HEARING AID PERFORMANCE -ITS CARE AMD MAINTENANCE (HAPICAM) :A FOLLOW UP STUDY

REG. N0.M9416

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

ALL INDIA INSTITUTE OF SPEECH AND HEARING: MYSORE 570006

MAY 1995

DEDICATED TO

ANNA

AND

AMMA

CERTIFICATE

This is to certify that **this** Independent Project entitled: **HEARING AID PERFORMANCE - ITS CARE AND MAINTENANCE (HAPICAM) : A FOLLOW UP STUDY** is the bonafide work in part fulfilment for the First year MSc., (Speech and Hearing) of the student with Reg.No.M9416.

Mysore
May 1995

Dr.(Miss) S.Nikam
Director
All India Institute of Speech and Hearing
Mysore **- 6**

C E R T I F I C A T E

This is to certify that this Independent Project entitled : HEARING AID PERFORMANCE - ITS CARE AND MAINTENANCE (HAPICAM) : A FOLLOW UP STUDY has been prepared under my supervision and guidance.

GUIDE

Mysore

May 1995

Dr. (Miss) S. Nikam,
Professor and H.O.D.
Dept. of Audiology
All India Institute of
Speech and Hearing
Mysore 6

DECLARATION

I hereby declare that this Independent Project entitled: **HEARING AID PERFORMANCE - ITS CARE AMD MAINTENANCE (HAPICAM) : A FOLLOW UP STUDY** ie the result of my own study under the guidance of Dr.**(Hiss) S. Nikam,** Prof, and Head of the 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.

Mysore
May 1995

Reg.No.M9416

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TABLE OF CONTENTS

INTRODUCTION

Hearing is perhaps man's most important sense for without it his power to communicate is greatly diminished.

The auditory system gets affected by drug trauma, diseases and aging process due to which an individual develops hearing-impairment. Hearing-impairment can have debilitating effects in all aspects of an adult life. Helping these individuals deal with these problems is an Integral part of the total process of aural rehabilitation.

The major objective of adult aural rehabilitation program is to assist the hearing impaired to overcome communication and psychosocial handicap that accompany hearing loss (Stephens and Goldstein, 1983). Recent advances in hearing aid technology have led to more widespread acceptance of hearing aids. Because amplification is at the heart of most rehabilitation programme, with elderly representing the primary consumers of hearing aids, the demand for rehabilitation services is Increasing (White, 1985).

The typical response of clinicians who fit hearing aids on all ages is that the older people are simply harder to

fit successfully and that older people do not use their hearing aids consistently. As many as one third to half of the older persons who own hearing aids do not use them (Stach, 1994).

It is felt that one of the most important aspects of adult rehabilitation process is the documentation of the outcome of intervention (Bess, 1982). Increasingly follow-up programs are considered as a crucial step in aural rehabilitation. These follow-up programs are done:

(i) To assess benefits derived from hearing aid usage (Oja and Schow, 1984).

(ii) To ascertain the level of satisfaction with their aids (Pou et al. 1982, Parving and Philips, 1991).

(iii) To obtain information about the utilization of the aid (Ewestsen, 1974).

(iv) To make the necessary changes in amplification pattern/type of system.

Over the years a numbers of researchers (Ward, Gower and Morgan, 1978; berger and Hagberg, 1982; Lazenby et al. 1986; Weinstein,1988; Smedley, 1990; Parving and Boisen, 1990; Murlow, 1992; Maya, 1987 and others) have studied and surveyed elderly hearing aid users to identify factors that

contributed to success and adjustment to the aid, and to assess the benefit and level of satisfction.

Purpose of the present study:

1. To evaluate the knowledge elderly hearing aid users have about the care and maintenance of body worn hearing aids.
2. To evaluate the effects of type of hearing loss on the benefit derived from the aid.
3. To evaluate the effects of degree of hearing loss on the benefit derived from the aid.
4. To evaluate the effect of age on the benefit derived from the aid.
5. To evaluate the effects of hours of use on the benefit derived from the aid.

REVIEW

Here is a brief review of the studies that have been conducted over the year to assess satisfaction, and benefit derived from the hearing aid by its user.

Ewersten (1958) studied 9382 patients who were treated in cophenhagen hearing centre. Partly based onthe consumption of batteries it was found that 81 percent of the patients used their aid to a satisfctory degree, while 7.4 percent used them rarely and 9.6 percent were out of use. Number of factors contribute to the satisfaction with the fitted hearing aid. Battery consumption alone cannot be used as an estimate of satisfaction. Psychosocial factors have a greater role to play.

Rushford and Lowell (1960) mailed questionnaires to 1515 families of deaf children. Parents reported that 45.8 percent of the children made maximum use of their hearing aids ie. they used the aid throughout the day. 52.6 percent of the parents reported that they were satisfied with the performance of their children's hearing aid.

Derks and Carhart (1962) sent questionnaires to 1700 hearing aid users (Bodyworn, BTE, Eye glass type aids) who

were asked to indicate their success in 26 everyday situation by rating their experienced in a five category scale (Excellent, good, fair, poor, worse). Of the 25 percent forms that were returned, they found that excellent rating for success in hearing was 17 percent for binaural users and 9.2 percent for monoaural users. Poor rating was 15 percent for binaural users and 15.9 percent for monoaural users. High excellent rating for success in hearing in binaural users is very much as expected due to the binaural advantage when compared to the monaural users.

Rice (1965, 1966) carried out a survey where 336 patients were asked to complete a questionnaire to estimate the use of hearing aid. It was found that 25 percent of his patients indicated that they used the aid all the time, 65 percent only on special occasions and 11 percent did not use the aid at all.

Becknell and Davis (1965) conducted a survey on patients who had been fitted with hearing aid for atleast three years. A questionnaire was used to obtain information. They found that 24 percent of their patients used their aids full time, 59 percent used their aid part time and 17 percent never used their hearing aids.

There is a high correlation between Rice's and Becknell and Davi's study with respect to the percentage of full time use of the hearing aid.

Rassi and Harford (1968) found that 75 percent of patients who purchased aids did not return for rehabilitation or re-evaluation.

Kodman (1969) found that even though people wore their aids most of the time they were not satisfied with the aid. This may be due to subjective feelings and lack of adequate rehabilitation.

Northern et al. (1969) sent attitude questionnaire to 334 males in the age range of 18-57 years who had completed aural rehabilitation program at Army Audiology and Speech Centre. A total of 218 (69%) of the questionnaires were returned, 88.4 percent reported high satisfaction with the hearing aids, only 6.5 percent of them seldom or never used their aids, 77 percent of the group reported that their aids were functioning normally. High satisfaction rate of 88.4 percent could be because of an adequate and complete aural rehabilitation program.

