

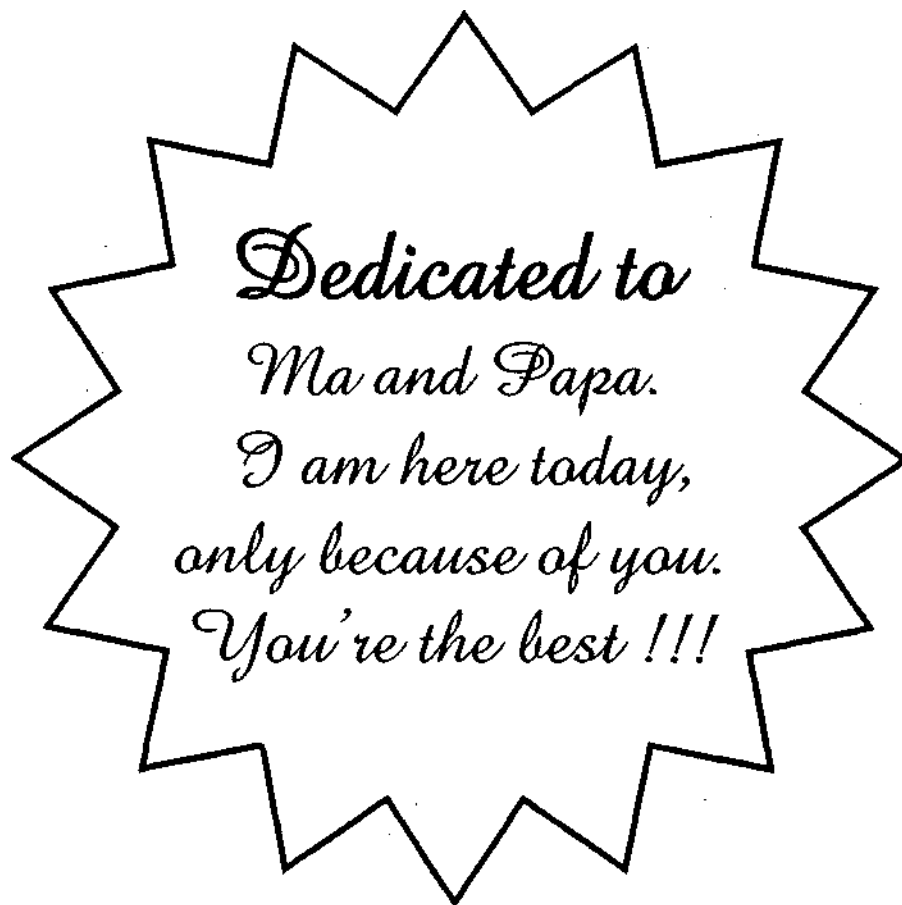
# **AUDIOLOGICAL DESK REFERENCE IN INDIA**

**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

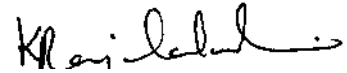
  
**Director**

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

Institute of Speech & Hearing  
Mysore - 570 006

Mysore

June, 2003

All India

# 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**

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*Ajji 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 away from home. Thanks a bunch!*

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

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*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 manpower 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,

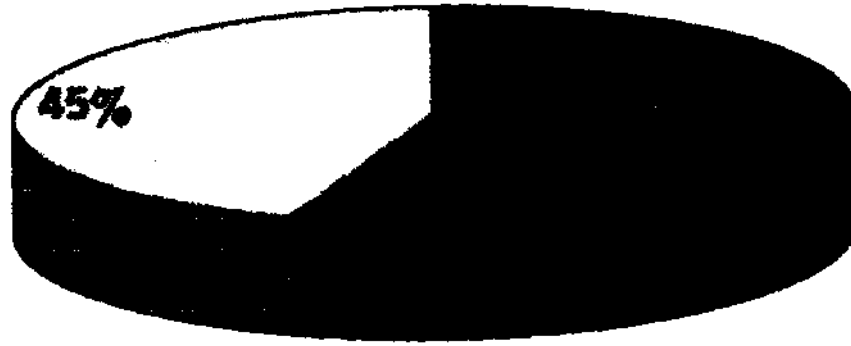
Number of letters mailed = 25

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



• Government • Private Hospital

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

**B. Audiological test procedure routinely followed for:**

**(i) Paediatric population:**

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



		OAE
		Immittance Audiometry
SHC-IV	.	Conditioned Response Audiometry 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

