developing children, those with only language impairments, and those with only ADHD (e.g., Tureck, et al., 2013). Temper tantrums and meltdowns differ in their causes and triggers, intent and purpose, duration and resolution, behaviour and reaction, and consequently, the appropriate coping mechanisms employed by their parents.

### **Need for Study:**

Many caregivers find it challenging to differentiate between meltdowns and temper tantrums and to address the root cause of these behaviours. This lack of understanding can lead to

inappropriate responses, potentially worsening the child's emotional state. Although extensive research has been conducted on meltdowns and tantrums in autism, there is a scarcity of studies focusing on parents' awareness of these issues. Therefore, this research seeks to support parents of autistic children by addressing the knowledge gap concerning the impact of parental comprehension in managing these emotional outbursts and thus improving the effectiveness of interventions

### **Aim & Objectives:**

This investigation aims to gather observational data on parental awareness and identify areas of limited knowledge. It seeks to explore how understanding the difference between meltdowns and temper tantrums influences parental perception and parenting strategies and outcomes. After examining parental awareness of meltdown in autism and strategies for managing meltdowns, assessing their efficacy, and identifying areas for improvement, the study aims to guide the creation of targeted educational resources and training programs.

### **Method:**

A qualitative cross-sectional study was done, using semi-structured interviews and a questionnaire. Since there has been no research examining both meltdown and temper tantrums in ASD, the present study was an effort/attempt to conduct a study on analysis of both aspects i.e. meltdown and temper tantrums. For this, the author has adapted questions from previous s such as Yalim & Mohamed (2023) and Ntiamoah, Joseph (May,2024) to form a questionnaire. Patients from AYJNISHD in the past year were selected who were diagnosed with ASD. The study involved 100 parents, with 60 participating in the research. The researchers employed two methods to gather data: direct personal interviews with patients who regularly attended therapy sessions, and collection of existing data from the Institute and contacted them using multi-modal communication measures to administer the questionnaire to the remaining group of patients.

The questionnaire contained 4 sections-

1. Demographic data of the patient which includes Name, Age, Provisional Diagnosis of the patient.
2. Awareness about meltdowns and the difference between temper tantrums and meltdowns in autism.
3. Response strategies used by parents in both temper tantrums and meltdown.
4. Education and Support received by the parents regarding behaviours of temper tantrums and meltdowns and coping strategies for the same.

### **Results & Discussion:**

A study of 60 parents with autistic children aged 2-10 with a mean age of 5 revealed significant disparities in awareness between meltdowns and temper tantrums. After analysing data following results were obtained -

1. Awareness about meltdowns and the difference between temper tantrums and meltdowns in autism- While only 18.1% of parents had some understanding of meltdowns, 94.5% were familiar with temper tantrums. After being informed about meltdowns, 28% of parents could identify their triggers such as a change in routine or sensory overload, compared to 95.7% who recognized temper tantrum triggers in autistic children such as a behaviour to manipulate or gain something. When children with autism showed behaviours, such as screaming and crying, 90% of parents reported experiencing confusion in differentiating between two behaviours.
2. Response strategies used by parents in both temper tantrums and meltdowns- Only 18% of parents attempted to calm down and to offer solution during episodes of meltdowns whereas 95% responded appropriately to temper tantrums like ignoring the behaviour until it stops however, the rest responded by offering the desired object consequence of these behaviours. Notably, just 23% of parents believed their current strategies for managing these episodes were effective.
3. Education and Support received by the parents regarding behaviours of temper tantrums and meltdowns and coping strategies for the same- Furthermore, a mere 4.3% of parents received professional guidance, while 11% sought information from online sources. Hence to handle these scenarios, parents must have a solid comprehension of it. Parents expressed a strong need for more education and resources to better understand the behavioural differences between meltdowns and tantrums, particularly for those new to an ASD diagnosis.

### **Summary & Conclusion:**

In conclusion, this research demonstrates that parents of children with autism spectrum disorder (ASD) exhibit varying levels of understanding regarding meltdowns and temper tantrums. This study underscores the critical role of parental comprehension in managing meltdowns and temper tantrums in children with autism. Understanding the distinction between the two phenomena would enable parents to mitigate stress levels, thereby enhancing the quality of life for both families and children with autism. Although the impact of meltdowns varies among

children with autism, it nonetheless presents significant challenges for parents. Consequently, the result emphasizes that parents of children with autism require comprehensive training on managing such episodes, which will enable parents to better meet the requirements of their children. The findings highlight the importance of developing targeted educational training to assist parents of children with autism in distinguishing between the two behaviours based on various factors, such as triggers, response behaviours, and effective management strategies, thereby enabling them to more effectively support their children's emotional and developmental needs. The study also reveals that parents who are armed with knowledge have a positive outlook on the condition of children; therefore, parents of their children with autism should possess the knowledge and skills to implement effective parenting strategies. Hence, guidance received by parents from educators, special education teachers, and speech-language pathologists regarding various aspects of autism would be beneficial.

## Development of Mobile Phone Application for Early Identification of Speech and Language Disorders in Children

*Gouri Shanker*

AYJNISHD, RC, Secunderabad

### **Introduction:**

Children with speech and language disorders face difficulties in interacting with peers and family impairing physical, psychological, social, and academic well-being. Verbal language skills are the basis for academic success. Speech and language delays in early childhood interfere with children's ability to express themselves in school and everyday communication. These delays may be caused by a variety of conditions such as hearing loss, intellectual disability, specific language impairment, autism, and attention deficit disorder, among others. According to the American Speech-Language-Hearing Association (ASHA), about 1 in 12 children (8.3%) have a speech or language disorder in the U.S. school-aged population. The prevalence of communication disorders in Australian schools was 13.04% while specific learning difficulty was 17.93% (McLeod and Mckinnon, 2007). The systematic review of prevalence of neurodevelopmental disorders based on DSM-5 criteria by Francés, Quintero, Fernández, Ruiz, Caules, Fillon, and Soler (2022) revealed prevalence rates as intellectual disability (ID), 0.63%; attention-deficit/hyperactivity disorder (ADHD), 5–11%; autism spectrum disorder (ASD), 0.70–3%; specific learning disorder (SLD), 3–10%; communication disorders (CDs), 1–3.42%; and motor disorders (MDs), 0.76–17%. Dockrell and Hurry (2018) reported results of a cohort study suggesting the need for speech and language needs (SLN) for children aged 7 and 11 years old.

The identification of speech and language problems could be done in schools by teachers. In a study by Ralli, Kalliontzi, and Kazali (2022) kindergarten and primary school teachers could identify vocabulary and grammatical difficulties in the receptive language domain while articulation and phonological deficits were found in the expressive language domain in children with developmental language disorder. The communication disorders if not treated at early stages will continue to cause problems. Aram and Hall (2019) found that 40%-100% of children with speech and language disorders continue to present language disorders at follow-up, with at least 50%-75%, of these children typically reported as experiencing academic difficulties. Further, other speech skills such as articulation proficiency, speech fluency, and voice quality

also contribute to speech intelligibility to a variable extent. Yairi and Ambrose (2005) based on parent reports, clinical judgments, and speech analyses found nearly 60% of onsets in the single year between 24 and 35 months of age.

### **Need for Study:**

The early identification of speech and language disorders is a necessity that needs to be executed by professionals, parents/caregivers. The accessible technological tools that can be used by parents, teachers, or professionals are not available. In this context, the current study addressed the development of an Android mobile phone application for the early identification of speech and language disorders in primary school children.

### **Aim & Objectives:**

The study aimed to develop a new Android mobile phone application and test its efficacy in screening for speech and language disorders in primary school children.

### **Method:**

At the outset, the physical format of the questionnaire was developed and Copyrights were obtained for the same. Later, the Android mobile phone application was developed by a group of software engineers who are the coinvestigators of this research study. The app is available in 5 languages - English, Hindi, Telugu, Kannada, and Marathi. The App consists total of 20 questions which may answered by parents/teachers/audiologists and speech-language pathologists / special educators/health care professionals. For each question, the user needs to choose 1 option out of 3. The options are YES, SOMETIMES, NO. Choose the 'YES' option if the problem is certainly observed in a child. Choose the 'SOMETIMES' if the problem is observed less frequently. Choose the 'NO' option if the problem is not observed.

Upon, submitting responses for all questions, the app will automatically make recommendations for further diagnostic evaluation if the answer is 'YES' or 'SOMETIMES' for 3 or more questions in any subsection. Otherwise, the app will not make recommendations for further evaluation. The results are saved in the 'download' folder on the user's phone. The user can visit the nearest qualified audiologist and speech-language pathologist for diagnostic evaluation. The app was tested in 1208 children attending primary school between grades 1 to 5. The statistical measures of sensitivity, specificity, positive predictive value, negative predictive value, positive likelihood ratio, and negative likelihood ratio for the mobile phone application were evaluated.

## **Results & Discussion:**

The results revealed a total of 287 out of 1208 children were identified with communication disorders indicating a prevalence rate of 23.75%. Among them, hoarseness was found to be more common in 180 children (15.13%) followed by misarticulations 43 (3.61%), autism 3 (0.25%), stuttering 18 (1.51%), and specific language impairment 7 (0.58%). Six children were found to present hoarseness along with misarticulations (0.58%). Thirty-one children (2.60%) were found with structural abnormalities in the form of tongue tie. Further, the prevalence of communication disorders was found to be higher in males (171) than females (119). The children who were found to be associated with any of the speech and language disorders were evaluated in detail by standardized tests to confirm the presence of the associated condition. The language evaluation was done by the Receptive Expressive Emergent Language Scale and COMDEALL test. Mild to moderate delays in language were found in all 7 children with specific language impairments. In children with autism, the diagnosis was confirmed by the test administration of the Childhood Autism Rating Scale (CARS) and was found to be mild autism. The misarticulations were evaluated by regional tests of Hindi and Telugu Articulation Tests. The evaluation was done at word and sentence levels. It was found that misarticulations were correctly identified by the mobile phone app 98% of the time. The voice problems were confirmed by the administration of CAPE -V voice profile. The results revealed that 90% of the children were found to present a mild to moderate degree of hoarse voice quality. The fluency disorders were evaluated by standardized Stuttering Severity Index (SSI). A mild to moderate degree of stuttering was observed in all children identified by the mobile phone app as having fluency problems. The results show a sensitivity of 0.982, specificity of 0.996, positive predictive value of 0.989, negative predictive value of 0.994, positive likelihood ratio of 245.5, and negative likelihood ratio of 0.018.

The findings of the study revealed a significantly high prevalence rate of communication disorders in children attending schools. The study found hoarseness of voice as more prevalent than any other condition. This may be related to vocal abuse often indulged by children. The misarticulation condition was the next prevalent phenomenon suggesting that phonetic/phonological-based articulatory errors need to be carefully observed in primary school children. The study found children with autism in regular schools which suggested the steps taken by school authorities towards mainstreaming of children with autism. The study differs from previous data on prevalence such as reported by McLeod and Mckinnon (2007) or Ralli, Kalliontzi, and Kazali (2022).

**Summary & Conclusion:**

The study brought out a simple and easy-to-use mobile phone application for early identification of speech and language disorders in 5 different languages. The study found efficient use of this application in the screening of primary school children for speech and language disorders.



## Herpes Simplex Meningoencephalitis: A Case Study on Linguistic and Cognitive Impairments, and Treatment Outcomes

*Neha Yadav*

Amity University Haryana

### **Introduction:**

Encephalitis involves inflammation of brain tissue, often linked to viral infections, with Herpes Simplex Virus (HSV) being a predominant cause. HSV-1 is responsible for most cases of HSV encephalitis (HSVE), with a significant portion occurring in older adults (Bradshaw & Venkatesan, 2016). HSV-induced meningoencephalitis leads to high mortality rates if untreated but can be managed effectively with antiviral treatment like acyclovir, reducing mortality from 70% to 20% (ElShimy et al., 2017). Common symptoms of HSV encephalitis include fever, seizures, and altered mental states, along with cognitive impairments such as memory loss and language difficulties. These issues arise due to the virus affecting the brain, particularly the temporal and frontal lobes, which govern memory, language, and executive function (Richard, 2012; Zimmerman, 1980).

### **Need for Study:**

There is a gap in research on the speech and language impairments caused by HSV-induced meningoencephalitis, particularly in individuals with anomic aphasia. Case studies focusing on these impairments could enhance understanding and inform the development of more effective rehabilitation strategies

### **Aim & Objectives:**

Mrs. J, a 62-year-old retired woman from India, presented with speech and memory problems following a diagnosis of HSV meningoencephalitis in September 2023. Initial symptoms included fever, jerky movements, and difficulty in word-finding, which evolved into memory loss and aphasia. Imaging studies (NCCT, MRI) and EEG revealed brain abnormalities, including epileptiform discharges, with MRI showing mild brain swelling. She underwent extensive cognitive and linguistic assessments in November 2023 using the Western Aphasia Battery (WAB), Montreal Cognitive Assessment (MOCA), and Addenbrooke's Cognitive Examination (ACE), all indicating significant deficits in speech, memory, and executive function

**Method:**

Mrs. J, a 62-year-old retired woman from India, presented with speech and memory problems following a diagnosis of HSV meningoencephalitis in September 2023. Initial symptoms included fever, jerky movements, and difficulty in word-finding, which evolved into memory loss and aphasia. Imaging studies (NCCT, MRI) and EEG revealed brain abnormalities, including epileptiform discharges, with MRI showing mild brain swelling. She underwent extensive cognitive and linguistic assessments in November 2023 using the Western Aphasia Battery (WAB), Montreal Cognitive Assessment (MOCA), and Addenbrooke's Cognitive Examination (ACE), all indicating significant deficits in speech, memory, and executive function. Intervention: Language Therapy Mrs. J's therapy targeted word retrieval using picture-naming tasks based on semantic-feature analysis, focusing on helping her describe object characteristics (e.g., appearance, function). Therapy items were selected from the Boston Naming Test (BNT) and personalized based on her performance in pre-therapy assessments. A cueing hierarchy was used, with semantic and phonological cues to assist in word retrieval, followed by repetition exercises to reinforce learning. Therapy sessions lasted 45 minutes, three times a week, over four months

**Results & Discussion:**

Mrs. J's pre-therapy WAB score was 43.8, indicating significant aphasia. After four months of therapy, her aphasia quotient improved to 77.8, with notable progress across several domains: Spontaneous Speech and Fluency: Her score increased from 4 to 13, indicating improved ability to communicate spontaneously and fluently.

Information Content: Gains in fluency and the ability to generate content reflected improved verbal expression.

Auditory Verbal Comprehension: Comprehension scores improved from 7.4 to 9.3, suggesting enhanced understanding of spoken language. Naming: Her naming ability improved significantly, from 4.3 to 6.6, highlighting the effectiveness of semantic-feature analysis in overcoming word retrieval difficulties. Overall Linguistic Recovery: The post-therapy gains across WAB domains, particularly in naming and comprehension, demonstrated the positive impact of targeted therapy for HSE-induced aphasia. The pathophysiology of HSV-1 in the central nervous system (CNS) is thought to involve retrograde transport through the olfactory and trigeminal nerves, affecting the frontal and temporal lobes, which are crucial for memory, language, and executive functioning (Bradshaw & Venkatesan, 2016). This case study illustrates the profound cognitive and linguistic deficits associated with HSE, particularly

anomic aphasia, and the potential for recovery through structured language therapy. Mrs. J's cognitive-linguistic profile revealed severe impairments, including word retrieval difficulties, memory loss, and challenges with attention and executive functioning. These deficits aligned with known effects of HSE on the brain's temporal and frontal lobes (Venkatesan, 2018). Language therapy, which focused on word retrieval through semantic-feature analysis and cueing, resulted in significant improvements, particularly in spontaneous speech, naming, and comprehension. The post-therapy WAB scores highlighted the effectiveness of a structured approach in managing anomic aphasia. Mrs. J's recovery underscores the importance of targeted language therapy for patients with HSE, which can lead to meaningful improvements in communication and overall quality of life. Future research should explore the long-term effects of such interventions and refine rehabilitation strategies to further support patients with HSE-induced cognitive and linguistic impairments.

### **Summary & Conclusion:**

This case study demonstrates the severe cognitive and linguistic impairments resulting from HSE, including anomic aphasia, and the positive impact of targeted therapy. Mrs. J's significant improvements after four months of language therapy offer insights into the rehabilitation potential for HSE patients, highlighting the importance of early intervention and personalized treatment plans to enhance recovery outcomes

## LP811

# Comparing The Editing Capabilities Of ChatGPT With That Of A Human.

*Bharathi Prabhu & Abhishek B P*

**Samvaad Institute of Speech and Hearing, Bangalore**

### **Introduction:**

Ever since its launch in 2022, Open AI's ChatGPT (Chat Generative Pretrained Transformer) has become the go-to tool for many people. The scientific community is no exception. Academic writing calls for rigour and a particular style which ChatGPT provides. Many studies are now written with the help of ChatGPT and a few even list this AI tool as a co-author. ChatGPT can conceptualize a research question, automatically generate content and summarize vast amount of data. It can also be used to refine and polish the content and thereby improve the style of writing. However, it is unclear whether the content refined/polished by ChatGPT is better/worse than or equivalent to human editing.

Writing is an essential aspect in the field of Speech Language Pathology and Audiology. Students write assignments and theses/dissertations. Practitioners write reports and letters. Academicians write research papers and grant proposals. Poor quality of writing is one of the reasons why scientific papers get rejected. Many of us feel the need to improve our writing and it is safe to say that over 60% of students and an almost equal percentage of clinicians in our field use ChatGPT for their routine tasks. But what happens when this tool is used for editing a manuscript?

### **Need for Study:**

With easy availability, ever increasing capabilities and ease of use of LLM (Large Language Model) technology it is likely that our students and professionals will rely on sources like ChatGPT for research writing also. A careful review of literature reveals that most studies on ChatGPT as used in research writing talk about its use- like creating an abstract, elaborating the introduction, presenting the data more meaningfully, summarizing the results and findings appropriately and some caution about the pitfalls of using Chat GPT. These studies have been done in disciplines such as Pharmacy (Ex Zu,hu, Chan, Zang, Wang, 2023), medicine (Garg et al, 2023), dental (Tiwari et al, 2024) and Speech language Pathology (for students) (Slavich et al, 2023). Scribbr, an editing services portal gave the same scientific text to ChatGPT and a human editor and concluded that a human editor was better. However, there are no published

studies in India that compare ChatGPT editing with Human editing and hence the need for the current study.

### **Aim & Objectives:**

We wanted to compare the editing capabilities of Chat GPT with those of a human on the following parameters: Ability to ensure grammatical correctness and remove spelling errors, ability to pick a hole in the argument and spot erroneous conclusion, ability to evaluate the relevance of content and provide advancement for the writer, time and cost of editing and ease of use.

### **Method:**

To address these aims, a research paper presented at a conference was chosen. The research question undertaken in the paper dealt with the comparison of performance on list generation task and delayed naming task in younger and older individuals. The primary purpose of the comparison was to identify which of these two tasks was sensitive in detecting probable cognitive linguistic deficits associated with aging. The research paper (henceforth called original paper-OP) was around 1200 words long and was written by 3 authors- all with a post graduate degree in speech language pathology. For the current study, this OP was edited by a Speech Language Pathologist with over 25 years of work in the field of writing and extensive experience as an academic editor (the primary author of the current study) in close collaboration with one of the authors of the OP (the second author of the current study) with a goal to make the OP publishable. The editing was done using Microsoft Word. The programme was used to track changes, ask questions, clarify points and raise and respond to the author's/editor's comments. After 5 drafts, the author and the editor felt that the paper was ready for publication. This was the human editing part of the current study that resulted in the Final Paper (FP). For the ChatGPT part, the OP was uploaded to ChatGPT. A total of 4 closely related but slightly different prompts were given. The prompts were serially changed according to guidelines given by <https://medium.com/the-generator/the-perfect-prompt-prompt-engineering-cheat-sheet-d0b9c62a2bba>. Each of the output generated through ChatGPT was compared with FP (output edited by the authors) and analyzed on the set of parameters mentioned above.

### **Results & Discussion:**

Not much difference was observed among the outputs of ChatGPT with all the 4 prompts. Comparison between the final human edited manuscript- FP and each of the Chat GPT output showed glaring differences. ChatGPT retained many grammatical mistakes from the OP. It did

not spot sentences that were confusing or portions that were not necessary. It did not pick out erroneous conclusions. Key words were missed. It was observed that the ChatGPT blindly considered studies which were stored in its repository to elaborate on the introduction. The authors felt that the inclusion of some statements was not relevant and potentially confusing. For instance, psycho-social issues associated with aging was added in the ChatGPT output whereas the authors' focus was on cognitive linguistic issues. The human editor apart from doing all the tasks missed by ChatGPT also asked for clarifications and incorporated changes in discussion with the author. On the upside Chat GPT was easy to use and extremely fast.

While ChatGPT is helpful in generating questionnaires, word lists or even therapy tools, its use as an editing software needs careful intervention by humans. Chat GPT can do a literature review and even summarize findings of s. The time taken for each of the iteration by this AI tool was less than a minute whereas a human editor may take days for each draft. The tool is free unlike professional editing services which cost money but the quality of editing left a lot to be desired at least in this test case. Dedicated tools like Grammarly may resolve the grammatical mistakes better than ChatGPT.

We urge authors to use ChatGPT judiciously for editing purposes. There are potential pitfalls such as plagiarism, muddled data, inappropriate conclusions etc. Perhaps better prompts, advanced (paid) versions of the tool may give better results. This can be explored in further studies.

### **Summary & Conclusion:**

Large Language Models such as Chat GPT are here to stay and they will be used extensively in scientific writing. But the use needs to be carefully monitored. Editors of scientific journals have come out with position statements regarding the use of Chat GPT and other tools in article submissions. Authors need to be aware of the potential benefits and pitfalls before using ChatGPT for research writing. Subsequent diligent overseeing of the Chat GPT output by the authors is essential. In this test case Chat GPT's performance as an editor was subpar.

Embracing this tool can help researchers- especially novice and amateur authors- in preparing the manuscripts with ease. However, the final product may not be equivalent to the one generated with a human interface.

**Picture Augmented Communication Temptation Activities on Verbal and Non-verbal Communication in Children with Autism-Spectrum Disorder: Single Case Design**

*Pooja Jolly Palatty, Veena K D, Venkataraja Aithal Udupi, Reshmi M & Blessline Nibisha*

**Manipal College of Health Professions**

**Introduction:**

Autism spectrum disorder (ASD) is a developmental disorder characterized by a deficit in social communication (American Psychiatric Association, 2013). Around 25-35% of children with ASD struggle with both verbal & nonverbal communication in social situations (Rose et al., 2016). Intentional communication is a signalling behavior that the sender persists until a desired outcome is obtained, and is aware of the effect of signal on the listener (Bates et al., 2014). Typically developing children may point to a desired toy and look at their mother. These children are aware of the cause-and-effect relationship. Children with ASD have a delayed or deviant development of communication intent (Meadan et al., 2012). As a result, they fail to communicate either verbally or nonverbally. Weatherby & Prizant, (1989) developed 18 communication temptation activities to facilitate communication intent in children with ASD. These activities were observed to improve the prelinguistic skills. (Gevarter et al., 2021). Most To Least (MTL), a prompt fading technique helps children with ASD to learn a new behavior (Cenger et al., 2015; Gast, 2011). Behavioral intervention in combination with communication temptation activities may enhance communication intent in children with ASD.

**Need for Study:**

Studies show that children with ASD have significantly lower levels of communication intent than typically developing peers, hindering their social skills (Travis & Sigman, 2001). Combining communication temptation activities (Weatherby & Prizant, 1989) with behavioural learning principles can enhance communication intent in these children.