Carstairs (1973) conducted an extensive survey on people who were issued NHS hearing aids. He found that 24% of the subjects used their aid for 8 hours, 40 percent of the subjects used their aid for 5-8 hours, and 35 percent used for less than five hours. 1.5 percent of the subjects reported high satisfaction, 86 percent reported moderate satisfaction and 12 percent reported low satisfaction, utilization of the hearing aid was as follows:

	Use always (in percentage)	Some times (in percentage)
Public meeting	78	14
Cinema/theatre	64	12
Talking to one person	60	5
Radio/TV	58	36
Shopping	54	3
Talking to two or more	43	53
At work	21	2

Ewerteon (1974) investigated 1006 patients who had used their hearing aids for 3-6 months to obtain information about the utilization of the hearing aids. It was found that 52 percent of the users used hearing aids in all working hours, 38 percent used them daily according to need, 4 percent used them on special occassion and 6 percent never

used their hearing aids (They used a four point for evaluating the responses of patients, always often, rarely and never).

Kapteyn (1977), judged the satisfaction with fitted hearing aids for 155 patients (age range 30-90 years) who wore body worn, spectacle and ear level aids. An analysis of the information obtained, together with some audiological features indicated that the relationship between satisfaction and degree of hearing loss and discrimination loss was weak. This study points out to an important fact that satisfaction is closely related to psychosocial factors.

Pou et al. (1981) conducted an extensive study for which they designed questionnaire to study satisfaction with clinical services and cost, acceptance and adjustment, communication abilities and wearing habits. They found that 46 percent were motivated to use hearing aid, 56 percent were unmotivated and 44 percent were willing but reluctant to wear hearing aid. 65 percent used the hearing aid most of the day, 16 percent only occassionally used their hearing aid, 4 percent used their aid for less than 2 hours, 6 percent used their aid for 2 to 4 hours and 9 percent used

their aid for 4-6 hours a day. They found that 74 percent used their hearing aid to converse with one or two people, 51 percent used their hearing aid while watching television, 35 percent used in meetings, 27 percent used in group conversation, and 59 percent used their hearing aid in church.

Berger and Hagberg (1982) sent questionnaires to 553 hearing aid users out of which 25 percent were usable. They found that 21.8 percent used their hearing aid for 4 to 8 percent, 5.7 percent used for 3-4 hours, 13.5 percent used for 5-6 hours, 13.1 percent used for 7-8 hours and 62.9 percent used their hearing aid for 8 hours. 16.6 percent required 1-2 days to adjust to the aid and 1.3 percent took more than 12 weeks to adjust to the aid. When they studied the volume control setting they found that 8.01 percent had barely put their hearing aids on, 43 percent set at 1/2 volume control setting, 9.3 percent set the volume control at full on. A comparison of the setting used by patients and that prescribed by the audiologists would give us additional information.

Haynes et al. (1983) conducted a study where in questionnaire was sent to 143 adults aged 20 years and above. These subjects were asked to rate their satisfaction

with their hearing aid on a four point scale. Of the 78 respondents 49 percent rated hearing aid as "very helpful', 28 percent found amplification satisfactory, 17 percent rated their hearing aid as sometime helpful and 6 percent found hearing aid unsatisfactory.

Briskey and Cole (1983) ascertained the success of fitting eighty seven individuals with binaural hearing aids in a multiplicity of acoustic environment with in each persons life style. They found that 66 percent took less than one month to adjust (Lower end of the range) and 4 percent took more than 6 months to adjust (upper end of the range) to the aid. 3.3 percent made maximum use of their hearing aid (more than 16 hours a day) 3 percent used their aid for less than 4 hours. In a number of studies it has been noted that individuals get adjusted to their hearing aid with in 2-3 weeks. Here the lower limit considered is less than a month. Varied results are very much expected.

Oja and Schow (1984) developed a follow up protocol to assess benefit, use and satisfaction. They found that 67 percent of the subjects were satisfied with their hearing aid.

Leidy (1984) gave twenty-one men who wore hearing aid a questionnaire asking them to respond to when and where they used the volume controls of the aid. A significant and predictable difference for users with sensori-neural hearing loss, mixed and conductive type of hearing loss in terms of gain control and changing (volume) gain control setting was noted.

Sorri (1984) interviewed 150 hearing handicapped who had been fitted with aid for 2 years. They wanted to find out how many of the aids were in use. 23 percent of the hearing aids were seldom used, 57 percent of them used hearing aid regularly everyday and 19 percent of them used occasionally. They also found that hearing aids were less used if the hearing loss was mild. BTEs were used more regularly than body worn aids.

Walden et al. (1984) used a self report method to measure success with amplification. A sixty-four item questionnaire was administered to 128 experienced hearing aid users who rated the benefit received from amplification in variety of situation. In general patients reported significantly more benefit from their aids in quiet situation than in noise.

Berger and Hagberg (1984) examined the differences in gain usage based upon hearing aid experience and wearer's age in users between 10-89 years of age. No pattern of hearing aid gain usage differences was found among hearing aid experinece categories.

Kama1ini (1985) studied certain aspects of hearing aid usage in children. Data was collected using questionnaire (given to the parents). 72 percent of the parents reported that the hearing aid needs periodic servicing, while 44 percent checked the hearing aid once a day.

Vanaja (1985) studied hearing aid usage in patients with tinnitus, ear discharge and vertigo. It was found that most of the subjects found hearing aid only adequate.

Lazenby (1986) gave questionnaires to twenty-eight hearing aid users to evaluate their ability to manipulate and take care of the hearing aid. It was found that 65 percent of them had mastered the handling of their aids after 2 weeks.

Chung and Stephens (1986) conducted an extensive survey on 200 subjects who had been fitted with the binaural

hearing aids to determine factors which could influence the use of hearing aid. 152 responded, and following were the results obtained. It was noted that frequent users used the aid for 4-12 hours/day. Infrequent users used the aid for less than 1-4 hours/day. Listening to speech in quiet was 92 percent, listening to TV 71 percent, locate sounds eg. car horn 76 percent, recognise sounds 72 percent, listening to a group 69 percent. Use of binaural hearing aids may be contributing to the high utilization of the aid in everyday situations.

Manjula (1986) conducted a questionnaire survey on BTE users. She found that 60 percent found their aids adequate, 26.6 percent were not satisfied with the aid, 13.4 percent had little satisfaction with the aid, 20 percent reported that the hearing aid needed servicing and 67 percent cleaned earmolds once in a week.

