

SOME ASPECTS OF HEARING AID
USAGE IN CHILDREN

REG. NO. 8404
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AN INDEPENDENT PROJECT WORK SUBMITTED IN PART
FULFILMENT FOR FIRST YEAR M.Sc., (SPEECH AND
HEARING) TO THE UNIVERSITY OF MYSORE.

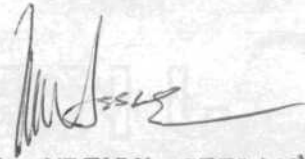
ALL INDIA INSTITUTE OF SPEECH AND HEARING
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TO MY PARENTS

CERTIFICATE

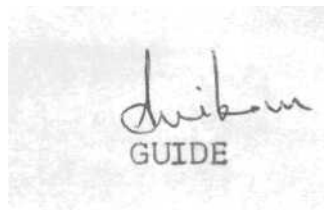
This is to certify that the Independent Project
entitled 'SOME ASPECTS OF HEARING AID USAGE IN
CHILDREN' is the bonafide work in part
fulfilment for the Degree of Master of Science
(Speech and Hearing) of the student with
Register No. 8404



(Dr. M. NITHYA SEELAN)
Director,
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CERTIFICATE

This is to certify that this Independent
Project entitled 'SOME ASPECTS OF HEARING
AID USAGE IN CHILDREN' has been prepared
under my supervision and guidance.

A rectangular stamp containing a handwritten signature in cursive script, which appears to be 'D. Gibson', positioned above the word 'GUIDE' printed in a simple, sans-serif font.

DECLARATION

I hereby declare that this Independent Project entitled 'SOME ASPECTS OF HEARING AID USAGE IN CHILDREN' is the result of my own study under the guidance of Dr. Shailaja Nikam, Professor and Head, Department of Audiology, All India Institute of Speech and Hearing, Mysore, and has not been submitted earlier at any University for any other Diploma or Degree.

REG. NO. 8404

Mysore,

Dated: May, 1985.

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penetrates solid objects and is independent of wind conveyance; it enables broadcast, transmission and directional perception. The rapid extinction of the signal was exploited by the shortening of the persistence time in the sensation created by sound. (FISCH, 1983).

Once sound was chosen as the raw material of language, the importance of an intact hearing system increased greatly. The acoustic characteristics of sound furnish the clues by which the listener distinguishes one auditory experience from another. We are able to differentiate sounds because they differ in frequency, in intensity, in overtone structure and in pattern of change.

The hearing system in certain unfavourable circumstances is more vulnerable than other

phylogenetically older systems. Hence early identification of hearing loss assumes great significance if the child is to have a near normal development of speech and language.

Rarely do we come across a case of total deafness; there is generally some amount of hearing left. Thus it becomes necessary for such individuals to make maximum use of this potential hearing. Auditory training equips the hearing handicapped person to become alert to sound, to distinguish various sounds and to build up tolerance for noise. A good hearing aid is of the utmost necessity in such training. It must be remembered that the main purpose is to amplify the sound and enable it to reach the ear effectively. It does not help regain hearing already lost.

The present study was undertaken to have a better understanding of the problems of child hearing aid users and the level of parental knowledge of their child's hearing loss and hearing aid.

It seems true that hearing impaired children usually have problems with their aids and that the parents lack of understanding contributed to this (BLAIR et al, 1981). It was also felt that there is a tendency for some parents to expect too much of a hearing aid. This can quickly lead to frustration, disappointment and discard of the aid. (OLSEN and TILLMAN, 1977).

To reduce the magnitude of these problems, it was felt that an analysis of the knowledge parents have of hearing aids would help, clarify the situation considerably.

Unlike the use of a pair of spectacles, correct hearing aid usage requires a certain degree of sophistication

and knowledge on the part of the user.

In India, in spite of its large hard of hearing population, the cost of hearing aids remains prohibitively high for a vast majority of the people. (The cost ranges from Rs.350/- for an ordinary pocket model to Rs.3,000/- for a spectacle aid). But, now with increasing awareness of the problems of the hearing impaired, several Government and non-government agencies have allocated funds for their rehabilitation. It is now relatively easier for an individual to get an aid free of cost.

To date, there is not much information available on how much an individual spends to maintain an aid after its purchase. Such data would be helpful in determining whether the existing schemes are adequate or not.

To get this information, parents of children fitted with hearing aids were given a series of questions to answer. Their responses have been tabulated and discussed in the following sections.

CHAPTER - II

METHOD

The present study was undertaken to determine the level of parental understanding of hearing aids and their usage. Data was collected using the questionnaire method.

The Questionnaires :

Four questionnaires were employed in this study (included in the Appendix). They broadly covered the following areas:

HA-1 dealt with the parents' knowledge of hearing aids.

HA-3 is about the parents' evaluation of their child's performance with the aid.

HA-4 deals with the spare parts and components of the hearing aid.

HA-5 is about the expenses incurred by the hearing aid user.

HA-2 which was developed for a different purpose was not included in this study.

Some items from forms HA-1, HA-3 and HA-4 have not been analysed as they were felt to be irrelevant to the present study.

These forms which were in English, had been developed earlier for a follow up programme of hearing aid users and were translated into Kannada. The translations were checked for authenticity by competent people (The Staff at SRLC, Central Institute of Indian Languages).

These forms were then cyclostyled.

The questionnaires were also checked by professionals from speech, hearing and allied fields for ambiguities.

Subjects :

The subjects were twentyfive parents of hand-of-hearing children and were volunteers for this study. 80% of these children were receiving speech therapy and 20% had been evaluated and counselled at a speech and hearing centre.

The children wore different models of body level aids. Their age ranged from 3 to 13 years and they had been using their aids for a period ranging from 3 months to 5 years.

Procedure :

Instructions on how to fill out the cyclostyled forms were given individually to the parents. The purpose for which this information was sought was explained to them.

The parents were requested to return the completed questionnaires as soon as possible, except for the fourth form which required the parents to give information at monthly intervals, for a period of three months.

Results:

The responses to the questions were tabulated in terms of percentages. Wherever it was meaningful to do so, the responses from different questionnaires are presented together.

C H A P T E R - III

R E S U L T S

The information from the different questionnaires have been combined and discussed under different headings.

GENERAL INFORMATION OF THE AID

The parental knowledge of hearing aids in general was tested. It was felt that parents require to know about the aid if they are to maximally support the child and to minimize hearing-aid 'down-time'.

Purpose of the aid :

The importance of parents knowing what the hearing aid can and cannot do is self evident.

Table - 1 : Purpose of the aid.

		Percen- tage
Helps the child hear	10	40%
Magnifies sound	8	32%
Those who did not respond	6	24%
Inappropriate response	1	4%

Table - 2 : Duration for which aid has to be worn.

	N	Percentage
Always	7	28%
Till hearing returns to normal	4	16%
Did not respond	6	24%
Do not know	6	24%
Till he gets speech	2	8%

Table - 3 : Does the aid improve hearing?

	N	Percentage
Improves hearing	12	48%
Does not improve hearing, but speech improves	3	12%
Does not improve hearing	2	8%
Did not respond	3	12%
Did not know	2	8%
No Change	1	4%
Hearing Deteriorates	2	8%

Type of aid their child is using :

This kind of general information regarding the details of the type of aid their child is wearing will facilitate

easy replacement of spare parts.

Table - 4 :

a. Kind of aid.

	N	Percentage
Did not respond	19	76%
Body level aid	6	24%

b. Kind of cords.

	N	Percentage
Monaural aid	2	8%
Pseudobinaural aid	15	60%
Did not respond	8	32%

c. Whether Indian/Imported aid.

	N	Percentage
Indian aid	17	68%
Imported aid	1	4%
Did not respond	7	28%

d. Brand name of their aid.

	N	Percentage
Given correctly by	15	60%
Did not respond	10	40%

e. Serial Number.

	N	Percentage
Given correctly by	7	28%
Did not respond	15	60%
Did not know	3	12%

Table - 5 : Reason for a particular aid being used.

	N	Percentage
Because of the Hearing loss	13	52%
Because it was prescribed by professionals	6	24%
So that the child can hear	2	8%
Did not respond	4	16%

Binaural Hearing Aids :

In this section parental attitudes and ideas about the use of binaural aids was assessed.

Table - 6 : Whether binaural hearing aids are better?

	N	Percentage
Yes	15	60%
No	1	4%
Did not respond	3	12%
Not tried	6	24%

Table - 7 : Reaction to a query whether parents would be willing to let their child wear two aids.

	N	Percentage
Yes	19	76%
No	1	4%
Cannot say	4	16%
Did not respond	1	4%

Behind the Ear Aids :

Parents preference for BTE aids was assessed.

Table - 8 : Prefer BTE aids.

	N	Percentage
Yes	12	48%
Only if more useful	4	16%
No	4	16%
Later on, if found more useful	1	4%
Do not know	1	4%

Imported Aids :

There is always a desire for a foreign equipment and a feeling that it would be more useful. The parents' preference regarding this was evaluated.

Table - 9 : Prefer Indian/imported Aids.

	N	Percentage
Indian	16	64%
No preference	5	20%
Do not know	2	8%
Did not respond	2	8%

Table - 10 : Whether there are problems in using an Imported aid.

	N	Percentage
Yes	12	48%
No	2	8%
Do not know	9	36%
Did not respond	3	12%

Table - 11 : Whether any spare parts are Imported.

		Yes	No.	Do not know	Did not respond
Cord	Percentage	16%	36%	48%	-
	N	4	9	12	-
Receiver	Percentage	-	52%	44%	4%
	N	-	13	11	1
Battery Charger	Percentage	12%	48%	36%	4%
	N	3	12	9	1
Ear Moulds	Percentage	4%	56%	36%	4%
	N	1	14	9	1

TROUBLE SHOOTING

Knowledge of the basics of trouble shooting would go a long way in solving minor problems of the aid.

Hearing aid functioning :

Table - 12 : Does the aid require periodic servicing even if not malfunctioning.

	Yes	No	Do not know	Did Not respond
Percent- age	72%	16%	4%	8%
N	18	4	1	2

Table - 13 : Aids are sent for repair, when.

	N	Percentage
There is something wrong with the aid	9	36%
After consulting the professional	2	8%
The child cannot hear	5	20%
There is no sound produced when the receiver is brought to the mic	1	4%
Sound is not clear	1	4%
Did not respond	7	28%

Table - 14 : Should a new aid periodically replace the old.

	Yes	No	Do not know	Did not respond
Percentage	4%	72%	4%	20%
N	1	18	1	5

Table - 15 : Might the aid being worn at the present time, have to be changed at a future date.

	Yes	No	Do not know
Percentage	52%	12%	36%
N	13	3	9

Table - 16 : Method used in checking hearing aid functioning.

	N	Percentage
By listening to the sound output	11	44%
By bringing the mic to the receiver	4	16%
By evaluating the child's responses	3	12%
Did not respond	6	24%

Table - 17 : Learned to check aid from.

	N	Percentage
Professionals	11	44%
Pamphlets given by Professionals	3	12%
Both	3	12%
Hearing aid manufacturers	1	4%
Did not respond	7	28%

Table - 18 : Frequency of checking the aid.

