SPEECH AND HEARING PROFESSION IN INDIA

CURRENT STATUS

Reg. No.8813

AN INDEPENDENT PROJECT SUBMITTED AS PART FULFILMENT FOR FIRST YEAR M.Sc. (SPEECH AMD HEARING) TO THE UNIVERSITY OF MYSORE.

ALL INDIA INSTITUTE OF SPEECH AND HEARING: MYSORE - 570 006

1989.

TO

MY TEACHERS

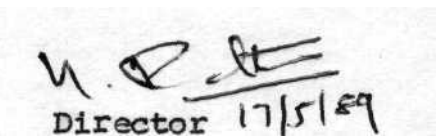
PARENTS

&

FRIENDS

CERTIFICATE

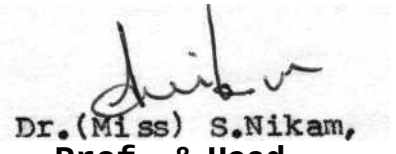
This is to certify that the Independent Project entitled "Speech and Hearing Profession in India - A Current status" is a bonafide work, done in part fulfilment for first year M.sc., (Speech and Hearing) of the student with Reg.No.8813



All India Institute of Speech and Hearing, Mysore - 570 006

CERTIFICATE

This is to certify that this Independent Project entitled "Speech and Hearing Profession in India - Current Status" has been prepared under my supervision and guidance.



Dr.(Miss) S.Nikam,
Prof. & Head,
Audiology Department,
GUIDE

DECLARATION

I hereby declare that this Independent Project entitled "Speech and Hearing Profession in India - Current Status" is the result of my own study under the guidance of Dr.(Miss) S.Nikam Professor and Head of the Department of Audiology, All India Institute of Speech and Hearing, Mysore, and has not been submitted earlier at any other University for any other Diploma or Degree.

Mysore Reg. No.8813

May, 1989.

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INTRODUCTION

Before 1960, unifed National programs designed to habilitate and rehabilitate the hearing handicapped in India were practically non-existent. In the early 1960s, with the return of audiologlsts and speech pathologists trained in the United States and United Kingdom, Great strides were made in coping with the problems of the hearing handicapped, national interest in programs to aid these people were generated.

India is the seventh largest land mass nation in the world, occupies 1,260,000 Sq.miles and it is second in population (1986) around 76.2 crores. The population is 76.7% rural and 23.3% urban and the population is distributed among 23 states and eight union territories. India is classified as a developing country.

India lies to the north of the equator between 8*4' and $37^0$6' north latitude and 68^0.7' and 97^0.25' east longitude. It is bounded on the south-west by the Arabian sea and on the south east by the Bay of Bengal. On the north, north east and north west lie the Himalayan ranges. The southern tip, capecomorin (Kanyakumari) is washed by the Indian Ocean.

India is a complex country with 15 officially recognized languages. The 1961 and 1971 censuses has listed 1652 languages spoken in India. Large groups of people of various religious backgrounds all attempting to live in one nation as an integrated society.

Helping the poor and physically handicapped individuals, even at the cost of personal sacrifice, has been a part of India's cultural heritage, references are found in the Mahabhara the great Sanskrit epic, when the state and joint family took care of those person who were in need of protection against the rigorous of life and the handicapped did not present a serious problem.

While the orthopaedically handicapped and blind (visually handicapped) persons attracted the sympathy and attention of the society, voluntory organizations and the Government, for those with hearing and speech impairment much needed to be done.

During 1950-60, very little was known of the nature and extent of speech and hearing disorders in India. It has been reported that about 5% of our population is having speech and hearing disorders, (Martin, F.Palmer, 1963),and majority of them have not received any kind of speech and hearing services due to lack of facilities available in hospitals.

The National sample survey organization. Government of India, 1981 report on survey of disabled person in India.
The incidence rate of hearing disability was estimated
19 per 100,000 population for the rural sector
15 per 100,000 population for the urban sector
The incidence rates for males and females are same in the both rural and urban areas of the country.

The incidence rate of speech disability was estimated about 4 or 5 per 100,000 population. For both rural and urban sectors.

The incidence rate for males was 6 or 7 in both urban and rural sector. The incidence rate for females was 2-3 in both urban and rural sector. However, all these rates are based on a very small number of sample.

In India, the development of speech and hearing profession is not as older as other like medical and engineering, agriculture. This profession was started with the health survey and planning committee (Mudaliar, 1961) report that there were inadequate facilities for hearing evaluation and rehabilitation of communicatively handicapped in India. The committee also indicated the need for development of training facilities for audiologist and speech pathologists. The importance of indigenou, manufacture of diagnostic and rehabilitative equipment and improving the facilities for diagnosis and treatment of patient's with communication disorders was stressed. Subsequently, efforts were made for quality control of the professional equipment through the preparation and publication of many standards by the Bureau of Indian Standards.

The first speech therapy clinic in India was established in the B.Y.L. Nair hospital a charity hospital in Bombay in January, 1963. The clinical facilities were made possible through the generous donation of a philantropist.

In 1965, one of the first training centre. All India Institute of Speech and Hearing, Mysore was established in order to provide graduates and post-graduates training in the profession of speech and hearing.

In 1965, a Rehabilitation Unit in Audiology and Speech Pathology was established at the All India Institute of Medical Sciences, New Delhi.

In 1966, program for the training in audiometry technician and speech therapy was started at AIIMS, New Delhi. The course comprises of four semesters in 2 academic years to include theoretical instruction and practical training. This course was later discontinued.

Later in 1966, a training programs "B.Sc, (Audiology and Speech Therapy) was started at B.Y.L.Nair Hospital, Bombay. The course is affiliated to the University of Bombay.

In December, 1967, Indian Speech and Hearing Association was established.

In 1972, a graduate course in speech and hearing was started at B.M.Institute of Mental Health, Ahmedabad, which was later closed.

In 1976, Post graduate Institute of Medical Education and Research, unit of Audiology and Speech Pathology, Chandigarh, started B.Sc., (Speech and Hearing) Course.

Recently in 1983, the Ali Yavar Jung National Institute for the Hearing Handicapped, Bombay was established. In this Institute a few training courses for teachers for the deaf (D.Ed) B.Ed.,(Deaf), B.Sc, (Audiology, Speech Therapy) M.Sc, (Audiology and Speech Therapy)., M.Ed.,(Deaf) was started.

In order to provide comprehensive rehabilitation services to the handicapped living in rural areas, the District Rehabilitation Scheme, a pilot project was launched by the Ministry of Social Welfare, Government of India. The project was developed in collaboration with National Institute on.Disability and Research, Washington. The purpose of launching this project of DRC is to provide comprehensive rehabilitative services to the disabled person in rural areas. This project is presently being implemented in 10 states with a rehabilitation unit at the district level.

Four Regional Rehabilitation Training 3aatre was established to provide support to DRC for training, developing of materials for community Awareness.

The profession in order to ensure growth and to provide services to all speech and hearing-impaired individuals? have drawn the attention of Government and voluntary organizations to start more and more speech and hearing centres at various places.

These authorities also must be informed about the facilities available at present for cases with speech and hearing disorders and what should be done to improve the existing and future clinics/centres to provide quality services to the handicapped people.

So far no attempts have been made to prepare a report of the current status of training and services in speech pathology and audiology in various institutions and in hospitals in India.

An attempt is made in the following pages to present information -

1. About the training programs for speech and hearing in various institutions and in medical colleges in India.
2. The kind of facilities and services available at various speech and hearing centres.for speech and hearing handicapped/
3. The availability of diagnostic and rehabilitative equipments and related mattery
4. Current research project at some of major institution.

This information was collected through personal communication and also through questionnaire send through mail.

TRAINING PROGRAM

Generation of manpower is an extremely important activity in the establishment of a profession. The manpower may be generated at various levels with varying duties and responsibilities to serve in varying professional environment. Both rural and urban population needs must be catered to. Keeping this in mind, training programs at graduate, post graduate and diploma and certificate level have been started in several institutions. Some of the programs are being conducted in departments that are part of larger institutions, whereas others are conducted by institutions established for the purpose of generating manpower in the field of speech and hearing. These programs are either affiliated to the university closest to the institution in which case the degree is granted by the university or the institution itself may grant the degree if it has a deemed university status.

Training programs - Degree and post-graduate level:

The All India Institute of Speech and Hearing was the first institution to have been established for the specific purpose of training professionals in the field of speech and hearing. The institute conducts three formal training programs leading to B.Sc, (Speech and Hearing); M.Sc, (Speech and Hearing), Ph.D. degree in speech and hearing. Curriculum is prescribed by the University of Mysore. In addition orientation courses for those in allied profession and short term

classes are conducted periodically depending on the need. No diplomas or certificates for these courses are issued, however.