Miller and Schen (1987) conducted a national survey on hearing-impaired and found that 12 percent of hearing-impaired persons were using hearing aids at the time of the interview. Only 3 percent of those who considered their hearing-impairment to be severe used hearing aid. The relationship between hearing aid use and age, and between hearing aid use and severity of impairment was as follows:

	Use of hearing aid	Does not use hearing aid
45-65 years		
All levels of hearing trouble	10%	90%
At best can hear shouted speech	33%	67%
67 years and older		
All levels of hearing trouble	20%	80%
At best can hear shoutd speech	37%	63%

In this study the severity of impairment is based on subjective levels of hearing speech, instead the severity should have even quantified and the relationship established.

Markides (1977, 1987) studied the use of individual hearing aids by hearing-impaired children over a period of 10 years. 1853 children attending schools for the deaf, units for the partially hearing and ordinary schools were examined. 39 percent wore body worn aids and 61 percent wore ear level aids. He found that girls were making better use of their aids than boys. Poorest hearing aid usage was associated with hearing-impaired children attending normal

school only 43 percent of children wearing body worn aids were making good use and 54 percent wearing ear level aids made good hearing aid use. In this study a significant difference in good hearing aid use in children attending deaf and units for partially impaired, and children attending normal schools is pointing out to an important fact that there are both advantages and disadvantages of integrating hearing-impaired and normal children.

Maya (1987) studied elderly hearing aid users using a questionnaire. She found that 5.2 percent of them used hearing aid for 12 hours or more per day, 33.3 percent used for 8 hours. 20.8 percent used the aid for 4-8 hours and 36 percent used their aids for 0-4 hours/day.

Henrichsen et al. (1988) evaluated the use of hearing aids in elderly users six months after fitting the ITE aids. They found that elderly users used their aid predominantly in situations when listening to TV and in smaller groups. 64 percent of the users used their hearing aids whole day, 6 percent never used their aids. 43 percent were satisfied with their aids, 18 percent were not satisfied with their aids and 8 percent were dissatisfied with their aids. Not satisfied and dissatisfied have very little difference. The criterias to choose these two options is not very clear.

Richardson and Robert (1989) conducted a survey on the client who had expressed difficulty with amplification. 99 percent of the subjects expressed satisfaction with the services.

Smedley (1990) used self asessed satisfaction rating with a seven point scale to evaluate the satisfaction in elderly canal type hearing aid user. It was found that 60 percent were highly satisfied with their fitting, 10 percent were dissatisfied. Seven point scale is used in this study, it is difficult for the clients to rate their response.

Kerlinger and Mi11in (1990) conducted a survey by telephone using a prepared questionnaire on 40 hearing aid users all of whom wore their aids for more than one year. 80 percent of the subjects described that they were satisfied with the aid, 14 percent were not satisfied and 10 percent had mixed feelings. 10 percent used their aid for 1-5 hour; 10 percent used their aid for 6-8 hours, 32.5 percent used their aids for 9-12 hours, 40 percent wore hearing aid more than 12 hours/day and 7.5 percent wore occasionally.

Parving and Boisen (1990) evaluated the use and benefit of In the canal hearing aids in a group of elderly and

younger subjects. It was found that 28 perent used their aid very rarely, only 1 percent never (used) wore their hearing aids. 74 percent were satisfied with their aid and 19 percent were not satisfied with the aid.

Parving and Philip (1991) evaluated the use and benefit of hearing aids in 135 hearing disabled. Following were the results obtained:

Utilization of the aid	% of use
At home, small group, while listening to TV/Radio.	70%
Large groups	33%
At theatre	17%

Satisfaction:

Satisfied with the aid	:	41%
Not satisfied with the aid	:	9%

Use of aid (frequency) : : 53% used the aid daily.

Murlow (1991) studied eighty-seven elderly hearing-impaired individuals. He found that 70 to 80 percent were very satisfied with the aid and 1 percent dissatisfied over 60 percent wore their aids for more than 40 hours per week,

whereas 10 to 15 percent wore them less than 20 hours per week. Low dissatisfaction is indicating that it is not always true that elderly hearing aid users are very often dissatisfied with their aids.

Davis et al. (1992) followed up forty-five individuals between the age range of 50-65 yers who were fitted with hearing aids for 2 years. It was found that 90 percent of the group were satisfied with their aids.

Gimsing (1992) interviewed 254 subjects 6 months after the hearing aid was issued, 66 percent were full time users, 88 percent wore an aid at either all time or everyday, 8 percent were non users.

Austin (1992) sent 40,000 questionnaires to hearing aid users in U.S. It was found that 80 percent listened to TV at normal volume with their aids, 82 percent found their instruments easy to operate and adjust, 76 percent heard better at Church, meetings with their hearing aids, 71 percent were satisfied with their aid.

Rosedale (1993) assessed patients adjustment and long-term satisfaction with a questionnaire. It was found that

they needed 16.7 days for the users to adjust to their aids, mean usage per day was 8 hours and the subjects were fairly satisfied with the aid.

Alberti et al. (1993) sent questionnaire to hearing aid users. It was found that 80% were totally satisfied and found their aids adequate.

Ovegard and Ramstron (1994) summoned individual follow up for 50 hearing aid users. About 30 percent seldom used their hearing aids (less than 1 hour/day). The hearing aid was mainly used in converstion between two conversation in group and listening to TV.

Purpose: The propose of the present study was to determine the knowledge about hearing aid care and maintenance and to ascertain the benefits derived from hearing aid usage.

Subjects:

Thirty one body worn hearing aid users who had been prescribed suitable hearing aids after a detailed evaluation at All India Institute of Speech and Hearing or by qualified audiologists else where served as subjects. Out of thirty one subjects, twenty five subjects voluntarily attended the 'hearing aid users week* and 6 subjects were interviewed at their residence.

There were twenty nine males and two females with the age range of 55-85 years. The mean age was 69.74 years and the median age was 71.23 years.

The subjects were either housewives, employees or retired persons from middle socio-economic strata.

All subjects used their aid monoaurally. thirty subjecte wore Indian hearing aids, one subject used an imported hearing aid.

The subjects formed a heterogenous group with respect to hearing loss. They either had sensori-neural (51.61 percent) or mixed (48.39 percnet) type of hearing loss. The subjects had either moderate (41.96 percent); severe *25.81 percent) or profound (32.26 percent) degree of hearing loss.

About eight different models of hearing aids were in use. The period of hearing aid use varied from four months to thirty years.