	N	Percentage
Once a day	11	44%
Once a week	2	8%
Not at all	1	4%
Do not know how to check	1	4%
Thrice a day	5	20%
Four times a day	1	4%
Did not respond	4	16%

Children checking the Aid :

Table - 19 : Do children check the aid for malfunction.

	Yes	No	Did not respond
Percentage	56%	28%	16%
N	14	7	4

Table - 20 : Children who check their aids, do so by.

	N	Percentage
Saying 'hallo'	3	12%
Holding receiver close to the mic	4	12%
Wearing the aid	4	16%
Did not respond	4	16%
Inappropriate responses	4	16%

Table - 21 : Do Children report when the aid stops functioning.

	Yes	No	Did not respond
Percentage	60%	24%	16%
N	15	6	4

HEARING AID CONTROLS

One of the important aspects of optimum hearing aid usage is a working knowledge of the controls of an aid.

Table - 22 : Number of Switches.

	N	Percentage
Did not know	3	12%
Responded correctly	4	16%
Did not respond	9	36%

Volume Control :Table - 23 : Knowledge of Volume Control Setting.

Yes		Did not know		Did not respond	
Percentage	N	Percentage	N	Percentage	N
48%	12	8%	2	44%	11

Table - 24 : Tried other Volume Control Settings.

Yes		No		Did not respond	
Percentage	N	Percentage	N	Percentage	N
28%	7	56%	14	16%	4

Table - 25 : Setting at which Volume Control is maintained.

	N	Percentage
1	1	4%
2 to 4	10	40%
6 to 7	3	12%
1 to 5	10	40%
Did not respond	10	40%

Table - 26 : Maximum Setting.

	N	Percentage
1 to 5	10	40%
6	2	8%
7 to 9	2	8%
Did not respond	12	48%

Table - 27 : Situations when maximum settings are used.

	N	Percentage
When the cell becomes weak	7	28%

	N	Percentage
When sound does not come	1	4%
While teaching	1	4%
Not frequently	2	8%
Did not respond	14	56%

Table - 28 : Volume Control is raised when.

	N	Percentage
The cell is weak	14	76%
The cell is new	1	4%
In a noisy place	1	4%
Not at all	2	8%
Did not respond	2	8%

Table - 29 : Volume Control is lowered when.

	N	Percentage
The cell is weak	3	12%
The cell is new	16	72%
In a noisy place	3	12%
Not at all	1	4%

Table - 30 : Whether the children adjusted Volume Control on their own.

	Yes	No	Not observed	Puts it off	Did not respond
Percentage	48%	24%	4%	4%	20%
N	12	6	1	1	5

Those who adjust the volume controls, do so under the following circumstances, according to the parents.

- when people talk softly
when he cannot hear
- when the child is testing the aid
- when there are very loud environmental sounds
- when going to school
- depending on the situation

Table - 31 : Child's understanding of Volume Control.

	Yes	
	N	Percentage
1. Varies the volume control himself	14	56%
2. Turns down the volume control when he hears loud sounds	13	52%
3. Turn down the volume control when there is noise	11	44%
4. Decreases the volume control when there is squeal/whistling noise	9	36%
5. Increases the volume control when he does not hear any sound	11	44%
6. Increases volume control when the sound from the aid is weak	12	48%

Tone Control :

Table - 32 : Knowledge of Tone Control Setting.

	Yes	Do not know	Did not respond
Percentage	36%	-	64%
N	9	-	16

Table - 33 : Meaning of LNH.

	Yes	Did not know	Did not respond
Percentage	52%	20%	28%
N	13	5	7

Table - 34 : Tried other Tone Control Settings.

	N	Percentage
When listening to speech or music	4	16%
When not interested in listening	3	12%
Never	14	56%
Did not respond	4	16%

'T' Switch :

Table - 35 : Uses of 'T' Switch.

	Yes	No	Do not know	Did not respond
Percentage	16%	56%	8%	20%
N	4	14	2	5

Table - 36 : Purpose of 'T' Switch.

	N	Percentage
To be used when speaking on the telephone	4	16%
Did not respond	21	84%

Table - 37 : Method of using the 'T' Switch.

	N	Percentage
Shift from 'M' to 'T' position	1	4%
Did not respond	24	96%

SOME HEARING AID PARTS

Parents should have an idea of the names and basic functions of a few of the parts of the aid which they have to handle frequently.

Cell :

Table - 38 : Voltage they ask for when purchasing a cell.

	N	Percentage
1.5 V	9	36%
Do not know	3	12%
Pen cell	2	8%
Did not respond	11	44%

Table - 39 : Whether child knows which cell has to be bought.

	Yes	Do not know	Did not respond
Percentage	40%	40%	20%
N	10	10	5

Table - 40 : Differences between cells of different make,

a) Some cells do not make proper contacts.

	Yes	No	Do not know	Did not respond
Percentage	40%	20%	28%	12%
N	10	5	7	3

b) Get exhausted faster.

	Yes	No	Do not know	Did not respond
Percentage	28%	24%	24%	24%
N	7	6	6	6

c) Do not get into the battery compartment.

	Yes	No	Do not know	Did not respond
Percentage	12%	24%	24%	40%
N	3	6	6	10

d) \When used give an intermittent sound.

	Yes	No	Do not know	Did not respond
Percentage	24%	16%	36%	24%
N	6	4	9	6

e) Lasts longer.

	Yes	No	Do not know	Did not respond
Percentage	36%	4%	28%	32%
N	9	1	7	8

Table - 41 : Differences between cells of different make according to the children.

a) That some cells are difficult to insert.

	Yes	No	Did not respond
Percentage	16%	52%	32%
N	4	13	8

b) That some cells do not fit correctly in the battery compartment.

	Yes	No	Did not respond
Percentage	12%	56%	32%
N	3	14	8

Checking the Cell :

Table - 42 : Method used in checking the cell.

	N	Percentage
By listening to the aid	17	68%
By using a voltmeter in the shop	1	4%
By examining the seal at the time of purchase	1	4%
Do not know how to check	1	4%
Did not respond	5	20%

Table - 43 : Frequency with which cells are checked.

	N	Percentage
Once a day	9	36%
Twice a day	3	12%

		Percentage
Thrice a day	2	8%
Once a week	9	36%
Did not check	1	4%
Did not respond	1	4%

Table - 44 : Life of a cell.

		Percentage
One week	10	40%
Two weeks	6	24%
Ten days	2	8%
1 month	2	8%
2 months	1	4%
Do not know	1	4%
Did not respond	3	12%

Table - 45 : Whether they store a spare cell.

	Yes	No
Percentage	64%	36%
N	16	9

Cords :

Table - 46 : Method of checking Cords.

		Percentage
By listening to the aid	11	44%
By checking with an instrument	2	8%
Do not check	1	4%
Do not know how to check	7	28%
Did not respond	4	16%

Table - 47 : Frequency of checking Cords.

	Once a day	Once a week	Once a month	Not at all	Once in a while	Do not know	Did not respond
Per-centage	44%	4%	4%	12%	4%	4%	28%
N	11	1	1	3	1	1	7

Table - 43 : Parents get a new cord when.

	N	Per-centage
1. When one cord gets torn	8	32%
2. When both cords get torn	1	4%
3. When the sound is intermittent from one cord	10	40%
4. When the sound is intermittent from both cords	5	20%
5. When there is no sound coming from one cord	1	4%
6. When there is no sound coming from both cords	2	8%
7. When advised by professionals	4	16%
8. Not changed even once	3	12%
9. When other possibilities are ruled out	1	4%
10. Did not respond	2	8%

Table - 49 : Ways in which cords were stored when aid was not in use:

	N	Per-centage
1. Removing the cord from the aid and keeping it in the box	2	8%
2. Winding the cord tightly round the hearing aid	7	28%

	N	Percentage
3. Winding the cord loosely round the hearing aid	6	24%
4. Winding the Cord, but not on the aid	3	12%
5. Did not respond	7	28%

Table - 50 : Replacement of a Cord during a period of 3 months.

	N	Percentage
Replaced cord once in 3 months	13	52%
Did not replace cord in the 3 months	12	48%

Table - 51 : Whether they store a spare cord.

	Yes	No
Percentage	32%	68%
N	8	17

Receivers :

Table - 52 : Type of Receiver they buy.

		Percentage
As advised by the audiologist	11	44%
Not bought even once	5	20%
Did not respond	9	36%

Table - 53 : Life of the Receiver.

		Percentage
1 to 2 years	4	16%
2 to 4 years	2	8%
Not changed	12	48%
Did not respond	7	28%

None of the parents kept a receiver in reserve.

Switches :

Table - 54 : Life of the Switch.

	N	Percentage
One year	1	4%
Two years	3	12%
Not replaced	9	36%
Did not respond	11	44%

Mic :

Table - 55 : Position of Mic on child's aid.

		Percentage
On top of the aid	8	32%
On the frontside of the aid	8	32%
Do not know	4	16%
Did not respond	5	20%

Table - 56 : Whether mic is often covered by a cloth.

	Yes	No	Do not know	Did not respond
Percentage	16%	28%	4%	52%
N	4	7	1	13

Dust Cover :

Table - 57 : Whether their child's aid has a dust cover.

	Yes	No	Do not know	Did not respond
Percentage	44%	40%	8%	8%
N	11	10	2	2

Table - 58 : When is the dust cover used.

	N	Percentage
Always	6	24%
When not using the aid	4	16%
When the child goes out	1	4%

Table - 59 : Purpose of the Dust Cover.

	Yes	Do not know	Did not respond
Percentage	32%	12%	56%
N	8	3	14

Those who said 'yes' gave the following functions :

- prevents dust from settling on the mic and controls.
- prevents food particles from falling on the controls.
- protects the aid.

Ear moulds :

Table - 60 : Does the child clean his ear moulds on his own.

	Yes	No	Did not respond
Percentage	24%	60%	16%
N	6	15	4

Table - 61 : If the child does not clean the ear moulds, who does.

	N	Percentage
Parents	10	40%
Mother	3	12%
Father	3	12%
Did not respond	9	36%

HEARING AID USAGE

Through these questions it was intended to elicit differences in the child's auditory behaviour, with and without a hearing aid and to see in what situations the child used the aid.

Table - 62 : When does the child wear an aid.

a) At home.		Percentage
1. With parents	17	68%
2. With siblings	15	60%
3. Listening to the radio	19	76%
4. The TV is on	12	48%

b) Outdoors.

	N	Percentage
1. School/Market/Theatre	18	72%
2. Friend's house	14	56%
3. Relatives	13	52%
4. Function's/Partie's	12	48%

Table - 63 : Does the child enjoy wearing the aid.

	Yes	No	Do not know	Did not respond
Percentage	24%	32%	12%	32%
N	6	8	3	8

Table - 64 : Hears the following environmental sounds.