Admission requirements - Master's level

All India Institute of Speech and Hearing started the training program in 1966 at the M.sc, level with candidates who had completed their undergraduate training in areas such as psychology, linguistics. This was so because there were no undergraduate training programs in the country at that time.

Subsequently, with the commencement of the B.sc., (Speech and Hearing) program, admission requirement for the M.sc., program was restricted to those who successfully completed their B.Sc, (Speech and Hearing). For a brief period, inspite of the availability of candidates with B.Sc.,(Speech and Hearing), candidates with background in other areas such as psychology and linguistics were admitted on condition that they fulfill the pre-requisite of one year's pre M.sc., program, also conducted at All India Institute of Speech and Hearing. After a 3 year trial, this program was discontinued. At present, the admission requirement for the M.Sc.,(Speech and Hearing) is limited to successful graduates of B.sc., (Speech and Hearing) programs.

Admission requirements - Bachelor's degree -

The requirements for the various institutions vary from completion of two-year P.U.C. course to completion of an undergraduate degree in another (related) field. In almost all the programs, irrespective of the level of pre-requisite (i.e. P.U.C. or Bachelor's) a science background is preferred.

Duration of the training - Master's level -

At the Master's level, the duration of training inclusive of theory and practice, at present, is two years. However, at the end of the training program, at one time, one year's internship was mandatory at All India Institute of Speech and Hearing, the only center where postgraduate training was given. The degree was awarded to the candidates only on successful completion of the internship. This requirement has long since been discontinued, the consequence being the award of the degree on successful completion of the theory, clinical practicum and viva-voce.

Duration of training - Bachelor's level -

Earlier at few places the course duration was 2 years but at present at all training centres the duration of Bachelor's degree in speech and hearing is 3 years. On account of this variation, often it is difficult for the graduates of some

training programs to get admission in the Master's program on account of non-equivalent undergraduate training.

Course content - Under graduate and post-graduate -

Whether it is at the Bachelor's or at the Master's level, the course content of the training programs is comprehensive. It includes courses in the core areas of speech pathology and audiology, Psychology as well as in the allied areas of Otolaryngology, Linguistics, Pathology. Physiology, Anatomy Acoustics and Electronics. At present, the candidates have to study all of the subjects i.e. there are no electives. Nor do the graduates get degrees in speech pathology or audiology separately. The titles of the degrees awarded range from B.sc.,(Speech and Hearing), B.sc., (Audiology and Speech Therapy).

Training programs - certificate, diploma etc -

Training programs designed at the diploma level have been in existence off and on. The first such program was started at the All India Institute of Medical Sciences, New Delhi. The successful candidates were awarded Diploma in Clinical Technique (DCT) in audiometry or Diploma in Clinical Technique in Speech Therapy. The duration was of two years. The purpose in starting this program was to provide audiometrists for school health services, Railways and other employing bodies, factories, non-teaching hospitals and schools for the deaf.

Both the D.C.T. programs were discontinued with the starting of graduate level courses in other institutions.

With the increasing awareness that the speech and hearing handicapped can be in the mainstream of society, even though graduate level trainees were available, the need was felt for making available personnel after a shorter training period. It was intended that these would be available to serve at the district and taluk level and perhaps in the urban areas under the supervision of professionals with graduate or postgraduate training. To fulfill this need, a certificate course was started at Ali Yavar Jung National Institute for the Hearing Handicapped, Bombay. The total intake annually 30 at Bombay and its 4 regional centres and the course duration is 9 months.

Other non-degree training programs are conducted at the RRTC's located at the centers - 3ombay, Madras, Lucknow, Cuttack.

TRAINING CENTRE

At present there are five training centre, which are involved in conducting training program in speech and hearing. Among the five training centres the two Institution are mainly involved in training undergraduates and post graduates degree in field of speech and hearing. The rest three training centres are attached with medical college.

Independent Institute	Course affiliated to University
1. All India Institute of Speech and Hearing Mysore-6.	University of Mysore
2. Ali Yavar Jung National Institute for the Hearing Handicapped, Bombay.	University of Bombay.
Attached with Medical College	
3. B.Y.L. Nair Hospital, Bombay.	University of Bombay
4. Post graduate Institute of Medical sciences and Research, Chandigarh	Deemed University
5. All India Institute of Medical Sciences, New Delhi-6.	Deemed University.

All India Institute of Speech and Hearing, Mysore.

All India Institute of Speech and Hearing, Mysore was established on9th August, 1965. Under the aegis of Union Ministry of Health and Family Welfare, wholly financed by the Government of India., The Institute was registered under

the Societies Registration Act XXI of 1860, Act 1957 as extended to the Union Territory of Delhi and since the functioning under the Aegis of the Union Ministry of Health and Family Welfare. It is registered under the Societies registration Act, and is working as an autonomus body.

The main objective of the Institute are imparting professionals training, clinical services, and research in the field of communication disorders i.e. speech and hearing.

The University of Mysore accorded affiliation for teaching programs leading to the award of -

1. B.Sc, (Speech and Hearing)
2. M.Sc., (Speech and Hearing)
3. Ph.D., (Speech and Hearing)

The Institute also conducts orientation programs for school teachers, short-term courses to otolaryngologists and training in preparation of custom earmolds. The Institute has been recognised by Government of India as an Advanced centre fer training and clinical services in speech and Hearing.

The following are the main Departments concerned with the above -

1. Audiology
2. Speech Pathology
3. Speech Sciences
4. Clinical Psychology
5. E.N.T.
6. Electronics
7. Library and Information Centre.

A full fledged clinic runs to provide diagnostic evaluation, treatment, counselling and rehabilitation facilities for the speech and hearing handicapped and also to associated psychological and E.N.T. problems.

In addition, specialist like Neurologists, Paediatrician, Plastic surgeon visit the Institute to attend to the patients and to take classes for B.Sc, (Speech and Hearing), M.Sc., (Speech and Hearing) students.

There are no inpatient facilities available at the Institute, The cases requiring hospltalization, surgery etc. are treated at K.R. Hospital attached to the Mysore Medical College.

All departments are actively engaged in Independent research projects. They also undertake hosting workshops and seminars and public education programs in speech and hearing.

A professional journal entitled Journal of All India Institute of Speech and Hearing is being published every year.

The Institute conducts speech and hearing camps all over South India. An Omni bus is used to transport the equipments and specialists to these distant places. In a year usually atleast 15 camps are conducted as part of clinical services, survey and public education. The cases having speech and hearing problems ace screened and guided about further rehabilitation steps. At the camps, certificate for the handicapped are issued which will be usefull for them to obtain pension for the handicapped.

B.sc., Speech and Hearing - Qualification for admission:

Pre-University examination or equivalent of any recognised University/Board with the following subjects with at least 50% marks in the optional subjects at the qualifying examination in these subjects (45% for SC/ST).

a) Physics		a) Physics
b) Chemistry	OR	b) Chemistry
c) Mathematics		c) Biology

The candidates with either PCM or PCB with or without any other subjects are accepted.

The marks obtained in PCM/PCB will be the criteria for selection. In the case of candidates who offer PCMB, the better of PCM/PCB marks will be considered.

Total seats avallable:33. Four seats reserved for SC and two seata for ST. Three seats are reserved for foreign nationals. The other seats are allocated on merit and zonal basis.

M.Sc, Speech and Hearing - Qualification for admission:

B.Sc, (Speech and Hearing) or equivalent. Number of seats: 23. Three seats reserved for SC and one seat for ST. Three seats are reserved for in-service candidates with B.sc, in Speech and Hearing and 3 years experience.

Stipend:

All the selected candidates (except foreign nationals) will get a stipend @ Rs.250/- per month for B.Sc., and Rs.400/- per month for M.Sc., for nine months in an academic year.

ALI YAVAR JUNG NATIONAL INSTITUTE FOR THE HEARING HANDICAPPED (AYJNIHH),BANDRA RECLAMATION, BANDRA (WEST),BOMBAY.

The AYJNIHH, Bombay has been established as a premier Institute for providing leadership to the large number of Government and non-Government agencies that are working in this area of development of services for speech and hearing handicapped.

The AYJNIHH was established on 9th August, 1983 by the Ministry of Welfare, Government of India. It is one of the four National Institute established by the Government of India to deal effectively with the problems of disabled population. It is named after late; Shri Ali Yavar Jung, in honour of the deep interest the Ex-Governor of Maharashtra, had in the Welfare of the hearing impaired persons and in appreciation of the help he rendered in establishing the institute at Bombay. It is an autonomous body which brings training, research, clinical and educational services.

The Institute has a number of objectives - these include -

1. Providing training facilities to speech and hearing clinicians teachers and to the different levels of health, educational and welfare personnel.
2. Developing educational programms for the hearing impaired.
3. Undertaking basis and applied research.
4. Providing comprehensive assessment and rehabilitation services to individuals with speech and hearing impairment and associated disabilities.