Questionnaire used in the study:

Three questionnaire were employed in the present study (See Appendix A,B, and C). They broadly covered the following areas.

Questionnaire-1 : Dealt with general information regarding the user and his hearing aid.

Questionnaire-2 : Dealt with information about the care and maintenance of hearing aid.

Questionnaire-3 : Assessed the benefit derived from hearing aid usage.

These questionnaires were developed based on the questionnaires used inthe earlier survey studies conducted by Kama1ini (1985), Vanaja (1985), Manjula (1986), Maya (1987) and also based on hearing handicap scale (High, Fairbank and Glorig, 1964) and hearing measurement scale (Noble, 1962). These questionnaires were given to ten audiologists to evaluate the questionnaire for ambiguity and to give suggestions. Based on their suggetions the questionnaires were further modified.

Procedure:

To collect the data a direct interview was conducted by audiologists and speech language pathologists. The subjects were given information as to why the data was being collected. A three point scale was used for rating questionnaire three (most often, sometimes, never).

Results of the study are tabulated and discussed in the following chapter.

Questionnaire-1:

In the present study questionnaire-1 and 2 were analysed using descriptive statistics. Questionnaire-3 which used a three point rating scale (always, often and never) were analysed using ANOVA and 't' test. Following are the results obtained.

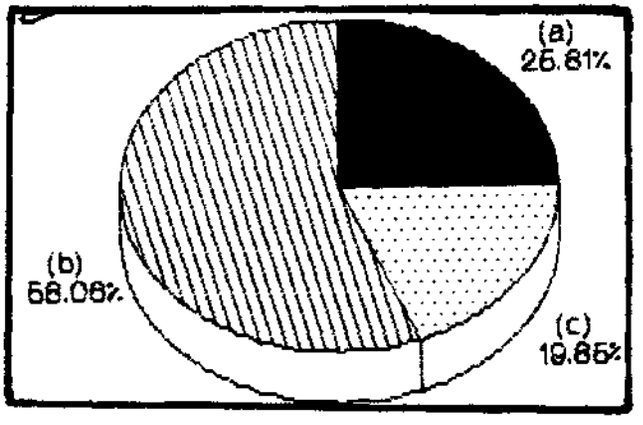
Age:

Range : 55 years - 85 years

Mean age : 69.74 years

Median age : 71.23 years

Age in years	No.of subjects	Percentage
55-60	8	25.81
66-75	18	58.06
76-85	6	19.85



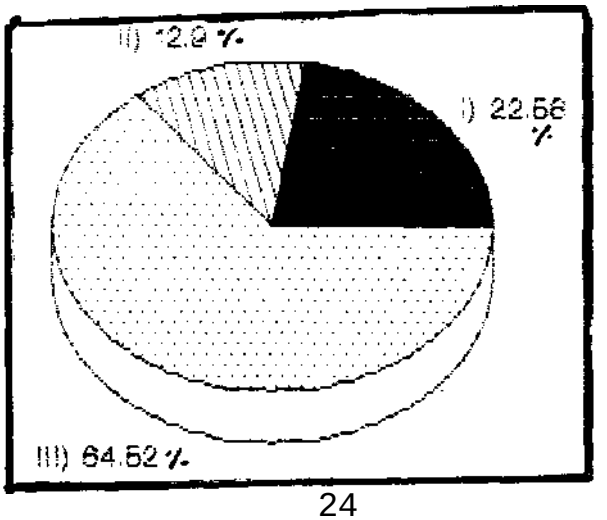
Majority of subjects were in the **age** range of 66-75 years (18 subjects), and rest of the subjects were in the age range of 55-60 years (8 subjects) and 76-85 years (6 subjects).

1.Years of use: Range : 4 months to 30 years.

Subjects included in this study had used their aid for at least a minimum of 4 months. Some subjects had used hearing aid for about 30 years.

2.How did you get the hearing aid?

	Options	Number	Percentage
i)	Purchased paying full cost	7/31	22.58%
ii)	Purchased paying 50% of the cost	4/31	12.90%
iii)	Free of cost/donated	20/31	64.52%
iv)	Others	0/31	0



More than half of the subjects had obtained a free hearing aid from All India Institute of Speech and Hearing, through the Aids and Appliances Scheme. Less than 25 percent of subjects had purchased the hearing aid paying full cost, rest had obtained the hearing aid from the Institute paying 50 percent of the cost.

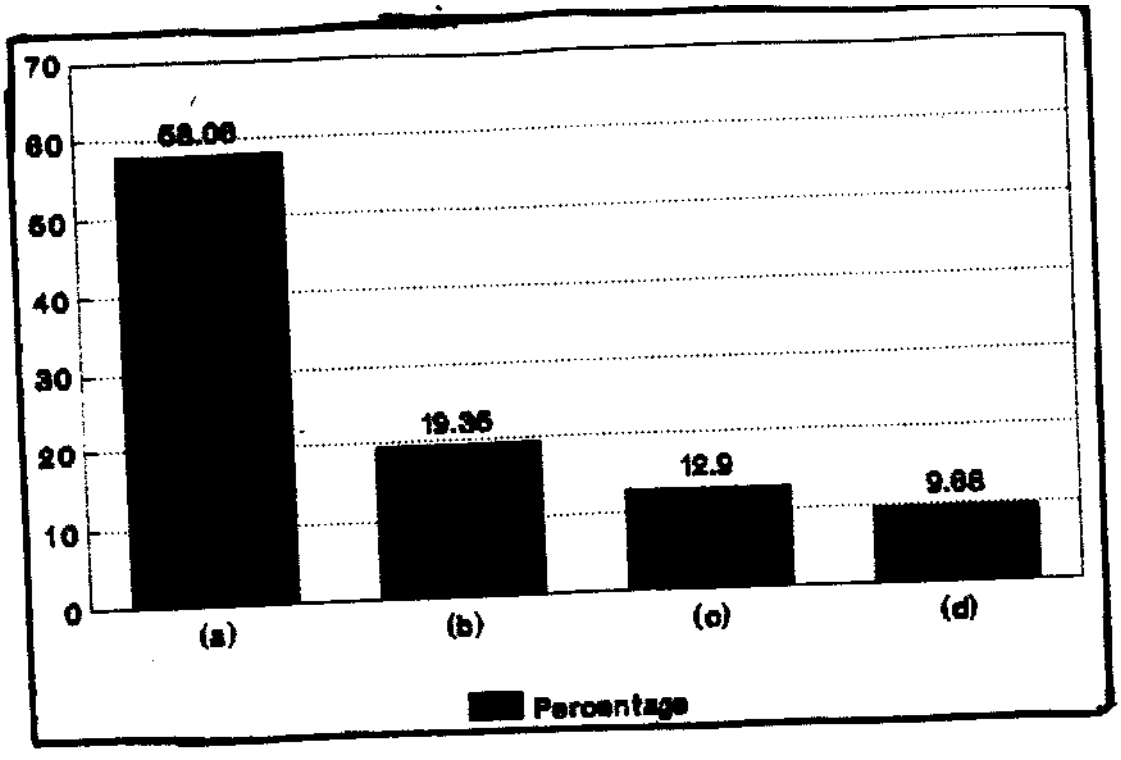
3.Since when is the hearing aid being used?