	Without the aid		With the aid	
	Percentage	N	Percentage	N
Door bell	32%	8	48%	12
2. Traffic Noises (Bus horn)	28%	7	36%	9
3. Telephone Ring	12%	3	12%	3
4. Dog bark	20%	5	40%	10
5. Crackers	16%	4	12%	3
6. Responds to name when called from the same room	20%	5	40%	10
7. Responds when called from the next room	4%	1	16%	4
8. Does not attend even when called from near	16%	4	12%	3
9. Locates where you are when he is called and he is not looking at you	20%	5	28%	7

		Without the aid		With the aid	
		Percentage	N	Percentage	N
10.	Does not try to locate at all	28%	7	8%	2
11.	Follows simple instruction when not looking at you	32%	8	56%	14
12.	Follows simple instructions only when he is looking at you	56%	14	76%	19
13.	Speaks more frequently	20%	5	48%	12
14.	Makes more vocal sounds	40%	10	44%	11

Table - 65 : While putting on the aid does the child.

	Yes	
	N	Percentage
1. Put on the hearing aid carrier pocket	16	64%
2. Open the battery compartment	12	48%
3. Insert the cell properly (+ against +, - against -)	7	28%
4. Close the battery compartment	10	40%
5. Fix the ear mould to the receiver	13	52%
6. Clip the aid to the carrier pocket	15	60%
7. Insert the ear mould in the ear	18	72%
8. Switch on the aid	15	60%
9. Adjust the volume control setting	12	48%
10. Fix/put on the dust cover	11	44%
11. Fix the cord to the aid and receiver	11	44%

Table - 66 : While removing the aid does the child.

	Yes	
	N	Percentage
1. Turn down the volume control?	11	44%
2. Switch off the hearing aid?	17	68%
3. Remove the ear moulds from the ear?	16	64%
4. Remove the aid from the carrier pocket?	17	68%
5. Remove the cell from the aid?	6	24%
6. Wind the cord carefully round the hearing aid?	14	56%
7. Replace the aid carefully inside the box?	16	64%
8. Remove the carrier pocket?	12	48%

Table - 67 : Does the child know he has to remove the aid when.

	Yes		No		Did not respond	
	N	Percentage	N	Percentage		Percentage
Going for a bath	10	40%	8	32%	7	28%
Sleeping	10	40%	8	32%	7	28%
Going out in the rain	11	44%	8	32%	6	24%

COUNSELLING

This is the most crucial portion in the management of the aurally handicapped and has a direct bearing on the degree of success of the rehabilitation.

Table - 68 : Was counselling regarding the hearing aid and its care adequate.

	Yes	No	Do not know	Did not respond
Percentage	80%	12%	4%	4%
N	20	3	1	1

Table - 69 : Was any additional information given on subsequent visits to the professional.

	Yes	No	Did not respond
Percentage	28%	56%	16%
N	7	14	4

Table - 70 : Was any additional reading regarding hearing aids and its usage done.

	Yes	No	Did not respond
Percentage	32%	56%	12%
N	8	14	3

Of those who have read other material, six parents found them useful.

Table - 71 : Whether they want more information on hearing aids.

	Yes	Did not respond
Percentage	96%	4%
N	24	1

They would like the additional information through :

- demonstrations
- books and pamphlets
- meeting professionals
- lectures
- audiovisual media

Care of the Aid :

Table - 72 : Is the child careless with his/her aid.

	Yes	No	Did not respond
Percentage	20%	64%	16%
N	5	16	4

The problems are :

- pulls at the cords
- chews the cord if near the mouth
- drops the aid accidentally while playing

The following steps are taken to avoid the above problems :

- shortened the length of the cord
- oral threats and punishments
- undesirability of such behaviour was explained to the child

Table - 73 : Does the child take care of the aid in school.

	Yes	No	Does not go to school	Did not respond
Percentage	68%	8%	8%	16%
N	17	2	2	4

The problems they report other than those related to the child's speech and hearing aid :

ear moulds are loose
 squeal is often present
 non-availability of spare parts
 no improvement in speech

FEATURES THAT PARENTS FIND DESIRABLE IN AN AID

Features that parents find desirable in an aid are:

the aid should efficiently pick up sound
 the sound transmission should be clear with a minimum of distortion
 the aid should be noise free
 the size should be small
 the casing and the aid should be durable
 should be attractive to children
 child should be able to hear even when the aid is removed

PURCHASE OF THE HEARING AID

Table - 74 : Who prescribed the aid.

	N	Percentage
Audiologists	20	80%
ENT Specialists	4	16%
Others (By themselves)	1	4%

Table - 75 : Percentage of the cost paid.

	N	Percentage
Full cost	8	40%
50% of the cost	5	20%
Free	12	48%

Table - 76 : Is getting a guarantee card important.

	N	Percentage
Yes	12	48%
No	4	16%
Did not respond	7	28%
Inappropriate response	2	8%

	Yes	No	Did not respond
Percentage	12%	64%	20%
N	3	16	5

	N	Percentage
1. No ear moulds	2	8%
2. Because the mother was expecting	1	4%
3. Malfunctioning of the aid	1	4%

POST PRESCRIPTIVE PERIOD

Table - 79 : Do you keep in touch with professionals after you got the aid.

	Yes	No	Did not respond
Percentage	72%	24%	4%
N	18	6	1

Table - 80 : Are periodic ENT and Audiological check-ups necessary.

	Yes	Did not know	Did not respond
ENT	68% 17	24% 6	8% 2
Audiological	92% 23	8% 2	-

Parents reaction to the efficacy of the aid :

Table - 81 : Has the aid helped the child.

	Percentage
More than they anticipated	11 44%
Less than they anticipated	8 32%
Not at all	2 8%
Did not respond	4 16%

Some felt the aid helped more than they anticipated because :

- they thought that the child will not be able to hear even with the aid, but they were proved wrong

the child responds to his name, repeats correctly and comprehends simple sentences now
speech has improved considerably

- the child likes to wear the aid

Some felt the aid helped less than they anticipated because :

they thought the child would be able to hear like other children, but they have now realized the limitations of the aid

- the child has been wearing an aid for three years, but still does not respond to a sound
- response to sound is still poor
does not respond to sound without visual cues

Table - 82 : Parents feelings about their child wearing the aid.

	N	Percentage
1. Happy because it helps him hear speech and other sounds	15	60%
2. Happy because it helps him learn speech	14	56%
3. The child has to wear an aid and there is no other alternative	13	52%
4. Not happy because it makes his handicap conspicuous	4	16%

Necessity for Child Learning about his aid :

Table - 83 : Should the child to wear his aid on his own.

	Yes	No	Did not respond
Percentage	68%	4%	28%
N	17	1	7

Table - 84 : Should the child maintain the aid on his own.

	Yes	No	Did not respond
Percentage	76%	4%	20%
N	19	1	5

Table - 85 : Are parents willing to teach their child to take care of the aid.

	Yes	No	Did not respond
Percentage	72%	8%	20%
N	18	2	5

Table - 86 : Those who are willing to teach want to do so in the following ways.

	N	Percentage
1. Teach the child on their own	10	40%
2. Send the child for a short term training course	6	24%
3. Teach the child after consulting specialists	3	12%

CHAPTER - IV**DISCUSSION**

A significant number of hearing aid users suffer from a hearing loss due to cochlear or end organ damage. Cochlear disorders are characterized by a number of major distortions of the acoustic signal such as intensity coding distortion, frequency coding abnormalities and binaural processing abnormalities.

Knowledge which could be helpful to professionals involved with children and their hearing aids would include how well hearing aids function in different situations, how equipped parents are to deal with the problems of their child's aid and be able to say what the expenses in maintaining an aid would be. The collection of some systematic information on the above topics was undertaken in the present study.

GENERAL INFORMATION ABOUT THE AID

The auditory channel can play a primary role in the establishment of basic language skills for the majority of hearing impaired children (ROSS and GIOLAS, 1975).

But this will be possible only if the children are supported by motivated and informed parents.

Purpose of the Aid :

That even 28% of the parents do not realize what the hearing is capable of is a matter of concern. Unless parents have a realistic concept of the functions of the aid, they are likely to get frustrated by its inadequacies. The fact that a few of the parents feel that an aid needs to be worn till the child's hearing returns to normal, and that others do not know how long the aid is to be worn seem to emphasize the misconceptions parents have of an aid.

The question about whether the aid improves hearing was apparently ambiguous, as some have interpreted it as 'temporary improvement' of hearing while others have meant a 'permanent' improvement of hearing.

Type of Aid :

A large number of parents have not responded to the question about the type of aid worn by their child (i.e. body level or BTE aid).

Knowledge of other identifying information such as the brand name and serial number seem to be lacking in a majority of the parents. This kind of information becomes important when the parents are looking for replacements to malfunctioning parts.

Keeping a record of this kind of information, so that they have easy access to it, is imperative. Making a note of the serial number and the model of the aid

becomes especially important as with several aids these get rubbed off with the passage of time. The other advantage would be identifying the aid in case of theft or loss or identifying the aid in a repair shop.

Parents seem to have a better knowledge of the cord used for their child's hearing aid. This is probably due to the fact that cords require to be replaced frequently and they have often been told which cord to buy.

Binaural Hearing Aids :

It appears that more than 50% of the parents are aware that two aids are preferable to the customary pseudo-binaural aid worn by most hard-of-hearing children. Most of the parents appear to be willing to let their child wear two aids if they are found to be more useful. It's not known whether they have considered monetary, cosmetic and other factors like increased difficulty in repairing two aids.

Behind-the-Ear Aids :

BTE aids are always preferred as they are much less conspicuous than the more commonly used body level aids. While Table 8 shows that a majority of parents prefer their child to wear a BTE aid, atleast half of them rate the usefulness of the aid higher than its cosmetic appearance. Parents also need to know that amplification benefits afforded by a BTE aid are limited.

Imported

Aids:

Contrary to the popular preference for foreign aids, the majority of parents have shown an inclination for Indian aids. This could be because of their awareness regarding the problems one might encounter with an Imported aid such as servicing and obtaining spare parts.

There seems to be some confusions regarding the origin of the spare parts. Many of the parents seem under the

: - 6 - :

impression that they are imported. A consciousness needs to be created amongst parents that these parts are available locally, lest they fall victim to unscrupulous dealers in spare parts.

TROUBLE SHOOTING

A knowledge of the basic principle which underlie the functioning of the aid, has the additional value of enabling one to correct minor faults such as identifying defective cells and cords. This reduces to a minimum the possibility of failure of the device due to an easily rectifiable defect.

This, of course, does not preclude the necessity for periodic servicing and electroacoustic measurement.

servicing :

A hearing aid requires frequent servicing as it has far too many components which have a limited life as they

are susceptible to environmental influences such as humidity and excessive warmth. Even if this does not result in malfunctioning of the aid, it might result in alteration of the electroacoustic characteristics.

Parents seem to have realized the necessity of periodic servicing irrespective of whether the aid is malfunctioning or not. But they do not do this as they send the aid for repair only when there is something specifically wrong with the aid, perhaps on account of the difficulties involved in giving the aid for repair and there being no loaner aids.

While most parents did not feel the need for a new aid replacing the one in current use, some parents realize that the aid being used now may need to be substituted by another model. They have to be told this, as there may be an alteration of the hearing sensitivity

of the child or a better model may become available at a future date.