5. Offering guidance and support to the speech and hearing handicapped and their families.
6. Providing follow-up and referral services.
7. Identifying local needs, planning and developing materials for clinical and educational purposes.
8. Undertaking public educational programmes.
9. Collaborating with voluntary agencies in initiating and co-ordinsting different programmes.

Courses offered:

The Institute has been affiliated to the University of Bombay since 1986-87. Under the aegis of the University of Bombay, the Institute offers the following courses:

B.Ed.(Deaf)	:	Bachelor's degree in Education of the Deaf. One year degree course to bring out professionally well trained teachers of the Deaf for primary and secondary school levels. It also aims at providing training to those teachers who are already teaching the Deaf but who have no or inadequate formal training in education of the Deaf.
No.of seats 25		
B.Sc.(A.S.T)	:	Bachelor of Science in Audiology and Speech Therapy. Three year degree course to bring out professionally well trained clinicians to take up rehabilitation of the hearing impaired and other communication disabilities.
No.of seats 30		

In addition to the above degree courses of the University of Bombay, the Institute also offers the following Diploma Courses at Bombay as well as its regional centres mentioned below:

D.Ed.(Deaf) : Diploma in Education of the Deaf offered at:

No.of seats			
30	1) Calcutta	-	Bengali
	2) Hyderabad	-	Telugu
	3) Bhubaneswar	-	Oriya
	4) New Delhi	-	Hindi

One year course to provide training to in-service untrained or under trained teachers of the deaf at pre-primary and primary level.

D.C.D. Diploma in Communication Disorders offered at:

No.of seats		
30 each centre	Regional Center	Bombay, Calcutta, Hyderabad, New Delhi.

One year course to bring out speech and hearing assistants for rural taluka and town level rehabilitation centres, schools for the Deaf, Schools for spaztics etc. They can take up routine speech and hearing rehabilitation activities like assessment of hearing, speech correction, checking/minor repairs of hearing aids, making of ear moulds etc.

In addition to the above courses the Institute from time to time holds Short-term Training courses like -

a) Orientation course for regular (normal) school teachers, general medical practitioners, village health workers, anganwadi workers, N.s.S. workers, psychologists, placement officers, parents and other.
b) Refresher Training programme for Teachers of the Deaf, ENT specialists, pediatricians, speech and hearing therapists etc.
c) Community awareness and Public Education programmes for various community workers.

d) Workshop/Seminars on different topics for teachers of the deaf; Audiologists, Speech and Language Pathologists, Psychologists, ENT specialists. Vocational Counsellors, Social Workers and others.

Besides the above long term and short term courses, the institute proposes to introduce the following post graduate courses from the ensuing academic year, 1989.

M.E.d (H.I.) : Master of Education of Hearing Impaired.
No.of seats
15

M.Sc.(Sp. & Hg) - Master of Science in Speech and Hearing
No.of seats
15

Eligibility criteria:

Minimum Educational requirement for admission to each course is as given under -

Admission are made on the basis of academic qualifications required and in accordance with the prevailing rules of the institute and the University of Bombay. Seats are also reserved for SC/ST candidates as per the Government of India rules.

Among other things being equal, preference will be given to sponsored candidates and candidates who are already working in schools for the deaf or speech and hearing centres.

B.Ed.(Deaf) - Bachelor's Degree in any discipline from any recognised university. Preference to those with B.Ed, from any recognised university or D.Ed, from NIHH

or it's Regional Centres or any other certificate/diploma in teaching the deaf or experience in teaching normal/hearing impaired.

D.Ed.(Deaf) : P.U.C. or H.S.C.(10+2 pattern) with T.T.C. (Teacher Training Certificate) or D.Ed, or any other Diploma certificate in primary Education.

D.C.D. : P.U.C. or H.S.C.(Science) (10+2) scheme. Sponsored candidates from District Rehabilitation Centre, Armed Forces, Training Centres, Schools for Handicapped and those from areas where no or inadequate speech and hearing rehabilitation facilities are available will be given preference.

B.Sc(A.S.T): P.U.C. or H.S.C.(10+2) or Inter science with Physics, Chemistry, Biology, Maths, and Statistics. One seat each reserved for the states of Bihar, Uttar Pradesh, Jammu and Kashmir, Rajasthan, Himachal Pradesh, Haryana, Punjab, Madhya Pradesh, Gujarat, West Bengal and Four seats for North Eastern States of Assam,Trlpura, Arunachal Pradesh, Meghalaya, Manipur, Mizoram, Nagaland, Sikkim. Five seats are reserved for SC/ST and the remaining 11 seats open to general merit.

M.Ed.(H.I) : (i) Graduate in any discipline with B.Ed.(Deaf) of University of Bombay or any other Institute/ University considered as equivalent thereto or B.Ed, with Diploma in education (D.Ed) of AYJNIHH or any other certificate/diploma course in teaching the deaf considered equivalent thereto.

: ii) Two years experience of teaching the hearing impaired. Candidates with post graduate qualifications will be preferred. (Minimum IInd class is required at all Degree/Diploma examinations).

M.Sc.,(Sp. and Hg) - B.sc, (A.& ST) or B.sc., (Speech and Hearing) or any other degree considered equivalent thereto from any recognised university or institute with minimum IInd class. For sponsored/deputed candidates, 3 years work experience is required in addition

Reservation for M.Sc, and M.Ed:

Two seats for SC/ST, 3 for foreign students, 5 for inservice sponsored candidates and the remaining for general merit for each course. In the event of non-availability of candidates from reserved category the same will be filled by general merit candidates.

Medium of Instruction: ENGLISH

All University courses are conducted in English, therefore, adequate knowledge of English is necessary. However, any one who prefers to write the D.C.D. and D.Ed(Deaf) Examination papers in regional i.e. Hindi, Telugu, Bengali, Oriya, Malayalam, etc. can do so with prior permission from the Director of Institute. Students of B.Ed.(Deaf) are permitted to the University of Bombay to write their answers in Marathi, Hindi or Gujarathi in addition to English. However, the question papers will be set in English

Stipend:

A training allowance/stipend will be paid to the students other than foreign students on the basis of their monthly family income as follows -

Bs.1200/- and below at full (100%) rate

Rs.1200/- to R$.25OO/- at 3/4th (75%) rate.

Rs.2500/- to Rs.4000/- at 1/2 (50%) rate.

Examination:

The examinations for Degree and Post graduate courses are conducted by the University of Bombay. For Diploma courses the institute holds the examinations.

The Institute has adopted a continuous assessment system for the evaluation of performance of the trainees all through the year by assignments, class tests and participation in group discussions etc. A midterm examination is held before the end of the first term. At the end of the academic year the final examinations are conducted. Internal assessment comprises 20% of marks in each paper and the remaining 80% is based on examination marks in that paper.

Examination in theory papers as well as practicals are held in each course. Successful candidates at Degree examination i.e. B.Ed.(Deaf) and B.Sc.,(AST) are awarded Degree by the University of Bombay. The Diploma certificates are awarded by the institute to the candidates passing the in Diploma course i.e. D.C.D. and D.Ed.(Deaf).

The Library:

The Institute has its own professional library. A good collection of professional books and journals in the core subjects and allied related fields are available in the Library. Library follows a open access system and outsiders associated with the Institute two avail the library facilities as per Institute rules.

Laboratories:

The Institute has the latest and sophisticated instruments in their well equipped laboratories of the Departments of Audiology, Speech and Language Pathology, Psychology, Electronics and Basic Medical Sciences. There is a well equipped ear mold lab, for preparation of custom made ear molds and electronic lab for maintaining the various equipments and to attend to hearing aid repairs of the patients.

Public Education:

One of the major activities of the Institute is to develop material for educational,training and clinical purposes like teaching aid kit, language work-book and material for creation of community awareness through posters, handouts, pamphlets, manuals, audio-visual. The Institute has produced two films - 'Suniye' and 'Surmonthon' dealing with the hearing handicapped.

AUDIOLOGY AND SPEECH THERAPY SCHOOL TOPIWALA NATIONAL MEDICAL COLLEGE. B.Y.L. NAIR HOSPITAL, BOMBAY

The first Speech Therapy Clinic in India was established in the B.Y.L. Nair Hospital in Bombay in March 1963. This institution was a charitable hospital and the clinical facilities were made possible through the donation. The Institute is under Municipal Corporation of Greater Bombay at present.

The B.Y.L. Nair Hospital in the major teaching hospital where the graduate course in Speech and Hearing is running. In 1966, the Diploma course in Audiology and Speech Therapy was started at B.Y.L. Nair Hospital. The duration of course was for two years with 6 months intensive training.

