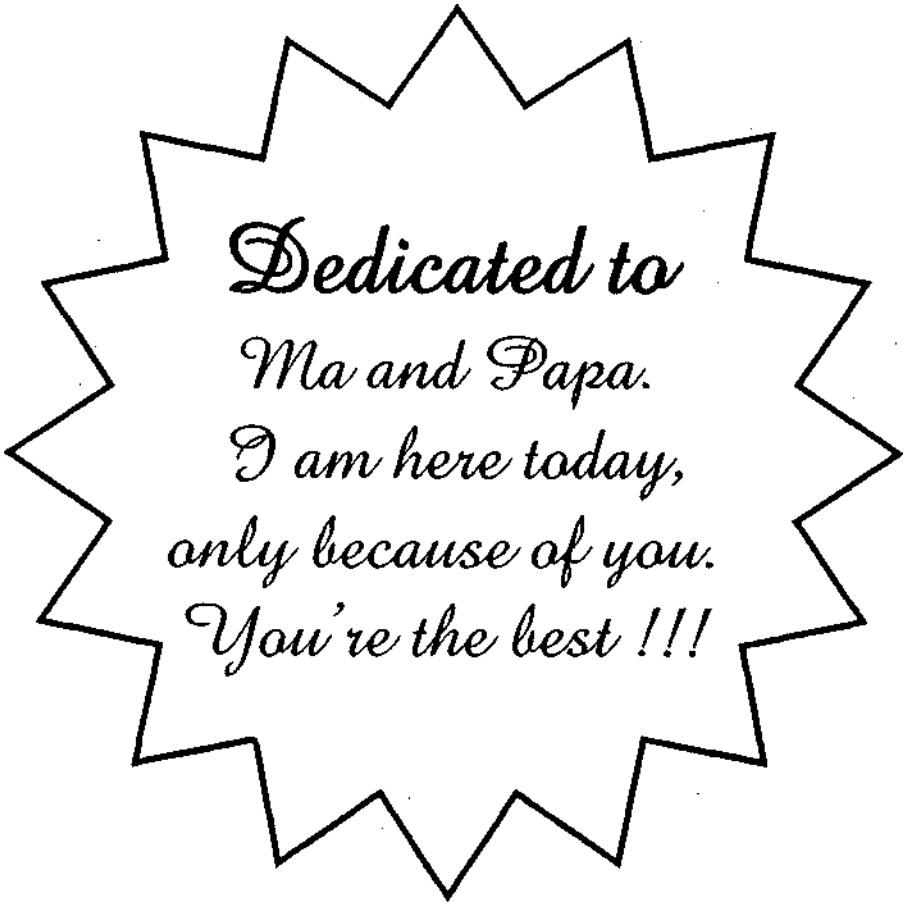
AUDIOLOGICAL DESK REFERENCE IN INDIA

Reg. No. 02SH0011

An Independent Project as a part fulfillment of First Year M.Sc, (Speech and Hearing), Submitted to the University of Mysore, Mysore.

ALL INDIA INSTITUTE OF SPEECH AND HEARING
MYSORE - 570006

June - 2003


Dedicated to
Ma and Papa.
I am here today,
only because of you.
You're the best !!!

Certificate

This is to certify that this Independent Project entitled **"AUDIOLOGICAL DESK REFERENCE IN INDIA"** is a bonafide work in part fulfillment for the degree of Master of Science (Speech and Hearing) of the student (Register No. 02SH0011).

Mysore

June, 2003

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

Certificate

This is to certify that this Independent Project entitled **"AUDIOLOGICAL DESK REFERENCE IN INDIA"** has been prepared under my supervision and guidance.