Options	Number	Percentage
a) From the date of obtaining the aid	31/31	100%
b) Sometime after obtaining the hearing aid	0	0
c) Don't remember	0	0
d) Others	0	0

From the data of obtaining the aid 31/31 100 percent. All the subjects started using their aid from the date of obtaining the hearing aid.

4.How long did it take to adjust to the aid?

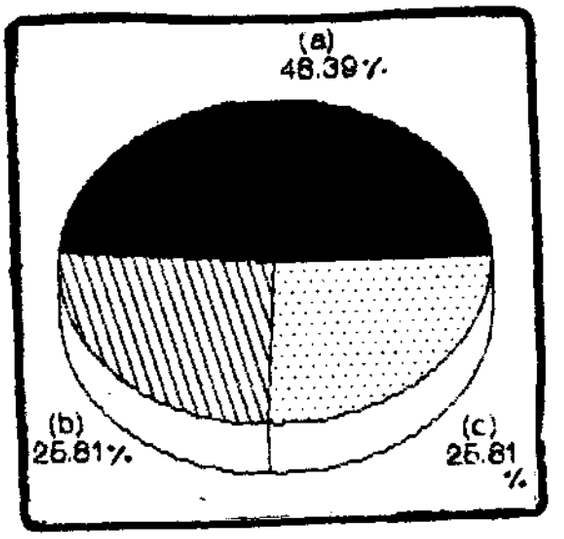
Options	Number	Percentage
a) 1-2 weeks	18/31	58.06%
b) 1-2 months	6/31	19.35%
c) More than 2 months	4/31	12.90%
d) Others (could not adjust to the aid)	3/31	9.68%



About half of the subjects took 1-2 weeks to adjust to their hearing aid. Except 3 subjects, rest of the subjects took about 1-2 or more than 2 months to adjust to the hearing aid. The 3 subjects who could not adjust to the hearing aid belonged to the older age group (76-85 years) and had poor speech discrimination scores.

5.How many hours do you use the hearing aid in a day?

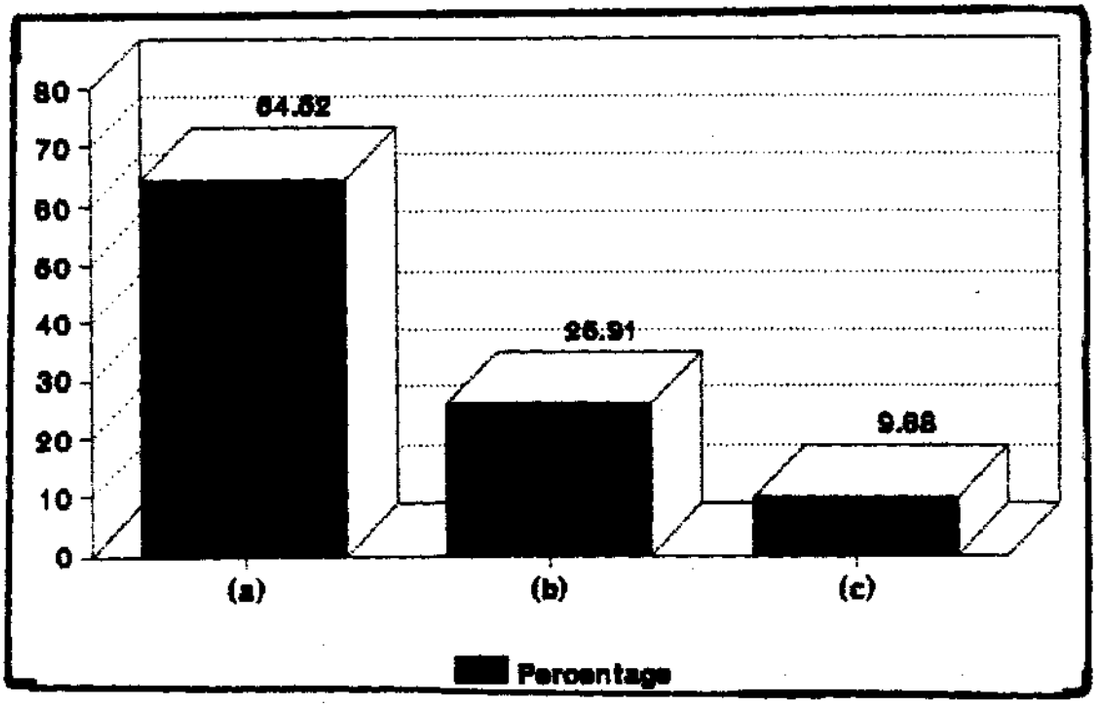
Options	Number	Percentage
a) More than 12 hours a day	15/31	48.39%
b) 6-12 hours a day	8/31	25.81%
c) Less than 6 hours a day	8/31	25.81%



About half of the subjects used their hearing aid for store than 12 hours a day, one fourth of them used their aid or about 6-12 hours a day and the rest of them used the hearing aid for less than 6 hours.

6.To what extend are you satisfied with your aid?