Later, in 1967, the B.sc., (A.S.T.) degree course was affiliated to Bombay University to provide training for Speech Clinician and Audiologists. The duration of course is 3 years. The minimum qualification for admission is Intermediate Science with biology group. This course is domecile for Stqte of Maharashtra. Clinical services are available in the following areas: (a) Audiological evaluation (b) Speech and Language evaluation and therapy (c) Psychological evaluation, parent guidance and counselling.

ALL INDIA INSTITUTE OF MEDICAL SCIENCES, NEW DELHI

In 1965, Rehabilitation unit in Audiology and Speech Pathology was established at the AIIMS, with the support of the Social and Rehabilitation Services Division, U.S. Department of Health, Education and Welfare, Washington, DC.

Course offered: A programme for the training of audiometry technician was started in 1966 at the Rehabilitation Unit in Audiology and Speech Pathology.

Duration of course: The course comprises four semesters in two academic years, theoretical instruction and practical training are included.

Later, the Diploma in Clinical Technician(DCT) (Speech Therapy) was started in 1967. This course requires for the admission was Pass Higher secondary or P.U.C. Here emphasis was given on Speech Therapy than on Audiometry and the trained personal are intended to serve in similar Institution i.e. Hospitals, School for the deaf, etc. The above two courses was discontinued.

In 1986, B.Sc., (speech and Hearing) Mons., was started. Duration of the course is 3 years, total number of students is 3/ pear. Eligibility for the admission is Intermediate (10+2)/ P.U.C., with Biology sciences. The selection of students are on the basis of merit/interview.

POST GRADUATE INSTITUTE OF MEDICAL EDUCATION AND RESEARCH CHANDIGARH

In 1976 Audiology and Speech Rehabilitation Unit of PSINR has started course in Speech and Hearing i.e. B.sc., (Audiology and Speech Therapy). The duration of course is three years. Total number of trainee per year admitted - 3. The admission is entirely based on merit and percentage of marks obtained in entrance test and interview. The main aim and objective of Audiology and speech Pathology Unit is to provide clinical services training and research in the field of speech and hearing. The facilities available at the centre are :

1. Audiological evaluation of hearing impaired
2. Diagnostics and treatment for all types of speech disorder
3. Electroacoustical measurement of hearing aid.

INDIAN SPEECH AND HEARING ASSOCIATION

The growth and interest in and the demand for speech and hearing services resulted in the establishment of the Indian Speech and Hearing Association in December, 1967.

Eligibility for membership in the Association - Applicants must have a degree or diploma in speech pathology and audiology. from a recognized training institution in the world. Membership is also open to Otolrynolaryngolosts and Psychologists.

Associate membership: Is open to physicists, educators, for the deaf, acousticians.

The aim and objectives of the Association are -

- To encourage the scientific study of the processes of individual human speech and hearing.
- To promote investigations of speech and hearing disorders.
- The improvement of therapeutic procedures for such disorders.
- The stimulate exchange of information among persons engaged and to dissiminate such information.

The Association has established a committee on educational standards to ensure high professionals and ethical standards in the training of personnel in Audiology and Speech Pathology. The Association meets annually in different parts of the country. The Head office of the Association is located at AIISH, Mysore.

REHABILITATION COUNCIL

In pursuance of the recommendation of the National Council for Handicapped Welfare, the Government of India in Ministry of Welfare carried out consultations with experts and concerned Ministries on the question of setting up an Apex Body to enforce uniform standards for manpower training programmes in the field of Rehabilitation of the disabled in the country. The lack of appropriate trained manpower has been one of the major constraints in the expansion of rehabilitation services in the country. The current training programmes in the country in the field of the Handicapped are isolated and adhoc in nature with no standard syllabi, entry qualification, duration of courses, level of degree/diploma etc.

The prevailing training programmes of Professionals are also urban based and do not solve the problems of the disabled in rural areas where hardly any facility exists at present. Their education need to be re-designed so that it produces professionals capable of serving at Institutional, District and Village levels to all the categories of disabled (visual. Speech and Hearing, Locomotor and Mentally Handicapped).

The aims and objectives of the Rehabilitation Council are as follows as also provided in the Memoradum of Association of the Council:-

1. To regulate the training policies and programmes in the field of Rehabilitation of Disabled people.

2. To bring about standardization of training courses for professionals dealing with disabled persons.
3. To prescribe minimum standards of education and training for various categories of professionals dealing with disabled persons.
4. To regulate these standards in Government Institutions, Central as well as State, uniformally through out the country.
5. To recognise institutions training professionals in the field and to recognise the degrees/diplomas certificates awarded by these institutions, and to withdraw recognition.
6. To recognise foreign degrees/diplomas/certificates on reciprocal basis and to get Indian degrees/diplomas/certificates recognised abroad and to withdraw such recognition.
7. To maintain and Indian Rehabilitation Register.
8. To collect information on a regular basis, on education and training in the field of rehabilitation of disabled persons from Institutions in India and abroad.

The rehabilitation council will deal with the few professionals i.e. Rehabilitation Engineers* and Technicians; Audiologists and Speech therapists? Multipurpose rehabilitation worke . Physiotherapists, occupational therapists. Clinical Psychologists, social Workers, etc.

The rehabilitation council is at present registered as a Society under the Societies ACT XXI of 1860 under certificate of Registration No.s/16711 of 1986 by Registrar of Societies, Delhi. Action to convert this society into a Statutory Body

is in hand with Ministry of Welfare, Government of India through an Act of Parliament when the Rehabilitation Council will start working on the lines of Medical Council of India in near future.

The Rehabilitation council have completed about 2½ years working so far. During this period the council with the support of four expert committees in four fields of disability have standardized about 30 (thirty) training courses. These courses will serve as minimum standards for all training institutions in this field for recognition by Rehabilitation Council when it starts acting as a Statutory Body.

CLINICAL SERVICES

Precise estimates about the extent of disablity in India are not available. The latest National Sample Survey reports that about 12 Million persons or about 2.5% of the population in the country suffer from speech, hearing, visual and Motor disabilities. However, a much larger number of people need rehabilitation services in India.

The following types of disabilities are prevelent almost in all parts of the country.

1) Physically handicapped (Motor),
2) Hearing impaired,
3) Speech and language defects,
4) Total or partial Blidness,
5) Mental Retardation.

There are several programmes designed to help the disabled population in the country. These includes programmes for prevention of disabilities, physical Rehabilitation, fitting of aids and appliances, Vocational Training and placement services. These services are supported by training and research programme. Voluntary organisations also play a significant role in rehabilitating the disabled and the government provides them with financial support.

However, there are several deficiencies in the present system of delivery of rehabilitation services have come to notice. A few institution in Major Cities are providing specialized services and no services are available outside the cities. Even the voluntary effort are confined to major cities and town.

It was widely recognized that a comprehensive and coordinated approach to the rehabilitation of the disabled should be adopted in the country and that at the same time the delivery system should be appropriatly to the rural population at a minimum cost, with dependence on a few specialists as possible. The District Rehabilitation Centre is designed to meet this need and it has a network of multipurpose Rehabilitation functionaires delivering the rehabilitative services right at the door step.

Clinical Services:- **For Speech and Hearing impaired**:- At all the training centre for speech and hearing, apart from conducting in depth training programs , a comprehensive diagnostic and therapeutic services to the speech and hearing handicapped are being provided, with the help of professionals of an inter-disciplinary team consisting of speech pathologists, Audiologists, psychologists. Ear Nose and throat (EMT) specialists

Paediatrician, Neurologists. The respective department of the Institute/hospital has procured dignostic and rehabilitative equipment for purpose of objective evaluation and diagnosis and treatment for those with speech and hearing- impairment.

Apart from these training center, there are various speech and hearing centre as a separate unit or as a part of ENT Department in various medical college and hospital, where clinical facilities are provided to speech and hearing-impaired individual..

Among the speech and hearing centres in India few centres is equiped with highly versatile imported instrument such as - Clinical Audiometer, Impedance audiometer, Brain- stem evoked response audiometer for Audiological evaluation and instrument such as spectrograph, Visi pitch, PM pitch analyser. High frequency Resolution Analyzer,expirograph. Vocal -II for purpose of dignosis and treatment to individual having speech disorder.

However a number of Speech and hearing centre has to satisfy with indigeneous audiometer only.

The Ministry of Welfare, Govt. of India has a scheme to provide fund to different National Institutes & hospitals for procuring hearing aids for its distribution to poor people. The Individual with monthly income less than Rs. 1,200/- get a hearing aid free of cost,those with the monthly income of Rs. 2,500/- get hearing aids at 50% of the cost.

Services in Rural Area - District Rehabilitation Centre(DRC):-

In order to provide comprehensive rehabilitation service to the handicapped living in rural areas, the District Rehabilitation Scheme, a pilot project was launched by the Ministry of Welfare, Govt. of India. The project was developed with collaboration with the National Institute on Dissability and Research, Washington. The purpose of launching this project of District Rehabilitation Centre is to provide comprehensive rehabilitation services to the disabled persons in the rural areas.