**Aim & Objectives:**

**Aim:** To study picture augmented communication temptation activities on verbal and non-verbal communication in children with Autism-Spectrum Disorder

**Objective:** To enhance communication functions such as requesting, rejection/protesting, and greeting either verbal /non-verbal form in children with ASD

**Method:**

A standardized method was followed to develop the picture augmented communication temptation activities for children with ASD. This was administered on two children, C1 (2.11 years) and C2 (3.3 years) with complaint of not speaking age adequately. On evaluation, two children were diagnosed with Receptive and Expressive Language Disorder with mild ASD using the standardized test Receptive Expressive Emergent Language Scale (REELS-3; Bzoch et al., 2003) and Indian Scale for Assessment of Autism (ISAA; NIMH 2009).

Communication and Symbolic behavior scale Developmental Profile Infant/ Toddler Checklist (CSBS; Wetherby & Prizant, 2001), Communication Acts and Functions (Lavya, 2012) and Communication DEALL Developmental Checklist (CDDC; Karanth 2007) were administered before intervention and every 15 days after intervention. Scores were documented to analyse the overall development. C1 and C2 were recommended for intensive speech and language therapy, weekly thrice for a period of one month. Four baseline data was gathered prior to intervention. The goals targeted were requesting, rejection and greeting skills.

The intervention incorporated five communication temptation activities (Wetherby & Prizant, 2001). Activities using core vocabulary and pictorials were implemented in play-based settings, guided by behavioural learning principles. The clinician modeled the activities, allowing a response wait time of five to ten seconds; if the child did not respond, the clinician would model again. MTL hierarchy of prompts such as physical to verbal prompts were utilized to elicit the desired responses across various activities. When the child was observed to use verbal (vocalizations)/ non-verbal (gestures) communication behaviour, the prompts were gradually faded. Positive reinforcement was provided at every communicative attempt. Number of trials, frequency of response, child's response, and type of prompts were accounted after each session in a tabular column. The data was analysed through visual representation and percentage of non-overlapping data (PND) were calculated. The direct outcome measures and CSBS, CDDC and Communication Acts and Functions Questionnaire was compared with pre-intervention score.

**Results & Discussion:****Results**

Communication either in verbal or non-verbal form was noted during the baseline phase. C1 was observed to use mother's hand to request and C2 was observed to grab the desired item. During the baseline assessment C1 and C2, CSBS score indicated "concern", CDDC scores revealed delay in receptive and expressive language and the Communication Acts and



Functions Questionnaire indicated "rarely" observed (up to 20%).

During the intervention phase, C1 began exchanging picture cards to have the desired item with partial physical prompts by 4th session. By the 6th session, C1 exchanged the picture cards with verbal prompts and, by 10th session verbalized with the hand extension towards desired item. Currently, C1 demonstrates increased vocalization and imitation skills (environmental sounds). By the 5th session, C2 extended hand to request with modelling and verbal prompts. By 8th session, C2 independently extended the hand with least prompts and started to vocalize more.

Following 15 days of intervention utilizing communication temptation activities, the formal tests were readministered on C1 and C2 to analyse the progress. For C1 and C2, CSBS and CDDC results showed significant improvement across all the domains. Communication acts and functions questionnaire indicated "sometimes (21-40%)" in all the communicative functions such as (requesting, rejection)

### **Discussion**

According to Trembath et al., (2015), children with ASD are visual-learners. The intervention focussed on reducing auditory stimuli and providing visual stimuli with the picture cards. The utilization of visual modality, resulted in quicker improvement of scores in C1 and C2. Compared to the baseline, C1 and C2 began to exhibit intentional communication using verbal/non-verbal communicative behaviours. There was a reduction in the prompt dependency over the time.

### **Summary & Conclusion:**

The case study suggests that picture augmented communication temptation activities can foster communication intent in children with ASD. The use of MTL prompting and positive reinforcement contributed to a significant improvement. Further, the study needs to account results for longer intervention period and should include larger sample size.

## LP813

# Use of Socially Assistive Robots (SARS) for Increasing Mean Length Utterance (MLU) in Children and Adolescents With Autism Spectrum Disorder.

*Shubhra Shanker, Jayashree Ramesh, Chiranjib Bhattacharyya, Nabanita Paul  
& Priya Vijayan*

**Academy of Severe Handicap and Autism, Basaveshwarnagar, Bengaluru**

### **Introduction:**

Socially Assistive Robots (SARs) are identified as high-tech assistive technologies with the most promising results in promoting social interaction and communication (UNICEF 2022). SARs have the greatest potential to play the role of a friend in a game or a mediator in the interaction with other children or adults. They also promote social interaction, and change the role of the child from a spectator to an active participant (Tsaneva et al 2023). Only a handful studies are available wherein the SARs are used in intervention of Autism Spectrum disorder, which mainly focuses on improving eye contact, joint attention (Boccanfuso, L. et al 2016, Kajopoulos, J. et al 2015), turn taking, communication initiation (Lewis, L. et al 2016, Farhan, S.A. et al 2021) and socialization skills (Boccanfuso, L. et al 2016, Tariq, S. et al 2016).

### **Need for Study:**

Though there is handful of studies, using SARs in ASD communication interventions, there is no study that focuses on increasing mean length utterance (MLU) in verbal expression i.e., expanding verbal expression from one word to phrase. Hence, Present study was carried out to attempt understand the beneficial effects of using a non-humanoid toy robot, as a Buddy (Teaching assistance through SAR-TSAR) to the children and adolescents with ASD for increasing Mean Length Utterance (MLU).

### **Aim & Objectives:**

To understand how TSAR can be used for increasing MLU, the following objectives were considered

1. Does Using TSAR in the session, help increase MLU in children and adolescents with ASD?
2. Does using TSAR in the session, motivate children and adolescents with ASD to attempt increasing their MLU?

3. Does using TSAR in the session reduce the load on special educator for eliciting verbal expression from children and adolescents with ASD?

**Method:**

In collaboration with Computer Science and Automation Department, IISc, we designed a triadic interaction activity between special educator, robot (TSAR) and the participant to increase MLU in their expression.

11 children and 6 adolescents aged between 6 yrs to 15 yrs (14 males, 3 females) with ASD and verbal expressive language age between 12 to 20 months (REELS -2) attending special education school were considered.

Goal oriented activity was carried out by special educator showing flash cards and asking three levels of questions to the participants. Participants would be expected to answer the questions appropriately with the above phrases. Level 1 elicitation of phrase “this is a boy/girl” involved asking “who is this?” by showing randomly 17 colored line drawing pictures. Level 2 elicitation of phrase of “boy/girl is jumping/ reading/ playing etc.” included asking “who is jumping/ reading/ playing etc.” and Level 3 phrase “boy / girl is jumping/ reading/ playing etc.” were elicited by asking “what is the boy/girl doing?”. The Level 2 and Level 3 phrases were elicited by showing 12 colored drawing pictures respectively. This activity was carried out in three phases with two pre-robotic sessions, 10 robotic sessions and two post robotic sessions. TSAR in the robotic sessions, would play a role of buddy, helping the participant answer the questions in phrases appropriately. The TSAR viz. DASH used for the study is a non-humanoid toy robot, developed by wonder workshop Inc., California, USA. A dedicated Python Library for DASH already exists in the robots. Hence, A web interface was created using HTML and Python for our study. This interface was connected from Dell Laptop to DASH (TSAR) via Bluetooth. Commands to express greetings, joy for reinforcements and prompts such as partial phrase prompt “this is, boy/ girl is,” model answer, prompts for engagement, repeating questions, encouragement to answer were passed via the web interface to the TSAR. Each command consisted of specific choreography of movements including the change in color of its LEDs i.e. “positive” emotions were denoted by LEDs turning green and “negative” emotions were denoted by LEDs turning red. The experimenter operated the web interface by clicking buttons appropriately, based on the child’s response, to generate the desired robot responses during the activity in the robotic sessions. All sessions were video recorded and annotated for special educator prompts, total attempts by participants, total correct answers by participants, correct answer with prompts, correct answers without prompts, low engagement, and low valence

duration in each session. The ethics clearance was obtained from both Bengaluru Medical College and Research Institute and Indian Institute of Science by 1st August 2023.

### **Results & Discussion:**

Statistical analysis of 238 annotated video recorded sessions were carried out using Wilcoxon Signed Rank test for pre-robotic and robotic sessions as well as for pre-robotic and post robotic sessions. Friedmans test with Dunnet C post hoc analysis was done to understand the performance differences between pre-robotic, robotic and post robotic sessions.

Results showed that, there is significant improvement in total correct answers from pre-robotic to robotic and post robotic sessions, indicating use of TSAR in the sessions helped to increase MLU. Total attempts by participants in pre-robotic, robotic and post robotic sessions showed significant increase along with decrease in low engagement duration and low valence duration. This indicates that, use of TSAR has motivated participants to verbally express with increased MLU. Also, significant decrease in special educator prompts from pre-robotic to robotic and post robotic sessions indicate that TSAR was able to help reduce the load on the special educator for increasing MLU in participant's expression.

### **Summary & Conclusion:**

The present study indicates that the use of the TSAR in triadic interaction i.e. as a Buddy for the children and adolescents with ASD in the session is helpful, in not only increasing MLU but also to keep them engaged and motivated to learn and verbally express in the session.

Thereby, reducing the load on the special educator to prompt children and adolescents with ASD for verbally expressing in their sessions. Our results support the idea of, using social robots in interventions can improve the verbal expression of children and adolescents with ASD.

Effect of Screen Time Exposure on Receptive and Expressive Language Age  
in Children with Autism Spectrum Disorders

*Sakshi, Surbhi Gupta & Garima Dixit*

**Sri Aurobindo Institute of Speech and Hearing, Indore**

**Introduction:**

Screen time exposure has become an increasingly prevalent aspect of early childhood, raising significant concerns regarding its impact on language development, particularly in the domains of receptive and expressive language. Receptive language, which involves the ability to comprehend spoken words and sentences, and expressive language, which pertains to the capacity to communicate thoughts and emotions through speech, are critical components of early communication development. The American Academy of Pediatrics advises that children under 18-24 months should avoid digital media and children 2-5 years old should limit screen time to 1 hour per day of high-quality program, accompanied by parents. A long screen time may be linked to negative outcomes in child development, such as poor academic performance, obesity, and sleep problems. Studies have reported that excessive screen time may also lead to social behaviour deficits or attentional problems, especially during critical periods of development. The purpose of the present study is to correlate the effect of screen time exposure on receptive and expressive language ages in children with autism spectrum disorder (ASD) and typically developing children (TDC).

**Need for Study:**

In the digital age, electronic gadgets have become the preferred media choice for children due to their streaming and interactive capabilities. As children are exposed to screens such as smartphones, tablets, and televisions for an average of 3-4 hours a day, concerns have emerged about the impact of this screen time on their development. The shift from traditional screens to touchscreens and smartphones has intensified screen use, including among young children who may not yet be proficient in reading and writing. Research indicates that excessive screen time can negatively affect children's language and communication development, as increased screen use often results in fewer interactions with parents, which are crucial for language growth. Understanding these effects is essential to assess how screen time influences both physical and emotional well-being, particularly in terms of language domains such as lexicon, phonology, morpho-syntax, and pragmatics. Given the potential impact of screen time on speech and

language development, it is important to consider various factors such as the amount of time spent on screens, the type of content consumed, and whether screen use is independent or facilitated by an adult. This understanding is crucial for speech-language pathologists who must provide informed advice to parents and healthcare professionals. The current study aims to bridge the gap in research by evaluating screen time exposure specifically in children with autism spectrum disorder (ASD) within an Indian context. By assessing how screen time affects speech-language and cognitive abilities in these children, the study seeks to identify relevant contributing factors and lay the groundwork for effective therapeutic interventions tailored to the needs of children with ASD.

### **Aim & Objectives:**

To correlate the effect of screen time exposure on receptive and expressive language ages in children with autism spectrum disorder (ASD) and typically developing children (TDC).

### **Objectives**

1. To assess screen time exposure in children with autism spectrum disorder (ASD) and typically developing children (TDC).
2. To assess receptive and expressive language ages in children with autism spectrum disorder (ASD) and typically developing children (TDC).
3. To assess the correlation between screen time exposure and language ages in children with autism spectrum disorder (ASD) and typically developing children (TDC).
4. To assess the comparison between screen time exposure and language ages in children with autism spectrum disorder (ASD) and typically developing children (TDC).

### **Method:**

Method: A total number of 100 participants were included in the study between the age range of 3-5 years. The participants were further divided into two groups, 50 children with autism spectrum disorder (ASD) and 50 typically developing children (TDC). Pre-diagnosed children with ASD were included in the study and the child's language development was assessed by using the scale: "Receptive Expressive Emergent Language Scale" (REELS). It consists of two parts: Receptive Language and Expressive Language and was created for the purpose of identifying infants and toddlers between the ages of 0 to 6 years who have language impairments or other disabilities that affect language skills and Scale for Assessment of Screen Time Exposure (SASTE) was used to assess the screen time exposure. SASTE is used to assess the children with and without the exposure of screen time. It was divided into two major

sections: Qualitative and Quantitative information. Qualitative information includes parent and child demographics, which was inclusive of age, birth order, gender, amount of time child watched screen on weekdays and weekends. Parental demographics included employment, parental education, parental screen time on weekdays and weekends were also assessed. Quantitative section is divided into five subsections. These subsections assessed neutral variables, parental positive and negative factors, and child positive and negative factors. The quantitative information was marked on a 5-point Likert Scale ranging from 0-4 where score 0 is when the behaviour or factor is absent for 0% of the time or the child does not exhibit the behaviour pattern. Score 1 is when the behaviour or factor is rarely seen for up to 25% of the time. Score 2 is when the behaviour or factor is sometimes seen for up to 26-50% of the time. Score 3 is when the behaviour or factor is frequently seen for up to 51-75% of the time. Score 4 is when the behaviour or factor is very frequently seen for up to 76-100% of the time.

### **Results & Discussion:**

The study assessed screen time exposure based on qualitative and quantitative parameters it was found that the children with autism spectrum disorder (ASD) had significantly higher average scores than the typically developing children (TDC). This further indicates that children with autism spectrum disorder (ASD) tend to spend more time in front of screens/more exposed to screen time than typically developing children. This further suggests that when typically developing children (TDC) and children with autism spectrum disorder (ASD) were correlated and compared, the TDC children showed a positive correlation, indicating a more advanced level of receptive and expressive language ages, while the children with autism spectrum disorder (ASD) children showed a negative correlation, indicating delayed receptive and expressive language ages.

### **Summary & Conclusion:**

It can be concluded that higher levels of foreground and background screen time are associated with symptoms of autism spectrum disorder (ASD) and impact the receptive and expressive language development of children. Higher parental ASD-related symptoms are linked to shorter social interaction times. Both children with ASD and typically developing children (TDC) benefit from careful screen time management and natural opportunities to develop social skills and language abilities. Comparing these groups, TDC generally show more advanced receptive and expressive language ages, despite similar or increased screen time exposure, which is often better managed.

Therefore, caregivers should monitor and limit screen time while providing opportunities for social and language development.



**Relationship between the development of meta phonological skills and social cognition in children**

*Jayashree C Shanbal & Jothi S*

**All India Institute of Speech and Hearing, Mysuru**

**Introduction:**

Language is a key component of human interaction, encompassing sophisticated forms such as verbal language, written language (reading and writing), and other communication systems like sign language. Both oral and written language demands extensive knowledge, including metalinguistic skills. Metalinguistic skill is defined as "the ability to think about and reflect upon language" (Gillon, 2004, p.10). These skills can be classified into four major categories: meta-phonology, meta-semantics, meta-syntax, and meta-pragmatics (Shulman & Capone, 2010; Benelli et al., 2006; Tunmer& Grieve, 1984; Pratt & Nesdale, 1984). Meta-phonological skills, which is the area of concern refers to the ability to manipulate the sound units within words spoken during conversation.

Besides, social cognition is the processes by which people understand and interact with others, including the ability to interpret and predict the behaviors, intentions, and emotions of others. This involves a range of cognitive skills, such as empathy, perspective-taking, and the Theory of Mind (ToM). The explicit ToM emerges at around the age of 4 and requires individuals to think and predict about the mental states of others, which makes it a cognitively demanding task. This form of ToM can be measured by using the false belief task (Wimmer and Perner,1983).

**Need for Study:**

The meta-phonological skills and ToM abilities develops during the early childhood and is important for communication and literacy (Pullen& Justice, 2003). Particularly, the meta-phonological skills facilitate language control that is crucial in interpreting social cues and participating in effective verbal communication. While learning linguistic complexity in terms of segmentation and manipulation of the language sounds, the children have a developing ability to appreciate and reason about the mental states of others. Thus, there is a clear connection between language and social cognition which underlies both social communication and interactions.

**Aim & Objectives:**

The current study examines the relationship between meta-phonological skills and social cognition, specifically Theory of Mind (ToM). The objectives are to determine association between the performance on meta-phonological skills and false belief tasks across different age groups (4.1 to 5 years and 5.1 to 6 years) and between genders (male and female).

**Method:**

**Study design:** The study adopted a cross-sectional exploratory research design.

**Participants:** A total of 240 typically developing children within the age range of 4-6 years having Tamil as their native or first language were recruited for the study. The purposive sampling procedure is used. The children were divided into 2 groups based on the age with interage interval of 1 year i.e., group 1: >4.0 to ≤ 5 years and group 2: > 5.0 to ≤ 6 years. All the children were matched with medium and board of education i.e. English medium and matriculation board.

**Inclusion and exclusion criteria:** The inclusion criteria include age (between 4-6 years); Language (Tamil as first or native language); Scholastic performance (fair to good academic performance); Socio economic status (middle socio-economic status); language skills (age matched receptive and expressing language skills). The exclusion criteria included problems such as neurological disorders, impaired hearing, vision, gross delay in motor milestones.

**Materials and Measures:** In a bid to establish the relationship between meta-phonological skills and the ToM, the study employed two main measures. First, the Assessment of Metalinguistic Skills in Children - Tamil (AMTa) was adopted to assess the meta-phonological skills of the children's. Second, the section called first order ToM is adopted from Test of Theory of Mind - Tamil (TToM-T) for evaluating their social cognition.

**Procedure:** To collect demographic details of the participants, a semi-structured interview was conducted. Participants who passed both inclusion and exclusion criteria were further administered the meta-phonological skills and false-belief task from above mentioned tools. The meta-phonological skills assessed across three levels: rhythm, syllable, and phoneme. The tasks comprised Rhyming, Syllable Counting, Syllable Blending, Syllable Deletion, Syllable Substitution, Syllable Segmenting, Phoneme Counting, Phoneme Identification, Phoneme Blending, Phoneme Deletion, and Phoneme Substitution totalling a score of 33. Every task was performed with one practice item and three test items.

In the TToM-T, there were two scenarios designed to assess first-order theory of mind, each containing 1 control question and 2 test questions. If the child did not answer the control

question correctly, the test questions were not administered. Only the test questions were scored, with each test question carrying 1 point, for a total possible score of 4.

## **Results & Discussion:**

### **Results:**

The study employed SPSS software version 26 for statistical analysis. Spearman's correlation coefficient test was done to find out the relationship between the development of false belief task and meta-phonological skills. A paired t-test was used for within-group comparisons of meta-phonological skills.

In meta-phonological skills children demonstrated better performance in rhyme tasks compared to syllable and phoneme tasks, with significant differences observed. Among children aged  $>4.1$  to  $\leq 5$  and  $> 5.1$  to  $\leq 6$  years, those were particularly skilled in blending, counting, and segmenting tasks at both the phoneme and syllable levels, although they faced difficulties with deletion and substitution tasks. In contrast, children aged  $> 5.1$  to  $\leq 6$  years showed improved performance across all tasks. Although females outperformed males in general, no significant gender differences were found. In false-belief task the children aged  $> 5.1$  to  $\leq 6$  years outperformed those aged  $>4.1$  to  $\leq 5$  years on false belief tasks, with no notable gender differences in performance.

Preliminary findings indicate that children aged between  $> 5.1$  to  $\leq 6$  years outclassed in both meta-phonological tasks and false belief tasks compared to those aged  $>4.1$  to  $\leq 5$  years. This suggests a developmental relationship between the two areas. Furthermore, a positive linear correlation exists between performance on the false belief task and meta-phonological skills, indicating that the development of social cognition and meta-phonological skills progresses simultaneously.

### **Discussion:**

The relationship between meta-phonological skills and social cognition is an important area of study, to understand the development in children. Research indicates that meta-phonological awareness may enhance ToM, crucial for grasping others' mental states. Children with phonological disorders often exhibit varying meta-phonological skills, impacting their performance on ToM tasks. Improved phonological skills are linked to better comprehension of social behaviors, facilitating ToM development (Major & Bernhardt, 1998). In children with autism spectrum disorder, the use of language structures such as complement syntax correlates with better outcomes in false belief tasks, suggesting a connection between language

proficiency and ToM (Lind & Bowler, 2009). While the potential for enhancing meta-phonological skills to support social cognition is promising, further research is necessary to clarify underlying mechanisms and explore effective interventions for children with developmental disorders.

**Summary & Conclusion:**

This study highlights the crucial link between meta-phonological skills and social cognition in children, suggesting that improving phonological awareness can enhance the ability to understand social interactions in typically developing children.

## Comparison of Canonical and Noncanonical Sentence Comprehension Abilities Across Broca's, Anomic and Global Aphasia

*Vijay Kumar & Akshara Saxena*

Amity University Haryana

### **Introduction:**

Aphasia is an acquired neurogenic language disorder resulting from an injury to the brain, typically the left hemisphere, that affects the functioning of core elements of the language network (Shephard & Sebastian, 2021). Aphasia often has difficulties in verb and phrase comprehension and production. A sentence is a collection of words used to express an idea, a fact, a question, a thought, a request, or a command (Croft, 2003). Sentence comprehension and production deficits are common in individuals with acquired aphasia, with studies showing that sentences with non-canonical word order, such as passives and object relative clauses, present more difficulty than those with a canonical order (e.g., Subject, Verb, Object [SVO] in English). Whereas canonical sentences display this SVO order (e.g., The dog chased the cat.), in noncanonical structures the object is moved across the verb and the subject and surfaces in the clause-initial position via syntactic operations such as NP and Wh-movement to form a passive structure (e.g., The cat is chased by the dog) (Chomsky, 1995). Research has consistently demonstrated that both agrammatic and fluent aphasic individuals struggle with non-canonical sentences, especially those that are semantically reversible. This difficulty is evident in both sentence production and comprehension tasks (Thompson, 2011).

### **Need for Study:**

Treatment studies suggest that the type of syntactic movement involved in a sentence is a crucial factor to consider in aphasia rehabilitation. Training on sentences with one type of movement (e.g., Wh-movement) may not generalize to sentences with another type (e.g., NP-movement). The Northwestern Assessment of Verbs and Sentences (NAVS) [Thomson, 2011] test includes sentences that assess both NP-movement and Wh-movement, comprehensively evaluating sentence processing abilities in individuals with aphasia. Consequently, understanding how aphasia affects sentence comprehension in Hindi, especially for passive and object-relative constructions, is crucial for developing tailored interventions that address these specific language difficulties. While research on sentence comprehension deficits in individuals with aphasia has made significant strides, particularly in English-

speaking populations, a notable gap exists in our understanding of these challenges in Hindi-speaking individuals across different sentence types i.e., Canonical and Non-canonical. This study aimed to address this deficiency by investigating the impact of aphasia on sentence comprehension in Hindi speakers across different sentence types and aphasia types using an adapted and validated version of NAVS.