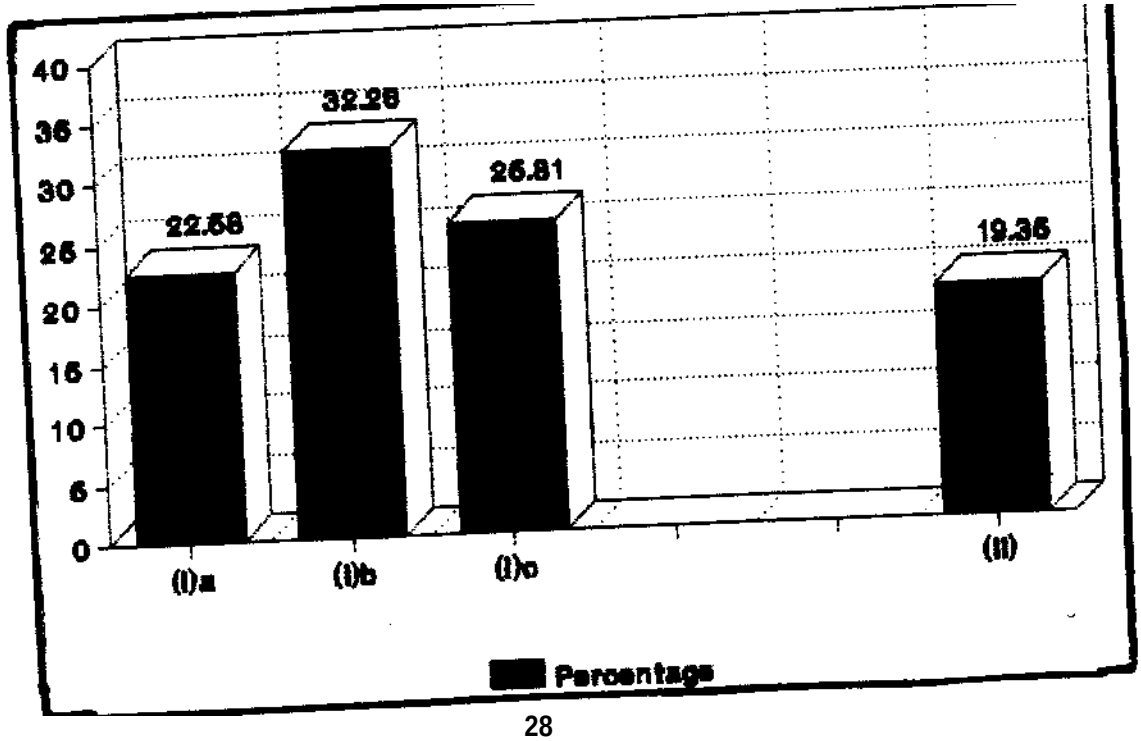
Options	Number	Percentage
a) Completely satisfied	20/31	64.52%
b) Find it adequate	8/31	25.81%
c) Not satisfied	3/31	9.68%



More than half of the subjects were completely satisfied with the hearing aid, one fourth of the subject found it adequate and the rest were not satisfied with their hearing aid. Reason for not being satisfied with the hearing aid was not probed.

7. Have you kept in touch with professionals after the hearing aid has been recommended?

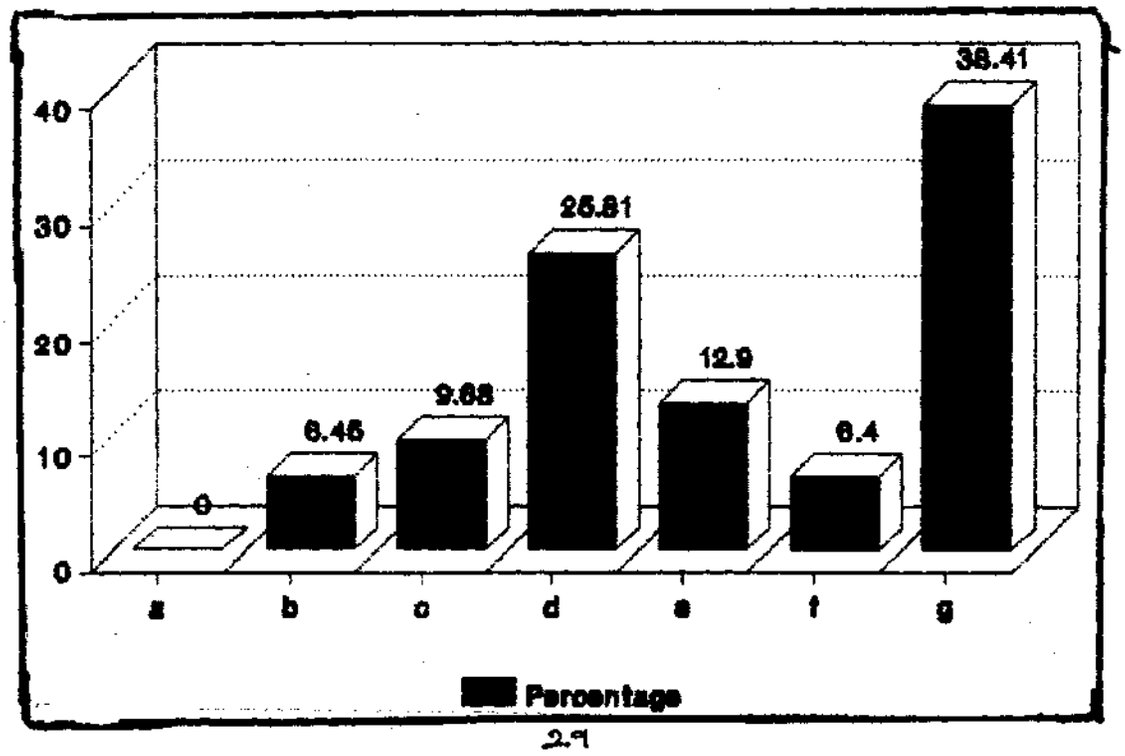
Options	Number	Percentage
(i) Yes		
a) For evaluation	7/31	22.58%
b) For evaluation and consultation	10/31	32.26%
c) For consultation	8/31	25.81%
(ii) No	6/31	19.35%



Majority of the subjects kept in touch with professionals (19.35 percent), few of them did not keep in touch with professinal. Reasons for which were not probed.

8.How often do you get your hearing evaluated?

Options	Number	Percentage
a) Once in 3 months	0	0
b) Once in 6 months	2/31	6.45%
c) Once in a year	3/31	9.68%
d) Once in 2 years	8/31	25.81%
e) Once in 3 years	4/31	12.90%
f) Once in 5 years	2/31	6.4%
g) Have not got their hearing evaluated.	12/31	38.41%