Guide

Dr. K. Rajalakshmi
Lecturer
Department of Audiology
All India Institute of Speech&Hearing
Mysore - 570 006

Mysore

June, 2003

DECLARATION

This is to certify that this Independent Project entitled **"AUDIOLOGICAL DESK REFERENCE IN INDIA"** is the result of my own study under the guidance of **Dr. K. Rajalakshmi,** Lecturer, Department of Audiology, All India Institute of Speech and Hearing, Mysore and has not been submitted earlier in any other University for the award of any Diploma or Degree.

Mysore,

June, 2003 **Reg. No. 02SH0011**

TABLE OF CONTENTS

LIST OF FIGURES

ACKNOWLEDGEMENTS

My sincere and heartfelt gratitude to:

My guide. Dr. K. Rajalakshmi, for all her support and guidance without you, this project would never have tamen shape.Thank you, ma'm!

Director, Dr.M.Jayaram, for permitting me to carry out this study.

All the people from the various centres who participated in the survey, and without whose co-operation this project would not have happened Thank you!

Divya Ma'm, for all her help. Thank you, for giving me that much needed confidence boost.

Jaby sir and Vidya, for their timely help. Thank yo.

Venkateshan Sir, for his help, with the project.

Ma, for knowing when to hold me tight, and just when to let go.I've always looked up to you and you've never failed me..love you, ma!

Pa, for your faith in my abilities, for never breaking your promises and for being the "oh-so-cool-dad" Ilove to brag about !ILU///

Kaur ma'm & Mathew Sir, for having taught me some very important lessons about life, I'm lucky to have had you as my teachers!

Akka,, for slipping into the "didi" role only occasionally, and being a friend most of the time. You mean a lot to me!

Nandini I loue being twins wtih you (yeah-...yeah.... I *know you are the better half). You've been with me at all times. Thanks for being my best friend and critic.. WE Really are two of a kind!!*

Ajjji and Ajja , for pampering me and for putting up with all the torture I inflicted as a superbrat!

Uncle, Aunty and Divya for giving me a home awa from hame. Thanks a bunch!

Adz..buddhu!! We've redefined the word "friends"! I'll always regret not having met you sooner.... Love you ..PTB!!!

Anjana, you've shown me that friends can stick together, no matter what. Thanks for being that constant factor and for sticking by me thru' thick and thin.

Sona, you are one of the good things that happened to me at AIISH. I cherish our friendship. And hey,thanks for making studies a-lot less painful!!

Sharad and Gupta, for all the fun times, great memories and... .ahem!.... the advices which I rarely *fallow! Sharad, thanks for being the brother I've never had. Gupta, you're a true blue pal!!*

Meenakshi... for fussing over me and for putting up with my incessant whining and pouting. You are a sweetheart!

Shereen... we've had our differences, but I known can always count on you. Thanks for everything!

Goswami sir....for all the differences, but I know I can always good work...hehehe!

I M.Scs... we definitely are "hut ke"! Here's to many more "record breaking" times!!

Softouch computers for their fast and efficient typing and for bringing this out in print. Senorita for the color you added to this project!

Thank you, God for seeing me through...as you always do!

INTRODUCTION

Survey is a method of data collection, in which an instrument is used to elicit responses, from a sample / population. It may vary in form, ranging from mail questionnaires to in-depth personal interviews.

The survey method is applied to various fields of study. The significance of survey method is that, it is an instrument of great versatility, applicable to a wide range of problems in the general area of social research. The advantage of survey research is that, a great deal of information can be collected from a large population simultaneously.

Surveys differ greatly in their scope, design and content. As in other methods of research, the specific characteristics of any survey will be determined by the objectives.

In the field of speech and hearing, the survey method has been used for various purposes. Curlee (1975), used the survey method to study the man power resources in speech pathology. Kapur, as cited in Rabindran (1993), conducted a survey of personnel, equipment and facilities available in India in the field of speech and hearing. A survey on man power resources and needs in speech pathology and audiology was done by Balakrishna (1978). Rabindran, MR., (1993), conducted a survey on man-power utilisation and advancement in ear mold technology.