Checking the Aid :

Professionals and parent should be on the look out for conditions contributing to better hearing aid use. Among these is the need for counselling parent on ways of checking the operating conditions of children's hearing aids. While once-a-day checks seem most common, one parent found it necessary to check the aid four times a day. While the fact remains that this is doubtful, it would be interesting to find out why they think this is necessary. It may be because the aid is prone to malfunction.

Children Checking the Aid :

According to the parents, many of the older children check their aids before using it employing the same methods as their parents. Quite a few of the children are said to

report to the parents when the aid stops functioning.

Perhaps, other children do not report this as they are too young. Steps should be taken to gradually educate them about trouble shooting.

HEARING AID CONTROLS

Recognizing that a hearing loss is different for every person, manufacturers produce a variety of types of hearing aids representing different powers and tonal qualities, thereby providing a certain amount of flexibility. The child should learn the location and function of all switches and controls which he needs to manipulate.

Several parents indiscriminately turn up the volume as the cell becomes progressively weaker, sometimes even upto 8 or 9.

HODGSON (1977) reports that as voltage in a cell drops there is a gradual increase in the harmonic distortion.

BERGER (1970) which occurs as the internal impedance approaches maximum. According to ROSE (1978) at very low voltages only a narrow band of frequencies from 1 to 2 KH is amplified. LOTTERMANN et al (1967) found increased distortion even at gain settings just below full on settings.

More than 50% of the parents did not know at which volume and tone control settings they were advised to keep their children's aids. Most children seem to use their aids at volume settings between 1 and 5. The high percentage of parents who did not respond to some of these items may be because of (a) some hearing aids have colour-coded volume controls instead of a number graded system. (b) some hearing aids have pre-set tone controls of which the parents may not be aware. (c) some hearing aids do not have the 'T' facility or that its use was not explained to the parents.

Very few have tried other volume and tone control settings. However, they do use higher volume controls as

the cell becomes weaker and lower it when the cell is new. This is a good sign as it indicates an understanding of the function of the volume control. Some parents report that their child varied the volume control on their own in different situations.

SOME HEARING AID PARTS

Parents require a working knowledge of the spare parts of the hearing aid which is especially useful at the time of their purchase.

More than 50% of the parents did not know what voltage to ask for while purchasing a cell. This may be because they are able to convey which cell they want by indicating its size. But this information is required so that they may check the voltage at the time of purchase of the cell. Nearly half the children know which cell they have to buy. The parents of an aided child particularly needs a thorough explanation regarding batteries since the child may be too

young to communicate that his battery is down (HASTEN, 1977).

Though most parents have not reported noticing any differences between cells of different makes (perhaps because they tend to stick to one brand) others have reported slight variations in size of battery compartments or the cells themselves. Thus a certain combination of cell hearing aid model will have to be used for optimum performance.

A few revealed that some cells get exhausted faster than others while others last longer. However, this could be due to differences in the hours of hearing aid usage or the sound environments in which they were used. Children report similar findings but in less numbers.

Checking :

Most parents check the functioning of the cell and cord through the use of a listening test. But this is not an altogether satisfactory method.

An unexpensive battery and cord tester should be acquired by parents. The battery tester will indicate whether or not the cell is capable of delivering adequate voltage for the use of the aid. However, cells may recover part or all of their voltage potential after a period of rest. Thus a battery tester should be used in conjunction with a listening check. (HASTEN, 1977)

The cord is more liable to damage especially in a young child as they may be subjected to a great deal of stresses. Another problem is that a damaged cord can cause intermittent functioning so the right method of checking a cord should be employed.

Life of the Spare Parts :

The parents of a prospective child hearing aid use nearly always asks questions about the expected life span of the spare parts. Cells seem to last from one to two weeks. The factors which could affect the life span of a

cell are (a) model of the hearing aid (b) volume control setting that is used and (c) the number of hours of usage (HASTEN, 1977).

Life of the cord seems to increase with increasing age of the child. Exact figures are difficult to arrive at as they depend on factors such as age of child, care with which they are used and how they are stored.

Life spans of receivers and switches could not be computed as very few had them replaced.

Parents often store a spare cell and sometimes a spare cord.

Mic:

Children often place their aids in a pocket in such a way that the mic is covered by a cloth. This produces a 'surface noise' which adversely affects the signal to noise ratio.

Some parents agreed that cloth covering the mic would affect the signal.

Dust Covers :

58

Many parents did not know the function of the dust covers probably because many models do not have them. Those of the children who have dust covers usually use it always.

Ear Moulds :

Very few of the children seem to clean the ear moulds. Possibly the parents do not permit them to do so, preferring to do it themselves.

HEARING AID USAGE

It is important that there be continuous contact between the hearing aid user and the professional, especially in the period immediately following the purchase of the aid.

The audiologist needs to see if the prescribed aid is sufficient too powerful for the child's needs.

It is reported that in most situations the child wears the aid. Those parents that avoid using the aids in certain social situations, require to be counselled.

The auditory behaviour of the child seems to be significantly improved with amplification. Another advantage of such comparisons is that it serves to indicate to the parents the benefits of amplification. It also shows them the common sounds which occur in the environment which can be used to train the child.

Results indicate that while most children know at least a part of the process of putting on and removing the aid, others have to be taught even basic things like switching on the aid or fixing the receiver to the earmould. It is possible that parents feel that the children are too young to do these things for themselves.

COUNSELLING

The audiologist should assume the primary responsibility

for parent education regarding both hearing aid use and maintenance of the instrument (MATKIN, 1977) instead of the professional just giving a list of do's and don'ts, he should have more demonstrations and less verbal instructions. Effective counselling is more than just an input of information to the parents and should instead be a two-way communication between the parent and counsellor where the former feels free to talk about his feelings.

Counselling done at the time of the diagnosis of hearing loss seems not to be remembered by the parent as the knowledge of the inevitability of their child's loss blocks out what else is said to them.

The parents reaction to the adequacy of the counselling with respect to the hearing aid and its care was examined. Though they indicated that the majority of them were satisfied at that time, it was found that there are some inadequacies in the counselling.

More than 50% of the parents have reported that no additional information was imparted to them during subsequent visits to the professional. It is felt that a little time set aside each week from the speech therapy session devoted to the child's hearing aid and its usage would pay off in the long run. This includes periodic listening and instrument checks on the aid for proper functioning.

Parent education programs should be instituted where a team of professionals provides a variety of opportunities in a programmed fashion for parents to enhance their knowledge and skills in rearing their hard of hearing children. Parents should receive instruction on hearing and hearing loss, techniques for training the residual hearing of the child and guidance for the proper use of amplification.

Very few of the parents seem to have done any extra reading concerning hearing aids and its usage. As they report, this is largely due to the paucity of such

information, especially in the various regional languages of India.

The parents are almost unanimous in their request for additional information. This is a good sign as it shows a willingness on the part of the parent to learn.

As a result of a survey they conducted, FELLENDORF and HARROW (1970) conclude that a parent counsellor should be initiated to bridge the gaps in the type of guidance, semantics and availability of professional advice which now seem to be denied to some hearing impaired children and their parents.

Some of the specific problems that parents seem to have with their child and his aid are listed on page 38. Parents need to be told specific solutions to each problem to avoid trial-and-error methods that they might otherwise employ and might do more harm than good.

When asked about problems they face other than those related to the aid or the child's speech, they cited the same problems loose earmoulds, squeal being present, non-availability of spare parts and no improvement in the child's speech.

The first two of these problems could possibly be related apparently these parents have not been told that children need to have their moulds changed once every six months because of the growth of the pinna. Ill-fitting earmoulds is the main source of the squeal and once proper moulds are fitted it disappears.

FEATURES THAT PARENTS FIND DESIRABLE IN AN AID

There is always scope for improvement of any instrument. Incorporating suggestions from parents would be an asset from a practical point of view.

The order of preference or the degree of desirability of a feature has not been taken into account. While on the whole parents have asked for features which shows some understanding of the limitations of the aid they need to be told why it has not been incorporated so far. For example the parent that asks for a smaller size needs to be told that by present technological standards, smaller size can be achieved only by sacrificing amplification benefits. One parent's requirement is likely to be a pipe dream for some time yet; that of having an aid which even when removed, will enable the child to hear!

PURCHASE OF THE AID

The knowledge of the inevitability of their child's hearing loss comes as a shock to the parents and is likely to precipitate a crisis (SHONTZ, 1975). Thus the person who prescribes the aid must be a person qualified to handle

the parent with understanding.

It is heartening to see that most of the children have aids recommended by audiologists.

As the cost of hearing aids remain prohibitively high for many hearing impaired persons there are welfare schemes instituted by the government which enable deserving hearing aid candidates to obtain hearing aids. The concessions offered to them are on par with the income of these patients.

Too many parents have not realized the value of the guarantee card.

POST PRESCRIPTIVE PERIOD

However effective the counselling process may have been certain problems individual to each child are bound to crop up. Thus, parents need easy access to professionals whom they can contact as and when the need arises.

Many parents have reported that they keep in touch with professionals. But this high figure is probably due to the

fact that most of the parents had children attending Therapy at a speech and hearing centre.

While many have realized the need for periodic ENT check-ups, more seem to think frequent audiological evaluations are necessary. Whether they feel the need for periodic consultations with other allied professionals need to be assessed.

Less than 50% of the parents seem to be satisfied that the aid has been of some use to the child. This is either because they had too high or unrealistic expectations of what the aid can do or that their aid is not the one best suited for the child or that the aid is not being used in the right way.

Parents on the whole are happy that the aid helps their child hear sounds and only a minority are not happy because it makes his handicap obvious.

Most of the children realize the need for children to learn to maintain the aid on his own and for this parents need to be taught first as they will be the ones to teach the child.

S U M M A R Y

The study evaluated the parental level of understanding of their child's hearing aid through the use of questionnaires.

Information regarding the child's aid, its usage and the expenses incurred in maintaining an aid. On the basis of the data collected, certain conclusions have been reached.

C O N C L U S I O N S

. While it was found that parents do have some knowledge of hearing aid and its care, it was felt that a better understanding of aids would facilitate the maximum use of amplification provided by the aid.

It was found that the children require about 3 to 4 cells a month. The price for a pair of cells varied from Rs.5.00 to Rs.5.75, thus incurring an expense of about ten to

twelve rupees a month. Cords were found to last about 3 months for more than 50% of the children. As the child grows older, the cords seem to last longer.

Based on the results, certain recommendations have been made which if instituted, would result in the children getting maximum benefit from their aids.

R E C O M M E N D A T I O N S

1. Continuous contact between the professional and the parents is essential for the successful rehabilitation of the aurally handicapped.

2. Counselling should be extended over a series of sessions with each session being devoted to a particular area, at the end of which the parent is given a written summary of all the information given to him in that session. The counselling should be through practical demonstrations and if this is not possible, audio-visual means may be employed.

3. On-going education programme for the parents should be instituted. The results of this study indicate that some of the areas that need to be included are :

- a) Information on the purpose of the aid and the relative merits and demerits of different types of aid.
- b) Instruction on operation and use of the controls on the aid.
- e) Information on cells (voltage requirements how long they can be used, need to check its voltage before buying) and cords (how they are to be worn and stored) and mic (how cloth covering the mic can affect the sound transmission).
- d) Basics of trouble shooting.
 - the need for trouble shooting
 - daily checks
 - identifying atleast some defective parts like a defective cord or weak cell

4. An inexpensive trouble shooting kit including a battery and cord tester should be made available for the

parents which is simple to use.

