



5.0 Research

Research projects have been designed to increase and improve rehabilitation services. Modules have been developed to serve the persons with hearing handicap, who are living in semi-urban and rural areas.

Some of these projects are aimed at evolving modules and diagnostic tests that can be used or replicated by other organisations. Modules for early identification and intervention of children with hearing impairment have been prepared and are on field trial. Work is under progress on the following projects at AYJNIHH Headquarter, Mumbai and its Regional Centres –

i) **Socio Economic Impact and Additional Cost Incurred in the upbringing of Persons with Hearing Impairment in India**

Principal Investigator : **Mr.N.Karthikeyan**
Co-Investigators : **Mr. Rajiv Jalvi**
Mr. N. Ganesh
Mr. P.J.Martin Mathew

This project aims at conducting a comparative study of the cost involved in the human development of persons with hearing impairment in India as against people without hearing impairment. This study will indicate how families make use of its resources to help its members in terms of human development. This in turn will give empirical evidence to realistically address the issue of development of persons with hearing impairment.

The sample for the study includes hearing impaired persons having identification age below 15 years and below 30 years of age during data collection, from all the 4 regions of India. Interview method was used to collect the samples by each research assistants. The time duration for interview varied from 20 to 30 minutes for each sample. The samples selected belonged to families belonging to three basic income categories, based on the colour of the ration card based on the income of the family they belong. Samples were taken from the type of families from regions in north, west, east and southern parts of India. The total sample consists of 1080 persons. The data analysis work has been completed and the report preparation is underway. The report with remarkable insight into the additional cost involved in bringing up of a person with hearing disability will be published soon.

ii) **Deafness in India : A Network Mission Towards Understanding the Genes & Mutations and their Clinical Outcomes.** *The Project is funded by Dept. of Bio-Technology, Govt. of India (Multicentric study being done in collaboration with JNCASR, Bangalore, MAMC, New Delhi and PGIBMS, Chennai)*

Principal Investigator : **Mr.R.Rangasayee**
: **Dr.Anuranjan Anand**
Co-Investigator : **Dr. Kamal Parasram**



It is a service based project to initiate genetic screening programme in the country to bridge the gap between deafness gene discoveries and application of genetic information to improve diagnosis, rehabilitation, management and prevention of hearing impairment;

This project is taken up with the following objectives -

- ◆ To create detailed data base of the deafness gene mutations by using modern technology;
- ◆ To develop cost-effective, sensitive and non invasive technologies for such diagnosis;
- ◆ To study the nature of Cx 26 & TMC1 mutations in India including their prevalence, audiological consequences & differential clinical correlates;
- ◆ To build up an easily accessible data base that will be useful for the purpose of accurate and high quality genetic counselling services and training of professionals in this area.

1. Number of data collected: Total 78 subjects' blood samples as well as audiological data was collected. Details of the same is as follows:

Sr.No.	Details of data	No. of Families
1.	Doda (At least 4 affected members)	6 Families (20)
2.	Baramati (At Least 6 affected members)	5 Families (40)
3.	Mumbai	3 Families (18)

2. Genetic counseling session : Individual genetic counseling session was conducted on 26th September, 2006 and Dr. Anuranjan Anand was present for the same. One family with confirmed Connexin 26 mutation reported for the same.

3. A scientific paper was prepared on the same and was presented by the Director, at 39th ISHA Conference held at Calicut, Kerala.

4. The same paper was submitted and accepted for publication in the International Journal of Audiology.

5. Computerization of all the data collected till this date was completed and same was forwarded to the chief investigators for their necessary suggestions.



6. Dr. Anuranjan Anand visited and delivered a scientific lecture on "Auditory Genetics" at AYJNIHH, Mumbai on 22nd March, 2007. T.Y. B.Sc. (HLS) and MASLP students as well as faculty members attended the same. It was decided to conduct a genetic counselling cum orientation programme for the families with confirmed Connexin 26 mutation, in the month of April, 2007.

iii) **Early Identification and Intervention towards Inclusive Education of Children with Hearing Impairment (0-5 years).**

**Investigators : Mr. R.Rangasayee
Mrs. Saraswathi Narayanaswamy
Mrs. V. Gathoo**

AYJNIHH in collaboration with Balavidyalaya Institute for Teachers Training, Chennai has undertaken a project titled "Early Identification and Intervention towards Inclusive Education of Children with Hearing Impairment" (0-5 years).