Survey research seems ideally suited for obtaining information regarding man-power and resources available in the field of speech and hearing.

In the recent times many new speech and hearing centres have come up. Many hospitals now have separate departments for the speech and hearing disorders. As more and more centres are being established, the demand for professionally trained personnel in these centres has also increased. Consequently the number of training institutes has also multiplied; which simultaneously caters to the needs of the disordered population.

Each of these centres provides different kinds of facilities for the diagnostic evaluations in hearing disorders. The audiological test procedures being followed may also be different.

Some centres may have more facilities for the paediatric population, while some others may cater mostly to the adult and / or geriatric group. Some centres use standard materials for testing, while some others may use materials that have been developed locally. Lot of research and experimental work is going on for the development of test materials to suit various regional populations at different training centres. Various modifications of the existing tests to suit different age groups is also under progress.

The present study has been designed to provide information regarding the kind of facilities available for audiological evaluations in the various speech and hearing centres across India.

NEED FOR THE STUDY

Each centre provides a different kind of facility for audiological evaluation and the procedures followed may also be different. Most professionals in the field may be unaware of the facilities provided and procedures followed at the other centres.

New materials / techniques are constantly being developed in this field and information regarding such development may not be available to the other speech and hearing centres. Hence, such a compilation would prove very useful.

AIMS OF THE STUDY

An attempt is being made through this project to present information:

- About the kind of facilities available at the various speech and hearing centres for audiological evaluation purposes.
- Regarding any new tests or materials that may have been developed indigenously.
- Regarding the availability of diagnostic equipments and related materials for audiological testing purposes.

The information obtained will then be compiled to serve as a ready reckoner for students and professionals.

METHOD

Aim

To obtain information regarding the kind of facilities available,the procedures followed for audiological testing and any new test and / or materials that have been developed in the centre.

Materials

A letter was formulated, inviting information regarding:

- The type of set-up
- Audiological test procedure routinely followed for:
    - > Paediatric population
    - > Adult and geriatric population (others)
- Any special tests that are being administered.
- Instruments / equipments available for testing.
- Any new materials that have been developed at the centre.
- The specialists involved in testing.

Procedure

About 25 speech and hearing centres across the country were identified, based on common knowledge. The letters were then sent out by post or e-mailed.

Follow-up letters were mailed to many centres as no response was elicited within the stipulated time. Some of the centres were personally visited to obtain information.

RESULTS AND DISCUSSION

The letter was mailed to 25 different centres across 'the country to elicit the information. No response was obtained from some centres even after a follow-up letter was sent, which some others sent it without the complete information and hence were rendered invalid.

Thus,

Number of letters mailed = 25

Number of complete responses received =9.

The information obtained has been compiled and is being presented below.

A. Type of set-up:

Type of set-up	Names of the Centres	Here after referred to as
Government	All India Institute of Speech and Hearing, Mysore	a) SHC I
Government	AH Yavar Jung National Institute for the Hearing Handicapped, Mumbai	b) SHC II
Government	Ali Yavar Jung National Institute for the Hearing Handicapped, Kolkata	c) SHC III
Private	SRC Institute of Speech and Hearing, Bangalore	d) SHC IV
Private	Dr. M.V. Shetty College of Speech & Hearing, Mangalore	e) SHC V
Hospital	Sri Ramachandra Medical College and Research Institute CDU, Chennai	f) SHC VI
Hospital	Malabar Institute of Medical Science, Calicut	g) SHC VII
Hospital	Sri Chitra Tirunaal Institute for Medical Sciences and Technology, Thiruvananthapuram	h) SHC VIII
Hospital	Government Medical College Hospital, Coimbatore	i) SHC IX