### **Aim & Objectives:**

To compare the canonical and noncanonical sentence comprehension abilities of individuals with Broca's, Anomic, and Global Aphasia.

### **Method:**

Twenty-six persons with Aphasia (PWA), (20 Males and 6 Females) ( $M=41.41 \hat{\pm} SD= 18.35$ ) within three groups (13 with Broca's Aphasia, 6 with Anomic Aphasia, and 7 with Global Aphasia) and thirty age-matched healthy individuals, (15 Males and 15 Females) ( $M=41.41 \hat{\pm} SD= 18.35$ ) of Delhi and nearby regions participated in the study. Ethical approval was obtained by an Ethical committee at Amity University Haryana (Ref.No.IEC-AMS/AUH/28/2022-2023). All were native Hindi speakers and spoke Hindi as their first language with normal or corrected-to-normal vision and hearing. None presented with a history of neurological, psychiatric, speech-language, or learning disorders before the study. The presence of Aphasia was confirmed using Western Aphasia Battery (WAB-H). An adapted and translated version of Northwestern Assessment of Verbs and Sentences (NAVS) in Hindi and its subtest Sentence Comprehension Test (SCT) was used to evaluate the comprehension performance across canonical and non-canonical sentences. Performance on Canonical sentences was evaluated across Active Sentences, Subject Wh-questions (SWQ), and Subject Relatives (SR) whereas Non-canonical sentences were evaluated across Passive Sentences, Object Wh-questions (OWQ), and Object Relatives.

### **Results & Discussion:**

**Results:** The controls achieved a 100% score for all the subtests of NAVS in Hindi, which justified its content and criterion validity. The SCT was compared for individuals with Anomic, Broca's, and Global aphasia using one-way ANOVA across canonical and non-canonical sentences. Results reveal that SCT scores differed significantly across various types of Aphasia [ $F(2,25)=542.56, p<0.05$ ]. Bonferroni post-hoc analysis test was done to check the level of significance for sentence comprehension across different aphasia types. It was observed that

the SCT scores differ significantly across Broca's [ $F(2,25)=433.11, (p<0.05)$ ] and Anomic Aphasia [ $F(2,25)=523.18, (p<0.01)$ ]. ANOVA indicated significant main effects for Canonical and Non-Canonical Sentences: the Broca group performed significantly more poorly than the anomic group,  $F(2, 25) = 421.101, p < 0.05$ , non-canonical compared to canonical sentences were more difficult,  $F(1, 54) = 462.669, p < 0.05$ . It was observed for Active sentences there were no significant differences in both anomic and Broca's Aphasia.

**Discussion:** Results showed that PWA had poorer performance than the control group, with individuals with Global Aphasia experiencing the greatest difficulty, followed by those with Broca's and Anomic Aphasia. Participants with Anomic Aphasia performed significantly better than those with Broca's Aphasia, with notable differences between these groups ( $p<0.05$ ). Findings support prior research indicating that Anomic Aphasia individuals have relatively intact syntactic processing, contributing to better SCT performance (Thompson, 2013). Broca's Aphasia, in contrast, is associated with greater difficulty in comprehending syntactically complex sentences, especially object-relative structures (Reyas, 2014). Broca's aphasia is primarily characterized by deficits in language production, often referred to as expressive language.

Individuals with Broca's aphasia may have difficulty formulating and expressing their thoughts, leading to labored speech and grammatical errors. However, comprehension deficits are generally less severe, and many individuals with Broca's aphasia can understand spoken and written language relatively well (Robert, 2001). While comprehension deficits are less prominent in Broca's aphasia compared to expressive deficits, some studies have shown that individuals with Broca's aphasia may experience difficulties understanding complex syntactic structures, particularly those involving grammatical relationships between words. This suggests that while their primary impairment lies in language production, there may be some underlying difficulties in processing complex language structures. (Caplan et al, 1989).

The results suggest that syntactic complexity plays a key role in comprehension difficulties for Broca's Aphasia, whereas Anomic Aphasia individuals demonstrate better comprehension across sentence types due to preserved syntactic abilities. [Caplan et al, 1989]. The reason for this difference is that Broca's aphasia is primarily characterized by deficits in language production, particularly in the ability to formulate and express complex syntactic structures. This suggests that the underlying syntactic knowledge may be intact, but the ability to access and utilize this knowledge for comprehension is impaired (Shephard, 1999) In contrast, Anomic Aphasia is primarily characterized by deficits in word retrieval, with relatively

preserved syntactic abilities. This suggests that individuals with Anomic Aphasia can still process and understand complex syntactic structures, even if they may have difficulty retrieving the specific words needed to express their meaning (Thompson,2009).

### **Summary & Conclusion:**

The study investigated the impact of aphasia on sentence comprehension in Hindi-speaking individuals, focusing on different sentence types and aphasia types. Results indicated that sentence comprehension deficits were prevalent among individuals with aphasia, with varying degrees of severity depending on the specific type of aphasia. Individuals with global aphasia demonstrated the most significant impairments in sentence comprehension. Broca's aphasia was associated with difficulties in processing syntactically complex sentences, particularly non-canonical forms. In contrast, individuals with anomic aphasia exhibited relatively preserved syntactic processing abilities, leading to better performance in sentence comprehension tasks. These findings highlight the importance of considering both aphasia type and sentence structure when evaluating and treating language deficits in Hindi-speaking individuals with aphasia. Tailored interventions that address the specific language challenges associated with each type of aphasia can potentially improve communication outcomes and enhance the quality of life for individuals affected by this condition.



## Practical Aspects of Technology Integrated Hybrid Therapy

*Chinnu Thomas*

### Xceptional LEARNING

#### **Introduction:**

The contemporary landscape has witnessed a significant shift in children's interests, with a growing inclination towards digital media. Their rapid development in digital skills is commendable; however, it is essential to approach screen time with caution to mitigate potential negative impacts and provides our children with healthy screen time. For children with disabilities, hybrid therapy integrating in-person and digital modalities offers a promising avenue for effective learning.

#### **Need for Study:**

Digital media is a pervasive part of our children's day to day lives and it has so much impact on children's early learning environments. Nowadays, the rapid advancement of technology, including in rehabilitation settings, underscores the growing importance of digital tools. Consequently, it is important to prioritize the practical implementation of hybrid therapy approaches that integrate digital and traditional modalities to optimize learning outcomes.

#### **Aim & Objectives:**

The aim of the study is to profile the practical aspects of hybrid therapy and the use of digital activity book. The objectives of the study are to incorporate digital activity books in traditional therapy sessions, to assess the receptivity of clients to the incorporation of digital activity books within the traditional therapeutic framework and to evaluate and record the operational aspects encountered when integrating digital activity books into therapeutic practice.

#### **Method:**

We have been practicing conventional method of speech therapy. To that, we implemented digital contents and customized digital materials, to evaluate the practical viability of hybrid therapy. A key contextual variable examined was the platform through which the hybrid practice was conducted: the digital activity book. The study evaluated children's learning outcomes from the hybrid therapy approach through observations, interviews, and parental feedback.

**Results & Discussion:**

The findings from this study, reveals that through digital advancement, we can quantify the achievements and through individualized therapy materials, therapists can enhance patient engagement and outcomes. Interactive games facilitate rapport building, while digital activity books address absenteeism and provide parents with real-time session updates. Creative animations align with individualized therapy goals, and the digital activity book aids in home follow-up. The use of digital materials has been shown to increase motivation and reduce boredom, although some children may require additional support to manage waiting times. Overall, these findings highlight the potential of digital tools to revolutionize pediatric therapy.

**Summary & Conclusion:**

Initially there was resistance towards digital integrated hybrid therapy, especially stating a concern of screen time, but the apprehension was successfully overcome through training and peer experiences. Integrating digital platforms and activity books into conventional therapy for regular clients proved to be effective. This hybrid approach facilitated faster learning and significantly enhanced the ease of using therapy materials. Documentation and evaluation became effortless, allowing therapists to effortlessly educate parents and caregivers using clear visual representations rather than solely relying on verbal explanations. This improved communication significantly benefited parental involvement in follow-up care.

## **Navigating Sensory Challenges: Insights into Children with Autism Spectrum Disorder**

*Sarthak Nehra, Swati Sharma, Vimala Jayakrishna & Jitendra Kumar*

**Amity University Haryana**

### **Introduction:**

Sensory processing difficulties, which can include both hypersensitivity and hyposensitivity to stimuli, are prevalent among children with ASD (CwASD) and can manifest as avoidance, seeking, or intolerance of sensory inputs (Baranek et al., 2006; Leekam et al., 2007).

Research indicates that up to 95% of CwASD experience sensory processing issues, impacting their behaviors and overall daily functioning (Baker et al., 2007).

These sensory challenges not only hinder a child's ability to engage in daily routines but also contribute to stress for both the child and their caregivers (Schaaf & Lane, 2015; Kirby et al., 2015). Moreover, studies consistently show that CwASD exhibit more sensory processing issues compared to typically developing children (Cheung & Siu, 2009; Kojovic et al., 2019). Sensory processing difficulties are common in ASD but are not unique to this condition; children with Attention Deficit Hyperactivity Disorder (ADHD) also demonstrate similar sensory processing challenges, making it difficult to differentiate between ASD and ADHD based solely on sensory profiles (Cheung & Siu, 2009).

The impact of sensory processing issues in CwASD extends beyond sensory experiences. These difficulties are associated with deficits in social skills, impaired social cognition, and reduced adaptive functioning (Kojovic et al., 2019). Sensory sensitivities can also interfere with daily activities such as oral care, both at home and in professional settings (Stein et al., 2011). Furthermore, distinct sensory processing subtypes have been identified within the ASD population, differentiated by taste and smell sensitivity as well as movement-related sensory behavior (Lane et al., 2009).

Given the prevalence and impact of sensory processing difficulties in CwASD, this research aims to investigate the percentage of various sensory issues among CwASD, contributing to a better understanding of their unique sensory profiles and the implications for intervention strategies.

### **Need for Study:**

This study aims to explore the sensory processing difficulties faced by children with autism

aged 3 to 10 years, focusing specifically on how these challenges affect their daily lives. Identifying the specific sensory issues that interfere with participation in everyday activities is crucial for developing targeted interventions designed to improve functional outcomes and overall well-being for these children.

Prior studies have shown notable disparities in sensory profile scores between children with autism and their typically developing counterparts, underscoring the urgent necessity to tackle sensory processing challenges within this group (Baker & Angley, 2010). Understanding these sensory processing difficulties not only contributes to the existing literature but also informs clinical practices and educational strategies, ultimately fostering better support systems for CwASD and their families.

### **Aim & Objectives:**

#### **Aim**

To understand the prevalence and distribution of various sensory processing issues across different modalities among children with Autism Spectrum Disorder (ASD).

#### **Objectives**

1. To identify the specific sensory modalities (e.g., visual, auditory, tactile, olfactory, and gustatory) that are most affected in CwASD.
2. To assess the prevalence of hypersensitivity and hyposensitivity within each sensory modality.

#### **Method:**

This study used convenience sampling to recruit parents of children with a confirmed diagnosis of Autism Spectrum Disorder (ASD) aged 3 to 10 years. Participants were selected from clinics providing speech-language therapy to CwASD in New Delhi, India. The Short Sensory Profile (Dunn, 1999), a 38-item questionnaire assessing sensory sensitivities across different modalities such as hearing, touch, smell, taste, vision, sensory seeking, and movement, was used. Participants were encouraged to fill out the questionnaire based on their observations of their child's sensory behavior in daily life. The data collection was conducted under the supervision of certified speech-language pathologists, who ensured informed consent from all participants to participate in the study.

#### **Results & Discussion:**

Majority of the participants are diagnosed with Autism Spectrum Disorder (ASD), accounting

for 87% (45 individuals). Two percent of the children (1 individual) have ASD with comorbid conditions, and 11% (6 individuals) have other conditions. In the sample of 52 respondents, the majority are male, comprising 73% (38 individuals), while females represent 27% (14 individuals).

The prevalence of sensory issues is notably high, with 90% (47 individuals) of respondents reporting sensory issues, while only 10% (5 individuals) indicate an absence of such issues. The sensory issue distribution among the children reveals huge challenges in various areas of sensory processing. A notable 42.3% (22 individuals) exhibit movement-related sensitivities, while 40.4% (21 individuals) face touch sensitivities. Additionally, 32.7% (17 individuals) struggle with sound-related sensitivities, indicating that noisy environments may be overwhelming for them. Conversely, only 17.3% (9 individuals) show sensitivities related to taste and smell. Sensory-seeking behaviors are present in 23.1% (12 individuals), suggesting some actively pursue sensory experiences. Finally, 34.6% (18 individuals) experience visual sensitivities, highlighting the diverse sensory processing challenges these children face. This underscores the need for tailored interventions to support their unique needs.

Tactile sensitivity is evident in 32.7% of children, who have difficulty standing in line or being close to others. This suggests that these children may have heightened awareness or discomfort with physical proximity. Children with movement sensitivity, particularly fear of falling or heights, represent 19.2% of the group. These children may have challenges with balance or spatial awareness, which can manifest as anxiety during physical activities involving heights or unstable surfaces.

In the domain of taste and smell sensitivity, around 21-25% of children show aversion to certain food smells, textures, or temperatures. Picky eating, especially regarding food textures, is particularly notable, with 25% of children exhibiting this behavior. Underresponsive and sensation-seeking behaviors are common among the children assessed. Around 32.7% always enjoy making strange noises, while 40.4% seek movement that disrupts their routines. Half of the children (50%) become overly excitable during movement activities, and 34.6% frequently touch people and objects. Additionally, 23.1% don't notice when their face or hands are messy, and 42.3% jump from one activity to another, affecting their play. These behaviors highlight challenges in regulation of sensory behaviours.

Regarding low energy and weakness, 19.2% of children consistently exhibit poor endurance and tire easily. Auditory filtering issues are prominent among the children, affecting their ability to process sounds in noisy environments. About 30.8% are always distracted or struggle

to function with a lot of noise, and a similar percentage (30.8%) appear not to hear when spoken to. Additionally, 28.8% find it difficult to work with background noise, while 38.5% don't respond when their name is called despite having normal hearing. Difficulty paying attention is prevalent in 48.1% of children, and 23.1% have trouble completing tasks when music or the radio is playing.

### **Summary & Conclusion:**

The study highlights the widespread prevalence of sensory issues among CwASD, emphasizing the significant challenges they encounter in daily living. An alarming 90% of participants reported sensory processing difficulties, with movement (42.3%), touch (40.4%), and sound (32.7%) sensitivities being the most prevalent. Tactile defensiveness can hinder social interactions, while movement sensitivities may restrict participation in play or sports due to fears of falling or heights. The sensory sensitivities related to smell and taste can lead to restrictive diets, impacting nutrition and causing stress during mealtimes for children and caregivers alike. Auditory filtering issues complicate functioning in noisy environments, affecting the ability to engage fully in various settings. These challenges emphasize the urgent need for tailored interventions that address the unique sensory profiles of CwASD.

## **Lived Experience of Parents of Children with Autism : a Mixed Design Study**

*Rudrasis Swain, Mrinal Kumar, Suresh Thontadarya, Srividya Balaji Asuri & Rithu Rajan*

### **Naaraayan Speciality Care**

#### **Introduction:**

Parenting a disabled child is challenging (Dyson, 1997; Panjra, Y & Mishra, S,2018). Challenges can be compounded with prevalent socioeconomic conditions where the parents are living (Cohrs and Leslie, 2017; Hayes and Watson, 2013). Increase in awareness, availability of professional help may or may not contribute to personal experiences. Both qualitative (Acharya S, Sharma K, 2021) and

questionnaire-based studies have been conducted on this in other countries. Qualitative seems to highlight differences in personal experiences and quantitative methods help in estimating impact and quantify the stress levels.

The present study was planned as a mixed method with open ended questions on eight domains that were framed to capture personalized experiences. And all participant parents answered a standard questionnaire on perceived stress and QOL.

#### **Need for Study:**

Lived experience are important aspect of understanding disability such as Autism. As per ICF, the impact of disorder should be measurable and understood in order to effectively describe the disorder itself. Parents and their life constitute an important aspect of overall rehabilitation efforts in children with Autism. Data pertaining to this therefore adds to the overall understanding. Lived experiences vary according to social and economical factors.

#### **Aim & Objectives:**

Aim of the study was to enumerate the overall difficulty level of raising a child with autism in the current times and to illuminate the range of experiences that parents go through.

#### **Objectives:**

1. To capture parental experiences in eight domains
2. To estimate Perceived stress of parents with Autism
3. To estimate perceived QOL of parents with autism

**Method:**

1. Questions for interview of parents : A question bank was created by reviewing literature on the topic and given to 3 experts in the therapy of Autism( >5yrs of experience). They rated all questions on relevancy on a Likert scale of 5 point. The questions rated 4-5 , were selected. The researchers categorized the questions on eight themes , Emotional, Initial Realization and Diagnosis, Daily Life and Routines, Social dynamics, access to services, educational challenges, self care and personal growth.
2. QOL- WHOQOL-BREF
3. Parenting Stress Index - Short Form

**Sample:** 10 parents from 10 different families were the subjects. Purposive sampling was chosen. All parents were attending therapy regularly in a therapy center in Eastern region of India.

**Inclusion criteria** were

1. Mothers willing to participate
2. Mother having a child aged 10 yrs or less
3. Mothers with one child with autism diagnosed by a protocol of National trust of India

**Exclusion criteria:**

1. Mothers who could not allocate time for further sessions of the interview or did not complete the questionnaires.

**Data collection:** The method was approved by ethical committee of the Institute which supervised the study. Data collection was carried out by obtaining written consent of the participants and explaining the study purpose and data usage.

**Data analysis:** The qualitative data was transcribed by the researchers. Themes were identified from the transcript by researcher 1 and later verified by researcher 2. If there is a difference of opinion researcher 3 identified the themes.

**Results & Discussion:**

**Objective 1:** To capture parental experiences in eight domains

Emotion: Emotional levels was reported to be highest during the initial professional help and diagnosis. Distress and worry for the future of the child were the prime concerns in all the respondents. Emotional reaction reduced with duration of therapy and impacted their acceptance and positive change was longer than a year of therapy. Observation of progress in the child with therapy has helped Initial Realization and Diagnosis: Thematic categories were confusion, worry about the cause and looking for second opinion. Self blame also emerged



strongly. They felt personally responsible for it. Reasons for consulting were child being non verbal, social unresponsiveness and other behavioral issues. All acknowledged positive reaction to the help received from professionals.

Daily Life and Routines: Parents over time have adopted to routine of the child. Mornings are dedicated to routine of the child. Child being non communicative of the emotions, persistence of disturbing behaviors are concerning. Over time they are able to identify triggers and avoid those in order to better manage the child and situations.

Social dynamics: reduction in social interaction. Negative reaction and failure to accept the child in the extended family. Support from close family members such as siblings, mothers etc. Time for social events and difficulties in traveling with the child to the events were the reasons emerged for reduced social interaction. Strain on relations with spouse also emerged.

Access to services, : This has been challenging to most parents. Most parents had to go through many experiences before finding professional care that they can rely on. Inexperienced therapists, ineffective approaches were reported.

Educational challenges, : both positive and neutral experiences were reported. Most parents reported positive experiences with the school teachers, administration. However some reported lack of skills in the teachers to manage sudden behavioral responses.

Self care and personal growth.: self care and confidence in handling situations as they arise has improved with continued professional support and therapy.

Personal Growth and Reflections: Acceptance is related to professional support and therapy progress. Child's positive reaction to therapy goals and achievement of targeted behaviors are cause of celebration and bring positive outlook.

Future concerns: Puberty and ability to travel independently in future are the main concern. Living with minimum care and communicating the needs are very important for the parents.

**Objective two** : To estimate Perceived stress of parents with Autism

Parental distress: Scores ranged from 36 to 48 on a maximum score of 60. It has 12 items with 5 point likert scale.

Parent-child dysfunctional interaction: Of maximum possible score of 60, parents responses ranged from 20-30 reflecting positive response to progress in therapy. Learning of skills of handling the behavioral issues and improvement in communication in the child may have contributed to reduced stress in this section.

Difficult child,: The scores ranged from a maximum of 52 to minimum of 20 out of maximum 60. Children in initial stages of therapy may exhibit many behavioral problems resulting in

higher stress levels of parents.

**Objective three:** To estimate perceived QOL of parents with autism

Mean scores were least for social section ( 46+/-8.3), followed by environment ( 56+/-3.46), psychological health ( 58+/-6.2) and physical health ( 74+/-6.45). Physical health was better as all were young mothers in their late twenties and early thirties. Psychological health may reflect positive impact of being in therapy and improvement in the communication and behavioral aspects of the child.

**Discussion :** the study was able to highlight the lived in experience of parents with autism child. As in other parts of the world, parental stress levels were higher and shows betterment with continuation of therapy. The QOL reflects deficit areas which may need further attention.

Qualitative part of the study was able to capture the most concerning issues of the parents. Initial reaction of the diagnosis is always the tough period for the parents. Mothers always tend to blame themselves which should be the point of repeated counseling during long period of therapy duration. Access to professionals' services is not always easy in certain parts of India and lead to unpleasant experiences to the parents. Professional practices may need to be regulated further to reduce anxiety of the parents.

**Summary & Conclusion:**

Lived experience reflect areas of concern for the parents such as behavioral issues and communication aspects, positive impact of therapeutic intervention, difficulties in personal and emotional aspects. Data reflects that mothers depend on close family members such as mothers and siblings for support and many also experience conflicts with spouse and separation too.

## **Navigating Speech Therapy: Challenges and Successes in Seckel**

### **Syndrome: A Case Study**

*Vijay Kumar & Akshara Saxena*

**Amity University Haryana**

#### **Introduction:**

Seckel syndrome is a rare genetic disorder characterized by growth retardation, microcephaly (a small head), intellectual disability, and distinct facial features resembling a "bird-headed" or "bird-like" appearance (George Seckel, 1960), it is also sometimes referred to as "bird-headed dwarfism." This condition results from mutations in genes responsible for regulating cell division and DNA damage repair, which affects overall growth and development. Seckel syndrome, is a rare autosomal recessive condition without any sex prediction, with a reported incidence of 1:10,000 live-born children. (Kutlu. R, 1983).

Infants born with Seckel syndrome typically present with intrauterine growth restriction (IUGR), leading to low birth weight and stature. As they grow, children may exhibit developmental delays, particularly in motor and cognitive skills. Additional physical features include large eyes, a beak-like nose, and a receding jaw, which contribute to the distinctive craniofacial presentation.

Seckel syndrome follows an autosomal recessive inheritance pattern, meaning both parents must carry and pass on the mutated gene for a child to develop the condition. There is currently no cure, and treatment primarily focuses on managing symptoms and addressing developmental challenges through multidisciplinary care. Genetic counseling is also recommended for affected families.

#### **Need for Study:**

Seckel syndrome presents significant communication challenges. While the prevalence of Seckel syndrome may be relatively low, its impact on individuals' lives is profound, and effective interventions are essential. One of the primary concerns for individuals with Seckel syndrome is their communication abilities. The distinctive facial features associated with the disorder, such as a small head, large eyes, and a beak-like nose, can affect articulation and pronunciation. Additionally, the underlying neurological and cognitive impairments often present in Seckel syndrome can further hinder speech development. Understanding the effectiveness of speech therapy in addressing these communication challenges is crucial for

providing tailored interventions and improving the quality of life for individuals with Seckel syndrome. By conducting research in this area, healthcare professionals can gain valuable insights into the specific challenges faced by individuals with this condition and develop evidence-based treatment approaches. Furthermore, studying the characteristics of speech development in individuals with Seckel syndrome can help identify potential biomarkers or early indicators of the condition. This information can be used to improve early diagnosis and intervention, potentially leading to better outcomes. Given the limited number of studies on the phonological aspects of Seckel syndrome, due to its rarity, this research is valuable. It can contribute to a better understanding of this condition among speech therapists and healthcare professionals, leading to more effective interventions.