Besides NIHH and its four regional centers, early intervention centers under the project are ongoing at National Institute of Speech and Hearing, Trivandrum; Balavidyalaya at Pondicherry, Villivakkam and Kottayam; K.L.Institute for the Deaf, Bhavnagar; Bholenath Rural Craft Development Society, Kuhibahal, Dist. Sonapur and Mai Lele Shravan Vikas Vidyalaya, Nashik. These centers all have teachers trained under the one month orientation programme to equip rehabilitation professionals to handle very young children with hearing impairment. A total of approximately 350 children with hearing impairment under the age of five years have received intervention services at these centers under the project during the reporting year.

iv) **Hindi Learning Package.** *The project is funded by Science & Technology Mission Mode, Ministry of Social Justice & Empowerment, Govt. of India*

**Principal Investigator : Mrs. Usha Dalvi
Co-Investigator : Mrs. Sadhana Relekar**

The aim of the project is to develop booklets in Hindi language in three sets viz., Varnasansar (3 booklets), Shabda Sansar (15 booklets) and Vakya Sansar (5 booklets) to facilitate the learning of the various aspects of phonological, syntactic and semantic rules of the Hindi language in children with hearing impairment and other language disordered children.

As suggested by the internal committee, pictures were modified and coloured wherever it was suggested by the field testers by appointing Ms. V. Naik, Commercial Artist and the modified pictures were field tested. After the completion of picture work, the final version of the books were given to visualizer for providing good outlay. Report writing work is ongoing.



- v) **Development of Kit for Auditory Training for Speech titled " Home Auditory Training Programme(HAP)".** *The project is funded by Science & Technology Mission Mode, Ministry of Social Justice & Empowerment, Govt. of India.*

Principal Investigator : Mrs. Anjali Kant

Co-Investigator : Dr. Medha Adhyaru

The project is taken up with the following objectives -

- i) To develop a kit for enabling parents and teachers to improve the auditory skills of children with hearing impairment.
- ii) To design a kit in such a manner so as to provide easily available simple material in Hindi and Marathi

Progress made during the reporting year is given below -

The material designed till date as a part of project comprises of 8 audio cassettes (4 in Hindi and 4 in Marathi), each for each level of auditory training (i.e. auditory awareness, auditory discrimination, identification and comprehension), 2 CD-ROMs (one in Hindi and one in Marathi) for auditory awareness.

As suggested by the review committee during the meeting held in Feb.,2007, the afore mentioned material was field tested.

Twenty parents reporting to the institute (two were from rural Uttar Pradesh), 32 special educators from special schools at Nashik and Pune were provided with the cassettes and CDs and were given instructions to use them with their hearing impaired children. With the help of a questionnaire, a feedback was then sought from the parents and teachers regarding the utility of the material and the ease with which they could use it.

Both parents and teachers reported that they found the cassettes and CDs user friendly. All parents, including those from rural areas showed a preference for CDs and were confident of using them. The children showed responses to the stimuli within 2 sessions except for the task of auditory discrimination. Children as young as 3 1/2 years of age gave responses when both cassettes and CDs were used but there appeared to be a preference for the use of CDs.

- vi) **Development of Study Materials for B.Ed.(H.I.) Trainee Teachers**

Principal Investigator : Dr.Arun Banik

Co-Investigator : Mrs.Balaka Mitra



Considering the needs of the teacher of the hearing impaired, a project on 'Development of study material for B.Ed(H.I) trainees has been under taken by the Material Development Department of AYJNIHH. To develop effective study material for theory courses they are to be adequately supplemented by practical experiences.

To fulfil such objectives, the study materials focuses on developing information and strengthening knowledge, self-study skills and management skills in students. The duration of the project was 2 years initially and has been extended for another year. The procedure involved in the selection of topics is by considering the common topics required for all subjects for B.Ed (HI), M.Ed (HI), B.Ed (Special Education), M.Ed (Special Education), D.S.E. (HI) and D.H.L.S. Courses run by Mumbai, Kolkata, Osmania and Bhoj Universities respectively, subject wise units have been prepared for writing chapters.

The compilation of paper one "Education in an Emerging Indian Society" has been achieved successfully and the remaining subjects under progress. The outcome of the project will generate new materials in the field of education of the deaf and it will help the teachers, professionals for manpower development.

vii) Screening of Hearing in Infants - A Pilot Project (SHIP)

Principal Investigator : Dr. Vijayalakshmi Basavaraj
Co-Investigator : Ms. Aparna Nandurkar
Dr. Ruchi Nanavati

The objective of the project is to develop and evaluate an infant hearing screening module to identify babies with severe to profound hearing loss. And to estimate the cost and applicability of the developed module for India and other developing countries.

The project is underway in collaboration with Dept. of Neonatology, K.E.M. Hospital, Mumbai. A combination Behavioural, OAE & ABR screening techniques is being evaluated for universal hearing screening in a Govt. Hospital set-up. Caregiver, nurse and audiologist are involved in the screening. During the reporting year 857 newborns were enrolled for initial screening of which 691 were at risk and 166 were non-risk newborns. 283 infants tested earlier have been followed up during this period.

viii) Developing and Standardizing a Test of School Readiness (TSR) for Children with Hearing Impairment

Principal Investigator : Mrs. Varsha Gathoo
Co-Investigator : Mrs. Suni Mathew



The objective of the project is to develop a Test of School Readiness (TSR) to assess the readiness skills of children with hearing impairment, which are essential for formal primary school in different educational setups.