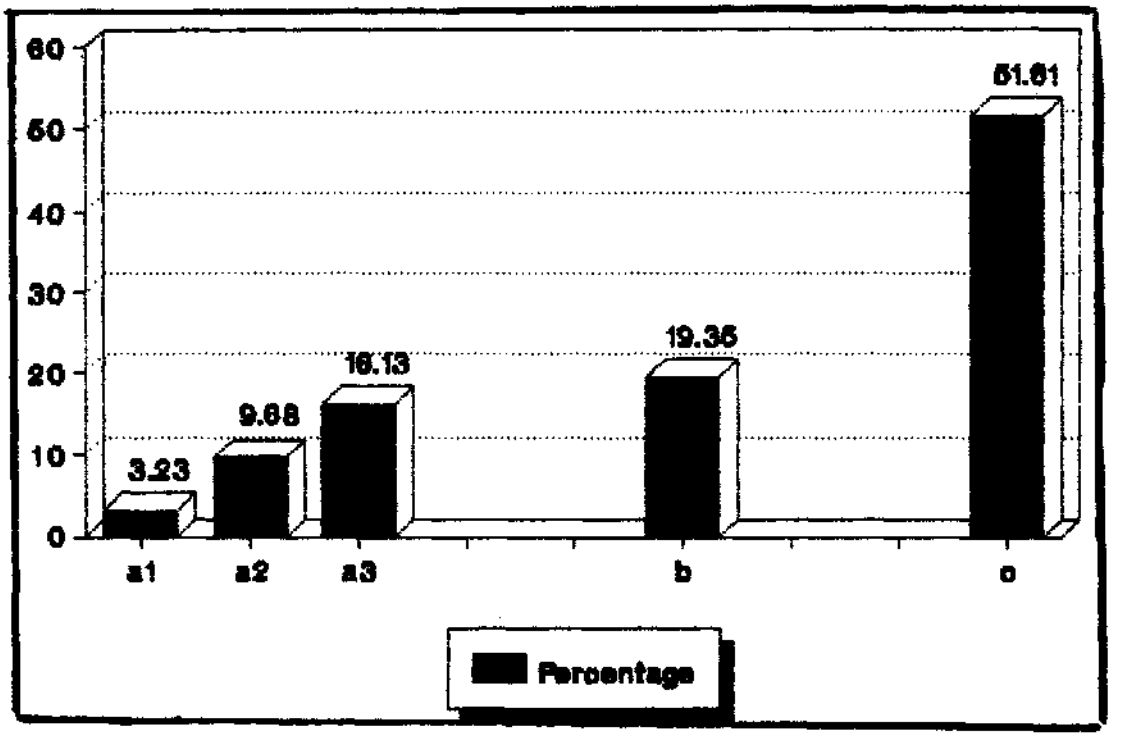


Majority of the subjects got their hearing evaluated but though not very periodically. Only few of the sujects got their hearing evaluated periodically and more than one fourth of them had not got their hearing evaluated after obtaining the hearing aid. Thorough Counselling is needed to make them aware of need to get their hearing evaluation.

Questionnaire-2

1. Do you think the hearing aid needs to be serviced frequently?

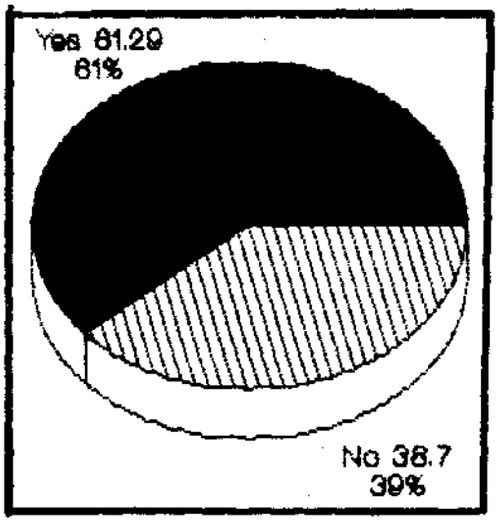
Options		Number	Percentage
(a) Yes			
	(1) Once in 3 months	1	3.23%
	(2) Once in 6 months	3	9.68%
	(3) Once in a year	5	16.13%
(b) No		6	19.35%
(c) Don't know	16		51.61%



Less than one fourth of the suject felt that there was a need to get their hearing aid serviced regularly. Half of the subjects did not know that the hearing aid needed servicing and others felt that there was no need to get the hearing aid serviced. Those who felt that there was no need to get the hearing aid serviced could not give acceptable reasons.

2.When the hearing aid is not working can you identify the parts not working?

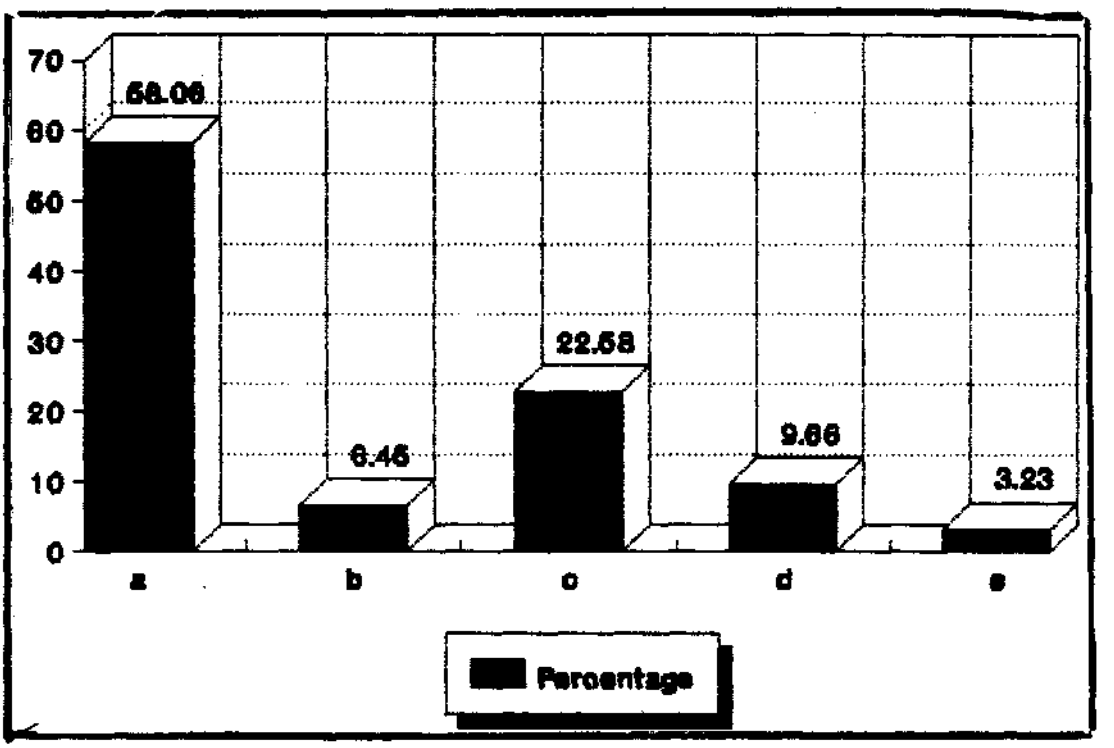
Options	Number	Percentage
a) Yes	19	61.29%
b) No	12	38.70%



More than half of the subjects could identify the parts not working in their hearing aid but the rest of the subjects could not identify the parts which were not working. These aspects have to be stressed in the counselling.