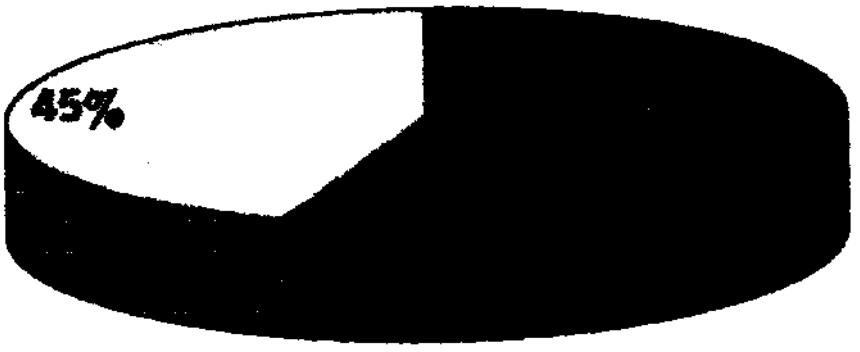


Figure 1: Percentage distribution of the various types of set-ups

B. Audiological test procedure routinely followed for:

(i) ***Paediatricpopulation:***

SHC-I	:	Behavioural observation audiometry (BOA)
		Visual reinforment Audiometry (VRA)
		Evoked Response Audiomety (ERA)
		Oto Acoustic Emissions (OAE)
		Immittance Audiometry (IMM)
		Conditioned Response Audiometry (CRA)
SHC-II	:	BOA
		VRA
		ERA
		OAE
		Immittance Audiometry
		Conditioned Response Audiometry
SHC-III	:	BOA
		ERA

OAE
Immittance Audiometry

Conditioned Response Audiometry

SHC-IV . BOA
ERA
OAE
Immittance Audiometry
Conditioned Response Audiometry

SHC-V : BOA
ERA
OAE
Immittance Audiometry
Conditioned Response Audiometry

SHC-VI : BOA
VRA
ERA
Immittance Audiometry
Conditioned Response Audiometry

SHC-VII : ERA
Immittance Audiometry

SHC-VIII : Cater mostly to the adult and geriatric population

SHC-IX : BOA
Immittance audiometry

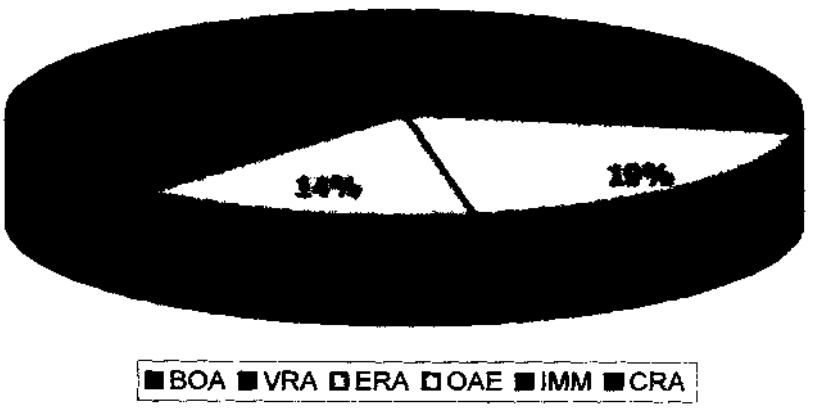


Figure 2: Percentage distribution of tests used for the paediatric population

(ii) *Others*

SHC-I	:	Pure Tone Audiometry (PTA) Speech Audiometry (Sp A) Immittance Audiometry
SHC-II	:	Pure tone Audiometry Speech Audiometry Immittance Audiometry
SHC-II I	:	Pure Tone Audiometry Speech Audiometry Immittance Audiometry
SHC-IV	:	Pure Tone Audiometry Speech Audiometry Immittance Audiometry
SHC-V	:	Pure Tone Audiometry Speech Audiometry Inmmittance Audiometry
SHC-VI	:	Pure Tone Audiometry Speech Audiometry. Immittance Audiometry
SHC-VII	:	Pure Tone Audiometry Speech Audiometry Immittance Audiometry
SHC-VTII	:	Pure Tone Audiometry Speech Audiometry
SHC-IX	:	Pure Tone Audiometry Speech Audiometry Immittance Audiometry