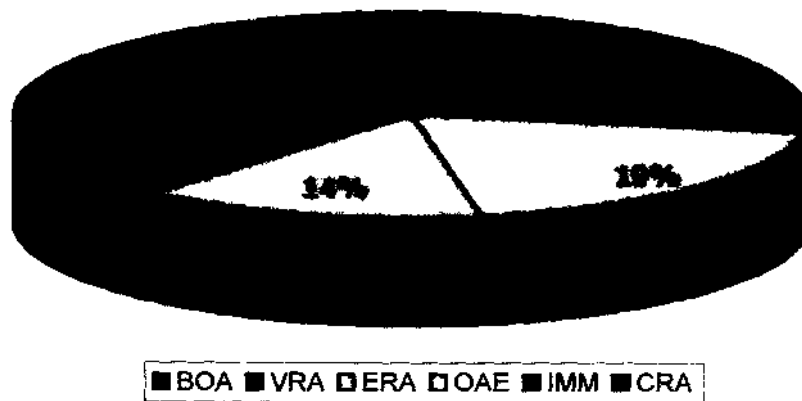


Figure 2: Percentage distribution of tests used for the paediatric population

(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 Immittance 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

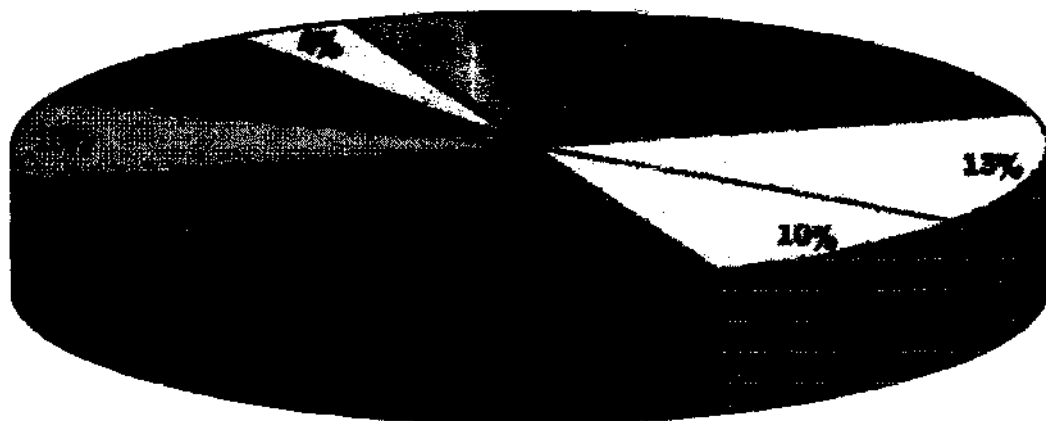


SHC-III	:	TDT SISI Alternates Binaural Loudness Balance test (ABLB) ERA OAE
SHC-IV	:	RDT STAT TDT Acoustic Reflex Latency Test (ARLT) PI-PB function ET function test ERA OAE
SHC-V	:	TDT RDT STAT SISI ABLB Metz Recruitment Test (MRT) Stenger Test ET Function Test ERA OAE
SHC-VI	:	TDT STAT RDT MRT ET Function test (ET test) Lombard test Stenger test ERA

SHC-VII : TDT  
STAT  
ERA

SHC-VIIf : SISI  
TDT  
STAT

SHC-IX : Audiometric 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) (Mascarenhas, K.E., 2002)

SHC IV : Spondee list in Kashmiri (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 Cochlear 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



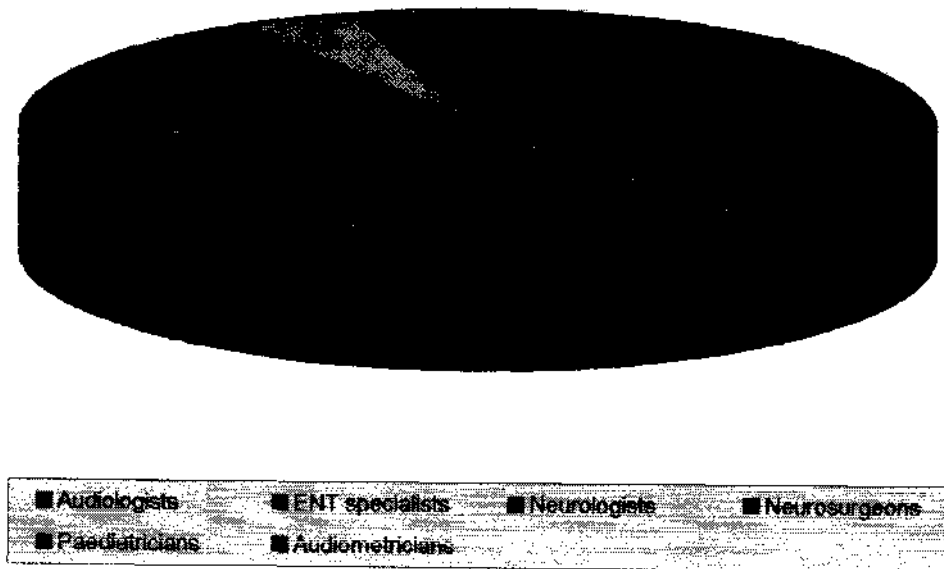
SHC V : Audiologists  
ENT specialists

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.

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