Progress made during the reporting year is given below -

- ◆ A blue print for each area and sub area was developed. The validation of the blue print was carried out with the help of 10 judges (special educators). The changes suggested by the judges were incorporated and blue print was finalized.
- ◆ The items under each sub area were drafted according to the blue print. Items were tabulated and a draft score sheet was developed.
- ◆ The score sheet was given to 30 teachers from regular schools to stratify the items in the age group of 2.1 to 3.0 years, 3.1 to 4.0 years, 4.1 to 5.0 years. The analysis of the same was carried out.
- ◆ Artists were contacted for the art work and trail sample of few pictures was taken. Pictures were also collected from books, internet, etc. for each item of each area of test. These pictures were scanned for the development of the test plates.
- ◆ Test plates for the collection of normative data were developed in power point format for the area of language and reading. The development of test plates for the other areas is being done.
- ◆ Normative data from regular pre-schools for children with normal hearing will be collected in following months and the test will be finalized on the basis of these results.

ix) A Survey of Role and Services Rendered by the Social Worker in Schools of Children with Hearing Impairment as Perceived by Parents and Other Professionals

Principal Investigator : Ms. Rekha More

The objectives of the Project are - to study (i) the role of the social worker in these schools; (ii) various services rendered by social workers in special schools in Maharashtra; (iii) the views of the schools' principals about the nature of the work of the social worker they have employed and (iv) how these social workers communicate with children with hearing impairment.

After the pilot study, four sets of questionnaires were rewritten as per suggestions. These were sent to schools for children with hearing impairment having a social worker. The questionnaires were for the Principal, Teachers, Social Worker and Parents of children. Replies were received from 31 schools. The data was sent for processing.



x) **Smart Aid - an Assistive Device for Hearing Impaired**

Principal Investigator : Mr. Nachiketa Raut
Co-Investigator : Mr. Suman Kumar
Mr. P.G. Waghmare

The objective of the project is to develop a multi purpose assistive device for the persons with hearing impairment having the facilities of a hearing aid, digital clock, vibrating alarm, door bell alert, torch light with rechargeable battery supply. The prototype is prepared with the expenditure of Rs.20000/- and needs modifications as suggested by the headquarter.

xi) **Creation of Database of Organisations Working for the Persons with Disabilities in India**

Principal Investigator : Mr. N. Karthikeyan
Co-Investigator : Mr. Arun Kalbage

People and persons with disabilities need to know where they can access education, vocational training and assistance for employment, etc. There are several organizations working for the disabled but there is insufficient coordination and linkage between organizations and rehabilitation providers. To bridge this gap it is required to create a database of organizations working for the rehabilitation of the persons with disabilities. The database will be useful for general public, persons with disabilities, parents, rehabilitation professionals, policy makers, planners and implementers of welfare and development programmes

Questionnaires were sent to 1022 institutions based on the addresses from our School Directory and the addresses given by State Disability Commission. So far 386 institutions have provided the information as per the questionnaire. Efforts are being made to collect more information of the institutions working for the persons with hearing impairment.

Research Projects Completed During the Reporting Year

- I) A study of relationship between language development and academic performance in children with hearing impairment

Principal Investigator : Mr.S.G.R.Prakash
Co-Investigator : Mrs. Shanti Prakash

- II) Preparation of Audio-Video CDs for Micro Teaching

Principal Investigator : Mrs. Shanthi Prakash



- III) Standardization of Indian Adaptation of Grammatical Analysis of Elicited Language Pre sentence Level (GAEL-P) Test in Marathi.
- Principal Investigator : Mrs. Varsha Gathoo
Co-Investigator : Mrs. Smita Pais
- IV) Cohort Study
- Principal Investigator : Dr. Geeta Rao
- V) Online Hearing Screening
- Principal Investigator : Dr. Vijayalakshmi Basavaraj
Co-Investigators : Mr. Rajiv Jalvi
Mr. P.J. Mathew Martin
- VI) Knowledge of Language Facilitating Skills in Trained and Untrained Parents of the Hearing Impaired Children - A Comparative Study
- Principal Investigator : Ms. Joan D'Mello
Co-Investigator : Mrs. V.A. Jyothi
- VII) A Comparative study of stress and coping among parents of children with hearing impairment and normal hearing.
- Principal Investigator : Dr. Krishnamurthy

5.2 Dissertations

Short term research work is undertaken every year by the M.ASLP and M.Ed (HI) students for their dissertation. The dissertation work in the areas of Audiology, Speech Language Pathology and Special Education, focuses significantly on encouraging the student trainees in approaching issues in a scientific manner at the field-level. Wealth of information is gathered to help persons with hearing impairment and communication disorders by these efforts. During the year under report 24 dissertations were submitted by the students. The topics of the dissertations are as under: -

MASLP (II) Audiology

1. Amplitudes of Transient Evoked Otoacoustic Emissions and Distortion Product Otoacoustic Emissions in Preterm and fullterm Neonates - A Survey.