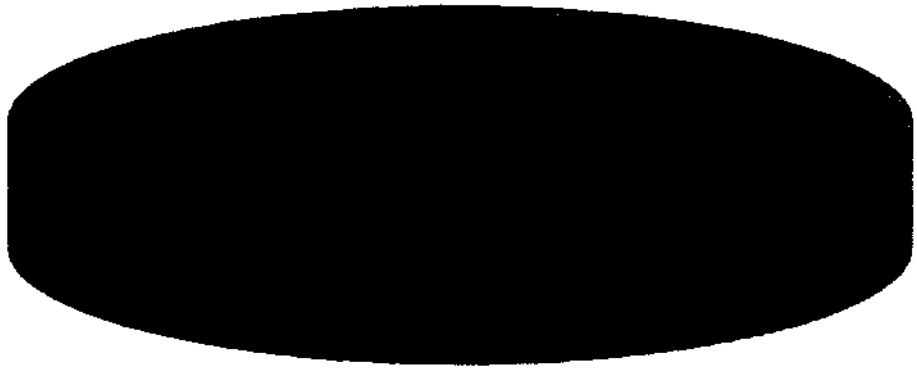


Figure 3: Percentage distribution of tests used for the adult and geriatric population

C. ***Special Tests Administered***

SHC-I	:	Audiometric Weber (A Weber)
		Tone Decay Test (TDT)
		Supra Threshold Adaptation Test (STAT)
		Reflex Decay Test (RDT)
		Short Increment Sensitivity Index (SISI)
		Stenger test
		Eustachian Tube Function test (ET function test)
		ERA
		OAE
SHC-II	:	STAT
		TDT
		RDT
		Performance - Intensity for Phonetically Balanced words (PI-PB function)
		Stenger test
		ERA
		OAE

SHC-1II : TDT

SIS1

Alternates Binaural Loudness Balance test (ABLB)

ERA

OAE

SHC-IV : RDT

STAT

TDT

Acoustic Reflex Latency Test (ARLT)

PI-PB function

ET function test

ERA

OAE

SHC-V : TDT

RDT

STAT

S1SI

ABLB

Metz Recruitment Test (MRT)

Stenger Test

ET Function Test

ERA

OAE

SHC-VI : TDT

STAT

RDT

MRT

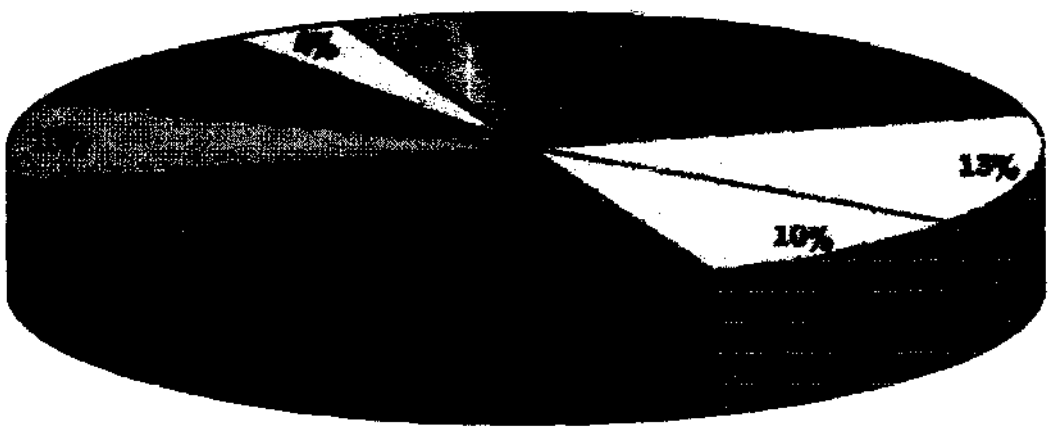
ET Function test (ET test)