### **Aim & Objectives:**

To investigate the effectiveness of speech therapy in individuals with Seckel syndrome.

### **Method:**

This is a case report of a child six years old at the date of assessment, female, evaluated and diagnosed with SCKL at nine months old by a geneticist in the study. Clinician reviewed the patient's syndrome report given by the pediatrician and medical records, confirming a Seckel syndrome diagnosis. The child also presented with developmental delays. An Oral Peripheral Mechanism Examination (OPME) was conducted to assess the structure and function of the articulators, followed by a Photo Articulation Test (PAT) to evaluate speech sounds at all positions and examine the phonological inventory. Additionally, the Receptive-Expressive Emergent Language Scale (REELS) was administered to assess both receptive and expressive language skills.

Patient undergo intensive speech therapy sessions for the period of 6 months and evidence based speech therapy techniques were employed throughout the treatment. For drooling management, both active and passive massages were utilized. Articulatory drills and PROMPT therapy were incorporated to target speech clarity, while specific language techniques were used to enhance both speech and language development.

### **Results & Discussion:**

The Oral Peripheral Mechanism Examination revealed several notable findings. The patient exhibited persistent drooling, reduced muscle tone, and a long, narrow facial structure. The hard palate was characterized by increased depth and narrow width, while the palatal veil was symmetrical with good mobility and functionality. The uvula appeared normal. The child

displayed habitual lip posture with parted lips and labial incompetence, where the upper lip only partially covered the upper incisors. Additionally, the tongue habitually rested in an interdental position with reduced tone. Speech articulation was imprecise, accompanied by limited mouth opening, which contributed to impaired intelligibility and reduced vocal loudness. Excessive saliva accumulation at the corners of the lips, along with a short frenulum and slight tremor, were also observed. In the outcome of the Photo Articulation Test (PAT), initial sounds such as /h/, /v/, and /n/ were present.

Throughout therapy, the child successfully acquired bilabial sounds; however, some pressure consonants are emerging as structural challenges are there. These anatomical challenges significantly impacted the child's ability to produce a wider range of speech sounds. The child demonstrated the ability to name a few objects and comprehend simple commands, reflecting emerging receptive and expressive language skills.

### **Discussion**

In this case, several challenges impacted the child's progress during speech therapy. Structural abnormalities, including a receding jaw, low palatal arch, labial incompetence, and a short frenulum, hindered the accurate production of many speech sounds, particularly pressure consonants. Reduced intraoral pressure and limited mouth opening further compromised articulation, resulting in impaired intelligibility and vocal loudness. Drooling persisted despite targeted management techniques, and the child exhibited reduced muscle tone and difficulty managing saliva during speech. Similar findings were obtained by Aline Brito, Sílvia Elaine in 2007, which results minimal progress in oro-motor skills and written language but slight improvements in language skills.

While the child made some progress in acquiring bilabial sounds and demonstrated the ability to name objects and follow simple commands, overall phonological improvement was limited. These challenges highlight the need for tailored therapeutic approaches that address both anatomical constraints and functional speech deficits in children with Seckel syndrome. However due to some preserved intellectual abilities, the receptive language seemed to improve with increased understanding of concepts learned.

### **Summary & Conclusion:**

Despite six months of intensive speech therapy, the patient did not demonstrate significant improvement in phonological inventory. Thus, in this case, speech therapy showed limited effectiveness. The child's structural and developmental challenges appear to have constrained

the overall progress, indicating that more targeted or alternative therapeutic approaches may be necessary to achieve further advancements in speech and language development.

## **Analysis of Epigenetic Mutation of AGTR2 Gene Responsible of ASD:**

### **An Exploratory Study**

*Vijay Kumar & Priya Mishra*

**Amity University Haryana**

#### **Introduction:**

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder marked by challenges in social interaction and communication, as well as restricted, repetitive interests and behaviors (Bailey et al 1995) and affects 1 in 160 birth (WHO, 2020). The etiology of ASD is poorly understood; however, a genetic basis is evidenced by the greater than 70% concordance in monozygotic twins and elevated risk in siblings compared with the population (Zhao et al 2007). According to an investigation by the U.S. Centers for Disease Control and Prevention (CDCP), the likelihood of boys being affected is four times that of girls. A study found two autism linkage loci on chromosomes 7q21-q32 (designated as autism susceptibility locus 1, AUTS1) and 2q24-q33 (designated as AUTS5), which are linked to autism. Meta-analysis and genome-wide association studies (GWAS) also reported that AUTS1 and AUTS5 are linked to autism spectrum disorder (Liang et al 2014). Studies reported that a number of gene, including IMMP2L, DOCK4, ZNF385B, GRIK1, RELN, COMT, OXTR, GABRB3, SLC6A4, NMDA, CNTCAP2, MET, etc. are linked to genetic instability, gene expression, synaptic regulation, imprinting, and recombination in ASD (Liang et al 2014). A study conducted in Japan demonstrated that the disruption of ZNF385B gene is responsible for neurodevelopmental disorder like a failure of growth (Liang et al 2014). Early diagnosis of ASD is highly desirable to initiate treatment promptly. Therefore, we have opted to identify specific genes potentially linked to ASD using saliva samples from affected individuals.

#### **Need for Study:**

Identifying Genetic Disorders: Certain intellectual disabilities are linked to genetic conditions. Genetic testing can reveal these conditions early. Risk Assessment: For families with a history of genetic disorders, genetic counseling and testing can help assess the risk of intellectual disabilities in future children. Understanding Etiology: Genetic analysis provides insights into the underlying causes of intellectual disabilities, aiding in the understanding of the condition's nature and potential progression. Personalized Interventions: Early identification through genetic analysis allows for tailored educational and therapeutic interventions that can enhance

a child's development. Family Planning: Results from genetic testing can guide families in making informed decisions about future pregnancies and understanding the likelihood of recurrence.

### **Aim & Objectives:**

To identify specific genes that might be transferred from parents to their children and potentially cause Autism.

### **Method:**

Distinguish between typically developing children and those with Autism was based on Childhood Autism Rating Scale (CARS) criteria.

Saliva sample of three children with autism was obtained. The DNA analysis of saliva samples involves several steps: (i) Sample collection and Analysis: Buccal swab of affected individual is collected which is further stored below 0 degrees Celsius to avoid fungal growth. (ii) Stain extraction buffer is used in dry samples of saliva. (iii) Organic Extraction of DNA: Add proteinase K, phosphate buffer, and DTT is added to the saliva sample. Centrifuge the mixture at 4 degrees Celsius at 1000 RPM for 2 minutes, then incubate in a water bath at 56 degrees Celsius overnight. Centrifugation with Organic Solvents (alcohol, chloroform, and phenol to the sample, then centrifuge at 4 degrees Celsius at 7000 RPM for 30 minutes). Collect the pellet and add it to an ethanol solution, followed by another centrifugation at 4 degrees Celsius at 7000 RPM for 15 minutes. Resuspend the pellet in a solution of Tris base, EDTA, and distilled water to achieve a pH of 8. Centrifuge again at 4 degrees Celsius at 7000 RPM for 30 minutes. Finally, extract the DNA from the pellet. (3) DNA quantification is accomplished by electrophoresis technique by using dye and visualized with the help of UV transilluminator. Polymerase Chain Reaction (PCR): This technique facilitates the amplification of DNA samples through the utilization of DNA polymerase, enabling the generation of numerous copies of specific DNA sequences.

### **Results & Discussion:**

**Result:** The electrophoresis technique of DNA quantification is a reliable technique that enables yield of DNA even with minimal swabs. The transillumination of DNA on the electrophoretic plate is suggestive of human DNA as compared of bacterial DNA which is non-ubiquitous and clear. The obtained DNA sample is further sequenced with the gene of AGTR2, AGTRY; the deletion in the base pair of the abovementioned gene primarily causes cognitive impairment in the individual. The objective of the present study was to explore and identify the



region of deletion of the associated base pair sequence for Autism was explored and identified.

**Discussion:** Whole-Exome Sequencing-based genetic testing approach focuses on analyzing the protein-coding regions of the genome to identify genetic variations that may be implicated in the manifestation of disorders. Methodologically, DNA can be extracted using various body fluids or tissues. Blood, nails, teeth, skin, urine, and saliva are frequently documented. In this study, a saliva-based DNA extraction method was used, as it is non-invasive in nature. Moreover, saliva-based DNA extraction can provide high-quality DNA with minimal degradation or fragmentation, making it suitable for a range of DNA assays.

**Summary & Conclusion:**

Understanding the underlying causes of Autism is a critical task. Several attempts have been made to decode the neurodevelopmental causes of autism. The identification of genes responsible for speech and language deficits in Autism has received significant attention among researchers. Analysis of Epigenetic mutation of AGTR2 gene responsible for ASD was evident in this study.

# INDEX OF AUTHORS

- A Vinnarasi, 448, 472, 686*  
*Aakash Chauhan, 307*  
*Aaruni V T, 567*  
*Aarya Sinha, 202, 465*  
*Aashka Gidwani, 105*  
*Abhishek B P, 593, 599, 606, 616, 710*  
*Abhishek Dora, 80, 230*  
*Abhishek Semwal, 124*  
*Abigail Nancy Thyatira, 110*  
*Abinaya Shree, 636*  
*Aditi Nitin, 52*  
*Afshida C P, 544*  
*Aishwarya Nallamuthu, 472*  
*Ajanya S, 206*  
*Ajith Kumar, 194*  
*Akanksha Tiwari, 532*  
*Akansha Sinha, 142*  
*Akash Patel, 405*  
*Akshara Saxena, 727, 741*  
*Akshita Rana, 652, 659*  
*Albina Preethi Infua, 189*  
*Amisha Rawat, 612*  
*Amit Pandey, 559*  
*Amulya M, 606*  
*Anas Jenifar, 138, 412*  
*Anciya Preemal Pinto, 49*  
*Angela Ann Biju, 677, 681*  
*Anil Kumar Adhikary, 274*  
*Animesh Barman, 172*  
*Anindita Arun, 362*  
*Anisha Sinha, 176, 177, 455, 673, 678*  
*Anita Iyvah, 110, 138, 412, 616, 621*  
*Anjali Shrivastav, 453, 542*  
*Anjana Arjunan, 567*  
*Anjani Jain, 612*  
*Ankit Kumar, 157, 235*  
*Ankita Suman, 127, 628*  
*Anmol, 339*  
*Anna Mariam Joy, 79*  
*Anushka, 670*  
*Archisman Shubhadarshan, 90, 139, 142, 315*  
*Arjun Namboothiri, 68, 221, 225, 244*  
*Arsiwala Tasneem Mustafa, 111*  
*Arun Banik, 492*  
*Arun Kumar, 181, 458, 465, 648, 665*  
*Arunima Santhosh, 681*  
*Arya Lakshmi C, 49*  
*Asha Yathiraj, 59, 270*  
*Ashika P, 68, 225*  
*Ashisha P Prasad, 354*  
*Aysha Hanan, 564*  
*Bhagya Lakshmi H, 287, 291*  
*Bharathi Prabhu, 710*  
*Bhargavi K, 606*  
*Bhavika Kabeer, 202, 465*  
*Bhavya Gurwan, 670*  
*Blessline Nibisha, 713*  
*Buddhabhushan Mukundarao, 310, 318, 320, 325, 330*  
*Cathy Charles, 170*  
*Chanchal Chaudhary, 564*  
*Chandni Jain, 41, 45, 259*  
*Charu Gupta, 408, 416, 617*  
*Cherukuri Ramya Sri, 299, 301, 303, 305*  
*Chhavi Tyagi, 514, 525*  
*Chinnu Thomas, 731*  
*Chiranjib Bhattacharyya, 716*  
*Chitra Rejoy Thadathil, 485, 549*  
*Danica Santosh, 682*  
*Debadatta Mahallik, 336*  
*Deepanshi, 84, 408, 416, 617*  
*Deepika J, 52*  
*Delphina D, 436*  
*Deovrat Deovrat, 609*  
*Deva Dharshini.S.S, 468*  
*Dharam Veer, 134, 275, 279*  
*Dharshini H, 472*  
*Dhriti Hasija, 105*  
*Divya S, 366*  
*Donna Sebastian L, 68*  
*Drishti Singh, 652, 659*  
*Esmine Phils, 370*  
*Fatema Siawala, 390, 397*  
*Feba Bovas, 206*  
*FREYA HIMANSHU, 87*  
*Fulkar Anshul Ashok, 98*  
*Gandham Gayathri, 54*

*Garima Dixit*, 441, 589, 719  
*Gauri Telang*, 283  
*Gayatri Hattiangadi*, 371, 571  
*Geetanjali*, 226, 437, 655  
*Godbole Apurva Pradeep*, 571  
*Gouri Shanker*, 609, 703  
*Grace Mariam Mathew*, 213, 235, 462, 648  
*Gracy M*, 68, 225  
*Harini Vasudevan*, 119  
*Harsha E*, 40  
*Harshan H S*, 45  
*Harshitha M*, 119  
*Harshitha R S*, 436, 487  
*Hasmithaa Balaji*, 448, 468  
*Heramba Ganapathy S*, 347  
*Herlin Jone Vila P S*, 616, 621  
*Imran Ansari*, 336  
*Irfana M*, 536  
*Isha Wosti*, 274, 355, 497, 529, 546  
*Jaimi Ann Achenkunju*, 119  
*Janhavi Vinay*, 142  
*Jasmine Lydia Selvaraj*, 366  
*Jayashree C Shanbal*, 567, 632, 687, 723  
*Jayashree Ramesh*, 716  
*Jeffrin Rose*, 593  
*Jitendra Kumar*, 231, 514, 518, 525, 733  
*Joshi Sukhi Srinivas*, 593  
*Jothi S*, 632, 687, 723  
*Jovita Priya Tauro*, 153  
*Joyline Rodrigues*, 267  
*Jyotsna CS*, 79  
*Kaavya Vig*, 142  
*Kalash Rawat*, 130, 419, 423, 432  
*Kamalika Chowdhury*, 644  
*Kamna Sharma*, 84, 673, 699  
*Kannathal Chidambaram*, 221, 244  
*Karthika P*, 632  
*Kavipriya K*, 686  
*Kavya S Kumar*, 522, 551  
*Keshav Mishra*, 166, 206, 217  
*Ketaki Borkar*, 98, 102, 209  
*Kiara Costa*, 473  
*Kisan Satish Chandra*, 390, 397  
*Kishan Madikeri*, 83  
*Komal Aggarwal*, 190  
*Koushiki*, 49  
*Kranti Acharya*, 529, 546  
*Krishnapriya Parthasarathy*, 123  
*Kristi Kaveri Dutta*, 105  
*Krupa M*, 567  
*Krupa Milan Thanki*, 249, 348  
*Krupa Venkatraman*, 472, 603, 695  
*Kuber Singh*, 469  
*Kundan Kumar*, 161, 166, 637  
*Lakshmi Venkatesh*, 366  
*Lekha MD*, 599  
*Lena Elsa Siju*, 119  
*Lukeshwari Verma*, 559  
*Madhan C*, 123  
*Madhumitha R*, 603  
*Madhuri Ramdas Bhogade*, 105  
*Mahasri Das*, 382, 386, 581  
*Mahenoor Khan*, 111  
*Mahima Evelyn*, 448, 468, 476  
*Manali Soni*, 609  
*Manav Dhir*, 465  
*Manish Kumar*, 161, 166, 637  
*Manisha kumari*, 106, 458  
*Manisha Kumari*, 146, 518, 525  
*Manisha Rathore*, 283, 291  
*Masud Ahamed Halder*, 102, 209  
*Maya Varma. R*, 473  
*Mayur Bhat*, 40, 79  
*Md Ibrar Hussain*, 146  
*Md. Noorain Alam*, 134, 275, 279  
*Megha Sasidharan*, 55  
*Meghavi Sarin*, 213, 648  
*Mir Sahil*, 176, 177, 455  
*Moazam Shahmiri*, 185, 245, 253, 256  
*Mohammad Ali*, 256, 295  
*Mohammed Rehan Raza*, 102, 209  
*Mohan Kumar Kalaiiah*, 49, 54, 267  
*Mohit Setia*, 80  
*Monisha T.R*, 189, 217  
*Motiwalla Tasneem Ali Asgar*, 597  
*Mrinal Kumar*, 737  
*Muskan Sharma*, 589  
*N Banumathy*, 134, 275, 279  
*Nabanita Paul*, 716  
*Nandana V Mukund*, 221, 244  
*Navya Agrawal*, 165  
*Navya Jayaprasad*, 190  
*Neelesh Benet*, 106, 146, 157, 202, 235  
*Neha Kumari*, 130, 217, 419, 423  
*Neha Prasad*, 111  
*Neha Yadav*, 462, 554, 682, 691, 707  
*Nidhi Aruna*, 593  
*Niharika Dash*, 222, 691, 693  
*Nikhil P S*, 153

*Nirnay Kumar, 221*  
*Nisha Mandal, 120, 427, 673, 678*  
*Nitya Sharma, 444*  
*Nuthan N Kamath, 641*  
*Pachaiappan C, 299, 301, 303, 305*  
*Pallavi Kelkar, 354, 488*  
*Pandi Meena, 138, 616, 621*  
*Parkavi C, 138, 412, 621*  
*Parthivi Ch, 68, 221, 225, 244*  
*Pawar Janhavi Bhaskar, 94, 115, 185, 253, 283, 295, 477*  
*Perumal R.C, 567*  
*Pooja, 408, 416, 617*  
*Pooja Jolly Palatty, 713*  
*Prabal Khatri, 235, 518, 670*  
*Prachi Ahuja, 628, 644*  
*Prachi Patwari, 441, 628*  
*Prajan PR, 172*  
*Prajwal K M, 79*  
*Prakash Boominathan, 347*  
*Prakash Kashyap, 157, 235*  
*Pranjal Prashant, 625*  
*Prarthana Krishnamurthy, 119*  
*Prashansa Chauhan, 130, 419, 423, 432, 637*  
*Prashanth Prabhu P, 190*  
*Prashasta C, 172*  
*Pratham Tirthani, 221, 394*  
*Pratik Dane, 221*  
*Pratiksha Dhananjaysing, 98*  
*Pratishtha Dev, 662*  
*Pravalika E, 79*  
*Pravesh Arya, 416, 617, 652, 659, 699*  
*Prawin Kumar, 165*  
*Preeti Sahu, 336*  
*Prema Devi, 500, 539, 559*  
*Priya Kapoor, 488*  
*Priya Mishra, 231, 437, 514, 655, 745*  
*Priya Vijayan, 716*  
*Priyadarshini M, 241, 472, 476*  
*Priyadarshini N, 189, 636, 669, 686*  
*Priyam Arora, 217*  
*Priyanka, 394, 625*  
*R. Naveena Neolisha, 669*  
*R.Naveena Neolisha, 217, 686*  
*Radhika Poovayya, 494*  
*Rajanikant Bharti, 263*  
*Rajaram S, 119, 123*  
*Rajeev Ranjan, 334*  
*Rakshitha S, 507, 606*  
*Ramji Pathak, 124*  
*Ranjit Rajeswaran, 52*  
*Rashmi Deshpande, 50*  
*Ravi Patel, 458, 532, 568, 612*  
*Reena A, 448, 472*  
*Reshmi M, 713*  
*Richa Rashmi, 63*  
*Rinki Maurya, 226, 231*  
*Rishav Bandyopadhyay, 199, 238*  
*Rithu Rajan, 249, 348, 737*  
*Ritika, 130, 217, 419, 423, 637*  
*Riya Raj, 213, 469, 510, 648, 665*  
*Riyaz Memon, 230*  
*Riyaz S., 90, 139, 315*  
*Rucha Vivek, 195, 230*  
*Ruchi Bhandari, 222, 226, 510, 665, 691*  
*Rudrasis Swain, 737*  
*Sai Keerthan K, 79*  
*Saksham Singh, 84, 699*  
*Sakshi, 719*  
*Sakthi P, 436*  
*Sam A, 110, 138, 221, 244*  
*Sandeep Maruthy, 194, 198*  
*Sangeeta R, 218*  
*Sanjana S, 270*  
*Sanjay Kumar, 134, 275, 279*  
*Sanjay S, 194, 198*  
*Sanjeev M.R., 268*  
*Santanu Saha, 102*  
*Santosh Kumar, 362*  
*Santosh Maruthy, 370, 431*  
*Saptarshi Neogi, 199, 238*  
*Saransh Jain, 41, 45, 259, 270*  
*Sarthak Nehra, 106, 458, 518, 733*  
*Satish Patel, 343*  
*Satyam Pandey, 390, 397*  
*Saumya Sundaram, 347*  
*Shaikh Saima, 94, 115, 185, 245, 256, 283, 295*  
*Shaikh Saima Mohammad Ali, 94, 115, 185, 245, 283*  
*Shaikh Saranaz Shariff, 371*  
*Shamithra Sridhar, 472*  
*Shamma Haneef, 632*  
*Shannmugavidhya Perumal, 189, 448*  
*Sharadha Lakshmi, 603*  
*Sharath Kumar K. S, 194*  
*Sharda Ajay, 63*  
*Sharon Iwin, 468*  
*Shashi Ranjan, 181, 190, 449, 481*