5. Parents should be advised to keep a record of the following :

- a. Brand name of the aid
- b. Serial number
- c. Type of receiver and cord that was recommended for the child

6. Questionnaires, such as the ones used in this study should be filled out by the parents periodically so that they get an idea of the progress of the child. It would also identify the problem areas where more attention is required.

7. Literature on hearing aids and its care preferably with illustrations needs to be written up in easy-to-understand language. This should be available in the different regional languages.

8. Children have to be given programmed instruction, the level of which will be determined by their age. It

should include :

- a) Training the child to put on and remove his aid.
- b) Handle and vary the controls and at a later stage.
- e) Learn how to trouble shoot.

9. Spare parts of an aid should be considered as essential items and should be freely available to hearing aid users to reduce hearing aid 'down-time'.

10. Repair facilities should be more accessible.

11. The system of loaner aids should be introduced so that the child does not lose out on 'hearing time'.

12. All children fitted with hearing aids received free of cost, should also be eligible for a monthly allowance irrespective of the degree of loss.

13. A systematic study needs to be undertaken to see which brands of cells fit which models of hearing aids and this information should be used in advising parents the brand of cell to use.

14. Further studies need to be done to determine the life span of switches and receivers.

15. Studies on whether 3 pin cords last longer than 2 pin cords or a single cord last longer than 'V or 'Y' type need to be conducted.

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HA-1

Date: _____

1 Name of the hearing aid user:

CaseNo. at AIISH:

Name of the person answering:

Relationship of this person to
the hearing aid user: Parent
(Father/Mother)/Friend/Guardian.

Please Note: Tick (./) the answer or the answers suitable for
your choice wherever essential. If you have any
other answer/s write below the corresponding
question. If more than one hearing aid is used
indicate the performance/s of each under the
following questions.

1. Why was a hearing aid/s recommended for you/your child?
2. Who recommended the hearing aid/s? When?
 - i) Audiologists
 - ii) ENT Specialists
 - iii) Others(specify)
3. When was the hearing aid/s obtained?
4. Did you get the hearing aid by post or in person?
 - i) If in person, how many times did you have to visit the place before getting it?
 - ii) If by post, was it sent by registered post?
 - i) Yes
 - ii) No
5. How did you get the hearing aid?
 - i) Purchased paying the full cost,
 - ii) Purchased paying 50% of the cost,
 - iii) Free/Donation (specify the source)
 - iv) Others....

6. What was the deposit made when the hearing aid was purchased?

- i) 25% of the total cost
- ii) 50% of the total cost
- iii) Others

7. Do you think it is important to get the guarantee card when you get the hearing aid? Give reasons.

8. Since when was the hearing aid used?

- i) From (date of purchase)
- ii) Sometime after purchase, (if there was a delay, specify the reasons).
- iii) Don't remember
- iv) Others

9. What do you think the hearing aid does?

10. For how many years do you think the hearing aid is to be worn? Give reasons.

11. Do you think after wearing a hearing aid the hearing improves or it get/s worse? Explain how?

12. What type of hearing aid/hearing aids is being used? (If more than one hearing aid is used specify below for each).

- i) Body worn or other type
- ii) Monaural or Pseudobinaural (**single hearing aid for both the ears by means of 'V' shaped or 'Y' shaped cord?)
- iii) Indian or imported
- iv) Powerful/not so powerful
- v) Model of the hearing aid/s (Name/s)
- vi) Serial number/s

13. Why is this/these type of hearing aid/s used by you/your child? Give reasons.

14. Why do you have more than one hearing aid? (Answer only if 79 you have more than one)
15. Do you think having the hearing aid in both ears(pseudobinaural) is more helpful to you/your child?
- i) Yec (give reasons)
 - ii) No (give reasons)
 - iii) Don't know
 - iv) Not tried
 - v)
16. Do you think having two separate hearing aids one in each ear would be more useful than the one worn by you/your child?
- i) Yes (give reasons)
 - ii) No (give reasons)
 - iii) Don't know
 - iv) Not tried
 - v) ...
17. If one more hearing aid is found useful, are you willing to wear one more/let your child wear one more?
- i) Yes (give reasons)
 - ii) No (give reasons)
 - iii) Can't say
 - iv)
18. If a body worn hearing aid is in use would you prefer/. let your child use a behind-the-ear hearing aid?
- i) Yes (give reasons)
 - ii) No (give reasons)
 - iii)
19. Would you prefer/let your child to wear an Indian hearing aid
- i) Yes (give reasons)
 - ii) No (give reasons)

20. Do you think there would be problems in using an imported hearing aid?

i) Yes (what problems?)

ii) No (why?)

21. Are any part/s of the hearing aid/s that is used imported? specify.

i) Cord Yes/No/Don't know

ii) Receiver Yes/No/Don't know

iii) Battery charger Yes/No/Don't know

iv) Earmolds Yes/No/Don't know

v) Others

22. How do you make out that the hearing aid is very powerful or less powerful?

23. Do you think that the most powerful hearing aid is most useful?

i) Yes (give reasons)

ii) No (give reasons)

iii)

24. In addition to being powerful what are the other characteristics of hearing aid you would consider important?

25. Do you think the hearing aid being worn at present may become less useful after sometime and different one (more powerful/model different model) is to be used? give reasons:

i) Yes (give reasons)

ii) No (give reasons)

iii)

26. Do you think the hearing aid needs to be serviced frequently even though it seems to be working all right?

i) Yes (give reasons)

ii) No (give reasons)

27. Do you think the hearing aid is to be replaced by a new one, periodically? 81
- i) Yes (give reasons)
 - ii) No (give reasons)
 - iii)
28. When would you think of sending the hearing aid for repair?
29. How do you find out if the hearing aid is working properly or not?
30. How did you learn to check the hearing aid?
- i) From Professionals (Speech Pathologists/Audiologists)
 - ii) From pamphlets given by the professionals.
 - iii) From pamphlets given by the hearing aid manufacturers.
 - iv) Others
31. How often do you check the hearing aid?
- i)times in a day
 - ii) Once indays
 - iii) Once in weeks
 - iv) Once in months
 - v) Not at all
 - vi) Don't know how to check
 - vii) Others
32. When the hearing aid is not working can you identify the part/s not working?
- i) Yes (write which parts)
 - ii) No
 - iii).....
33. Where do you keep the hearing aid when it is not worn?
34. What voltage do you ask for when you buy the cell?

35. Which cells have you tried so far? specify the names:
 Eg. Novino/Nippo/Philips/JK/Toshiba/Eveready (blue/red)/
 others
36. Which cell/cells do you often buy? Why?
 (Toshiba/JK/Eveready (Blue/Red) Novino/Nippo/Philips....)
 Reasons
- 37- Do you think that some cells (batteries):
- i) Do not make proper contacts in the battery compartments
- No
 Don't know.
- If yes, write the name/s of the cell/s:
- ii) Get exhausted earlier than the others.
- Yes
 Don't know
- If yes write the name/s of the cell/s:
- iii) Do not get into the battery compartment:
- Yes
 Don't know
- If yes, write the name/s of the cell/s;
- iv) When used the sound from the hearing aid comes on and off:
- Yes
 No
 Don't know
- If yes, write the name/s of the cell/s.
- v) Lasts longer:
- Yes
 No
 Don't know.
- If yes, write the name/s of the cell/s;

- 38. How do you check the cell (battery)?
- i) By listening to the aid
 - ii) By using a voltmeter at home
 - iii) By using a voltmeter at shop
 - iv) Others ,...
39. How often do you check the cell (battery)?
- i) Once in days
 - ii) Once in weeks
 - iii) Once inmonths
 - iv) Don't check
40. When do you change the cell (battery)?
- i) When there is no sound at all from the hearing aid
 - ii) When the sound coming from the hearing aid is weak
 - iii) When the sound from the hearing aid is not clear
When there is no change in loudness when the volume control is turned to higher numbers
 - v) Not changed so far
 - vi) Others.
41. How often do you change the cell (battery)?
- i) Once in.....days
 - ii) Once in weeks
 - iii) Once inmonths
 - iv) Not at all
 - v)
42. Do you use chargeable batteries?
- i) Yes
 - ii) No
43. If yes, from where do you get them? What is the cost of each?

45. Do you have battery charger?

If yes, which one?

From where did you get it?

What was the cost?

46. How do you charge the cell (battery) with the battery charger?

46. Do you check for the voltage at the shop when you buy the cells/batteries?

i) Yes

ii) No

iii) Did not know

iv).....

47. How many batteries do you purchase at a time?

i) One

ii) Two

iii) More.....

48. If you purchase more than one battery where do you store them?

49. Where do you keep the cell (battery) when the hearing aid is not worn?

50. Which type of cord is used for the hearing aid used by you/your child?

i) Single for Right/Left/Either ear

ii) 'V'

iii) 'Y'

iv) Other

51. Do you use 2-pin or 3-pin cords?

52. How do you check the cord?

i) By listening

ii) By means of an instrument (Name the instrument)

iii) Don't check

iv) Don't know how to check

53. How often do you check the cord?
- i). times in a day
 - ii) Once in days
 - iii). Once in weeks
 - iv) Once in months
 - v) Not at all
 - vi)
54. When do you get a new cord?
- i) When a cord gets torn in V/Y/Single type
 - ii) When both the cords get torn in V/Y type
 - iii) When the sound comes on-and-off from a cord in V/Y/Single type
 - iv) When the sound comes on-and-off from both the cords in V/Y type
 - v) When there is no sound coming from a cord in V/Y/Single type
 - vi) When there is no sound coming from both the cords in V/Y type
 - vii) When advised by the Audiologists/Speech Pathologists/ Electronic Engineers/Electrical Shops
 - viii) Not changed even once
 - ix) Others
55. Do you know that the cords are sold at All India Institute of Speech and Hearing at a low cost?
- i) Yes
 - ii) Not aware of
56. How do you keep the cord when the hearing aid is not used?
- i) Removing the cord from the hearing aid and keeping them in the box.
 - ii) Winding the cord tightly round the hearing aid.
 - iii) Winding the cord loosely round the hearing aid.
 - iv) Winding the cord but not on the hearing aid.
 - v) Others

57. Which type of receiver do you buy when necessary?

- i) Any receiver.
- ii) As advisee by Audiologists/Speech Pathologists/
Electronic Engineers/Electrical Shops.
- iii) Only certain types of receivers with the following
mark and symbol such as:
- iv) Not bought even once
- v) Others

58. How many different switches are there on the hearing aid?
What do they do?

59. How do you switch on the hearing aid?

By turning the switch to _____ position

60. At which settings of tone control and volume control have
you been advised to use the hearing aid?

Volume control

Tone control

61. Have you tried other settings of the volume control?

- i) _____ Yes _____ (which _____ settings)
- ii) _____ No
- iii)

62. If yes, have you found this/these setting/s to be more
useful?

63. At what setting do you keep the volume control? When you
use the aid?

i) Most of the time....

ii) Occasionally (in situations such as:
to.....setting

64. At what maximum volume control setting do you use the

65. When do you change the volume control settings to a higher number? specify to which number?
- i) When the battery is weak
 - ii) When the battery is new
 - iii) In a noisy place
 - iv) Also in situations such as
 - v) Not at all
66. When do you change the volume control setting to a lower number? specify to which number?
- i) When the battery is weak
 - ii) ~~When~~ When the battery is new
 - iii) In a noisy place
 - iv) Also in situations such as
 - v) Not at all
67. At what setting do you keep the tone control When you use the aid?
63. Do you know what LNH stands for? Yes/No
If yes, write below.
- i) L
 - ii) N
 - iii) H
69. When do you change the tone control settings?
- i) When interested in listening to speech, music and other sounds, such as
 - ii) When not interested in listening
 - iii) Never
 - iv).....
70. Do you use the 'T' switch?
- i) Yes
 - ii) No
 - iii).....