Lombard test

Stenger test

ERA

SHC-VII	:	TDT
		STAT
		ERA
SHC-Vllf	:	SISI
		TDT
		STAT
SHC-IX	:	Audiotnetric Weber
		TDT
		SISI
		ABLB



• A Weber	•TDT	STAT	RDT
• Stenger	• ET function test	•ERA	• OAE
• PI-PBfunction	•ABLB	•ARLT	• MRT
• Lombard			

Figure 4: Percentage distribution of special tests used at the various centres

(D) *Instruments available for testing:*

SHC-1	:	Audiometers
		GS161, Beltone 110, OB822, OB922
		Immittance meters
		GSI33 (version 1 and Version 2) Zodiac, GSI Tympstar, MA52
		ERA
		Biologic, Nicolet Bravo
		OAE
		IL0292 (TEOAE)
		GS160 (DPOAE)
SHC-II	:	Audiometers
		GSI 16, Beltone 2000, AD-29, Elkonmulti, Madimate, OB922
		Immittance meters -
		GSI33, Maico401, Zodiac 901
		ERA-
		MK22, MK12, Nicolet
		OAE-
		ILOV5 (TfiOAE)
		Echoport (DPOAE)
SHC-III	:	Audiometers -
		AD229, Amplaid 171, Beltone 110, Arphi MKSI, ELKON 3N3/ multi, Lotus 118.
		Immittance meters -
		Amplaid 750, GSI38, Siemen's hand held tymp., Zodaic 990
		ERA
		Nicolet meridian compass.
		OAE
		ILO98

SHCIV	:	Audiometers
		Fonix-FA12, GSI16, Beltone 2000
		Immittance meters
		GSI33
		ERA
		Biologic EP 317
		OAE
		GSF60 (DPOAE)
		ILO (TBOAE)
SHC V	:	Audiometers
		GSI61
		Immittance meters
		Amplaid 724
		ERA
		Biologic
		OAE
		GSI60 (DPOAE)
SHC VI	:	Audiometers
		Arphi MK10, Arphi MK11, Graphic MKIV, GSI6I
		Immittance meters
		GSI 38, Amplaid 770
SHC VII	:	Audiometers
		Amplaid 311, Eluon EDA 3N3, Multi-diagnostic audiometer
		Immittance meter
		Amplaid 750
		liRA
		Amplaid MK22 BERA system
SHC VIII	:	Audiometer
		Welch Allyn, GS1-61

SHCIX	:	Audiometer
		Clinical audiometer
		Immittance meter
		Impedance audiometer

E. *New Test Materials Developed*

SHC I	:	Picture test of speech perception in Malayalam (Mathew,P., 1996).
		Speech Identification tests for Kannada speaking children (Vandana, S., 1998)
		A picture speech identification test for children in Tamil (Prakash, B., 1999)
		A speech perception test for English speaking hearing impaired Indian preschoolers (Begum, R., 2000)
		Speech reading test in Kannada for adults (Mahesh, S., 2000)
		Development of Environment sound test for assessing listening skills in children (Rawat, N., 2001)
		High frequency- Kannada speech identification test (HF-test) (Mascerenhas, K.E., 2002)
SHC IV	:	Spondee list in Kashimiri (Waheed-Ul-Zaman, 2000) Urdu / Hindi high frequency word list (Preeti, R., 2001)
SHC V	:	Spondee list in Nepali (Kama, S.L., 2002)
		Acoustic Reflex Latency 'lent Retro Cochlcnr Pathology (Pachauri, B., 2002)

F. *Specialists involved in testing*

SHC I	:	Audiologists
		ENT specialists
SHC II	:	Audiologists
		ENT specialists
SHC III	:	Audiologists
		ENT specialists
SHC IV	:	Audiologists
		ENT specialists