*Shaya M Sanghvi, 488*  
*Shejal Kasera, 221*  
*Shezeen Abdul Gafoor, 119*  
*Shivam Singh, 449, 469, 568*  
*Shreya P S, 599*  
*Shrunga Manchanapura Shivalingaiah, 585*  
*Shruti Kamble, 142, 397*  
*Shubhangi Anand, 267*  
*Shubhra Shanker, 716*  
*Shushil Raj, 90, 120, 150, 307, 503*  
*Shweta Singh, 195, 230*  
*Siju Rana, 542, 546*  
*Simran Gulati, 585*  
*Simran Mohanty, 55*  
*Sindhusha Chandran, 536*  
*Sneha Mareen Varghese, 677, 681*  
*Sonam Sharma, 120, 150, 343, 503*  
*Sowbakkiya, 468*  
*Spurthi M, 687*  
*Srabanti Saha, 124, 394, 625, 628, 644*  
*Srabanti Saha Saha, 628, 644*  
*Sreeraj Konadath, 80*  
*Sri Danvi, 110, 487, 636, 669, 686*  
*Srikar Vijayasathy, 172, 218, 270*  
*Srividya Balaji Asuri, 249, 348, 737*  
*Stuti Amith, 473*  
*Subhadeep Manna, 199, 238*  
*Subikshaa Senthilkumar, 217, 436, 686*  
*Sudhanshu Vikas, 120, 150, 503*  
*Suman N, 153*  
*Suman Pranav, 87*  
*Sumanth P, 358*  
*Sundaresan R, 225, 436, 616, 669*  
*Sunila John, 83*  
*Supriya Nawale, 87*  
*Surbhi Gupta, 719*  
*Surbhi Kashyap, 176, 177, 455*  
*Suresh Thontadarya, 737*  
*Sushmita Dutta, 589*  
*Sushmitha H, 431*  
*Swati Jha, 106, 525*  
*Swati Mahendru, 161, 166, 432*  
*Swati Sharma, 146, 458, 518, 733*  
*Swati Sinha, 609*  
*Swati Solanki, 241, 476, 487, 636, 686*  
*Swetha Murali, 695*  
*Tanu Bharti, 150, 427, 503, 673, 678*  
*Theertha Dinesh, 55*  
*Tojo Joseph, 55*  
*Tomui Dangshawa, 536*  
*Trini Rock, 448*  
*Unnati Bajpai, 401*  
*Urmi Ajay, 139, 142, 199, 287, 291, 307, 315, 390*  
*Usha Shastri, 49, 119, 267*  
*Utkarsh Naithani, 176, 177, 455*  
*Utsav Shrivastava, 401*  
*Vaibhav Patil, 291*  
*Vaibhav Sahu, 559*  
*Vaishnavi Rawat, 221*  
*Vanaja C.S., 59*  
*Vandana V.P, 370*  
*Varsha Chowdri, 259*  
*Varsha U, 83*  
*Varunisha G, 448, 487, 636*  
*Vedha Sorubini K, 487*  
*Veena K D, 641, 713*  
*Venkataraja Aithal Udupi, 713*  
*Venkatraman Prusty, 500, 539*  
*Vibha Mahajan, 84, 401, 405, 408, 427, 662*  
*Vidushi Saxena, 437*  
*Vidyashree M, 687*  
*Vijay Kumar, 339, 462, 648, 665, 670, 727, 741, 745*  
*Vijaya Kumar, 41*  
*Vijaya P, 662*  
*Vijaya Sri R, 682*  
*Vijayeshwari S, 431*  
*Vimala Jayakrishna, 733*  
*Vinayagar P.T., 139, 315*  
*Vinit Mishra, 157, 554*  
*Violet Priscilla S, 366, 472*  
*Vishal Kooknoor, 218*  
*Vishesh Mehra, 190*  
*Vishwadeep Singh, 437, 444, 449, 510, 655*  
*Vivek Kumar, 206, 217, 423*  
*Wajid Ali, 455*  
*Wasim Ahmed, 40*  
*Yashaswini C N, 677, 681*  
*Yashu M A, 40*  
*Yasika Agarwal, 599*  
*Yeshoda K, 358*  
*Zainab Panvelwala, 597*  
*Zainab Unwala, 597*  
*Zufashan Anwer, 130, 419, 423, 432*

# SPONSORS

## **Disclaimer:**

*The Indian Speech and Hearing Association (ISHA) does not endorse, subscribe to, or take responsibility for the content, claims, or representations made in any advertisements published or displayed. The inclusion of advertisements does not imply ISHA's approval or recommendation of the products, services, or organizations featured.*

Meenakshi Speech & Hearing Clinic Pvt Ltd	756
Vision Institute of Applied Studies	757
Budha Institute of Dental Sciences & Hospital	758
Samvaad Institute of Speech & Hearing	759
Hearing Hearts	760
Alliance Biomedica Pvt Ltd	761
Auditivo Hearing Services Pvt. Ltd.	762
Aanvii Hearing Solution Pvt Ltd	763
ALPS Hearing Research	764
HAC Acoustic Technologies	765
HEARZAP	766
Labat Asia Pvt. Ltd	767
MEDEL India PVT Ltd.	768
Sonova Hearing India Pvt. Ltd	769
SPeechGears	770
XceptionalLEARNING	771
Arth Speech & Hearing Clinic, Gujrat	772
iHear	773
Ayush Speech & Hearing Clinic Pvt Ltd	774
Kumar Speech & Hearing Center, Rohtak	775
MHH Clinical Services PLLC, New York	776
Navjeevan Speech & Hearing Clinic	777
OT4KIDS	778
Otofon India Pvt Ltd	779
Sinha Speech & Hearing Center	780
Soft Hear Speech Hearing & Vertigo Clinic	781
SpHear Speech and Hearing Clinic	782
SS College of Speech & Hearing	783

TAEVAS	784
Advanced Speech & Hearing Clinic	785
Audiology and Speech Therapy Clinic	785
Apex Hearing & Speech Clinic	786
Apple speech & Hearing Clinic	786
APSA Hearing & Multimod Speech Thearpy Clinic	787
Asha Speech & Hearing Clinic	787
Audisound	788
Aural Hearing Care, Nagpur	788
Bengal Rehabilitation group	789
Brahmnaad Speech & Hearing Clinic Cochlear Implant Center	789
Care of Balance Speech & Hearing	790
Chandra Speech & Hearing Clinic	790
Chehak Speech & Hearing Clinic	791
Chetna Foundation	791
Dhwani Speech & Hearing Implant Clinic	792
Dhayani Speech & Hearing Rehabilitation Center	792
Divine Dentistry Implant & Laser Center	793
Divine Speech & Hearing Clinic	793
Ear Health & Habilitation Center	794
OAS Global Services	794
Hear for Sure	795
Hearing Point	795
Heartime Audiology clinic	796
Hearwell Hearing Aid Experts	796
HHB Speech & Hearing Clinic	797
Indian Speech & Hearing Clinic	797
Jay Speech & Hearing, Patna	798



Klear Speech & Hearing	798
Lavanya Speech & Hearing Center	799
Maa Baliraji Sewa Sansthan, Mirzapur	799
Nagpur Audiology Speech & Hearing services	800
Nalanda Speech & Hearing Clinic, Patna	800
Nalanda Speech & Hearing Clinic, Gorakhpur	801
Audiology and Speech Therapy Clinic	801
Orange City Hearing Aid Centre	802
Patliputra Speech & Hearing Clinic	802
Perfect Hearing & Speech Clinic	803
Rampo Hearing and Speech Therapy Clinic	803
Rani Child Neurodevelopmental Rehabilitation Centre	804
Rohit Speech & Hearing Clinic	804
Sai Hearing Care	805
Sakhsham Speech & Hearing Care	805
Sampark E-Polyclinic	806
Shabada Brahma Speech & Hearing Clinic	806
Shivam Speech Therapy & Hearing Aid Centre	807
Shrestha Hearing, Vertigo, Speech Care & Research Centre	807
Singh Hearing & Speech Centre	808
Sky Speech & Hearing care	808
Sound Tree Speech Language & Hearing Clinic	809
Speech Swallowing & Hearing Care	809
Step by step, Speech Therapy & Hearing Aid Centre	810
The Speech & Hearing Clinic	810
UNIKOL Healthcare	811
Vedansh Foundation	811
Vivek Mohan's Speech and Hearing Centre	812

# Spreading SMILES through our EXCELLENCE & SERVICE for over 25 YEARS



## Spectrum of Services

**200000+**  
HAPPY CUSTOMERS

**35+**  
PROFESSIONALS

**25+**  
YEAR OF EXPERIENCE

**22+**  
LOCATIONS



HEARING TESTS



HEARING AIDS



BALANCE TEST



SPEECH THERAPY



COCHLEAR IMPLANT



## MEENAKSHI SPEECH & HEARING CLINICS P. LTD

EAST DELHI | CONNAUGHT PLACE | GREATER KAILASH | BLK HOSPITAL | GURGAON | MATHURA  
AGRA | FIROZABAD | LUDHIANA | JALANDHAR | PATIALA | SHIVPURI | GWALIOR

Customer care  
**95558-12345**

[www.speechhearingaid.com](http://www.speechhearingaid.com)

# Become an Audiologist & Speech Language Pathologist



**VISION INSTITUTE OF APPLIED STUDIES**

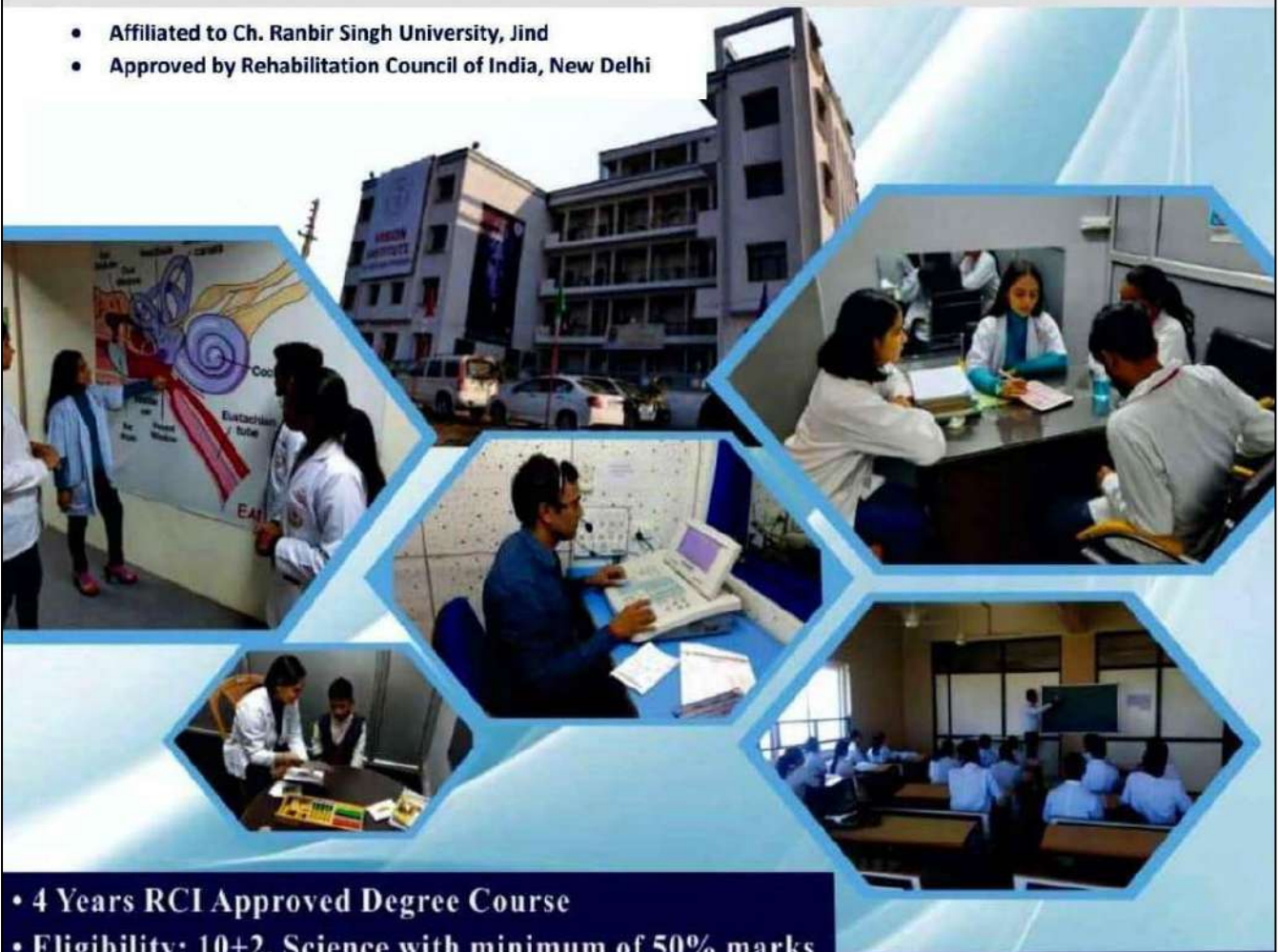
**Plot No. 40, Sector-20B, Near Bata Metro Station**

**NH-2, Faridabad (Haryana) India**

**Ph. : 0129-2222175**

## **BASLP ADMISSION SESSION 2023-2024**

- Affiliated to Ch. Ranbir Singh University, Jind
- Approved by Rehabilitation Council of India, New Delhi



- 4 Years RCI Approved Degree Course
- Eligibility: 10+2, Science with minimum of 50% marks
- Senior subject specific experienced faculty
- Latest practical laboratory equipments for hands on learning

**Contact No : 9311305291, 9936925312, 9810632832**

**E-mail : [visionfbd@gmail.com](mailto:visionfbd@gmail.com)**

**Website : [www.visioninstitutes.com](http://www.visioninstitutes.com)**





## Buddha Institute of Dental Sciences & Hospital

Post Graduate Institute & Research Centre

Recognized by Dental Council of India & Govt. of India(MOHFW)

Affiliated to Magadh University, (Bodh Gaya) Gaya, Bihar

# BDS

## Other Courses

1. Dental Hygienist
2. Dental Mechanic
3. Dental Operating -  
Room Assistant

# MDS

In All The Nine Recognized Courses

1. Oral & Maxillofacial Surgery
2. Prosthodontics And Crown & Bridge
3. Conservative Dentistry & Endodontics
4. Orthodontics & Dentofacial  
Orthopedics
5. Periodontology
6. Pediatric & Preventive Dentistry
7. Oral Medicine & Radiology
8. Public Health Dentistry
9. Oral Parthology & Microbiology

Address:- West of T.V. Tower, Gandhi Nagar, Kankarbagh, Patna-800026

Contact Details:- 9431018255, 9431009958, 9431024266, 7070523460, 9334112792

E-Mail:- [bidsh85@gmail.com](mailto:bidsh85@gmail.com)

For more detail visit our website:- [www.bidsh.org](http://www.bidsh.org)

# 20 Years of Education, Therapy and Giving

Samvaad has always stood for care, empowerment, and impact. Through education, therapy, and charity, we continue to help individuals and communities flourish. As we celebrate this journey of two decades, our new identity reflects the evolution of our mission and the road ahead.



## SAMVAAD



SAMVAAD INSTITUTE OF SPEECH AND HEARING



SAMVAAD CENTRE FOR SPEECH AND ABA THERAPY



SAMVAAD FOUNDATION



SAMVAAD HEARING CARE SERVICES

Institute of Speech And Hearing: Hebbal - 99018 51884

Speech and ABA Therapy Centres: Domlur - 99805 85774 | Marathahalli - 94816 02292 | Hebbal - 70267 76290



HAVE UNFILTERED FAITH IN US



YOUR ULTIMATE HEALTH DESTINATION

## OUR SERVICES

- Audiological Services with Real Ear Measurement ( REM ) Based Hearing Aid Fitting
- Speech - Language, Voice Assessment & Therapy
- Physiotherapy
- Occupational Therapy
- Nutrition and Diet Consultation
- Mental Health & Addiction Counseling / Relationship & Marital Counseling
- Acupressure & Flower Therapy



A CENTER FOR ADVANCED HEARING, SPEECH AND HEALTH MANAGEMENT

### ADDRESS:

3-4, GAUTAM ASHISH BUILDING,  
GROUND FLOOR, V.M. ROAD,  
JUNCTION OF S.V ROAD, VILE PARLE (W)  
MUMBAI 400056.

Follow Us:



@hearinghearts



**Alliance**  
Biomedica

**Alliance Biomedica Pvt Ltd**  
Flat 15 Ashirwad No 30 Puliyur 1st Lane Trustpuram Chennai - 600 024.  
Contact No : +9144 23725299 , +9144 24803704  
Email - info@alliancebiomedica.com , Website: www.alliancebiomedica.com



## AUDIOMETERS

PELLO



AUDIOSTAR PRO



## TYMPANOMETERS

GSI 39



TYMPSTAR PRO



## NEWBORN HEARING SCREENERS

NOVUS



CORTI



## CLINICAL EP

AUDERA



## AUTOMATED AUDIOMETRY

AMTAS



Our Branches at Hyderabad, Bengaluru, Trivandrum, Kolkata, Mumbai and Delhi





Solo Bera



AC 40



Eclipse Ep 15



Diagnostic Audiometer



Titan OAE



Touch Tympanometer



Duet AEP, VEMP and OAE



Avant A2D Audiometer



Maico Eroscan Oae



**Auditivo Hearing Services Pvt. Ltd.**

Community Centre, 309, Oriental House, Above Kotak Bank Atm, Yusuf Sarai, New Delhi, Delhi 110049

Contact Us at: +91 98101 12042, +91 11-4987-4115  
Email: [auditivohearing@gmail.com](mailto:auditivohearing@gmail.com)



# AANVII HEARING SOLUTIONS PVT LTD



## VISION



**"WE BELIEVE IN BETTER HEARING THROUGH INNOVATION."**

**– CEO, VISHAL SHAH**

- **140+ CLINICS BY 2028**
- **TO SERVE 5 LAKH+ CLIENTS BY PROVIDING CREATIVE SOLUTIONS**

**GROWTH**  
**84+ CLINICS**  
**3LAKH+ TRUSTED CUSTOMERS**  
**4.5LAKH+ EAR UNDER OUR CARE**

## LEARNING & DEVELOPMENT - NAVGYAN



**A RIDDLE**



**CAMPUS INTERVIEWS**



**NURTURE WITH CARE**



**AUDIOLOGY GROWTH SUMMIT**



**TOP-UP TRAINING**

## REMUNERATIONS

- ATTRACTIVE SALARY PACKAGE
- INCENTIVES
- CAREER GROWTH
- INSURANCE
- REWARDS & RECOGNITION

## EMPLOYEE ENGAGEMENT



**97914 84357 / 73376 99155**



**www.aanviihearing.com**

- AUDIOMETERS



- MIDDLE EAR ANALYSERS/ TYMPANOMETERS



- OAE HEARING SCREENERS



- NEWBORN HEARING SCREENER OAE / ABR



sales@alps.in | sales@alpshub.com  
 www.alpshearing.com



- 5.0 Bluetooth Low Energy
- Artificial Intelligence
- Superior Sound Quality
- Wireless Programming
- App Controlled

Enhancing Hearing thru Innovation







# HAC ACOUSTIC TECHNOLOGIES

Authorized Distributor / Representative in India



## TYMPANOMETERS

- ▶ Screening & Diagnostic Tympanometers
- ▶ Handheld and Table Top Tympanometers



## AUDIOMETER

- ▶ Screening & Diagnostic Audiometers

## NEW BORN SCREENERS

- ▶ Screening and Diagnostic OAEs
- ▶ Screening AABR with OAEs



Speech & Hearing

## AUDIOLOGY

Speech & Voice Measurements

## EQUIPMENTS

Vestibular & Balancing Lab

Screening & Diagnostic ABR Systems

Compact & Portable Evoked Potentials

## MANY OPTIONS

### ONE SMART SYSTEM

ASSR | VEMPs | EcochG | eABR | OAEs

Advanced research modules



## ABR SYSTEMS

- ▶ Single and Dual channel
- ▶ Screening and Diagnostic ABR systems





# REVOLUTIONISING HEARING CARE ACROSS INDIA



COME, VISIT A NEW WORLD  
OF HEARING CARE!



**WE ARE HIRING  
AUDIOLOGISTS ACROSS INDIA**

**Advanced Technology:** Featuring innovations like Auracast™ & Bluetooth Low Energy.

**Extensive Network:** Bridging gaps in hearing care across the nation.

**Client-Centric Care:** Exceptional client experience through personalized care.

**“Transform Lives with Us”**



EXCLUSIVE BRANDS **PHILIPS** **zenaud™**

**CONTACT US**

**9659 455 455**

TELANGANA • TAMIL NADU • ANDHRA PRADESH • WEST BENGAL • KARNATAKA  
KERALA • BIHAR • JHARKHAND • CHHATTISGARH • MAHARASHTRA



# Tympanometer

**First**

## Make In India Tympanometer

**Book Your Order Now**



**tymplite**

- Tympanometry
- Ipsilateral Reflexes

**Deliveries Starting Feb, 2025**

## Others Products

### AUDIOMETERS

- NOAH Audiometers
- Hybrid Audiometers (Stand-Alone & PC Based)
- Audiometers with Cloud Solutions
- Wearable Audiometers
- Customized Solutions

### BERA/ASSR

- Dual Channel ABR/ASSR
- ECochG, VEMP
- Battery Operated



**Labat Asia Pvt. Ltd.**

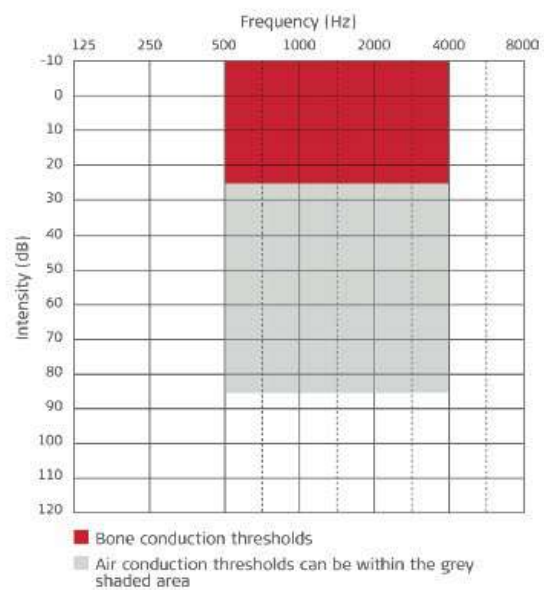
- ✉ sales@labatasia.com
- ☎ Toll Free - 1800 123 004455
- ☎ Mob no. +91 81460-04455

- 📍 Plot No. 1408, JLPL Industrial Area, Sector-82, Mohali-160062
- 🌐 www.labatasia.com

## How does ADHEAR work?

ADHEAR works with the principle of bone conduction to help you hear. This means that the hearing system converts sound into vibrations and transfers them to the bone. The bone can conduct vibrations to the inner ear where they are perceived as sound.

- Stick the adhesive adapter on the skin behind the ear.
- Click the Audio Processor on to the adhesive adapter.
- Hear.



Stick.



Click.



Hear.

hearLIFE

medel.com





Phonak Infinio:  
Unlock a world  
of possibilities



Ultra-responsive  
ERA chip



Adaptive Phonak  
Digital 3.0 (APD 3.0)



AI Dome  
Proposer



AutoSense OS™  
6.0 together



Motion Sensor  
Hearing



Leading Therapeutics Tool  
Manufacturer in India

Startup  
Recognized

Developed Oral Motor & Sensory  
Integration Therapy (OSIT) Levels 1 to 4

Women  
Empowerment

Built very first SpeechGears  
Research Institute in NAGPUR

Does Weekly Webinars for  
Autism Awareness among Parents.

Hemalatha D  
★★★★★ **Satisfied fully**  
Reviewed in India on 18 December 2024  
Colour: Green(medium Hard) **Verified Purchase**  
Product meets the expectations.

Helpful | Report

★★★★★ **Great buy**  
Reviewed in India on 3 July 2024  
Verified Purchase  
The product is perfect for kids to identify their finger strength. It helps to develop their fine motor skills. Through experience, the product is fully worth its price.

★★★★★ **Excellent product**  
Reviewed in India on 26 September 2023  
Colour: Green | Verified Purchase  
After experience of the effects of the product on my special kid, I find positive changes within a month. Hope that it will be helpful for him and he will gain verbal ability.  
Great person found this helpful!

DRIVING INNOVATION IN AUTISM CARE SINCE 2022

WORKING FOR NEURODIVERGENT CHILDREN

## OUR MOST SELLABLE PRODUCTS



SPECIAL-KIT



TONGUE DEPRESSOR



JAW BITE BLOCKS



SENSORY BRISTLE



SUCKING TUBE



WONDER PUTTY



### • Collaborated With •



ISHACON – 2023-2024



IDC - 2023-2024



OSIT, BANGLADESH



AMITY UNIVERSITY



# TRANSFORMING INTERVENTION WITH ADVANCED TECHNOLOGY

Time to upgrade from pen & paper flashcards to dynamic, digital, and animated therapy materials for enhanced therapy outcomes.

## ARE YOU READY?

Step in to the future with XceptionalLEARNING—Protect your therapy materials from unauthorized access and downloads.

### Why XceptionalLEARNING?

- Secure and user-friendly platform.
- Supports multiple rehab-therapy sessions.
- Interactive video platform for distance therapy.
- Effortless digital content creation with an advanced authoring tool, enabling hybrid practice for in-person and remote sessions.