72. How do you use the 'T' switch?
73. where is the microphone placed in your child's/your hearing aid?
- i) On the top of the hearing aid
 - ii) On the front side of the hearing aid
 - iii) Don't know
 - iv)
74. Where do you think the microphone should be placed?
- i) Top of the hearing aid
 - ii) In the front side
 - iii) Don't know
 - iv) Does not make a difference where it is placed
 - v)
75. Does your hearing aid have a dust cover?
- i) Yes
 - ii) No
 - iii) Don't know
 - iv)
76. When do you use the dust cover?
77. Do you use the dust cover when the aid is not used?
78. How does the dust cover help to protect the aid?
79. Where do you keep the hearing aid when worn?
- i) In the shirt pocket or clipped on to the blouse
 - ii) A bag hanging around the neck
 - iii) A pocket with hand around the body
 - iv) Other arrangements such as
80. Is the microphone covered with cloth or shirt often? why?

31. Do you think covering the microphone with cloth affects the sound reaching the ear?

- i) Yes (give reasons)
- ii) No (give reasons)
- iii) Don't know
- iv)

82, For how many days/weeks/months do the following parts of the hearing aid last in your experience?

- i) Cell
- ii) Cord
- iii) Receiver
- iv) Switches(specify which switch).....

83. Do you keep the following additional spare parts with you?

- i) Cell - Yes/No
- ii) Cord - Yes/No
- iii) Receiver - Yes/No

84. From where do you purchase the following spare parts when necessary?

- i) Cell Place of purchase
- ii) Cord
- iii) Receiver
- iv) Switches

(If you have not purchased any of them write 'Not purchased' against the item)

85. Do you always purchase the spare parts from the same place? why?

Reasons

- i) Cell - Yes/No
- ii) Cord - Yes/No
- iii) Receiver - Yes/No
- iv) Other spare parts - Switches - Yes/NO

36. If more than one hearing aid is being used, can you specify the good qualities and bad qualities of each below.

87. Do you keep in touch with the professionals (audiologists/ Speech Pathologists/ENT/Other) after the hearing aid has been recommended and acquired?

- i) Yes (give reasons)
- ii) No (give reasons)

88. Do you think periodical ENT check up is necessary for those who wear hearing aids?

- i) Yes (give reasons)
- ii) No (give reasons)
- iii) Don't know

89. If you have visited the professionals subsequent to acquiring the hearing aid, was any additional useful information given to you that you were not already given? If yes, what?

90. Do you think periodical hearing evaluation is necessary ever after a hearing aid is obtained?

- i) Yes (give reasons)
- ii) No (give reasons)
- iii) Don't know
- iv)

91. Was the advice given about the hearing aid and its care adequate?

- i) Yes (give reasons)
- ii) No (give reasons)

92. Have you on your own read books, magazines etc. on hearing aids?

- i) Yes (specify sources)
- ii) No (give reasons).

93. If yes were these sources:

- i) Helpful
- ii) Helpful only to some extent
- iii) Not at all helpful

94. Are you interested in knowing more about the hearing aids?

- i) Yes
- ii) No

95. If yes, do you prefer to know through:

- i) Pamphlets
- ii) Tapes
- iii) Audiovisual media
- iv) Lectures

RL/21783

-

Signature of the Person
answering.

Name of the Hearing Aid User:

Case

Number

at

A.I.I.S.H:

Name of the person answering:

Relationship of the person answering to the hearing aid user:

Parent (Mother/Father)/Friend/Guardian

Please Note: Tick () the answer Or the answers suitable for your choice wherever essential. If you have other answers than the ones given, write below the corresponding question. If more than one hearing aid is used indicate the performance/s with each under the following questions.

- 1. Does your? child wear the hearing aid throughout the day or only some times?
- 2. If hearing aid is worn only sometimes specify the situations and the approximate duration in hr-urs below:

<u>Situations</u>	<u>No. of hours/day/week</u>
-------------------	------------------------------

i)

ii)

iii)

- 3. Does he/she wear the hearing aid when;

i) At home:

- 1. with parents - Yes/No
- 2. with siblings - Yes/No
- 3. listening to the radio - Yes/No
- 4. the T.V.is on - Yes/No

ii) Outdoors:

- 1. School/market/theatres - Yes/No
- 2. Friends' house - Yes/No
- 3. Near Relative's house/distant relatives -Yes/No
- 4. Functions/Marriages/parties - Yes/No

5.

- i) Yes
 - ii) No
 - iii) not observed.
 - iv)
5. If yes, in which situations does your child seem to enjoy wearing the hearing aid?

Situations

- i) When the music is on - Yes/No
 - ii)
 - iii)
 - iv)
6. Have you noticed your child turning the volume control setting?
- i) Yes
 - ii) No
7. If Yes, in which situations does he change the volume control? Is it to a higher or lower number/direction?

Situations

Volume control setting/direction

- i)
 - ii)
 - iii)
8. Which of the following have you noticed in the child when the hearing aid is not worn?

1) Hears the following environmental sounds such as:

- 1. Door bell -Yes/No
- 2. Bus horn and other traffic noises - Yes/No
- 3. Telephone ring - Yes/No
- 4. Dog barking and other animal sounds - Yes/No
- 5. Other sounds such as

- ii) 1. Attends when he/she is called from the same room -Yes/No
- 2. Attends when hs/she is called from the next room -Yes/No
- 3. Does not attend oven when called from near - Yes/No
- iii) 1. Locates where you are when he is called and when he is not looking at you - Yes/No

1. to his right side often - Yes/No
 2. to his left side often - Yes/No
 4. Does not locate out stops his activity and looks around when a sound is made - Yes/No
 5. Does not try to locate at all - Yes/No
 6. Others
- iv) Follows simple instructions when he/she is not looking at you such as:
1. Give me the doll
 - 2.
 - 3.
- v) Follows instructions only when he/she is watching you, such as:
- 1.
 - 2.
 - 3.
- vi) Converses easily with you when:
1. he is watching you
 2. he is not looking
- vii) 1. Speaks more frequently
2. Makes more vocal sounds eventhough they are meaningless
 3. Others
9. Which of the following have you noticed in the child when the hearing aid is worn?
- i) Hears the following environmental sounds such as:
1. Door bell - Yes/No
 2. Bus horn and other traffic noises - Yes/No
 3. Telephone ring - Yes/No
 4. Does barking and other animal sounds - Yes/No
 5. Other sounds such as
- ii) 1. Attends when he/she is called in the same room - Yes/No
2. Attends when he/she is called from the next room -Yes/No
 3. Does not attend even when called from near - Yes/No

- iii) 1. Locates where you are when he is called and when he is not looking at you - Yes/No
2. Also locates other sounds such as appropriately - Yes/No
3. Does not locate the sounds properly but turns:
1. to his right side often - Yes/No
2. to his left side often - Yes/No
4. Stops his activity and looks around when a sound is made - Yes/No
5. Does not try to locate at all - Yes/No
6. Others
- iv) Follows simple instructions when he/she is not looking at you such as :
1. Give me the doll
- 2.
- 3.
- v) Follows instructions only when he/she is watching you, such as:
- 1.
- 2.
- 3.
- vi) Converses easily with you when:
1. he is watching you -Yes/No
2. he is not looking at you - Yes/No
- vii) 1. Speaks more frequently - Yes/No
2. Makes more vocal sounds eventhough they are meaning less - Yes/No
3. Others
10. Which of the following have you observed in your child when the hearing aid is Switched off:
- i) Cries or demands that the aid be switched on - Yes/No
- ii) Others

11. What changes have you noticed in the child's general behaviour since the time he is wearing a hearing aid?

i) He/she is manageable more easily -Yes/No

ii) He/she spends more time with other children/adults -Yes/No

iii) Goes out to school and other places without attendants -Ycs/No

iv) Moves about the house more freely - Yes/No

v) Moves about the house less frequently - Yes/No

vi) Cries less frequently - Yes/No

vii)

viii)

12. Which of the following changes have you observed in yourselves since the time the hearing aid is worn?

i) 1. You have started speaking more to the child - Yes/No

2. You speak less relatively to the child - Yes/No

3. No change - Yes/No

ii) 1. You need not raise your voice - Yes/No

2. You need not repeat the instructions given to him -Yes/No

3. List other changes in you such as : (i) Greater willingness to take him/her to social gatherings etc. - Yes/No

2. Use of less signs - Yes/No

3.....

4.

13. When does your child decline to keep the hearing aid on? Why?

Situations

Reasons

i)

ii)

iii)

iv)

14. When he declines to wear the hearing aid do you make him wear the aid?

i) Yes

ii) No

15. If yes, how do you make him wear the hearing aid?
16. How successful are you when you try the above methods?
17. Does/Did your child show any other specific behaviour/s that interfered with wearing the hearing aid (eg. pulling the cord, pulling the receivers, crying etc):
 - i) Yes
 - ii) No
 - iii) Not observed
 - iv)
18. If yes, what specific behaviour/s did/does your child show?
19. What did you do for the above behaviour/s? Which of the steps taken were helpful and which were not?
20. Have you overcome this problem now?
 - i) Yes
 - ii) No
21. Do you feel the hearing aid has helped your child:
 - i) More than you anticipated
 - ii) Less than you anticipated
 - iii) Not at all
22. If you think the hearing aid has helped more than you anticipated in what ways?
23. If you think the hearing aid has helped less than you anticipated or not at all why?

24. How do you feel about your child wearing the hearing aid? 98

i) Happy because it helps him hear speech and/or other sounds - Yes/No

ii) Happy because it helps-him learn speech - Yes/No

iii) Child is made to wear the hearing aid since there is not other alternative such as medical or surgical treatment
- Yes/No

iv) Not happy because it makes his handicap conspicuous -Yes/No

v) Others

25. Is your child sent for:

i) Auditory training (at home/speech therapist/Audiologist)

ii) Speech therapy (at home/speech therapist/Audiologist)

iii) School (normal/deaf school)

iv) Correspondence courses (John Tracy clinic/others. . . .)

v).