This project is presently being implemented in 10 States with a rehabilitation unit at the District level and four Regional Rehabilitation Training Centre have also been set up, to provide support to DRC, for training, improvement in the

qualitative content of their services,delivery programmes, development of materials for community awareness including preparation of slides, posturs, pamplets and research for development of low cost aids etc.,.

These centres are located at

1) Virar, Thana District (Maharastra)y
2) Khoragpur, District Midnapur (West Bengal);
3) Chengalpottu District Chengalappu (Tamil Nadu);
4) Sitapur, District Sitapur (Uttar Pradesh);
5) Mysore, District Mysore(Karnataka);
6) Bhuneshwar, District Puri (Orisa);
7) Vijaywada, District Krishna (Andra Pradesh);
8) Bilaspur, District Bilaspur (Madya Pradesh);
9) Kota, District Kota (Rajastan);
10) Bhiwani, District Bhiwani, (Hariyana).

Each Centre is headed by a District Rehabilitation officer assisted by professionals in the field of physical medicines and Rehabilitation, Physiotherapy, occupational therapy, speech therapy. prosthetic/orthotic Engineering, Vocational Counseling, psychologist and social worker, which provides the specialised expertize necessary for the development of a referral net work.

The centres are attached to the District hospitals. Each of the centre has a workshop headed by a prosthetic/ orthotic Engineer and also has facility for speech-therepy/ Radiological Assessment, Physiotherepy and occupational therepy and psychological evaluation of the disabled.

The services delivered from the DRC starts with the identification of the disabled by a house to house survey, followed by Assessment clinics on the basis of which a client based rehabilitation pian is drawn up.

The services provided under the scheme include physical restorative services like surgical correction, fitment of aids and applMhces, therapeutical treatment, i.e. speech-therepy, physio/occupation therepy facilities for pre-primary education for the disabled children and vocational training for the adult disabled. The programme is community based and counselling services for the parents/guardians of the disabled are provided along with mass contact programmes for reaching the community.

Thefield level services of the District Rehabilitation centre are organised through the primary health centre Rehabilitation unit which are headed by primary health centre rehabilitation officers, supported by Multipurpose Rehabilitation worker, Multipurpose The repist, Village rehabilitation workers, Multi-purposes rehabilitation technician.

The training needs of the specilist attached to the DRC such as Multipurpose Rehabilitation Workers, Multipurpose therapist. Multipurpose Rehabilitation Technicians and Village Rehabilitation Workers, which is provided by four Regional Rehabilitation Training Centres.

The four Regional Rehabilitation Training Centre is located at premier Institutes providing services to the disabled are

1) RRTC Bombay - All India Institute of Physical Medicine & Rehabilitation, Bombay.
2) RRTC Lucknow - Rehabilitation and Artificial limb centre, Lucknow.
3) RRTC Cuttak - National Institute of Rehabilitation Training and Research, Cuttak.
4) RRTC Madras - Govt. Institute of Rehabilitation Medicine, Madras.

The district Rehabilitation Centre originally proposed to handle services for the orthopedically handicapped and the speech and hearing-impaired. However, after the service delivery programme began in these two areas, it was decided that services should also cover the visually-impaired and mentally retarded.

It is expected that the centre would be a comprehensive one, catering to any kind of information required by any institute or person on the Welfare of the handicapped.

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:DIAGNOSTIC & REHABILITATIVE INSTRUMENTS:

Instrument for diagnosis of Auditory disorders :

For diagnostic purpose behavioural, physiological and electrophysiological measures are sought. The audiometers are available, for diagnosis purpose of auditory disorders at most of speech and hearing centres, however the impedance audiometer and Brain stem evoked response Audiometer are available in only a few centres in India.

A) Audiometers :

For obtaining behavioural measures, the basic pure tone audiometry is employed in most centres.

Pure tone audiometers are available which ranges from portable screening, type to the highly sophisticated diagnostic type. Both manual and automatic audiometers are available which are manufactured in India. But the use of automatic audiometer in the country for clinical purposes, as elsewhere is limited.

The automatic audiometers of Bekesy type are available in a few centres only. Imported microprocessor based audiometers are in use at the National institutes. Such microprocessor based audiometers are also available indigeneously.

The indigenous portable screening audiometers have the frequency ranges varying from 250 Hz to 8000 Hz. (i.e., 250 Hz, 500 Hz, 1000 Hz, lS00Hz,2000 Hz, 3000 Hz, 4000 Hz, 6000 Hz and 8000 Hz). similarly the intensity ranges from -10 dB to 100 dB, at the frequency except 250 Hz and 8000 Hz, for air conduction. At the 250 Hz and 8000 Hz, the maximum level is 90 dB only. For bone conduction, 50 dB (from 500 Hz to 4000 Hz). The signal level may be changed in 5dB steps from minimum (-10dB) to maximum (100 dB). A few indigenous audiometers have facility for +10 dB OR +20 dB increase in signal level with the help of push button. The test facilities available in portable screening audiometers are - air conduction only or air and bone conduction both. certain advanced models of portable audiometers have facilities for testing - air conduction,bone conduction, speech test, tone decay test, SISI test, ABLB test. These audiometers have 240 V AC mains operation but have options for battery connection also.

The digital free field audiometer (reactometer) are mainly for screening purposes fortesting childrens.

The indigeneous clinical diagnostic duel - channel audiometer which are widely used in government and civil hospitals, speech and hearing clinic.

These audiometer got pure tone frequencies - 125 Hz to 10,000 Hz The hearing level attenuator ranges from -10 to 100 dB for Air conduction at 500 to 4000 Hz, at 90 dB being the maximum level for

250 Hz and 8000 Hz.The range fro bone conduction is 0 to 50 dB from 500 Hz to 4000 Hz; 40 dB is the upper limit for 250 Hz. Test facilities for clinical diagnostic audiometer includes :-

1. Air conduction, Bone conduction. Pure tone Threshold test with masking facility (masking noise mainly white band noise/ narrow band noise which has intensity ranges from 500 to 6000 Hz) Insert masking are optionally available. Masking is calibrated to effective level.
2. Speech Test (Speech reception/speech discrimination test).
3. ABLE (Alternate Binaural Loudness Balance Test)
4. SISI (Short Increment sensitivity Index) Test.
5. SAL (Sensorineural Acuity level) Test.
6. Difference limen test.
7. Tone Decay Test (TDT)
8. Free Field Test - for use with optional free field amplifier loud speaker.

The audiometer is available with optional built in check-up of the calibration to ISO/IEC Standards, in case of ' Two Test Boom Set-up ' recommend ' patient talk back ' to the audiologist. The system comprises of an amplifier, a microphone, two speaker, talk back key box.

The indigeneous available computerized audiometer is dual channel with completely independent channels with individual frequency generators. This audiometer permits all test mentioned

above such as - SISI, SAL, DLI, ABLB, TDT, Speech Test (SRT/ SDT/Speech Balance). It has a variety of test stimuli such as - warble tone, continuous tone, pulsed tone.

The cost of the Paediatric free field audiometer and portable screening audiometers ranges from Rs.2,000/- to Rs.4,000/-. The paediatric free field audiometer (reactometer) has limited frequencies that can be presented at fixed intensity level (one/two) in free-field.The screening audiometer has facility for only air conduction testing under ear phone.

The cost of diagnostic audiometers ranges from Rs.9,500/- to Rs.30,000/-. The variation in the price may be attributed to the number of test facilities available on the instrument. Features such as digital display,+20 dB provision, free field facility, patient talk-back system and other optional accessories, are more expensive models.

IMPORTED AUDIOMETERS:

Besides the indigeneously available (manufactured)portable and clinical diagnostic model audiometers, a number of imported audiometers are available. These may have been purchased or procured for different projects supported by W.H.O, UNICEF and other agencies.Reasons for importing audiometers could be several -

1) Some of the test required for diagnostic purposes are not possible with indigenous equipment.

2) subjective impression of greater reliability of imported audiometers.

MANUFACTURE OF AUDIOMETERS IN INDIA:

Earlier the manufacture of audiometer was taken up by Bharat Electronics Limited., in the year 1966-67. Now a few more companies manufacture different models of portable screening audiometer, diagnostic audiometer and even microprocessor based audiometer. These manufacturers are - arphi Electronics Pvt.Ltd., Elkon Pvt.Ltd., and Lotus Electronics , However,despite the made in India tag , several parts of audiometers are imported.

IS STANDARDS: None of the present indigenous audiometer which is manufactured in India has got ISI certification mark. The IS specifications for pure tone and diagnostic audiometers can be found in the documents IS:9O98-1939 and IS:10565-1983. In addition, IS:4755-1987 gives the reference zero, which is required for the calibration of output SPL of various earphones.