**VergeTAB – The Digital Activity Book**  
*Designed For Those Who Need It Most.*

A therapist-controlled device crafted to focus on therapy, restricting access to social media and games for improved outcomes.

### Why Choose Hybrid Practice?

- Fix your own therapy fee.
- Stay connected with your clients seamlessly on any device, including mobile.
- Be your own boss to Serve More & Earn More.
- Streamline Documentation like never before.



Equip yourself for better outcomes.  
ISHA members, contact us today for your free registration coupon.



care@xceptionallearning.com  
www.xceptionallearning.com  
+91 89 212 87775





# ARTH SPEECH & HEARING CLINIC

## BEST DIGITAL HEARING AID IN AHMEDABAD



Cochlear®



Cochlear Australia and  
New Zealand Head Office  
Cochlear Clinical Skills Institute (CCI)



**Hearing Aid**

**Cochlear Implants**

**Speech & language Therapy**



**09909981829**

**312A, Sun Westbank, B-314, Ashram Rd, nr. Shiv Cinema,  
Vishalpur, Muslim Society, Navrangpura, Ahmedabad,  
Gujarat 380009**





**Respected Delegates, Esteemed Guests, and Fellow Professionals,**

It is an absolute honor to welcome you all to **ISHACON 56** on behalf of iHear. This year is especially significant for us as we celebrate 25 years of excellence in hearing care—a journey dedicated to restoring sound and enriching lives.

Since our inception in 2000, iHear has been committed to providing cutting-edge audiology services and advanced hearing aid solutions. Over the years, we have witnessed remarkable advancements in the field, and it is a privilege to be part of this transformative journey alongside esteemed experts like you.

ISHACON is a platform where knowledge meets innovation, and I look forward to engaging in insightful discussions that will shape the future of audiology and speech therapy. As we step into the next phase of our journey, iHear remains committed to delivering personalized care, technological excellence, and unwavering trust to those who rely on us.

Thank you for your presence, and I invite you to visit us, exchange ideas, and celebrate the progress we have made together. Here's to learning, collaborating, and shaping the future of hearing care!

Warm regards,

*Pankaj Sarkar*

Director, iHear

ihear.in 



### WHO WE ARE ?

Ayush Speech and Hearing Clinic and Hope Centre for Speech Therapy and Autism are dealing with ASD, ADHD, Learning Disorder, Voice Disorder, Aphasia, Dysarthria, Lyrngectomy since 2011.



**RAJEEV RANJAN**

#### Our Services:

- ◆ Speech Therapy ◆ Autism Treatment ◆ Occupational Therapy
- ◆ Sensory Integration Therapy ◆ Auditory Verbal Therapy (AVT)
- ◆ Special Education ◆ Hearing Aid

#### Our Branches:

PUNJAB (16)  
JHARKHAND  
KOLKATA

(More branches will open soon.....)

*Facility of  
online and offline  
therapies are  
available*

#### AYUSH Speech and Hearing Clinic (Pvt.) Ltd.

Ph.: 95015-93647  
e-mail: ayushclinic777@gmail.com  
website: www.ayushclinic.org

#### HOPE Centre for Speech Therapy and Autism

Ph.: 98763-31677  
e-mail: hopespeechtherapyldh@gmail.com  
website: www.hopespeechindia.com

#### OFFER

Those who want to be a franchise with us and want to grow (We provide and help in Funding, Lead Generation, Marketing Strategies, HR, New Techniques of Therapies) feel free to contact us

**M.: 93564-97327, 90411-40117  
98763-31677**





# Kumar Speech and Hearing Center, Rohtak

## Our Expert Team



**Mr. Sanjay Kumar**

- Founder and Director
- Audiologist and Speech-Language Pathologist
- Experience: 30+ years



**Mrs. Puspa Kumari**

- Co-Founder
- Speech Therapist
- Experience: 25+ years



**Ms. Archita Kumari**

- Consultant ASLP
- Fellowship in Onco deglutology (SRCISH)
- Vital stim Certified
- MASLP (SRCISH), BASLP (AIISH)
- Specialty in Adult Speech language Disorders and Dysphagia



**Mr. Abhilash Ghadei**

- Visiting Consultant ASLP
- Fellowship in Onco deglutology (Tata Memorial Center, Mumbai)
- Langmore FEES certificate
- VFSS Certified
- MASLP (SRCISH), BASLP

## Services Provided

### Audiological Services Provided

- Cochlear Implant Mapping and Switch On
- Diagnostic Tests: ASSR, ABR, OAE, Immittance Audiometry, PTA, Speech Audiometry and other special tests
- Eustachian Tube Dysfunction Tests
- Hearing Aid Programming, Fitting & Counseling
- Auditory Verbal Therapy
- Tinnitus Evaluation

### Speech, Language and Swallowing Services Provided

- Childhood Language Disorders
- Adult Language Disorder (Aphasia, Right Hemisphere Damage)
- Neurogenic Speech Disorder (Dysarthria, Apraxia)
- Dysphagia and Feeding Issues
- Voice disorder
- Fluency Disorders
- Laryngectomy
- Speech Sound Disorder
- Cleft Lip and Palate, CP, GDD



+91-9812058841 +91-9812202878



kumarspeechrohtak@gmail.com  
www.kumarspeechandhearing.com



Unit 1: 91, Palika Bazar, Rohtak,  
Haryana - 124001  
Unit 2: 1401/28, Arjun Nagar, Rohtak,  
Haryana- 124001



CLINICAL SERVICES PLLC

76-49 Hewlett Street, New Hyde Park, New York 11040



Speech Therapy  
Audiological Services  
Psychotherapy  
Occupational  
Therapy  
Physical Therapy  
Nutrition Services  
Registered Nurses



**Dr. Minal Jha**  
MS CCC SLP, AuD

Contact Us Today!

P: (212) 388-1903

F: (212) 388-0767

E: [mhhrehab@gmail.com](mailto:mhhrehab@gmail.com)

W: [www.mhhrehab.com](http://www.mhhrehab.com)

- MHH Clinical Services is a leading provider of clinical care in the U.S.
- Specializes in Speech/ Language Therapy, Physical Therapy, Occupational Therapy, Psychotherapy, Audiology, and Nursing services.
- Our team consists of highly skilled and compassionate clinicians.
- We hire both local and international clinicians to expand our team.
- MHH sponsors H1B visas for overseas clinicians seeking to work in the U.S.
- Our goal is to maintain excellence in service delivery by continually growing our team of experts.

“WHERE THE MIND, HEART & HANDS MEET TO SERVE PEOPLE IN NEED”  
SERVING SINCE 1999





## Navjeevan speech and hearing clinic since 1996 : Beyond Hearing, Communication Redefined

**Unmuting The World: Discover the Power of Clear Communication. Whether you're facing hearing loss or speech challenges, Navjeevan is not just a problem identifier, but a solution provider for clear communication.**

### Services Offered

#### Audiology

- Hearing Evaluation
- Cochlear Implant Evaluation and Programming
- Hearing Aid Selection and Fitting
- Hearing Aid Adjustments and Maintenance
- Tinnitus Management
- Aural Rehabilitation
- Custom Hearing Protection
- Neonatal screening

### Services Offered

#### Speech

- Speech and Language Evaluation
- Articulation Therapy
- Fluency Therapy
- Aphasia Therapy
- Language Therapy
- Voice Therapy
- Dysphagia Therapy
- Augmentative and Alternative Communication (AAC) Therapy
- Aural Rehabilitation for Speech and Language

### Why Choose navjeevan? We redefine communication :

At Navjeevan, we believe in the power of effective communication to enhance quality of life. Our comprehensive services are designed to empower individuals to overcome communication challenges and achieve their full potential.

#### Expert Care

Our team of experienced audiologists and speech-language pathologists is dedicated to providing personalized care plans to address your unique hearing and speech needs.

#### Leading-Edge Care

We offer the latest diagnostic tools and treatment options to ensure you receive the most effective care possible.

Hear the World Clearly, Speak with Confidence! Our experts are here for you.

Hearing loss is unique, so are our solutions! We listen to your needs.



✉ navjeevanspeech@gmail.com    🌐 navjeevanhearingclinic.com    ☎ +91 98145-64444

**Branches:** AMRITSAR | BATALA | CHANDIGARH | GURDASPUR | PATHANKOT | DERA BASSI

📍 Shop No. 7, Opp. Govt. Eye & E.N.T. Hospital, Near Puri Lab., Majitha Road, Amritsar-143001



# OT4KIDS

Where care is concern

We provide expert pediatric therapy, helping children thrive through personalized support and fun learning.

An exclusive centre for:



OCCUPATIONAL THERAPY



SPEECH THERAPY



ABA/ SPECIAL EDUCATION



PSYCHOLOGICAL SERVICES



## OT4KIDS Deals With:

- Autism Spectrum Disorder
- Developmental Delayed Child
- Learning Disabilities
- Feeding Issues
- Speech Disorders
- Psychological Assessment
- Behaviour issue
- Attention Deficit Child
- Cerebral Palsy
- Neurological Problems
- Hand Writing Difficulties
- Family & Child Counselling



**Dr Arpan Kumar, OT**  
Director, **OT4KIDS**  
Sr Occupational  
Therapist  
More than 20 Yrs of Exp.

OT4KIDS offers services both online and offline, ensuring flexible and accessible therapy for children based on their unique needs.

**OT4KIDS**  
For Complete Child Rehabilitation

Call us For Consultation  
**+91-99998-56433**  
**WWW.OT4KIDS.IN**

Address:  
B-217 1st.&2nd floor, Chittranjan Park, Near  
Pamposh Enclave Bus Stand, New Delhi-110019

Berwala Bagh, Adjoining Ajanta Nursery, Harl  
Nagar, New Delhi-110064





# TAKE CARE OF YOUR HEARING HEALTH

We take care of your Hearing Aids

10+  
Years of  
Experience

- Hearing Tests
- Hearing Aids
- Cochlear Implant
- Speech Therapy

40000+  
Happy  
Customers

Aligarh | Agra | Jhansi | Jaipur | Dholpur | Firozabad | Mathura | Bulandsahar

Your health  
is our priority

+91 8755404545  
Have questions?  
Call us today!

info@otofonindia.com  
Reach out to us.  
We're just an email away!



www.otofonindia.com





# Sinha

SPEECH & HEARING CENTER



## SINHA SPEECH & HEARING CENTRE

**ADDRESS:** LIG-26, Sarita  
Complex, Block No. 3, 5 No. Bus  
Stop, Behind Congress  
Bhavan, Near Ayappa Mandir, Shivaji  
nagar, BHOPAL (M.P.), 462016

**FACILITIES:**

- Pure tone Audiometry
- Impedance Audiometry
- BERA
- Ear Mold
- Hearing Aid Trial & Fitting
- Early Intervention
- Speech & Language  
Stimulation/Therapy



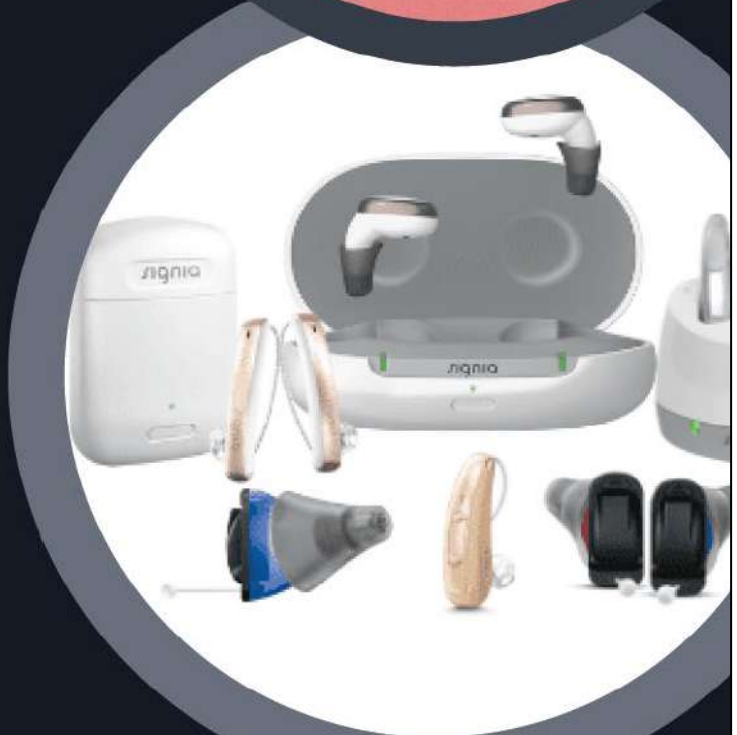
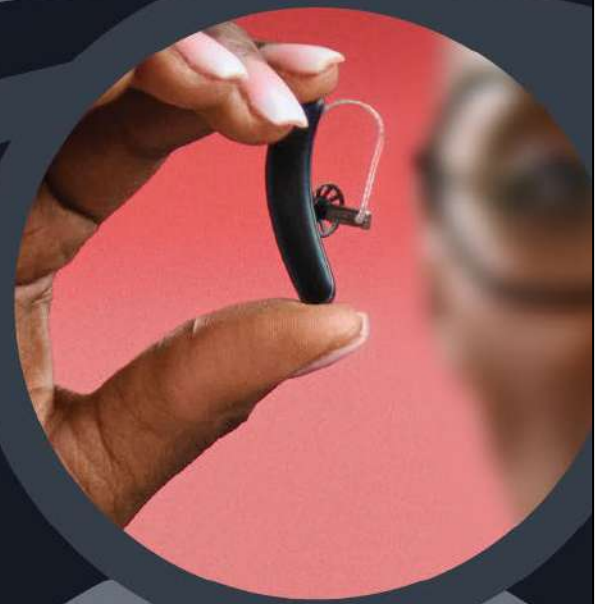
[pksinha007@gmail.com](mailto:pksinha007@gmail.com)



For Appointment Contact  
**0755-2760853**



Timings: 10AM-1 PM  
Evening 5 PM- 8PM







# Soft Hear Speech Hearing & Vertigo Clinic

Your Trusted Partner in Hearing Communication & Balance Health  
Where Expertise and Compassion Come Together

## About Us

The only chain of clinics founded and led by a highly skilled team of ASLPs.

## Our Services



Speech Therapy  
for All Ages



Comprehensive  
Audiological Assessments



Cochlear Implant  
Services



Vertigo  
Management



Advanced Hearing  
Aid Fitting

## Why Choose Soft Hear?

- Evidence-Based Practice model
- Global exposure
- Personality development at an international level
- Emphasis on expanding learning opportunities



**JOIN US**

With PAN India presence, we're committed to bringing the best care  
and growth opportunities to all!



[hr@softhear.com](mailto:hr@softhear.com)



+91 9266903112



[www.softhear.com](http://www.softhear.com)



# PERSONALISED HEARING AND SPEECH SOLUTIONS

We ensure shared decision-making by understanding your needs while maintaining quality with personalised hearing and speech solutions.

## OUR EXPERTISE



Qualified team of Audiologist & Speech Pathologist



High quality, personalised hearing assessment



Highly ethical standards with unbiased advice



5000+ satisfied customers over 18 years."



# SS College Of Speech and Hearing

## Our Courses

BMLT  
PGDRP  
BASLP  
M.phil clinical  
B.ed(Hi) Spl Edu



[www.ssclegebhopal.in](http://www.ssclegebhopal.in)

7999719571

Salaiya, Sunkhedi, Via, Danish Kunj Kolar Rd,  
Bhopal, Madhya Pradesh 462042





**Taevas life sciences** specializes in ENT & Audiology medical devices, offering solutions for vestibular diagnosis and rehabilitation, hearing assessment and demonstration, OSA management device, and endoscopic imaging. We focus on delivering reliable and user-friendly technologies to enhance patient care.


**Our Product Range:**




**AUDECOM:**  
Intelligent Hearing Aid Comparison System



**OSCILLA AGO:**  
Diagnostic Audiometer  
 Accurate hearing assessment solutions



**EQUIPOISE:**  
Computerized Static Posturography



**EQUICOG:**  
Cranioculography (Videonystagmography++)



**EQUICCG:**  
Cranioculography



**EQUIFHIT:**  
Functional Head Impulse Test



**iNAP FOR OSA THERAPY:**  
A Non-Invasive Sleep Apnea Solution



**WIRELESS ENDOSCOPE CAMERA:**  
Clear Imaging For ENT Diagnostics



- Reliable and effective devices for clinics and hospitals.
- Easy-to-use technology for better patient care.
- Proven solutions used by ENT professionals & Audiologists.
- Local support and guidance for seamless use.

[www.taevasglobal.com](http://www.taevasglobal.com)



9581744744

[teja.b@taevasglobal.com](mailto:teja.b@taevasglobal.com)  
[contact@taevasglobal.com](mailto:contact@taevasglobal.com)





# ADVANCE SPEECH AND HEARING CLINIC

Complete solution of speech & hearing problems



## Our Services



Balance Test



Hearing Tests



Hearing AIDS



Speech Therapy



Cochlear Implant



8826246347, 9155646347

mukulasp89@gmail.com

Juran Chapra, Road No.1, Opp. HDFC Bank, Muzaffarpur (Bihar)



Follow us



None so deaf as those that will not hear. None so blind as those that will not see. Kindness is the language which the deaf can hear and the blind can see



# AUDIOLOGY AND SPEECH THERAPY CLINIC

Dr. Sanjay kumar

Msc.(Sp & Hg)

AUDIOLOGIST AND SPEECH LANGUAGE PATHOLOGIST

### Audiological Services Provided :

Puretone audiometry, Speech Audiometry  
Immittance audiometry, Eustachian Tube  
Function Tests  
BERA, OAE(DPOAE,TEOAE)  
Hearing Aid Trial, Fitting & Counseling  
Tinnitus Evaluation

### Speech, Language assesment and intervention and

### Swallowing Services Provided

Childhood Language Disorders & Adult Language Disorder  
Neurogenic Speech Disorders  
Voice disorder  
Fluency Disorders  
Speech Sound Disorders  
Cleft Lip and Palate



**PROVIDING HEARING AND SPEECH SOLUTIONS TO YOU FROM MORE THAN 30YEARS**

DEEPRAJ COMPLEX , OPPOSITE MACHHUATOLI POWEHOUSE ,  
ARYA KUMAR ROAD , PATNA , BIHAR  
MOBILE- 8102131401,9334330005





## Apex Hearing & Speech Clinic

Cochlear Implant Rehab Centre

A unit of former Asian Speech and Hearing Clinic Vadodara

FF-109, Trivia Complex, Nr. Natubhai Circle, Racecourse Road, Vadodara - 390 007  
E-mail : hearingapex@gmail.com

**DARSH CHAUDHARI**  
Audiologist & Speech Pathologist  
(Clinical Cochlear Implant Specialist)  
RCI No. A 57023

+91 94274 23365 For Appointment : +91 87330 61033

### Facilities Available :

#### DIAGNOSTIC SERVICES

- ✦ Hearing Assessment (PTA/ BERA / ASSR / OAE / IMPEDANCE)
- ✦ Advanced Digital Hearing Aids
- ✦ Cochlear Implant Assessment
- ✦ Hearing Aid Optimization
- ✦ Cochlear Implant Mapping
- ✦ Speech & Language Assessment
- ✦ Tinnitus Assessment
- ✦ Cochlear Implant Optimization



Website : <http://hearingaidinbaroda.com>

Working Hours : 10.00 am to 07.00 pm

**BRANCHES : Vadodara (Natubhai Circle, Manjalpur) Gandhidham, Rajkot**

## ASIA FIRST EAS COCHLEAR IMPLANT CLINIC

GUJARAT FIRST AIDED CORTICALS CLINIC

Gujarat First EABR with CI Clinic



## APPLE SPEECH & HEARING CLINIC

INTERNATIONAL COCHLEAR IMPLANT RESEARCH UNIT

UNIT OF ASIAN SPEECH AND HEARING CLINIC

>10000 hearing aid fitting  
>1500 cochlear implant patients  
Flagship Audiology clinic

### MONDAY TO SATURDAY

11 am to 07 pm

- Cochlear Implant clinic.
- Advance audio-Neuro diagnostics lab.
- Robotic hearing aid fitting.
- Neonatal and Paeditric hearing care.
- Speech & Voice lab.
- Vertigo & Tinnitus care.
- Medical grade hearing with REM.