26. How often does he/she attend the following? Specify place and address:

i) speech therapy

ii) School

27. Do you have any other problems with our child's hearing, hearing aid or speech?

i) Yes

ii) No

28. If yes, please write the problems you are facing below:

29. Do you keep in touch with professionals after the hearing aid has been recommended?

30. If Yes, how often? Why?

31. What are the leateat diagnostic findings and advise?

32. what was the advise given with regard to ear surgery for your childs hearing loss?

Signature of the

DEPARTMENT OF AUDIOLOGY

HA-4

Date

Case No.

99

Dear Parents/Guardians.

We are sure you would be interested in knowing the progress your child is making in using his/her hearing aid. We thought of some questions that you may make use of. By answering each of these questions, you may know yourself whether your child has still a long way to go or if he has already learnt quite a lot about his/her hearing aid. If he has already learnt quite a lot, then you can be sure that the hearing aid is quite safe with him and more important that he can handle the switches in such away that he gets maximum benefit for himself. If your child is still a long way to go, don't get discouraged. He may still be young to learn to use the hearing aid. But, you may start teaching him and if necessary, we can help you do this. Please write the answers and return them to us within 15 days after the receipt of the questionnaire. Answers may please be written in the same questionnaire and returned to us. If you require any further information about your child's hearing or hearing aids do contact us.

Thanking you,

Sincerely yours,
S. Nikam
Dr. (Miss) S. Nikam
Prof. and Head
Audiology Department.

RL/291083

DEPARTMENT OF AUDIOLOGY

HA-4

Date: _____

Name of the Hearing Aid user:

Case Number at A.I.I.S.H.

Name of the person answering:

Relationship of the person answering to the hearing aid user:

Parent (Mother/Father)/Friend/Guardian.....

Please Note: Tick () the answer or the answers suitable for your choice wherever essential. If you have other answers than the ones given, write below the corresponding question.

- 1. For how long does your child wear the hearing aid?
 - i) Does not wear the hearing aid at all. Seems to be afraid of the aid. Yes/No.
 - ii) Does not wear the hearing aid at all. Does not seem to be afraid of the hearing aid but tends to play with it. Yes/No.
 - iii) Allows to put on the hearing aid. But, removes it immediately, damaging it by throwing etc.. Yes/No.
 - iv) Allows to put on the hearing aid. But removes it immediately, without damaging it. Yes/No.
 - v) wears the hearing, aid for very short duration upto 5 minutes. Yes/No.
 - vi) Wears the hearing aid for few minutes, 20-30 minutes at a stretch. Yes/No.
 - vii) Wears the hearing aid for an hour at a stretch. Yes/No.
 - viii) wears the hearing aid for 2-3 hours at a stretch. Yes/No.
 - ix) Wears the hearing aid throughout the day. Yes/No.
 - x).....

2. Does your child insist that the volume control be set to a particular number/position? Yes/No.

3. If yes, to which number or position?

- i) Often.....
- ii) Sometimes (specify the situation).....

4. Does your child insist that the tone control be set to a particular position? Yes/No.
5. If yes, to which position?
- i) Often
- ii) Sometimes (specify the situation).....
6. Does your child care fully do the following things when he wears the hearing aid?
- i) Wears the hearing aid carrier pocket - Yes/No
- ii) Opens the battery compartment - Yes/No
- iii) Inserts the battery properly:
+against +, - against - - Yes/No
- iv) Closes the battery compartment - Yes/No
- v) Fixes the earmold to the receiver - Yes/No
- vi) Clips the aid to the carrier pocket/
shirt pocket - Yes/No
- vii) Inserts the earmolds in the ears - Yes/No
- viii) Switches on the hearing aid - Yes/No
- ix) Adjusts the volume control setting - Yes/No
- x) Inserts the dust cover - Yes/No
- xi) Fixes the cord to the hearing aid and
the receiver - Yes/No
7. Does your child know to do the following things care-
fully when he removes the rearing aid?
- i) TURNS down the volume control - Yes/No
- ii) Switches off the hearing aid - Yes/No
- iii) Removes the earmolds from the ears - Yes/No
- iv) Removes the aid from the carrier pocket- Yes/No
- v) Removes the battery from the aid - Yes/No
- vi) Winds the cord carefully round the
hearing aid - Yes/No
- vii) Replaces the aid carefully inside the
box - Yes/No
- viii) Removes the carrier pocket - Yes/No
8. Does he know the function of the volume control? Yes/No
- i) By increasing/decreasing the number on
the volume control, the loudness of
the sound he hears can be increased
or decreased, - Yes/No
- ii) Turns down the volume control when he
hears very loud sounds - Yes/No
- iii) Turns down the volume control when
there is noise -
Eg:i)In presence of bus noise while
travelling.

- iv) Decreases the volume control when there is squeal or whistling noise. - Yes/No
- v) Increases the volume control when he does not hear any sound - Yes/No
- vi) Increases the volume control when the sound coming from the hearing aid is weak. - Yes/No
9. Does your child know that the hearing aid is to be removed in the following situations?
- i) When he/she takes bath - Yes/No
- ii) When he/she sleeps - Yes/No
- iii) When he/she goes out in rains - Yes/No
- iv).....
10. Does your child check for the proper functioning of the aid on his own every time the hearing aid is worn?
Yes/No
11. If yes, how does your child check for the functioning of the aid?
12. What sounds does he use to check the hearing aid?
13. If the hearing aid stops functioning suddenly when it is worn, does your child identify it? Yes/No.
14. If yes, does he report it immediately? Yes/No
15. How does your child report the improper functioning of the hearing aid?
Reports:
- i) 'No sound' - Yes/No
- ii) 'Intermittent sound' - Yes/No
- iii) 'Sound comes only from one of the receiver' - Yes/No
- iv) 'Sound is too loud' - Yes/No
- v) 'Noise in the hearing aid' - Yes/No
- vi) 'Sound is too weak' - Yes/No
- vii).....
16. Does your Child clean the earmolds on his own without being asked to do so? Yes/No
17. If yes, how often does he clean the molds?
18. If no, who cleans his molds often?

19. Does your child do the following things on his own, to clean the earmolds?
- i) Removes the earmolds from the receiver - Yes/No
 - ii) Prepares soap water - Yes/No
 - iii) Cleans the earmolds in soap water - Yes/No
 - iv) Dries the earmolds properly - Yes/No
 - v) Fixes the earmolds back to the receivers - Yes/No
20. Does your child handle the hearing aid carelessly, like: chewing the cord, pulling the cord, putting food, mud, water etc. on the hearing aid? - Yes/No
21. If yes, describe the child's behavior?
22. What have you done for the above behavior of your child?
23. Can he identify his/her hearing aid if more than one person is using the hearing aid at home? - Yes/No
24. Does your child know the type of battery to be purchased for his hearing aid? - Yes/No
25. Has your child reported any of the following?
- i) That some cells are difficult to insert and remove. - Yes/No
 - ii) Some cells do not fit in tightly in the battery compartment. - Yes/No
26. Does your child take care of the hearing aid and protect it from other children at School? - Yes/No
27. If no, describe the problems your child is facing at School below:
28. What have you done for those problems?
29. Does your child switch off the hearing aid on the Classroom?
- i) Yes
 - ii) No
 - iii) Not observed
 - iv).....

30. If yes, who identified it?

- i) Teacher
- ii) Parents
- iii) Classmates
- iv).....

31. What have you done for this problem? Does your child still continue to do it?

22. Do you think it is better if your child is taught to wear the hearing aid on his/her own? Why?

33. Do you think it is better if your child learns to take care and maintain the hearing aid on his own? Why?

34. If the child has not learnt the above requirements about the hearing aid are you willing to teach him? Yes/No

35. If yes, how?

- i) Teach the child on your own - Yes/No
- ii) Send the child for short-term training Course. - Yes/No
- iii) Teach the child after consulting the specialists. - Yes/No
- iv).....

Signature of the person
answering

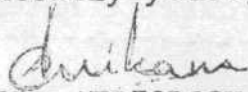
DEPARTMENT OF AUDIOLOGY.

RECURRING EXPENDITURE INCURRED FOR THE MAINTENANCE OF HEARING AID.

Dear Sir/Madam,

We are interested to know the annual expenditure incurred by the users of hearing aids. For this purpose, We have given a format on the reverse side of this paper. Please notedown the details in the space provided and mail it to us at the end of each months. Please record the information in as much detail as possible. So that we can find ways and means to cut down the recurring expenditure incurred by the hearing aid users. If there are two or more hearing aid users in your family, please write and obtain additional sheets.

Thanking you,

Sincerely yours,

 HOD. AUDIOLOGY DEPTT.

Give the particulars below:

Name of the hearing,aid user:

Case-No.

Age:

Hearing aid in use (specify the model):

Hearing aid is used since(approximate date)

Occupation of the hearing aid user:

(Please write, in brief the type of occupation).

Is the hearing aid worn at the work spot?

Yes/No.

If the hearing aid is not worn at the work spot, please write the reasons below:

Date when the problem
was noticed

When did you consult the
repair center? (Write
approximate date and address
of the repair centre)

Replacement/s suggested

Repair/s suggested

Spares purchased with address
of the shop:

Battery

Cord

Switch

Others

The hearing aid repaired on :
(Write approximate date)

Expenditure:

1. To buy the spares: Battery
Cord
Switch
Others

2. Charge for the repair services
3. For writing letters to the
repair centre
4. For sending the hearing aid by post
5. Total travelling charges (if any,
if the repair centre was contact-
ed in person)
6. Others
7. Total expenditure

26. FUA±À ÀÉÁÏÏÀÀ^a À ÀiÀV PÉ, À^a ÀqÀVÉJ±zÀ CzÀ DUÁUÀÏÏÉ^a Àr ÉÉÁqÀÏÀ J±, ÀVÉÍÀ?

- C) °ÉzÀ
- D) E®è
- E)

27. ±À ÀÉÁÏÏÀÀ^a À DUÁUÉSzÀÀ-À, ÀVÁÏÀ J±, ÀVÉÍÀ?

- C) °ÉzÀ (PÁgÀ PÉr)
- D) E®è
- E)

28. ±À ÀÉÁÏÏÀÀ^a À j ÏÏ UÉPÀÀ, À °ÉÉ(AiÀ^a ÁU) ±zÀj, Àk?

29. ±À ÀÉÁÏÏÀÀ^a À ÀiÀV PÉ, À^a ÀzÀVÉÍÀ E®è É JAzÀ °ÉÉÏÏÉ^a ÀqÀVj?

30. ±À ÀÉÁÏÏÀÀ^a À ÏÏÏ, À °ÉÉPÀwj?

- C) ^a ÁPi±À vÁj AzÀ
- D) ^a ÁPi±À vÁgÀ PÉI 0 ±À ÀÉÁÏÏÀÀ zÀSUE^a À»w EgÀ À®ÏÀ ÏÀ VÁAzÀ
- E) ±À ÀÉÁÏÏÀÀ zÀvÁiÀgÀ PÉI 0 ±À ÀÉÁÏÏÀÀ zÀSUE^a À»w EgÀ À®ÏÀ ÏÀ VÁAzÀ
- E) EvÁÉ

31. ±À ÀÉÁÏÏÀÀ^a À JµÀ, À ÏÏÉ^a ÀqÀVgÁ?