SHC V	:	Audiologists
		ENT specialists
SHC VI	:	Audiologists
		ENT specialists
		Paediatricians
		Neurologists
SHC VII	:	Audiologists
		ENT specialists
		Neurologists
SHC VIII	:	Audiologists
		Neurosurgeons
		Neurologists
SHC IX	:	Audiologists
		Audiometricians
		ENT specialists

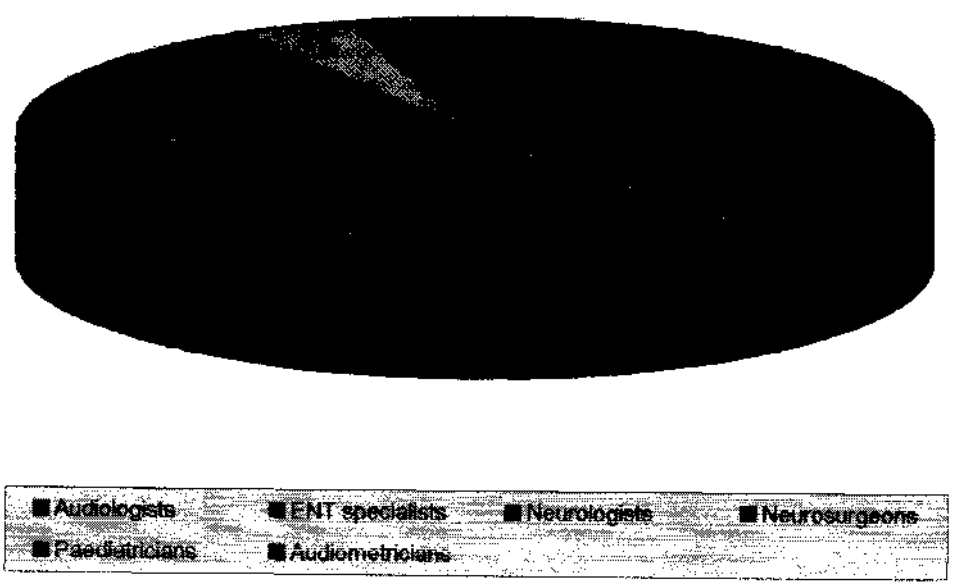


Figure 5: Percentage distribution of specialists involved in the testing across various centres

From the above mentioned results it is evident that there is not much variation in the audiological test procedure followed across the various set-ups. For the paediatric population, Immitance has emerged as the most widely used test, closely followed by BOA, OAE and Conditioned Response Audiometry. For the adult and geriatric population, the test procedure followed is almost uniform across the centers. Among the special tests, ERA, OAE, TDT, STAT and SISI are used most frequently. Most of the test materials have been developed to suit the regional population.

Almost all the centers, which participated in the survey, have equipments for all the routine tests as well as for tests like ERA, OAE etc.

The survey also revealed that, ENT specialists are almost always involved in the testing, along with the Audiologists. Neurologists are also part of the team in many of the centers.

SUMMARY AND CONCLUSION

The present study was aimed at collecting information regarding the facilities available for audiological evaluation in the various speech and hearing centres across the country.

A letter was formulated and mailed / e-mailed to the various centres. The information obtained has been thus compiled.

Such a compilation will help professionals and students alike to keep abreast with the latest developments in the field, while also giving information regarding the kind of facilities available at the various centres. This will also aid in making appropriate patient referrals.

REFERENCES

1. Balakrishnan, E.P. (1978). Man-power resources and needs in speech pathology and audiology. *An Unpublished Independent Project.* Submitted to the University of Mysore, Mysore.
2. Curlee, R.F. (1975). Man power resources and needs in speech pathology / audiology. *ASH A, H.* (pp. 265-273).
3. Rabindran, M.R. (1993). Man power resources in speech and hearing - Ear mold. *An Unpublished Independent Project.* Submitted to the University of Mysore, Mysore.