CALIBRATIONS AND REPAIR SERVICES:

Biological calibrations using a group of normal hearing subjects is mostly used for day to day use in various audiological clinic.But, electroacoustic and electrical measurements on the performance of the audiometers are must - once a quarter.

The equipment used for calibration are - a coupler, artificial ear, artificial mastoid, appropriate microphone, AC millivoltmeter, sound level meter, preamplifier, Octave or l/3rd octave filter set, level recorder, frequency counter, oscilloscope, audio frequency analyzer. A majority of the equipment listed above are not indigeneously manufactured. At few national centres and with manufacturers,imported equipments are available for calibration, of the audiometers. Other speech and hearing centres which has the audiometer, have to depend upon manufacturers centre, where the facilities for calibration is available. Manufacturers do report about calibration facilities provided at their centres for their own product. Difficulty may further be encountered in servicing and repair because of the non-availability of spares parts and because of lack of trained personnel. However effort was usually made by manufacturers toirepair indigen4ously made audiometer and even for imported audiometers.

B) IMPEDANCE AUDIOMETER/BRIDGES:

Impedance audiometers are integral part of the basic audiological test battery. Together with the pure tone audiometry findings, impedance audiometry provides valuable information in the differential diagnosis of various middle ear disorder and in differential diagnosis of cochlear and retrocochlear disorders.

Impedance audiometers are not manufactured in India. These instruments are imported from countries such as U.S.A. DENMARK and ITALY. Several of the foreign manufacturers of impedance audiometer have their representatives in India who provide the requisite technical information,servicing and calibration facilities subsequent to purchase.

The problem encountered in the use,calibration and repair of these Instruments is similar to those mentioned under the section of audiometers. The facilities fori impedance audiometer testing is available at the few speech and hearing centres only, because of non-availability of instrument in India and the great problem encountered in process of importing and the more amount involved for imported impedance audiometer, often on payment of customs duty. Therefore importing of instrument is a time consuming and expensive.

C) ELECTROPHYSIOLOGICAL MEASURING SYSTEM:

The diagnostic information obtained by means of audiometer require the active participation of the individual under test. Such participation from a testee is not possible in case of infant, young child and children with multiple handicapped. In such cases, the integrity of the auditory system is evaluated by means of equipment Brain stem evoked response audiometer (3SERA) which measures changes in the ongoing electrical,physiological, activities. Test carried out using these equipment (B.S.E.R.A)

offer useful diagnostic information, several such imported instruments are in use inivarious speech and hearing centres in India.

The servicing and repair of such instruments is undertaken by thesa. suppliers through their representatives in India.

D OTHER EQUIPMENTS:

In addition to the foregoing other instruments are also used to obtain diagnostic information, some of these are used to generate/produce delayed auditory feed back, time compressed speeds, filter speech etc.,

i) Delayed Auditory Feed Back :

The disrupting effect of delayed auditory feed back has been made use of clinically to identify those cases who feign a hearing loss.The delayed auditory feed back technique in hearing assessment is not used extensively in India. This could be due to non-availability of the equipment or lack of appropriate technique. There is a crucial need for the development of equipment and techniques for identifying patients feigning hearing loss.

ii) Speech Compressors/Expanders and filters :

Speech stimuli, can be modified by filtering or by varying the time parameters.While filters are available indigeneously,but equipment for time compression or expansion is not available.

Modified speech signals are essential for identification of central auditory disorders.

iii) TAPE RECORDERS:

Tape Recorders are essential in the field of speech and hearing for diagnostic,rehabilitative and research purposes. Speech audiometry is an integral part of the diagnostic test battery.Use of recorded speech stimuli is recommended as extraneous variables intrude in live-voice testing, care must be taken to ensure that the impedance of audiometer and tape recorder are matched. For rehabilitative purposes,the tape recorders is normally used to give a model of correct speech output and to provide the patients with feed back of his/her own defective speech/voice. A number of simple tape recorder to highly versatile tape recorder are manufactured in India by different companies which are extensively used in various speech and hearing clinic.

AIDS AND EQUIPMENTS FOR REHABILITATION

I. HEARING AIDS WORN ON THE PERSONS:

The first step in the rehabilitation of the individuals with hearing loss is the selection of a suitable hearing aid.

The types commercially available in thecountry include body worn (Air conduction/Bone conduction),behind the ear,spectacle, type (Air conduction/Bone conduction), all in the ear and in the

canal hearing aid with and without special circuitry such as Automatic Volume Control(AVC). The all in the ear and the canal type of hearing aid are not commercially available in India.

Even though, there are about 17 manufacturers of hearing aid in the country, some parts of the hearing aids are imported and assembled in the country. A few of manufacturers have got is mark for their hearing aids.

II. MASTER HEARING AIDS:

The master hearing aids are used in the evaluation and selection of hearing aids. The utility of these instrument is non-existent in speech and hearing clinic,because ofnon-availability of indigeneous master hearing aid.

III. INSTRUMENTS FOR MEASURING ELECTRCACOUSTIC CHARACTERISTICS OF HEARING AIDS:

The electroacoustic characteristics of the hearing aids have to be measured both on completion of assembly and periodically thereafter. Specification; Both national and international-for this purpose are available for different types of hearing aid.At present very few centres i.e., National Institutes are equipped for this measurement. A few manufacturers report testing their products with the instrumentation meant for electroacoustic measurement. Such

instruments are not manufactured in India, but they are mainly imported one. The instruments are B & K Audio Test Station, Fonix Hearing Aid Analyzer.

IV. AUDITORY AND SPEECH TRAINER:

Besides individually worn hearing aids, auditory & speech trainers are also used in the rehabilitation of aurally handicapped.Indigeneous different model of auditory and speech trainers are available which is extensively used in various speech and hearing clinic. At present, there are no such specifications for auditory trainer. Development of standards for this instrument is on the programme of work tobe taken up by ISI (Indian standard Institution).

V.GROUP HEARING AID:

Group hearing aids system are available in most of school for the deaf in India. Indigenous group hearing aids are manufactured by different companies.

VI.VISUAL AND TACTILE AIDS:

Amplifying acoustic signals is one means of receiving signals from the environment. Devices where the acoustic signals is converted for visual or tactile can also be helpful to the aurally handicapped.

Visual/tactile devices could range from converting the sound of a door bell or a telephone ring to a flashing lights

to those where the complex signal such as speech can be displayed in a visual form on screen so that the pattern of speech output canape matched with to the pattern produced by a normal person. Such devices which use specific aspect of speech i.e., N indicator or S indicator, where presence of nasality and the presence of high frequency sound 's' can be visually displayed respectively. A few imported ones are in use at different centres.

Aids with vibrotactile input are also used in a few centres.

VII. OTHER AIDS:

Whereas individually worn hearing aids may help the individual to overcome the limitation imposed by hearing loss to some extent,additional aids are also becoming popular. This is so because the aurally handicapped can and do take an active part in the world of sound. As such, devices to help them to use the telephones,to listen to lecturers, sermons, to watch the IV etc., are available in other countries. In India, telephone amplifying devices are available. Other types of aids to improve the quality of life for the hard of hearing do not seem to be commercially available.

INSTRUMENTS FOR DIAGNOSIS AND REMINDIATION OF SPEECH & VOICE DISORDERS

The Instrument used in the assessment of speech and voice disordrs purpose to evaluate the dynamic processes of speech production, specifically those of respiration, phonation resonance and articulation. They may be broadly classified into those measuring the physiological/Electro-physiological parameters and those measuring the parameter of the acoustic wave-form emitted by the speaker.

Physiological/Electro-Physiological:

In this category are included a wide variety of instruments such as: Spirometer Menometer, Fiberoptics,Ceneradiographic Videoflurosccpic. The expirograph, useful in the evaluation of respiratory function is manufactured-: indiginously and commercially available.

Other instrument in this category are - Electroglottograph used for diagnosis of different voice disorders, electromyograph which is used to get a measurement of the muscular contraction in speech disorder and having neuromuscular origin. Electro-Palatograph: Which is used to observe the tongue movement in articulation.

Of these,the electromyograph ia manufactured indigenously but does not seem to be used extensively in Speech and Hearing Clinic. Other Imported Instrument such as spirometer, Manometer, Fiberoptics, Vediofluroscopy, Cineradiographic equipment are available only at the National Institutes in India. They are mainly used for diagnostic and remedial purpose.

Instrument for Acoustic Analysis:

Visual display of speech Weveform of peak amplitude RMS amplitude and formants on a cathode-ray screen is made use of for the evaluation ofvarious parameter related to the vocal output.

Increasing use of the sound spectrograph in the diagnosis of Speech and Voice Disorders is evident Rom the literature. Its versatility and in its capacity to provide information on all three parameters of Speech, namely; Frequency, intensity and time are of particular value. At present sound spectropraph in use in the country are all imported, other imported instruments such as High Frequency resolution analyzer, PM pitch analyzer, Visipitch, Vocal II available at the National Institutes, which is used for diagnosis and remediation of Speech and voice disorders Prosthetic devices such as: artificial larynx used by laryngectomees who may be unable or unwilling to learn esophageal speech.