### CONTACT US

7863830803

9824038881

[www.applehearingclinic.com](http://www.applehearingclinic.com)



# 306, Sunrise Complex,  
Nr- Mansi Circle, Judges  
Bunglows road, Vastrapur ,  
Ahmedabad- 380019.





**Dr. Sanjay Kumar**

SR. SPEECH LANGUAGE PATHOLOGIST AUDIOLOGIST

+91 9811055084

www.apsaspeechtherapy.com

Shiv Shakti Apartment, B 4/7, Sector 71, Noida

## CLINICAL SERVICES

Diagnosis & Conselling  
Assessment

Programme Planning  
Language Therapy

Articulation Problem  
Autism Spectrum

Hearing Impairment

CLEFT Plate

CLEFT Lips

Adult Speech Disorder

Oral Placement Therapy

Delayed Speech/ Language

## आशा स्पीच एवं हियरिंग क्लिनीक

1. 196 ए.पी. कॉलोनी, आशा सिंह मोड़, विशाल मेगा मार्ट के सामने, गया
2. रंग बहदुर रोड, आनन्दी माँ मंदिर से पूरब शिया मस्जिद के पहले, गया



## अभिषेक रंजन

BASLP, MASLP (AYJNIHH, Mumbai)

वाक् एवं श्रवण रोग विशेषज्ञ

Ex. Audiologist, A.N.M.M.C.H., Gaya

### स्पीच थेरेपी

- ✓ बच्चों का उम्र के हिसाब से नहीं बोल पाना या बात नहीं करना।
- ✓ बच्चों को आवाज देने पर या नाम बुलाने पर ध्यान नहीं देना।
- ✓ बहुत उँची आवाज पर ही ध्यान देना।
- ✓ बच्चों का अपने आप से बोलते रहना (Meaningless Words)
- ✓ बच्चों का एक जगह स्थिर नहीं बैठना।
- ✓ नजर नहीं मिलाना और दूसरे साथ नहीं खेलना या अकेले में ही खेलना।
- ✓ मुँह से लार गिरना।
- ✓ तुतलाना।
- ✓ हकलाना (अटक-अटक कर बात करना)
- ✓ लड़को का आवाज लड़कियों जैसे निकलना।
- ✓ Voice Therapy



सम्पर्क :-

7654876791, 7070858704

### बोलने एवं सुनने से संबंधित समस्याओं की जाँच एवं निदान

- ◆ कान से कम सुनाई देना या बिल्कुल नहीं सुन पाना
  - ◆ कान में सनसनाहट रहना या सिटी जैसा आवाज रहना
  - ◆ पिछे से बोली गई आवाज को नहीं सुन पाना या नहीं समझ पाना
  - ◆ जब दो या अधिक आदमी बात कर रहें तो उनकी बोली गई आवाज- भाषा को नहीं समझा पाना
  - ◆ बोलने वाले के नजदिक कान कर के बोलना या फिर तेज आवाज में बोली गई आवाज को समझाना
- कान से कम सुनने की समी तरह की जाँच एवं कान की मशीन (हियरिंग एड्स की सुविधा)

### कान की विभिन्न प्रकार की मशीन





# Audisound



## SERVICES

- ▶ All Branded Hearing aid & Distributors
- ▶ Audiological Equipment
- ▶ Hearing Aid Accessories
- ▶ Speech Therapy Material

+91 7739844225

[sales@audisound.in](mailto:sales@audisound.in)

## Why only us

- ▶ High Quality Product
- ▶ Fair Pricing
- ▶ Dedicated Support team
- ▶ Audiological Support
- ▶ Years of Experience
- ▶ Product Availability

**Raja Bazar, Patna**

▶ Since 2012



**RAHUL K. PANDEY**  
(MASLP)  
Audiologist and  
Speech Language Pathologist



## SERVICES

- Audiometry Test
- Vertigo Test
- Speech Therapy
- Hearing Aid

### NAGPUR

Shop No. 6, Pushpkunj Complex,  
Beside Yes Bank, Near Hotel Centre Point,  
Ramdaspath, Nagpur - 440010  
Ph. No. 0712 - 2441100 | Mobile: 9823449422  
[www.auralhearingcare.com](http://www.auralhearingcare.com)



BENGAL  
REHABILITATION  
GROUP

**Bengal's Largest Hospital-  
based Hearing & Speech Chain**

# Most Trusted & Tested Brand in Bengal

**'DPIIT' Recognized Start-up**

**IIM Calcutta Incubation, Partner**

**India, USA Patent Holder**

74396 34351 | 9830447176

infobrg18@gmail.com

<https://www.bengalrehabilitationgroup.com>



**Brahmnaad Speech & Hearing Clinic  
Cochlear Implant centre**



*Professional care for speech, hearing and balance disorders*

## Services Available

- Hearing Evaluation
- Hearing Aids
- Cochlear Implants
- Bone Conduction Devices/Implants
- Tinnitus Evaluation & Rehabilitation
- Vestibular Evaluation & Rehabilitation
- Speech & Language Evaluation
- Speech & Language Therapy
- Auditory Verbal Therapy
- Occupational Therapy
- Special Education
- Behavioural Therapy



**PRABHASH KUMAR**  
Director & Audiologist  
M.Sc. Audiology, B.Sc. Speech & Hearing  
RCI GRR No: A27100  
M-ISHA, M-DISHA, M-CIGI, M-AAA

RZ 101/45A, Opposite Janak puri D  
block, Mohan Nagar pankha road,  
New Delhi 110046  
Contact: +91-9716352727, 011-  
46109193





# CARE OF BALANCE SPEECH & HEARING

SERVICES

**MR. ABHIJEET KUMAR**

(Audiologist & Speech Therapist)

M.Sc. Speech & Hearing

- ✓ Vestibular Assessment & Management
- ✓ Speech Assessment & Management
- ✓ Hearing Assessment & Management
- ✓ Voice Assessment & Management

**ADD:-GAURI SHANKAR COMPLEX BEHIND DOMINO'S PIZZA, P.C. COLONY ROAD, KANKARBAGH, PATNA**

[careofspeechhearing@gmail.com](mailto:careofspeechhearing@gmail.com) [9110076657](tel:9110076657) <https://g.co/kgs/7L9xfTk>



## Chandra Speech and Hearing Clinic



### SERVICES

- ✓ Hearing aid available
- ✓ Hearing Test
- ✓ Speech Therapy for Misarticulation
- ✓ Speech Therapy for Stammering
- ✓ Cochlear implant



**MORE INFO**

+91 9634280274, +91 9955254250

10:00 am to 07:00 pm

Tripuri Plaza, 1, Baccha park, Begambagh, Meerut Delhi, Uttar Pradesh

# Dr. Mona Chug

BASLP, MSc. App. Psychology

Audiologist & Speech Language Pathologist



## SERVICES AVAILABLE:

### SPEECH AND LANGUAGE ASSESSMENT FOR ALL DISORDERS

Speech and language therapy for Childhood communication disorders

- Autism spectrum disorder
- ADHD
- HEARING IMPAIRMENT/COCHLEAR IMPLANTEE
- MISARTICULATION
- FLUENCY DISORDERS
- PHONOLOGICAL DISORDERS
- LEARNING DISABILITY
- CEREBRAL PALSY
- INTELLECTUAL DISABILITY

### SPEECH AND LANGUAGE THERAPY FOR ADULTS

- APHASIA
- DYSARTHRIA
- FLUENCY DISORDERS
- OTHER NEUROCOMMUNICATION DISORDERS



## AUDIOLOGICAL SERVICES :

- PURE TONE AUDIOMETRY
- NEW BORN HEARING SCREENING(OAE)
- ABR, ASSR (ON PRIOR APPOINTMENT)
- HEARING AID TRIALS AND FITTING
- TYMPANOMETRY

## OTHER SERVICES :

- SPECIAL EDUCATION

Address: 554-Patel Nagar, Hapur (U.P.) Mob. +91-8923202468. email: hearingclinic@chehak.in



## Services:



**Speech Therapy & Rehabilitation:**  
Misarticulation, Stammering, Voice, ASD, Cerebral Palsy, ADHD.



**Play therapy**



**Feeding & Swallowing therapy**



**CI Habilitation**



**Hearing evaluation:** Hearing screening (OAE & ABR)



**Occupational Therapy**



**Child Physiotherapy**

## Aditi Shekhar (Mentor)

**15+** Years Experience

Masters in Audiology & Speech-Language Pathology (MASLP)

Behind JIMS Hospital, Delhi public School Road, Karmik Nagar Saraidhela, Dhanbad, India, Jharkhand

+91-9310151155, 9229049723

chetnafoundation.in







# “ध्वनि”

Mob.: 9359387776  
9759853523

## स्पीच, हियेरिंग एण्ड इम्प्लान्ट क्लीनिक

### डॉ. रिया. बी. अग्रवाल

Ex. Professor & Principal (Mullana Medical College)  
Worked at Gangaram Hospital, Consultant (Saksham and Gaba) Hospital



- स्पीच थेरेपी
- **ABA** थेरेपी
- स्पेशल एजुकेशन
- O-T- (Occupational)
- फिजियोथेरेपी
- रेगुलर (**Day Care**)
- Assesment & Councelling
- Early Intervention
- हियरिंग असेसमेंट फोर चिल्ड्रन  
Hearing Screening  
(OAE, BERA, ASSR)
- हियरिंग टेस्ट फोर एडल्ट  
(PTA, Impedance)
- हियरिंग एड्स (Advanced Digital Rechargeable)
- Cochlear Implant for Deaf Kids & Adult  
(Surgery, Mapping, AVT Therapy)

Rehabilitation Center Where Under One roof All Specialized Services are Provided to Children  
(Special Need Children; ADHD, Autism, Hearing Impaired)

Add.: Kamal Colony, Opp. Westland School, Dominos Pizza Lane, Delhi Road, S.R.E.



# DHAYANI

## SPEECH & HEARING ,REHABILITATION CENTRE

FACILITIES:-SPEECH AND LANGUAGE THERAPY, HEARING TEST ( PTA, IA, OAE),  
HEARING AID FITTING AND PROGRAMMING

### service

- Speech Therapy
- Special Education
- Language Stimulation
- Articulation Therapy
- Multi Brand Hearing aid
- Hearing Test & Programming
- Earmould



CONTACT US

Dr. Arun Kumar

(BASLP, MASLP, Ph.D)

+91 9958522567

aykumararun@gmail.com



Siddartha, NCR One, L 201,  
near RR College, Wazirpur,  
Sector 95, Gurugram,  
Haryana 122505





**Dr. Ayush Khatri**

BDS, MDS  
Periodontist and Oral Implantologist



**Dr. Aarchi**

BDS, MDS Gold Medalist  
Periodontist and Oral Implantologist

**Services We Provide**



Dental Implants



Braces



Ridge Augmentation



Root Canal Treatment



Smile Designing



Flap Surgery



Single Sitting RCT



Teeth Whitening



Implant Surgery



Cosmetic Dentistry



Bonge Grafting



Child Dentistry

📞 91-9868893505

🌐 [www.divinedentistrydelhi.in](http://www.divinedentistrydelhi.in)

📍 66A, Doctors Ln, Pocket 2, Sector 6 Dwarka, Dwarka, New Delhi, Delhi, 110075



**Our Services**

- Vertigo Test
- VNG, VEMP Ecochg
- Pure Tone Audiometry
- Brainstem Evoked Response
- Audiometry
- BERA
- Hearing Aid Trail (HAT)
- Speech Language Therapy
- Tympanometry



**Dr. Md M. Ansari**  
MASLP, PhD

Audio-vestibular specialist.

📞 +91 9631090077, +91 7870401507

📍 Shop No. 22, A.C Market, Opp. Gurudwara, Katras Road, Bank More, Dhanbad





**India's first GN ReSound Hearing Aid Outlets**  
JAMMU

**FACILITIES AVAILABLE**

Our clinical services include assessment and intervention for

HEARING TESTS

HEARING AIDS

COCHLEAR IMPLANTS

SPEECH THERAPY

AFTERCARE



**EAR HEALTH & HABILITATION CENTRE**

Opposite Ahli Hadith Eid Gah Ashajipora, Anantnag , Jammu & Kashmir 192101

**Our Branches : Jammu | Anantnag | Srinagar**

📞 7973608833, 9877986469

**Mr. Ishfaq Ahmad**

CLINICAL AUDIOLOGIST &  
DIRECTOR OPERATIONS

Experience :10 Years+ In Hearing Health Care



**Authorised Channel Partners**



GSTIN : 10ASDPK5599B1ZO

**OAS**

**GLOBAL SERVICES**

Flight Booking | Hotel Booking | Holiday Packages | Corporate Services  
Corporate Event | Travel Insurance | Visa Services | Wedding

5A-17, Big Daddy Apartment,  
Vivekanand Marg, North Sri Krishna Puri,  
Boring Road, Patna-800013

Ph : +91-9507028888, 9546502888  
E-mail : Info@oasglobalservices.com





**Your Family, Our Priority**  
**Hear For sure**  
**Revolutionizing Hearing Care**

Hear For Sure (a unit of HFS Hearing Clinics Pvt. Ltd.) is on a mission to make hearing & speech care accessible, ensuring everyone experiences the joy of sound with the best technology & expert guidance.

**Wide Range of Hearing Aids Available**



Explore Career Opportunities  
 Contact Now at  
[hr@hearforsure.com](mailto:hr@hearforsure.com)

**Comprehensive Services Offered**

**Audiological Evaluations**

- Pure Tone Audiometry
- Speech Audiometry
- Tympanometry / ETFT
- Otoacoustic Emmission (OAE)
- Tinnitus matching & masking
- Special test (TDT/ SISI/ ABLB)
- ABR/ASSR

**Speech & Language Evaluations**

- Speech and Language Therapy (Autism, ADHD, Hearing Impaired, Delayed Speech & Language)
- Voice
- Fluency
- Dysphagia
- Articulation
- Dysarthria/Aphasia

Corporate Office: HFS Hearing Clinics Pvt. Ltd.  
 B44-B, Kalkaji Main Road, Kalkaji, New Delhi-110019

[info@hearforsure.com](mailto:info@hearforsure.com)  
[www.hearforsure.com](http://www.hearforsure.com)



# Hearing Point

## SPEECH & HEARING CLINIC






# First Class Hearing

## Thousands of Satisfied Patients

Monday to Saturday 10:00 am to 7:30 pm ( Sunday through prior appointment only)



**Hearing Point**  
SPEECH & HEARING CLINIC

C-135 A, Sector - 19, Noida-201301, India  
☎ 0120-255 2233/44, 0120-4210873



**FOCAL POINT**

Branch1:Sunehri Market, Atta, Sector 27, ☎ 098736 45166  
 Branch2:The Great India Place, Shop No-250,2nd Floor,  
☎ 0120 245 0250

[contactus@hearingpoint.com](mailto:contactus@hearingpoint.com) | [www.hearingpoint.com](http://www.hearingpoint.com)





I am a BASLP, but I can't program a HEARING AID

Tu kya AUDIOLOGIST Banega re!



# LEARN



20+ SUCCESSFUL BATCH TRAINED  
OFFLINE TRAINING AT DELHI/GURUGRAM  
3 DAYS HANDS-ON TRAINING

# HEARING AIDS

For Professionals and Students of Audiology

## YOU LEARN:

- Selection and Prescription
- Detailed Hands-on Experience
- Programming & Fitting across Different Brands
- Obtaining Ear Mold Impression for Custom Molds and Aids

TRAINER

**Dr. S M Tarique Najeeb** (PhD)  
Audiologist/ Ex. Trainer- Sonova India



for Just ₹6000/-



9999845994



## HearWell Speech & Hearing Clinics Pvt. Ltd. Our Experts & Managing Team



**Audiologist & Speech Therapist**  
Exp. 16+ Years

**Avinash Kumar**  
DIRECTOR OPERATIONS



**Mr. Dhirendra Bundela**  
MANAGING DIRECTOR

Experience 10+ Yrs. in Hearing Healthcare



**Sales & Marketing in Hearing Aid Industry**  
Exp. 12+ Years

**Jot Parkash Singh**  
DIRECTOR SALES & MARKETING

## We Specialize in:

### AUDIOLOGICAL EVALUATIONS

We Specialize in Various Tests Like OAE, BERA, PTA, Impedance Testing

### SPEECH THERAPY & REHABILITATION

Voice, Misarticulation, Stammering, DSL Austim (ASD)

### HEARING AIDS

We Offer All Leading Brands of Digital Hearing Aids (BTE, RIC, CIC, ITC) Custom Molds & Ear Protection Devices

Locations: Punjab, Jammu, Himachal Pradesh, Haryana, Uttar Pradesh, Delhi NCR



Head Office: B - 107 First Floor Sector 88, Noida 201301



85560 86888



www.hearwellhearing.in





# HHB Speech and Hearing Clinic

A trusted ASLP clinic for patient referral in DELHI

Save the number

# 84475 26898

All Audiology and Speech Pathology services available

- PROFESSIONAL SETUP
- CLIENT CENTRIC PRACTICE
- ETHICAL PRACTICE
- LATEST EQUIPMENT

Contact: **Mohd. Ali (BASLI)**



C/4F-24, Lower Ground Floor  
Below IndusInd Bank, C  
block, Janakpuri, Delhi, 110058



## INDIAN SPEECH AND HEARING CLINIC

Early intervention centre



**Contact Us**  
Phone: 01143710512/09956036302  
Website: [indiaspeechhearing.in](http://indiaspeechhearing.in)

**Rajesh Kumar**  
Director and Founder  
Senior Audiologist and Speech Therapist  
MASLP

**Bindu Kumari**  
Senior Audiologist and Speech Therapist  
MSc. Audiology

### Test

- Hearing Tests
- Pure tone Audiometry
- Impedance
- BERA
- OAE
- VEMP
- VNG

### Hearing Aid Services:

- Digital Hearing Aid
- Authorized Centre for Cochlear Implant

### Therapies and Assessments:

- Vertigo Assessment and Rehabilitation
- Tinnitus Assessment and TRT
- AVT Therapy
- Occupational Therapy
- Special Education
- Speech Therapy



**Address:**  
T3-A303, 3RD FLOOR, NX ONE, PLOT NO.-17,  
NEAR GAUR CHOWK, NOIDA EXTENSION

B-36 BASEMENT, GUURUNANAKPURA (NEAR  
MAHARAJA HOTEL, NEW DELHI)

### Associate Branches:

- Ranchi
- Udaipur
- Cuttack
- Varanasi





बच्चों के सुनने, बोलने  
सम्बंधित विकारों पर समय पर  
ध्यान देना आवश्यक है ।



आज ही अपना श्रवण परीक्षण शेड्यूल करें



+91 9090198181

www.jayspeechandhearing.com

ajayaudiologist@gmail.com

Ganga Palace, Dinkar Chowk, Arya Kumar Rd, Patna, Bihar 800004



Follow us.



**KLEAR SPEECH & HEARING**  
HEARING AID, COCHLEAR IMPLANT  
REHABILITATION CENTRE

**Dr Kalyani Singh**

Speech & Hearing Specialist

Director & Founder of KS Hearing Clinic

Hearing Aid, Cochlear Implant, Rehabilitation Centre

Former A. professor, AYJNISHD NRC Noida

Clinical Senior Audiologist & SLP at Care & Cure medi centre New Delhi



BTE

CIC

IIC



ITC

RIE

- STUTTERING
- VOICE THERAPY
- TINNITUS
- APHASIA
- SPEECH ART
- AUTISM/MR
- DYSPHAGIA
- SPEECH & LANGUAGE TREATMENT
- HEARING
- THERAPY & REHABILITATION
- VERTIGO
- SPEECH LANGUAGE THERAPY



📍 B3/307, SRS Royal Hill, Sec. 87, Faridabad, Haryana.

📍 Methapur Extn, Badarpur, New Delhi-110044

📞 9871764717, 9582042374

📧 klearspeechhearing@gmail.com





# LAVANYA SPEECH & HEARING CENTRE



RCI 'A' CERTIFIED TRUE AUDIOLOGIST AND SPEECH THERAPIST/PATHOLOGIST



Founder | Lavanya Speech and Hearing Centre  
Sr. Audiologist & Speech Therapist,  
15 years' experience  
Proprietor of Lavanya Speech & Hearing Centre  
RCI Registration No- A10501  
ISHA Life Membership No-L15042487

**SUSHMITA AGRAWAL**  
Audiologist Speech Therapist



Co-Founder | Lavanya Speech and Hearing Centre  
Sr. Audiologist & Speech Therapist,  
17 years' experience  
RCI Registration No-A10506  
ISHA Life Membership No--L15042486  
CIGI Membership No- 371

**VIKAS KUMAR VERMA**  
Audiologist Speech Therapist

## SERVICES AVAILABLE

- PURE TONE AUDIOMETRY
- IMPEDANCE AUDIOMETRY
- OAE
- BERA
- SPECIAL AUDIOLOGICAL TESTS
- SPEECH THERAPY
- SPEECH & LANGUAGE THERAPY
- VOICE THERAPY
- SWALLOWING THERAPY
- TINNITUS ASSESSMENT & MANAGEMENT
- HEARING AIDS
- COCHLEAR IMPLANTS
- AUDITORY VERBAL THERAPY
- ARTICULATION THERAPY
- NEWBORN HEARING SCREENING
- FLUENCY THERAPY
- SPEECH AUDIOMETRY
- SOUND FIELD AUDIOMETRY
- AIDED AUDIOMETRY
- HEARING AID - REPROGRAMMING & DEHUMIDIFICATION

9738 494 494  
9698 494 494

WWW.LAVANYASPHEAR.COM  
LAVANYASPHEAR@GMAIL.COM

B-4, OPP. DAINIK BHASKAR OFFICE, BHASKAR FLYOVER,  
VIVEK VIHAR, BAJAJ NAGAR, JAIPUR, RAJASTHAN

प्रवेश  
प्रारम्भ



RCI CODE  
UP031

## माँ बलिराजी बी.एड. विशेष शिक्षा कॉलेज

मान्यता - भारतीय पुनर्वास परिषद (R.C.I.) भारत सरकार  
सम्बद्ध - डी० शकुन्तला मिश्रा राष्ट्रीय पुनर्वास विश्वविद्यालय, लखनऊ

सामान्य शिक्षक एवं विशेष शिक्षक बनने का सुनहरा अवसर

कोर्स - 1

बी० एड० - विशेष शिक्षा

अवधि : दो वर्षीय योग्यता : ग्रेजुएट 50%

कोर्स - 2

डी० एड० - विशेष शिक्षा - समकक्ष बी०टी०सी० (दो वर्षीय)

अवधि : दो वर्षीय योग्यता : ग्रेजुएट 50%

कोर्स - 3

डिप्लोमा इन हियरिंग लैंग्वेज एण्ड स्पीच (DHLS)

अवधि : एक वर्ष

योग्यता : इण्टर मीडिएट 50%- साइंस (मैथ/बायोलॉजी)

बी०ए०एस०एल०पी०

कोर्स - 4

अवधि : चार वर्ष (3+1 वर्ष इंटर्नशिप)

योग्यता : इण्टर मीडिएट 50%- साइंस (मैथ/बायोलॉजी)

सम्पर्क सूत्र : 9918388887, 7234000493 ई-मेल: maabairaji@gmail.com

दूधनाथ तिराहा विन्ध्याचल रोड मीरजापुर - 231001 (उ०प्र०)



# nagpur audiology

SPEECH & HEARING SERVICES



## ISHITA MANDAVIYA

Msc Audiology, BSLPA (Gold Medalist), Bangalore University  
M.: 9975514011 | nagpuraudiology@gmail.com

309/ 310, "Heera Plaza", Telephone Exchange Square,  
C.A. Road, Nagpur - 440008

### SERVICES:

- Speech and Language Assessment and Intervention
- Audiological evaluations
- Hearing Aids
- Expertise in Cochlear Implantation
- BAHA and other Implantable solutions

### ASSOCIATIONS :

Government Medical College and Hospitals, Nagpur  
KIMS- Kingsway Hospitals, Nagpur  
Colours Child and Maternity Hospital, Nagpur  
Neeti Clinics, ENT Nursing home (Dr Madan Kapre)



# नालन्दा

a BestSound Center

स्पीच एण्ड हियरिंग ऐड क्लिनिक  
सभी प्रकार के सुनाई देने की जाँच व मशीनें उपलब्ध

स्पीच  
थेरेपी



कान की मशीन



### उपलब्ध सुविधायें :

- कम्प्यूटर द्वारा कान के सुनने की जाँच।
- इम्पिडेंस जाँच।
- हकलाना, तूतलाना, तालू में छिद्र, मंदबुद्धि इत्यादि का स्पीच थेरेपी द्वारा इलाज।
- BERA & ASSR जाँच।
- OAE (Oto Acoustic Emission)
- 100% डिजिटल एवं प्रोग्रामिंग हियरिंग ऐड उपलब्ध।
- Ear Mould (कान की माप) बनना।
- Cochlear Implant मरीजों का स्पीच थेरेपी।

कॉक्लियर  
इम्प्लान्ट  
की सुविधा  
उपलब्ध।

दुकान नं० 10, सेन्ट एन्ड्रयूज इण्टर कालेज  
के सामने, बेतियाहाता रोड, गोरखपुर

Mob. : 9450880258

Ph. : 7235973595

6204574177  
9378240515

# NALANDA SPEECH AND HEARING CLINIC



1

HEARING LOSS  
DETECTION AND  
INTERVENTION

2

HEARING AIDS

3

SPEECH THERAPY  
FOR  
MISARTICULATION  
AND STAMMERING

MUNNA CHAK ,KANKARBAGH PATNA - 800020



None so deaf as those that will not hear. None so blind as those that will not see. Kindness is the language which the deaf can hear and the blind can see



## AUDIOLOGY AND SPEECH THERAPY CLINIC

Dr. Sanjay kumar  
Msc.(Sp & Hg)

AUDIOLOGIST AND SPEECH LANGUAGE PATHOLOGIST

### Audiological Services Provided :

Puretone audiometry, Speech Audiometry  
Immittance audiometry, Eustachian Tube  
Function Tests  
BERA, OAE(DPOAE,TEOAE)  
Hearing Aid Trial, Fitting & Counseling  
Tinnitus Evaluation

### Speech, Language assesment and intervention and

### Swallowing Services Provided

Childhood Language Disorders & Adult Language Disorder  
Neurogenic Speech Disorders  
Voice disorder  
Fluency Disorders  
Speech Sound Disorders  
Cleft Lip and Palate



**PROVIDING HEARING AND SPEECH SOLUTIONS TO YOU FROM MORE  
THAN 30YEARS**

DEEPAJ COMPLEX , OPPOSITE MACHHUATOLI POWEHOUSE ,  
ARYA KUMAR ROAD , PATNA , BIHAR  
MOBILE- 8102131401,9334330005





**ORANGE CITY**  
HEARING AID CENTRE

Est Since 2000

## SCOPE OF SERVICES



- Complete Audiological evaluation
- Hearing Aid Dispensing & Fitting
- Cochlear Implant & other implantable solutions
- Speech Language Assessment & Therapy
- Auditory Verbal Therapy
- Play Therapy

**SHLOK SHRIVASTAVA**

BASLP ( CRR No. A60212)

8087028960

**PRACHI SHRIVASTAVA**

BASLP ( CRR No. A88980)

7666749978

Ashirwad Palace, Near Mehadia Sq., Dhantoli, Nagpur- 440012



## पाटलीपुत्रा स्पीच एण्ड हियरिंग क्लिनिक

### उपलब्ध सुविधाएँ

- स्पीच थेरेपी
- आवाज में भारीपन
- विशेष शिक्षक की सुविधा
- 5 साल तक के ऐसे बच्चे जो जन्म से सुन और बोल नहीं सकते।
- 5 साल तक के ऐसे बच्चे जिनकी सुनने की शक्ति अचानक किसी कारणवश खत्म हो गई हो।
- 5 साल तक के ऐसे बच्चे जिनको कान की मशीन से कोई फायदा ना हो।
- 5 साल तक के बच्चों का निःशुल्क कॉक्लियर इम्प्लान्ट कराया जाता है।
- हकलाना एवं तुतलाना

सुनाई की जाँच, कान की मशीन,  
कॉक्लियर इम्प्लान्ट एवं स्पीच थेरेपी

यहाँ सुनाई देने की सभी  
प्रकार की मशीन उपलब्ध है।

**Mob. : 7482094204**

### PATLIPUTRA SPEECH & HEARING CLINIC

Chaturi Kuti, Near Oro Dental,  
Rai Jee Gali, Behind Vishnu Palace  
East Boring Canal Road, Patna - 800001



### Other Branches :

#### PATLIPUTRA SPEECH & HEARING CLINIC

Behind Mangal Market, North Side of Pillar No. - 72 & 73  
Raja Bazar, Patna - 80014

Cont. No. - 6202532792

#### PATLIPUTRA REHAB CENTRE

2nd Floor, Pal Market, Opposite to Dr. Rakesh Kr. Singh  
Sheikhpura, Raja Bazar, Patna - 80014

Cont. No. - 7667041108

#### VAAINI SPEECH & HEARING CLINIC

Road No. - 3, 1st Floor, Rama Nursing Home,  
Juran Chapra, Muzaffarpur

Cont. No. - 7061643035

#### PATLIPUTRA SPEECH & HEARING CLINIC

Neha Nursing Home, Dr. K. Rajan Clinic

Fida Hussain Road, Jehanabad

Cont. No. - 9386594204

#### THE CHILDREN'S NEURO DEVELOPMENT CENTRE

Akya Tower, East Boring Canal Road, Patna - 800001

Cont. No. - 7482094204

#### PANCHLOK SPEECH & HEARING CLINIC

Navroop Medico, Near Tara Mandal, Bailey Road, Patna

Cont. No. - 9386594204



# Perfect Hearing & Speech Clinic

Say "Yes" to  
Better Hearing



## Our Service

- ✓ Hearing Tests
- ✓ Hearing Aids Repair
- ✓ Hearing Aids Fitting
- ✓ Exchange of old Hearing Aids

"Experience a Complimentary Hearing Test & Trial at Our Center."