- C) ÇÉÉ_____ , À
- D) _____ ÇÉVÁUÉ^a À
- E) _____ ^a ÁgVÁUÉ^a À
- F) _____ wÁUÁUÉ^a À
- G) ÏÏÏ, À É E®è (H) ÏÏÀ UÉwè I À) EvÁÉ

32. ±ÁÁÚÉÁÏÁÁ PÉÁÓ °ÉÁZÁÚÁÁÍÁÁ Á©r °ÁÚÁÁPÉÁÓ °ÉÁVZÉÍÁZÁ PÁQÁ »rÁÍÁÁ ±ÁÁÚÉ SgÁÁÉÍÁ?

- C) °ÉZÁ (ÁÍÁÁ Á©r °ÁÚÁÁ)
- D) E®è
- E)

33. ±ÁÁÁ±ÁÁÚÉÁÏÁÁ ÁÁ GÏÁÍÉÁV, ÁÁ, ÁÁÍÁZÁè J°è EqÁÁVÁ?

34. °Áál j ÁÍÁÁÁ PÉÁQÁÁÉ¼ÁÁ ÁÚÁJµÁÁ °ÉÁ-ÉÉéíÉÁ°Áál j ÁÍÁÁÁ PÉÁÁÁVÁ?

35. ±ÁÁÁÁÍÁÁ ÁÁÍÁÁ Á°Áál j ÚÁÁÁÁ GÏÁÍÉÁV, ÁÁj, °ÉÁÚÁÁÁÁ SgÉÁj.

GZÁ: ÉÉ«ÉÉÁ, ±ÏÉÁ, |ÚÏü, eÉÉÉÁ°ÁÁ, J°ÁÉ, ±Á°:PÉÁÁ EvÁÉ

36. ±ÁÁÁÁÍÁÁ ÁÚÁÉ ÁÍÁÁ Á°Áál j ÁÍÁÁÁ PÉÁQÁÁÉ¼ÁÁ? PÁGÁ ÁÁÁ?

37. (1) ±ÁÁÚÉÉ°ÁÁ°Áál j ÚÁÁÁ °Áál j PÁÏÁÍ ð°ÁÁnUÉ, ÁÁÍÁÁV VÁÚÁÁ Á®è J±ÁÁÁÉÍÁ?

°ÉZÁ °Áál j ÁÍÁÁ °ÉÁÚÁÁÁÁ SgÉÁj

E®è: ÚÉw®è

(2) °ÁÉ°Á°Áál j ÚÁÁVÁVÁ°ÁÚÁÁ ÁVZÁÁ ÉÁÚÁÁÉJAZÁ J±ÁÁÁÉÍÁ?

°ÉZÁ (°Áál j ÁÍÁÁ °ÉÁÚÁÁÁÁ SgÉÁj)

E®è

ÚÉw®è

(3) °Áál j PÁÏÁÍ ð°ÁÁÁmíÉÉ¼ÁÉ°ÉÁÚÁÁ Á®è

°ÉZÁ

E®è

ÚÉw®è

(4) °Áál j ÁÍÁÁ PÁGÁ ÁAZÁ±ÁÁÚÉÁÏÁÁ ÁAZÁ SgÁÁ Á±S°ÁÁZÉ ÁÁÉ±ÁVÁ

°ÉÁÚÁÁÉ

°ÉZÁ (°Áál j ÁÍÁÁ °ÉÁÚÁÁÁÁ SgÉÁj)

E®è

ÚÉw®è

(5) °Áál j VÁÁ°ÁÁ ÁÁÁ½PÉ SgÁÁÉÍÁ?

°ÉZÁ (°Áál j ÁÍÁÁ °ÉÁÚÁÁÁÁ SgÉÁj)

E®è

ÚÉw®è

74. α^a ΑΙΕΑ ΠΕΑΥΕΑΕΙ J° gÀ ΠΕΒ, ΑΒΕ

- C) ±ΑΙΕΑΥΠΑ zÀ^a ΑΑΑ
- D) αΑΑ ΑΑΑ
- E) UÉwPè
- F) ΑΙΑ^a ΑεΑΥΑ zÀ^a ΑΑ^a Α[®]
- G)

75. α^a Α ±ΑΙΕΑΥΠΑ ΠΕ zÀ^a AzÀg[®] Α^a ΑΑΑΑΕ zÉÍ?

- C) °ÉzÀ D) E[®] E) UÉwPè F)

76. zÀ^a AzÀg[®] Α^a ΑΑΑΑ ΑΙΑ^a ΑΥΑΓΥΑΙΕΑΥ, ΑΑÍ?

77. ±ΑΙΕΑΥΠΑ^a ΑΑ GΥΑΙΕΑΥ, Α zÀUÀzÀ^a AzÀg[®] Α^a ΑΑΑΑΑΑ GΥΑΙΕΑΥ, ΑΑÍgÁ?

78. zÀ^a ΑΑ vÀÍΑ^a ΑΑΑΑΑ ±ΑΙΕΑΥΠΑ^a ΑΑ °ΕUÉg[®] ΑΒΕ

79. ±ΑΙΕΑΥΠΑ^a ΑΑ GΥΑΙΕΑΥ, Α ΑΥΑJ° è EI ΑΠΕ^a ΑΑÍ?

- C) ±ΑΔΕΑεÉ[®] ΕΑè CxÀÁ °Á^a UÉ¹ Q¹ q[®] ΑΑ
- D) ΠΑUÉΕÉVÀ °ΑΠ[®] ΑΑÍ[®] zÀè
- E) ΥΑÍ-Íg[®] ΑεÉ[®] ΕΑè
- F) EvgÉ

80. α ΠΕΑΥΕΑΕΙ DUÁUÉS mÉCxÀÁ ±ΑΔ^a AzÀ^a ΑΑΑΑΑΑΒΕÍ? ΚΡÉ

81. α ΠΕΑΥΕΑΕΙ SmÉ-IAzÀ^a ΑΑΑΑΑΑ ΑΑAzÀ^a ΑΕ+SP Α, ΑΑÍΑΥ ΠΕ², Α[®] C[®] ΑΑΒΕÍ?

- C) °ÉzÀ (PÁgÀ UÀΑΑ ΠÉr)
- D) E[®] (PÁgÀ UÀΑΑ ΠÉr)
- E) UÉwPè
- F)

82. α^a Α CΕΑ^a ΑΑΥΑΓΑF ΠΕΑΕ[®] r °ΑΑΑ Jμ[®] CΕΑ^a Α^a ΠΕSg^a ΑΒΕ

- C) °ÁÍ j
- D) vAw
- E) j¹ Á^a Í
- F) 1[®] zIUA (ΑΙ^a Α¹ zI JAzÀ °ÉgÀ SgÉÍj)

±ĀĀ «eĀĒĀ»^a ŠJA

±ĀĀ ŠĒĀYĀĀPĒĀ ĴĀ^a ĀĒVĀZĀRZĪŃ

^a ĀĒĀZĀ: ZĀ^a ĀVĀĪĀ ĀŮĒ

±ĀĀ ĀĒMAZĀ^a ĀĀPĒ ±ĀĀ ŠĒĀYĀĀPĒĀ ĴĀVĀĪĀ ĀRaŃĒĀ «^a ĴĀĀĀĀ w½ ĀĪ ĒĀĀ D. ĀĪĀĀĀ ĴĀVZĒ Ē CzĀĀV ĒĀĀPĒĀPĒĀ ĀYĀĀĀĀĀ PĒĒĒĒ ĒPĒĒĀ Ā, ĀĀĀĒ «^a ĴĀĀĀĀ vĀĀ¹ YĀĀ WĀUĀĀPĒĒĒĒĒĀ ĀĴĒPĀĀ»¹, ĀzĀzĀĀĀ ĴĀĪĀZĀ «^a ĴĀĀĀĀ PĒĒĒĒ. ĀĪĀPĒZĴĒ CzĀĀZĀĒĀĀ ĀD RZĀĒĀ PĀĀĒ Ē ĀĴĀĀ Ā ĴĀUĀĀĀĀ PĀĴĀ » rĀĪĀS^o ĀZĀ MAZĀ^a ĒĀĒ^a ĀĀ^a ĀĒĒĪĀ Ē MSĴ VAVĀ^o ĒĀĀ dĒĀ ±ĀĀ ŠĒĀYĀĀPĒĀ^a ĀĀĀ GYĀĪĒĀV, ĀVĀĀĒ ĒĀĀĴĒSgĒĀ ĒAVĀĀ^o ĒĀĀ YĀĀ ĀĀUĀĀĀĀ YĀĒĀĀĒĒ¹/₂ j.

PĀĀĀVĀĒĒĒĒĒĒĒĒ

EWĀ^a ĀĀĀ

(±ĀĀ «eĀĒĀ»^a ŠJA^a ĀSĀĀĀĀĀĀĀĀĀ ĀĪĀ ĄĀ)

F PĒĒĒĒ «^a ĴĀĀĀĀ PĒĒĒĒ:

±ĀĀ ŠĒĀYĀĀPĒĀ ^a ĀĀĀ GYĀĪĒĀV, ĀĀĀĀ ^o ĒĴĀĀ	
PĒĒĒ Ē ĒĀSgĪ:	^a ĀĪĀĀ
ĀĪĀ ^a ĀVĴĀĀĀ ±ĀĀ ŠĒĀYĀĀPĒĀ (CzĴĀ	:
^a ĀĴĀĀĪĀ ^o ĒĴĀĀĀ w½ ¹ j)	
ĴĴĀ ĀĒĀĀZĀG YĀĪĒĀV, ĀVĀĀĴĀ?	:
(CzĀĀĀĀ vĀĴ ĀĀĒĀĀ w½ ¹ j)	

wAUAA aAA :

aaA ±A AEAyPAASUEUAa1zAvEAzGE :

AiAaUAvEAzGEPAqMSAvA? (vAjAREM w½1j) :

jyEj aMqA ASUEaaAAiAaUA, A°E yAEj? (vAjARA aAAj yEj aMqA AaA «¼A, AA SgEAj) :

AiAaAE SUAAAR SzAA-A, APZA w½1zGE? AiAaA' SA :

AiAaAE SUAAAR j yEj aArzGE? AiAaA' SA :

AiAaACAUAAe CaAE Ae RjAcj 1j? CaAA«¼A, APERj. :

AA j :

aAiAi (CxAA PAqiö) :

1zi :

EvGE(CxAA G½zAA) :

±A AEAyPAaAAj yEj aArzAcEA :

RaöEA«AA :

SUAAAR PE¼AA DzARZAO :

AA j :

aAiAi :

1zi :

G½zAA :

j yEj aArzAcPEPEI 0°A :

j yEj aMqA AJUESgEAYAAUA, GA RZAOzA°A :

±A AEAyPAaAA CAZETA°E (yEA, i) PAA, AA RZAOzA°A :

yAiAtPERZAözA°A (CAzGEaaAj yEj

aMqA AUÉ°EAVzAe CxAA aaAj yEj

aMqA AaA aArvA' AiAVzAe :

EvGARZAO :

MI AO RZAO :