Artificial Larynx is being manufactured in India. However, there seem to be no standards on the specifications for this instrumentsdeveloped by the Bureau of Indian Standards.

The Metronome, delayed auditory feedback and masking divices for the use of Stutterers, are available. The Metronome and aversive Noise/shock units are available indigenously, but the miniature version are not available. These devices are available at many Speech and Hearing Clinic where therapy is administred by clinician.

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STANDARDS

Standards - It is of great importance that we should have maintain proper and accurate standards. The aim of all standardization is to promote optimum overall economy.

Standardization is the process of formulating and applying rules for an orderly approach to a scientific activity for the benefit and with the co-operation of all concerned and in particular for the promotion of optimum overall economy taking due account of functional condition and safety requirements.

It is based on the consolidated results of science, technology and experience. It determines not only the basis for present but also for future development and it should keep pace with advance.

On standards, Jawaharlal Nehru has said (Standard India, V_2N_7 (12-12),Oct.1988) -

> "Without standardization, we cannot make progress in industry. If we wish to create confidence about an industry and the scale of our goods, then they should be of high standards."

"The whole conception of planning is not to do things in an old spasmodic way but in a planned way. It is an essential element of planning to have standards."

Indian Standard Institution:

Being conscious of the various economic benefits that occurs from standardization at the national level and realising the urgent need for achieving maximum overall economy in the developing country.

The Indian Standard Institution was established in 1947, the year of Independence, by a resolution of the Government of India, with the active support of industrial, scientific and technical organizations in the country. The Indian Standard Institution is renamed as the Bureau of Indian Standards.

The Bureau of Indian Standards is an Autonomous Body supported by the Central and State Government Departments, Industries, Trade & Commerce, Technologists Research and Testing Institutions, Consumer Organization and others. The overall control rests with the General Council with the Minister of Industrial Development and Company Affairs, Government of India.

How a Standard is born

In a developing country such as India, where there is rapid industrial growth, establishment of standards is essential for safety as well as quality of products manufactured. The consumers also derive benefits in purchasing the articles with ISI marking which generates a certain known level of performance.

A number of electronic and electroccoustical measuring are used in audiological evaluation, rehabilitation of the aurally handicapped'and in other area related to the prevention of hearing loss. It is necessary that these instruments meet the specified standards regarding their performance so that the information collected by means of these instruments are valid and comparable to those obtained elsewhere.

Further, the measurement procedures also have to be standardized so that data is collected in a prescribed manner minimizing the effects of extraneous variables and for permitting the results obtained in different places at different times by different people are comparable.

To accomplish this, the Bureau of Indian Standards has set up several Committees to prepare the draft standards which is circulated to all the interested parties in India and abroad. Along with the comments received, the draft is considered carefully by the panel invested with responsibility. With the recommendations of panel the draft is placed before the Sectional Committees for finalization.

From the Sectional Committee, the draft along with comments incorporated is sent for wide circulation both within and outside the country, to all other National Standard Bodies on a reciprocal basis. Normally the period for wide circulation is 3 months. However, in rare cases, the duration is reduced.

On conclusion of wide circulation, the draft with the comments received is placed before the panel in whose purview it falls for finalization. The finalized draft goes again before the Sectioned Committee. Sometimes the draft may be sent back to the panel for modification, the collection of data, etc.

Subsequent to the approval of the draft by the panel and the Sectional Committee, it is referred to

Divisional Council for approval and finally for printing.

Revision of Standards

After a standard is printed the documents is reviewed to decide if a revision is necessary. This is done once in five years. But if the need for revision is felt and difficulties are encountered in implementation, a revision may be done even before the expiry of the five year period.

Amendments are issued and when comments are received after the document is printed. There is no time limit for issue of amendements.

Topics for Standards

The topics for standard may be suggested by the Divisional Council (there are 11 Divisional Councils). The Sectional Committees or a panel member may also suggest topics on which standards may be prepared. The drafts for standards are prepared by panel members, one or more. It can also be prepared by the BIS based or IBC, ISO and/or other national standards.

In adopting other national or international standards the points considered are climatic conditions, technology available and whether there is any, for it. Some of the national standards however may not be amicable to cur way of preparing standards.

Aims and Objectives:

The aims and objectives of ISI includes preparation of standards related to products, commodities, material and process and the promotion of general adoption on national and international scale,promotion of standardization, quality control and simplification in industry and commerce, co-ordination of the efforts of products and user for the improvement of material, products, appliances, process and methods, provision of the registration of standardization marks applicable to products.

ISI Certification Marks Scheme:

With the objects of providing practical utility of standards to the ordinary consumers, the Institution is operating under the authority of the ISI certification marks scheme. Under the scheme, licences are issued to manufacturers who provide goods according to the provision laid down in the relevant Indian standards, whereby they are permitted to apply on their product

ISI certification mark which provides a third party guarantee to the consumer that goods are of standard quality. A few indigenous manufactured hearing aid has got the ISI certification mark.

The Bureau of Indian Standards has published several documents that are of relevance to the speech and hearing professionals. These may be considered under several heads.

1. audiometers:

There are three standards that should interest any one who uses the audiometers for testing and for those in charge of caliberating the audiometers. Of the three, two documents, IS: 9098-1979 and 13:10565-1983 pertain to the specifications of the pure-tone and the diagnostic audiometer respectively. The former (IS:9098-1979) deals with the requirements for a pure-tone audiometer with facilities for air & bone conduction tests.

Audiometers meeting the requirements of IS:9098 (1979) would confirm to the IEC type 3 audiometer. On

the other hand, diagnostic audiometers constructed to the specification of IS: 10565 (1983) would be confirm to IEC type I audiometers. The diagnostic audiometer would be equipped to conduct speech audiometry and suprathreshold special tests besides the more basic air and bone conduction tests.

Two more documents: IS: 4755-1968 & IS:4755-1987 are entitled. Reference zero for the caliberation of pure-tone audiometers and Reference zero for the caliberation of pure-tone Air conduction audiometers, respectively. These documents gives the RET SPL (Reference equivalent threshold sound pressure level) for earphones commonly used with audiometers. These values (RET SPL) would form as reference at the time of audiometer caliberation.

The fifth document IS: 11024-1984 entitled "Specification for Standard Reference Zero for the caliberation of pure-tone - bone conduction audiometers and guidelines for its practical application" gives the RETFL (Reference Equivalent Threshold Force Level) values. This document is useful for the purpose of caliberation of bone vibrators.

& related documents for this purpose is the standards specifying the characteristics of the mechanical couple (IS: 11449-1985) has been published.

Hearing Aids

The first two documents on hearing aids published in 1967 were entitled "General Requirements for Hearing Aids" (IS: 4406, 1967)and "Specification for Hearing Aids (IS: 4482, 1967). Subsequently, these documents were revised and the new title being "Specification for Body Level Hearing Aids (IS:10775-1983), whereas in the earlier documents (15:4482-1967) the hearing aids were divided into two types, Gradp A and Grade B. In the latter document (13:10775-1984) the hearing aids are divided into 3 types - strong, moderate and mild based on four parameters ie, maximum saturation sound pressure level, average Osplgo, full on acoustic gain, H-F average full on gain.

Although general requirements and specifications for hearing aids were published in the late 1960s, a standard on the methods of measurements on hearing

aids was published almost a decade later (13:3641-1976). In 1984, a series of documents on "methods of measurement of the Electro-acoustical characteristics of hearing aids" were published.

Part - I of the documents (IS: 16776 (Part D-1984) entitled "General measurements for Air Conduction Hearing Aids" superseded the earlier documents 15:3641-1976.

Part II is on measurement of the induction coil input. Part III was prepared for measurements for hearing aids with automatic gain control circuits.

Measurement of the characteristics of the bone vibrator is covered in IS: 10776 which is the last in the series.

As early as 1966, dimensions of paralyzed plugs for hearing aids (IS: 3720-1966) was published. Since then, no standard pertaining to the cords used for hearing aids have been brought out. There seems to be considerable variation in the cords supplied along with the hearing aids, sometimes resulting in mismatch between the cord supplied by one manufacturer and the hearing aids carrying the level of another manufacturer. This makes the job of the audiologist

cumbersome at the time of counselling regarding use and maintenance of hearing aids; he/she would have to specify the cord to be purchased so as to prevent mismatch between the cords and the hearing aids used by the patients.