All types of hearing aids available

Contact us :- +91-9811196718



Location :- B-1/637, Janakpuri East, Delhi

G-32, Ocus Quantum, Sec-51 Gurugram



www.perfecthearingclinic.com



## RAMPO CLINIC

HEARING, HEARING AID, VERTIGO & SPEECH THERAPY

### Dr Ram P Kumar

Audiologist & Speech-language Pathologist  
Director & Founder, RAMPO Clinic  
Clinical Senior Audiologist & SLP at USA & Canada  
Lecturer College of Speech & Hearing Mangalore



BTE

CIC

IIC



ITC

RIE

- STUTTERING
- VOICE THERAPY
- TINNITUS
- APHASIA
- SPEECH ART
- AUTISM/MR
- DYSPHAGIA
- SPEECH & LANGUAGE TREATMENT
- HEARING
- THERAPY & REHABILITATION
- VERTIGO
- SPEECH LANGUAGE THERAPY



49A, Sector-6, Pocket-2, (Behind Sector 6 Main Market) Dwarka, New Delhi-75

+91 9934408932 | +91 9123199893 | +91 9311441929

rampoclinic@gmail.com | www.rampoclinic.com





## Rani Child Neuro Developmental Rehabilitation Centre

### Services:



**Speech Therapy & Rehabilitation:**  
Misarticulation, Stammering, Voice, ASD, Cerebral Palsy, ADHD.



**Audiological Evaluations:** PTA, Impedance Audiometry, BERA, OAE, ASSR, VEMP, ECochG.



**Play therapy**



**Newborn Hearing Screening (NHS)**



**Feeding & Swallowing therapy**



**Occupational Therapy**



**CI Habilitation**



**Child Physiotherapy**



**Aditi Shekhar (Mentor)**

**15+** Years Experience

Masters in Audiology & Speech-Language Pathology (MASLP)

📍 Bariatu Rd, near Karamtoli, Chowk, Ranchi, Jharkhand 834008, Ranchi, India, Jharkhand

☎ +91-9263142341, +91-9279787808 🌐 ranichildneurorehab.com



9534368185

## ROHIT SPEECH AND HEARING CLINIC

**14 YEAR EXPERIENCE**

### SERVICES OFFERED

COMPLETE DIAGNOSTIC AUDIOLOGY

ASSESSMENT & MANAGMENT OF SPEECH DISORDER + VOICE DISORDER

NEONATAL SCREENING

HEARING AID AMPLIFICATION  
(DIGITAL & RECHARGEABLE ONLY)

FOR MORE INQUIRES & CONCERNS,  
A/20, SACHIWALAYA COLONY, KANKARBAGH ,  
PATNA - 800020  
rohitpintu2007@gmail.com





# SAI HEARING CARE

HEAR BETTER! LIVE BETTER!

**15,000+**  
HAPPY CUSTOMERS

**12+**  
YEARS OF EXPERIENCE



HEARING TESTS



HEARING AIDS



VESTIBULAR TEST



SPEECH THERAPY



COCHLEAR IMPLANT



OCCUPATIONAL THERAPY



BRANCHES

DARBHANGA | MADHUBANI | SAMASTIPUR

**CONTACT: 9570406959**

WEBSITE: [WWW.SAISPEECHANDHEARING.IN](http://WWW.SAISPEECHANDHEARING.IN)



**SAKSHAM  
HEARING CARE**

## LEADER IN HEARING CARE



Saksham Hearing Care is leading chain of Hearing care clinics in Delhi NCR, Punjab, Haryana, UP, Chattisgarh, MP, Uttarakhand, Rajasthan

We provide comprehensive and professional hearing care from prevention to rehabilitation.

Our unparalleled standards of professional patient care, ensuring improved quality of all through better communication.

Saksham Hearing care has a legacy of delivering exceptional Hearing aids with its prime focus on latest technology and state of the art craftsmanship.

We provide a one stop solution for hearing aids and hearing equipments.

We also provide full equipped audiology and speech department with qualified team in hospital and ENT setups.

### WE DEALS IN:

- » HEARING AID (ALL BRANDS)
- » AUDIOMETER
- » TYMPANOMETER
- » COCHLEAR IMPLANT
- » REPAIR & AFTER SALES SERVICE
- » EAR MOULD
- » HEARING AID BATTERIES & ACCESSORIES
- » BERA, ASSR & OAE

Registered Office:  
Saksham Speech & Hearing Care  
E-574, Greater Kailash Part-2  
New Delhi-110048

**9540494740**  
**9555514455**

✉ [sakshamsphr@gmail.com](mailto:sakshamsphr@gmail.com)

🌐 [www.sakshamhearing.com](http://www.sakshamhearing.com)

**Customer Care: 9311759701**





**SAMPARK**  
e - POLYCLINIC  
REACHING THE UNREACHED  
Maharashtra, India





Shop No. 3, Renuka Nagari Society,  
Near Deccan Honda Showroom,  
Pune - Satara Road, Pune - 411043  
📞 9730511441

Survey No. 147/8, Payko Towers,  
3rd Floor, Karve Statue, Above Dominos,  
Kothrud, Pune - 411052  
📞 8766004883

[www.samparkeclinic.com](http://www.samparkeclinic.com)



॥शब्द-ब्रह्म॥ **SHABDA - BRAHMA**  
**Speech & Hearing Clinic**  
Cochlear Implant Rehab Center  
Vertigo & Balance Clinic

- ❖ Diagnostic Audiology
- ❖ Speech Language Assesment & Management
- ❖ Vertigo & Balance Clinic
- ❖ Voice Clinic
- ❖ Digital Hearing Aids
- ❖ Middle Ear Implants
- ❖ Cochlear Implant Pre & Post Workup
- ❖ Research and Manpower Development

**AFFILIATION: Dr. Chandrakant Vishwakarma**  
❖ Director & Chief Audiologist at **Shabda - Brahma** Speech, Hearing and Vertigo Clinic, Cochlear Implant, Rehab Centre, Ahmedabad.  
❖ Consultant Audiologist at **Apollo Hospitals**, Ahmedabad.  
❖ Guest Faculty at **Gujarat Spine Institute**, Speech & Hearing College, Asarwa, Ahmedabad.

**AFFILIATION: Dr. Rupali Mathur**  
❖ Chief Speech Language Pathologist at **Shabda - Brahma** Speech, Hearing and Vertigo Clinic, Cochlear Implant, Rehab Centre, Ahmedabad.  
❖ Guest Faculty at Speech and Hearing College, **GMERS**, Sola, Ahmedabad.  
❖ Guest Faculty at Speech and Hearing College, **CRC**, Odhav, Ahmedabad.  
❖ Consultant Speech Language Pathologist at **JAJU PLASTIC SURGERY**, Ahmedabad.

Third Floor - 3, AAKAR COMPLEX, Sardar Patel - Stadium Road, Nr Golden Triangle, Navrangpura, Ahmedabad-380 014. Gujarat - India.  
Phone: 079-4890 7009 | Mobile: 76005 83838 [O] | Mobile: +91 - 81417 05342  
E-mail: [contactshabda@gmail.com](mailto:contactshabda@gmail.com) | Website: [www.shabdabrahma.com](http://www.shabdabrahma.com)



**Dr Chandrakant Vishwakarma**  
Ph.D., M. Sc. [Audiology]  
B. Sc. [Speech & Hearing]  
All India Institute of Speech & Hearing  
RCI No. A 17214



**Dr. Rupali Mathur**  
Ph.D., M. Sc. [Speech Language Pathology]  
B. Sc. [Speech & Hearing]  
All India Institute of Speech & Hearing  
RCI No. A 36544





25 बर्षों से आपकी सेवा में

# शिवम् स्पीच थेरेपी

एण्ड हियरींग एड सेन्टर

के. के. सिंह

BASLP (Mysore)

Ex. Lecturar DSE (HI) Navavani

Ex. Audiologist E.N.T. Hospital, Vns.

Ex. Speech Therapist, G.S.M. Hospital, Vns

SPEECH PATHOLOGIST & AUDIOLOGIST

RCI-Reg-No-A37878

## उपलब्ध सुविधाएं

- कम्प्यूटर द्वारा कान के सुनने की जाँच।
- कम्प्यूटर द्वारा कान की मशीन संबंधित जाँच एवं सलाह गूगै/बहरेपन की जाँच एवं इलाज।
- हकलाना, तुतलाना, मंदबुद्धि इत्यादि का इलाज।
- Ear mould (कान की माप) बनना।
- Cochlear implant मरीजों का स्पीच थेरेपी। (AVT)



100% डिजिटल एवं प्रोग्रामिंग इनविजिबल हियरींग एड उपलब्ध रविवार बंद

समय - प्रातः 9 से 6 बजे तक

डी 69, गुरु कृपा, चन्द्रिका नगर, सिगरा, वाराणसी मो- 6392115532



**Shrestha™** श्रेष्ठा  
The best

**HEARING, VERTIGO, SPEECH CARE & RESEARCH CENTRE**  
(A Complete Advanced Hearing, Vertigo & Speech Solution)

BHUBANESWAR & CUTTACK, ODISHA

Pioneer & Best Clinic In

**VESTIBULAR  
ASSESSMENT &  
MANAGEMENT  
CLINIC**

### Facilities Available

#### Hearing CARE

- Computerized Pure tone Audiometry
- Speech Audiometry
- Impedance Evaluation (Tympanometry, Reflexometry)
- Eustachian Tube Function Test (Non-perforated/perforated)
- Other Special tests for CP/RCP differentiation
- New born Hearing Screening (OAEs)
- Electrophysiological tests (BERA, ASSR)
- Digital Hearing aid dispensing and repair
- Cochlear Implant Mapping & Therapy
- CAPD Evaluation and Management
- Tinnitus Treatment (TRT/TPOT)
- All type of Hearing Aids & Accessories.

#### Vertigo CLINIC

(For Dizziness, Imbalance and Vertigo)

- Detailed Vestibular Evaluation
- Video Nystagmography (VNG)
- Craniocorpography (CCG)
- Functional Head Impulse Test (fHIT)
- Vestibular Evoked Myogenic Potential (VEMPs)
- Subjective Visual Vertical Test (SVV)
- Stabilometry (Posturography)
- Gans Sensory Organization Performance Test (GSOP)
- Computerized Dynamic Visual Acuity Test (CDVAT)
- Electro Cochleography (EcochG)
- Vestibular Rehabilitation therapy (VRT)
- All Exercises for Vestibular & Balance Problems



**Swarup Bikash Mishra**

MASLP, DHLS, Cert. VAM (USA)  
IOVD (AVISA), Cert. VARD (Mangalore)  
DCP (India)  
Audio - Vestibular Specialist



**Smaranika Mishra**

BASLP, Cert. VRAL (Manipal)  
DIR - Floortime (Singapore)  
M.Cl.Psy. (India)  
Voice & Childhood Communication Disorder  
Feeding & Swallowing Specialist

### Mentorship Programme Available

- 3 Months Extensive Online Training
- Structured Syllabus
- 5 days Offline Hands-on Training
- Examination and Certification

hearingvertigospeech@gmail.com  
www.hearing-vertigo-speech.com

9776650514  
9583434843

Follow us :







# SINGH HEARING & SPEECH CENTRE

① D-10/86, (1st Floor), Opp. Metro Pillar No.-405, (Near Himalaya Public School), Sector-7, Rohini, Delhi-85  
☎ 011-27052600 ☑ 9899551051, 9899551054, 9910252428, 9910252428

## FACILITIES

PURE TONE AUDIOGRAM | IMPEDANCE AUDIOGRAM SPEECH | THERAPY (SPEECH DISORDERS)  
HEARING AID TRIAL & FITTING (ALL TYPE) | BODY AID | BTE (BEHIND THE EAR) | DIGITAL (FULLY AUTOMATIC)  
C.I.C. (COMPLETE IN THE CANAL) | ITC (IN THE CANAL) (STARKEY, WIDEX, SIEMENS, GNRESOUND, OTICON, PHONAK)

### Mission:

"Enhancing Lives through early intervention, Diagnosis & Treatment of Speech and Hearing Disorders."

### Vision:

"A Future where Everyone has access to quality Speech & Hearing Healthcare, enabling them to reach their full potential."

## B. P. Singh

B.Sc., A.S. T.M.I. S.H.A.  
(Hearing & Speech Specialist)  
Sr. Consultant Audiologist  
& Speech Pathologist



# 9899551051  
☎ singhearing@gmail.com

(RCI CRR No.: A42110)

Sr. Consultant : SAROJ HOSPITAL, ROHINI, DELHI  
Formerly: MAX HOSPITAL, PITAMPURA, DELHI

## Sankalp Kumar Singh

B.A.S.L.P. (Bachelor Audiology &  
Speech Language Pathology)  
# 9818003414



M. Audiology  
( Vestibular Vertigo Tinnitus &  
Cochlear Implant Rehabilitation)

(RCI CRR No.: A79943)

Consultant Audiologist Vestibular Vertigo Tinnitus &  
Cochlear Implant Rehabilitation Specialist

## Dr. Abhishek Kumar Singh

MBBS MS ENT  
# 9899551054



### Speech Therapy Services Includes

Autism  
ADHD  
Stuttering  
Voice and Voice Disorders  
Dysarthria  
Cleft Lip and Cleft Palate  
Adult Language Disorders  
Aphasia  
Apraxia of Speech  
Auditory Processing Disorder  
Child Language Disorders (School Age/Adolescent)  
Cognitive-Communication Disorders  
Pragmatic Language Disorders  
Traumatic Brain Injury

### Audiology Services Includes

Pure tone Audiometry  
Immittance Audiometry (Tymp / Reflex)  
Hearing Aid (Sales & Services)  
New born Screening  
Industrial Audiological Testing  
Oto Acoustic Emissions (OAE)  
Auditory Brainstem Response (ABR)  
Cochlear Implant (Surgery & Mapping)  
Middle Ear Implants  
Tinnitus Management

### SKY SPEECH & HEARING CARE

No : 7, Rajalakshmi Nagar,  
VKR Complex, Masakalipalayam Road,  
Peelamedu, Coimbatore- 641004



Dr. V R Pradeep (BASLP, MASLP, PhD)  
Speech Language Pathologist &  
Audiologist

☎ 9543217409, 9043012796

🌐 www.skyspeechhearing.com

✉ skyspeechhearing@gmail.com



# Sound Tree

Sound For Living...

Speech language & Hearing Clinic

☎ 0821 - 4282273

📞 +91 6364669753

✉ soundtreemysuru@gmail.com

### ALL TYPES OF HEARING AIDS AVAILABLE



### SERVICES AVAILABLE

#### AUDIOLOGICAL EVALUATION :

- Pure tone Audiometry
- Speech Audiometry
- Tympanometry
- Otoacoustic Emission (OAE)
- Hearing Aid Trail

#### SPEECH & LANGUAGE EVALUATION :

- Speech & Language Therapy  
(Autism, ADHD, Hearing impaired, Delayed speech & language act.)
- Voice
- Fluency
- Dysphagia

#### OCCUPATIONAL THERAPY :

- Fine motor activities
- Gross motor activities
- Oro motor massage
- Spine massage

📍 **Head Office :** 165/A Sahukarchennaya Road, Opp. to Brahmasthana Covention Hall, T.K. Layout, Mysuru - 570009

📍 **Branch Office :** Government Hospital road, next to niral health care, Mandya, Karnataka 571401



## SPEECH, SWALLOWING & HEARING CARE CLINIC

WE HELP FOR BETTER SPEECH & HEARING  
Let's Make A Better World For Speech & Hearing Disorder



### MS. JYOTI

Sr. Audiologist & Speech-Language Pathologist  
Ex. ASLP-R&R Army Hospital, R.G.C.I.R.C, G.G.S.I.P.U  
(Over 15 years of experience)

#### Speech Therapy

- Stuttering
- Misarticulation
- Feeding Issues
- Intellectual Disabilities
- Cerebral Palsy
- Autism
- ADHD

#### Hearing Rehabilitation

- Hearing Evaluation
- Hearing Screening
- OAE
- BERA
- Speech Audiometry
- Tinnitus
- Hearing Aid Fitting



Aphasia



Dysarthria



Counselling



Voice Problems



AVT

☎ 91-9968303774

H.No :- 35, G.F, PKT-15, Sec-24,  
Rohini, Near Sovereign School



# Step - By - Step

## Speech Therapy & Hearing Aid Centre



**7764-035-478**

### Dr. Santosh Kumar

Ex - Audiologist & SLP, New York USA  
Ex Lecturer , Aynihh, New Delhi  
Ex- Tata Motors Hospital, Jamshedpur  
Senior Audiologist &  
Speech Language Pathologist

### Services Offered

- Hearing Testing
- Hearing Aids
- Speech Therapy
- ABA Therapy
- Special Education

**Add - SB Complex Near Chinmaya Vidyalaya Kali Mandir Telco Colony Jamshedpur, Jharkhand**



# The Speech & Hearing Clinic



(A Unit of R.H.S Memorial Society)

11+  
Years of  
Experience

### SALIENT FEATURES:-

- |                             |                         |
|-----------------------------|-------------------------|
| ★ BERA TEST                 | THERAPY FOR:-           |
| ★ OAE TEST                  | ★ AUTISM / CP / MR      |
| ★ HEARING AID               | ★ STUTTERING            |
| ★ COCHLEAR IMPLANT          | ★ CLUTTERING            |
| ★ TINNITUS MANAGEMENT       | ★ APHASIA               |
| ★ VERTIGO & BALANCE TEST    | ★ VOICE THERAPY         |
| ★ IMPEDANCE AUDIOMETRY      | ★ LEARNING DISABILITY   |
| ★ PTA TEST                  | ★ MISARTICULATION       |
| ★ SPEECH & LANGUAGE THERAPY | ★ DSL / DOWN SYNDROME   |
| ★ OCCUPATIONAL THERAPY      | ★ HEARING IMPAIRED etc. |
| ★ PSYCHO THERAPY            |                         |



Call Us Now!

9504335525

Reach Us Now!

theshc20@gmail.com

Search Us Now!

www.speechhearingclinics.co.in

### Our Branches:-

CHAPRA | SIWAN



**Audiological Products**



Hearing Aid



Audiometer



Impedance



OAE



BERA



Audiological Accessories

**UNIKOL Products**



UNIKOL Audiometer- Shine



UNIKOL Audimeter- Mini



Pocket Hearing Aid

**Clinic:**



www.earconnect.in

**Audiologist**

**Akshee Kaul**

M.Sc. (Audiology), BASLP  
M/RCI, M/DISHA, M/UACA  
Vestibular Diploma

📞 / 📧 98100 96676

✉ - akshee.earconnect@gmail.com

**Contact Us at:**

📞 / 📧 - 98118 70676

✉ - unikol.healthcare@gmail.com

**Regd. Office:**

8 - MIG, Gyan Khand - 4,  
Indrapuram, Ghaziabad,  
Pin - 201014, U.P., INDIA

Branch Office: New Delhi, Dehradun, Jaipur, Jammu

# VEDANSH FOUNDATION

( Centre for Children with Special Needs )

## OUR SERVICES

- Occupational Therapy
- Speech Therapy
- Special Education
- Behaviour Modification Therapy
- Cognitive Behaviour Therapy
- Good Parenting Skills
- Child Psychiatry Consultation
- Psychological Assessment for Neuro Developmental Disorder



## MORE INFO

✉ vedanshfoundation2022@gmail.com



0612 - 3599205, +91 6203502145

🌐 www.vedanshfoundation.in

📍 1st floor, 225 MIG (near Malahi pakri chownk) Lohia Nagar, Kankarbagh, Patna (800020)

25  
YEAR

# Vivek Mohan's Speech & Hearing Clinic



## Vertigo & Balance

VNG ENG, Ecochg, VEMP, Stabilometry VHIT, Balance Rehabilitation



## Audiological series

PTA/ Impedance, SRT/ SDS OAE, BERA ASSR, Tinnitus evaluation & TRT



## Speech, Language & Swallowing Services

### MORE INFO



[vivek\\_km2004@yahoo.co.in](mailto:vivek_km2004@yahoo.co.in)



[www.speechandhearingcentre.com](http://www.speechandhearingcentre.com)



1st floor, 225 MIG , Lohia Nagar, Kankarbagh, Patna (800020)





<https://www.ishaindia.org.in/>

**ISBN Number : 978-81-971692-4-3**