Name of the Student : Ms. Sneha Lata
Name of the Guide : Mrs. Anuradha Bantwal

2. The effect of Neo-Natal Hyperbilirubinemia on A.B.R.

Name of the Student : Mr. Brij Bhushan Sharma
Name of the Guide : Mr. Rajeev Jalvi

3. Development and Standardization of PB word lists in Aimol Language.

Name of the Student : Mr. Lanu Wanboy Aimol
Name of the Guide : Mr. Rajeev Jalvi

4. Prediction of TTS-2 susceptibility in normal young adults by using contralateral suppression of DPOAE.

Name of the Student : Ms. Ranjeeta Patra
Name of the Guide : Mr. Rajeev Jalvi

5. Audiological and Psychological Characteristics of a group of tinnitus sufferers.

Name of the Student : Mr. Sujoy Kumar Makar
Name of the Guide : Mr. Rajeev Jalvi

6. Self esteem and quality of life of adult deaf, hearing aid users and cochlear implantees.

Name of the Student : Mrs. Ankita Gupta
Name of the Guide : Dr. Geeta Rao

7. A Comparison of Auditory Brainstem Response obtained using monaural and binaural stimulation in adults with and without hearing loss.

Name of the Student : Mr. Gaurav Patil
Name of the Guide : Mr. Rajeev Jalvi

8. Auditory Steady State Response thresholds using single frequency versus multi-frequency stimuli in adults with normal hearing sensitivity and hearing loss: A Comparative Study.

Name of the Student : Mr. Navneet Gupta
Name of the Guide : Mrs. Anuradha Bantwal



MASLP (II) SPEECH

1. A study of self esteem and quality of life of stutters.

Name of the Student : Ms. Anuja Nardekar
Name of the Guide : Mrs. Alka Joshi

2. A comparative study of pragmatic abilities in normal Hearing and Hearing Impaired Adolescents.

Name of the Student : Ms. Pranali Gaonkar
Name of the Guide : Mrs. Usha Dalvi

3. Comparative study of Voice and Speech intelligibility in Laryngectomees using oesophgeal speech. Tracheo-oesophageal prosthesis & artificial larynx.

Name of the Student : Ms. Vrushali Angadi
Name of the Guide : Ms. Sadhana Relekar

4. Perspectives of Parents of children with Cochlear implant.

Name of the Student : Ms. Madhumita James
Name of the Guide : Dr. Geeta Rao

5. Reading Comprehension and writing abilities of persons with Hearing Impairment.

Name of the Student : Ms. Sumaria Mir
Name of the Guide : Mrs. Usha Dalvi

M.Ed. (HI)

1. Auditory Comprehension of Supra Segmentals in Children with Hearing Impairment : A Survey.

Name of the Student : Ms. Minal Aundhiya
Name of the Guide : Mr. Rajeev Jalvi

2. A Study of Language and Academic Performance of Children with Hearing Impairment in Special Schools.

Name of the Student : Ms. Sonal Kaushik
Name of the Guide : Mrs. Alka Joshi



3. A Study of Science Question Papers used for Examinations in different educational settings.

Name of the Student : Ms. Shobha N Odunavar
Name of the Guide : Mrs. Suni Mariam Mathew

4. Designing Scholastic transition plan for children with Hearing Impairment for Inclusive Education.

Name of the Student : Ms. Deepali Rajgore
Name of the Guide : Mrs. Varsha Gathoo

5. A survey of special educators' attitudes towards, knowledge about and skills in the use of individual and group Hearing Aids.

Name of the Student : Mr. K. Sridhar
Name of the Guide : Mr. Rajeev Jalvi

6. Rating special schools for Students with Hearing Impairment : A Survey.

Name of the Student : Mr. G. Shivaraju
Name of the Guide : Mr. R. Rangasayee

7. Factors Important for Successful Retention of Students with Hearing Impairment in Mainstream Education : A Survey of Special Educators' Perception (Marathi).

Name of the Student : Mr. Santosh Sathe
Name of the Guide : Dr. Asmita Huddar

8. Comfort Level about educating students with Hearing Impairment : A Survey of Teachers in Mainstream Education (Hindi).

Name of the Student : Mr. Sunil Trivedi
Name of the Guide : Dr. Asmita Huddar

5.3 Research Paper Presentations :

During the reporting period 23 research papers were presented in conferences at various levels by the faculty of AYJNIHH.