In the late 1980s, a few manufacturers were able to obtain the ISI marking on their hearing aids. This spells significant achievement and a major step towards proving hearing aids of good quality to the patients. However, quite a few hearing aids are available commercially without ISI marking. The entire process of obtaining the ISI certificate marking being expensive and time consuming, not all the manufacturers may be eager to obtain the ISI marking. Added to this, are the scarce facilities for getting the electro-acoustic measurement on hearing aid. Centres equipped for this purpose must be identified and adequate publicity must be given among the professionals.

The importance and the advantages of subjecting the hearing aids to electro-acoustic measurements must be emphasized among the professionals as well as

administrators. In addition, sufficient training must be given to the personnel involved in the measurements not with the standing the fact that instruments used for the electro-acoustic measurements may be microprocessor based.

NOISE: Instrumentation, Methods and related areas

Besides the standards on audiometers and hearing aids, the audiologists should also concern himself and herself with standards on sound level meter, assessment of noise exposure during work for hearing conservation purposes. Specification for personal sound exposure meter (IS: 10423-1982) and specification for ear protectors (15:9167-1979); methods for measurement of real ear protectors of hearing protectors and physical attenuation of ear muff (IS: 6229-1980); measurement of air borne noise omitted by pneumatic tools and machines (IS: 11702 (Part I)-1986)y measurement of noise from stationary vehicles and moving vehicles.

Lastly, assessment of noise with respect to community responses (IS: 9989-1981). With the current

interest in noise pollution, health hazards due to noise, the guidelines provided by the standards regarding the use of appropriate instruments and the methods to be employed in the measurement would ensure the validity of the information obtained.

Ear protectors are sought by people to protect their hearing against the onslaught of laud noise, to combat the disturbance due to over crowding and environmental noise. Ear protectors, plugs, muffs and helmets with muffs are manufactured in the country. It is not known, however, that the ear protectors manufactured meet the specifications in their respective categories.

In summary, several standards published by the Bureau of Indian Standards are of relevance to the professionals in the field of speech and hearing, whereas a few of the hearing aid manufacturers have obtained the ISI Certification makr, none of the audio-meters made in India have the ISI Certificate. Standards on sound level meters are available, but sound level meters are not on the commercial scene as yet.

RESEARCH PROJECTS IN PROGRESS

Research activities form an integral part of the activities of institutions, departments and professionals. The training programmes are geared towards imparting training in the acquisition of research skills by the trainees. The curriculum includes courses in such area as research methods, statistics, At the post-graduate level, practical experience is gained by the trainees through planning and execution of small scale research projects which is required as part fulfilment of the degree of Master of Science. Subsequent to completion of the course, the post-graduate degree holders become eligible to get fellowship from such agencies as the UGC, CSIR, ICMR or AIISH. Normally such fellowships are meant to support research activities leading to a doctroal degree. The Research grants from ICMR, UNICEF, WHO and other agencies have been made available to professionals in Speech and hearing. A few of the projects thus receiving support.

Of necessity, several of the research projects especially at the Master's level are directed towards establishment of norms, standardization of test material in various Indian languages, characteristics of Indian languages. Fewer reports are available regarding the investigation of therapeutic techniques. Similarly, interdisciplinary research seems to be to limited. Even when the research team includes

representatives of different professions, the areas being investigated are not always interdisciplinary. Reports are scarce on single case studies & case reports.

Research related to evaluation of hearing and speech disorders and in aural and speech rehabilitation is being conducted at a number of centres in India.

At the All India Institute of Speech and Hearing in Mysore the main area of research focus are-

The Institute has a team approach in the evaluation, treatment and counsilling of hearing and speech handicapped. Students of B.Sc., (Speech and Hearing) and M.Sc.,(Speech and Hearing) are being trained to work as a part of this team and this set a future pattern for comprehensive services for these handicapped. The students of M.Sc.(Speech and Hearing)? are required to do Independent project and dissertation on a variety of topic related to speech and hearing disorders. Different norms has been established. Ph.D., programme is also in progress at the All India Institute of Speech and Hearing, Mysore.

The following topics are under investigation in the various departments of the All India Institute of Speech and Hearing, Mysore.

1) Aphasia and Multilingualism clinical evidences towards the ceriberal organisation of language.

2) Acquisition of syntax in hard of hearing.

3) Acquisition of languages in mentally retarded.

4) Orthographics and the acquisition of reading.

5) Infant cry Analysis.

6) Acoustic analysis of Kannada speech sounds.

7) Laryngeal behaviour in stutterers.

8) Analysis of prosodic aspects of Kannada language.

9) Acoustic analysis of Alaryngeal speech.

10) A study of personality difference among stutterers and Non stutterers.

The following Projects are under taken by different department of All India Institute of Speech and Hearing, Mysore.

l) Project on "language disorders in Indian Neurological patients - a study in Neurolingnistics in the Indian context was complited, which has been funded by Indian Counsil of Medical Research (ICMR) New Delhi.

2) Project on "Perceptual cues of Kannada stop consonent" is underway, which has been funded by Department of Science and Technology, (DST), New Delhi.

3) A project entitled "Evaluation and follow up of hearing aid user is in progress"- The same is being funded by the Ministry of Welfare, Government of India.

4) A project entitled Hearing conservation in School going children which is funded by world Health Organisation(WHQ).

5) A project entitled "Development of Audiological Research Materials for the Geriatric Hearing-impaired and other families"funded by HELPAGE.

At Ali Yavar Jung National Institute for Hearing Handicapped, Bombay, the following UNICFF assisted research projects are in progress.

1) Screening of pre-school children for early identification of Hearing impaired and consequent intervention writhout delay.

2) Development of training Material for workers in rural areas for early detection and Management of Communication disabilities in young children.

3) Development of pre-school programmes for young hearing impaired children.

4) Development of material for creating awarness among parents of the bearing handicapped and for community in general.

The institute is also independently involved in the development and standardization of speech, language hearing and psychological tests.

The following research project are in progress at All India Institute of Medical Science, New Delhi.

1) Electroacoustic and clinical evaluation of Automatic Volume Control Hearing aid,which is funded by ICMR.

2) SAFA (Selective filter auditory amplification) for the Hearing impaired; which is funded by PL 480 fund of USA.

3) Prevention of deafness scheme,which is funded by DST (Dept. of Science and Technology).

The following research Projects are in progress at Audiology and Speech pathology Rehabilitation Unit, Dept. of ENT, Post-graduate Institute of Medical Education & Research Chandigarh.

1) Improvement in IQ Vs Hearing Impaired Children.

2) Transcutaneous Electro therapy for Tinnitus.

3) Community Noise and its effect on hearing.

4) Development of Aphasia Test.

At National Institute of Mental Health & Neuro Science, Bangalore, the following research project are in progress.

1) Study of Neurolinguistics in the Indian context, which is funded by ICMR, Collaboration with A.I.I.S.H.

2) Spectrographic Analysis of Infant cry,funded by DGHS.

The Regional Rehabilitation Training Centre, Madras has taken up project title "Development and Standardization of Language and Articulation Tests in Indian Languages; which is funded by UNICFF.

A number of computer based research related to speech and hearing field "On Analysis and Synthesis of speech, Speech signal processing, coding and recognition of speech" are being carried out at various centre such as, Indian Institute of Science, Bangalore, Total Institutes of Fundamental Research, Bombay, All India Institute of Speech and Hearing, Mysore, Ali Yavar Jung National Institute for the Hearing Handicapped,

CONCLUSION

1. There are five training institutes/medical colleges, where they provide training to Speech Pathology and Audiology All the five training institutes are providing training at graduate level.

   Two Institutes are providing training at postgraduate (M.Sc, Speech and Hearing) level including graduate (B.sc., Speech and Hearing) level.

   Only one Institute conducts Ph.D. programme in Speech and Hearing.

2. Although the major objective of these training institutes are to provide training in Audiology and Speech Pathology, these institutes provides facilities for ENT examination, audiological and speech evaluation services, counselling, therapy and vocational services for patients with speech and hearing handicapped.

3. These training institutes are equipped with indigenous and imported advanced diagnostic and rehabilitative equipment used for the identification, diagnosis and rehabilitation programs for speech and hearing handicapped. Some of the speech and hearing centres situated in Medical College are equipped with indigenous and imported.

4. A steady increase in the case load at the various speech and hearing centres, shows the growing awareness of speech and hearing disorders which calls for an increase in the profe-ssional manpower to meet the growing demand by the speech and hearing handicaps.

5. Keeping in mind the increased demands for speech and hearing professional, the number of seats for training in B.sc., (Speech and Hearing) and M.Sc, (Speech and Hearing) at AIISH, AYJNIHH has been increased.

6. There are many facturers engaged in manufacturing portable and diagnostic audiometers. They also manufacture body and ear level hearing aids.

7.A number of standards pertaining to speech and hearing has been developed by the Bureau of Indian standards.

8. A number of research project has been taken up by various Institute/Hospital to develop norms, various tests for audiological and speech evaluation in various Indian languages.

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