3.How often do you check your hearing aid?

Options	Number	Percentage
a) Everyday	18	58.06%
b) Once in a week	2	6.45%
c) Once in a month	7	22.58%
d) Don't know how to check	3/31	9.66%
e) Don't check	1/31	3.23%



Majority of the subjects checked their aids daily, some checked their aid once in a week or once in a month. But some subjects either didn't check or didn't know how to check the hearing aid. For those subjects who reported that they didn't check their aid they stated that they checked the aid only when there was no sound or sound from the aid was not clear.

4.How do you check the cell?

Options	Number	Percentage
a) By listening to the aid	31/31	100%
b) By means of an instruments c) Don't check d) Don't know how to check	0	0

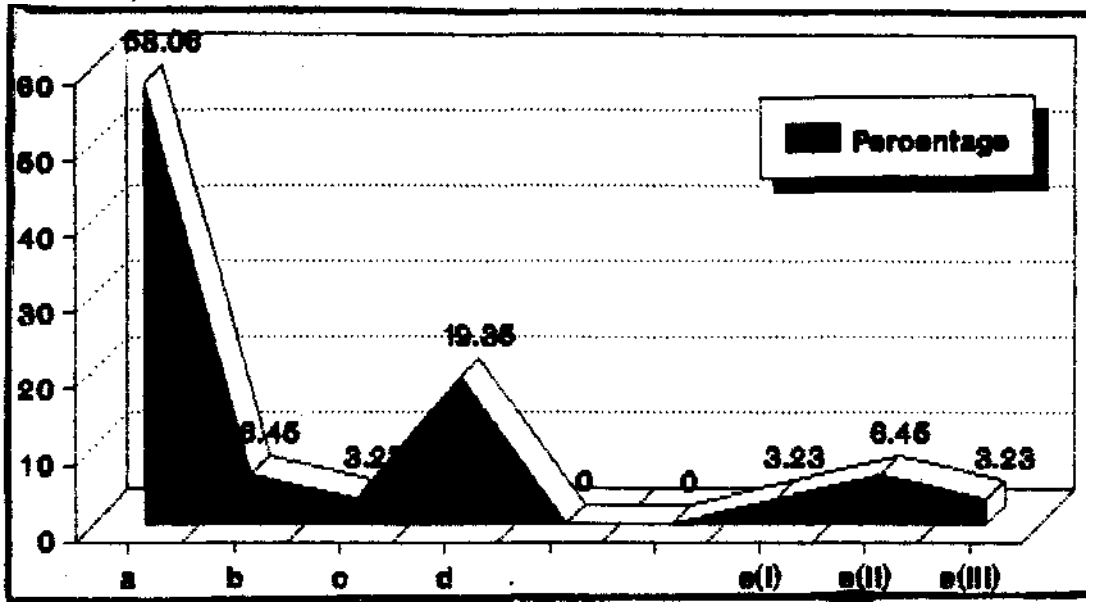
All the subjects checked their hearing aid by listening to the sound from the hearing aid (When the hearing aid was switched on).

5.How often do you check the cell?

Option	Number	Percentage
a) Once in a day	18/31	58.06%
b) Once in a week	2/31	6.45%
c) Once in a month	7/31	3.23%
d) Don't check	6/31	19.35%

e) Other

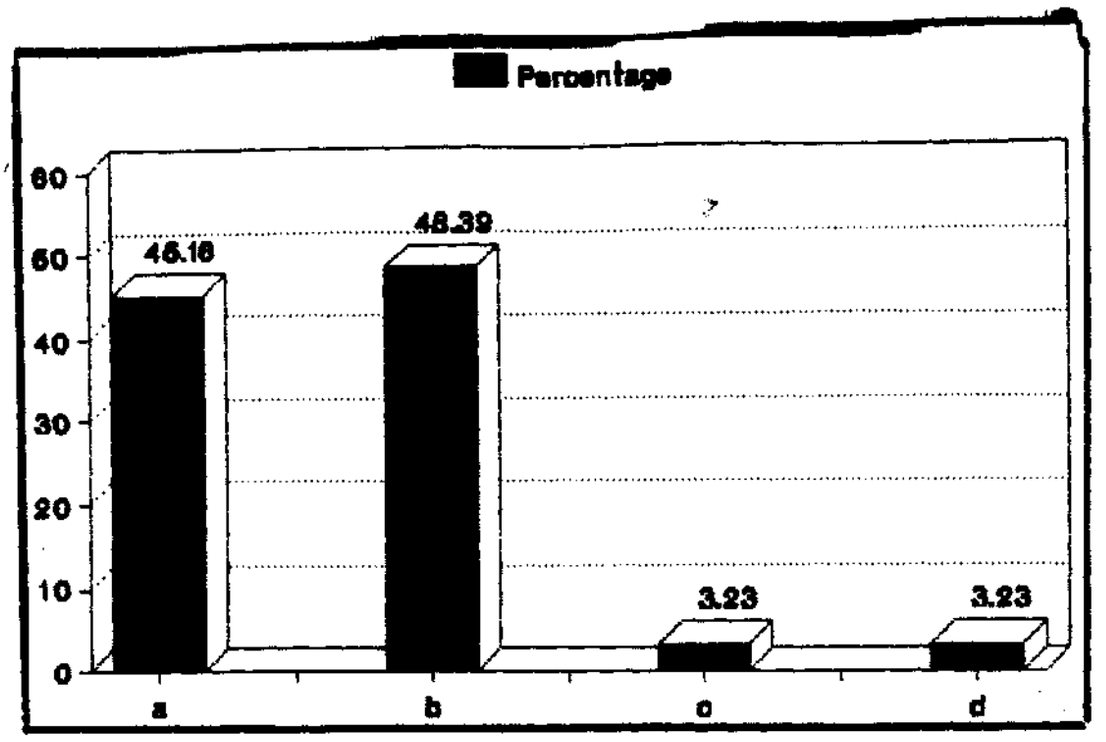
i) Rarely	1/31	3.23%
ii) When no sound	2/31	6.45%
ill) When volume decreases	1/31	3.23%



Except a few subjects majority of them checked that cell every day, once in a week, once in a month or rarely. No specific reasons were obtained from those who didn't check the cell.

6.When do you change the cell?

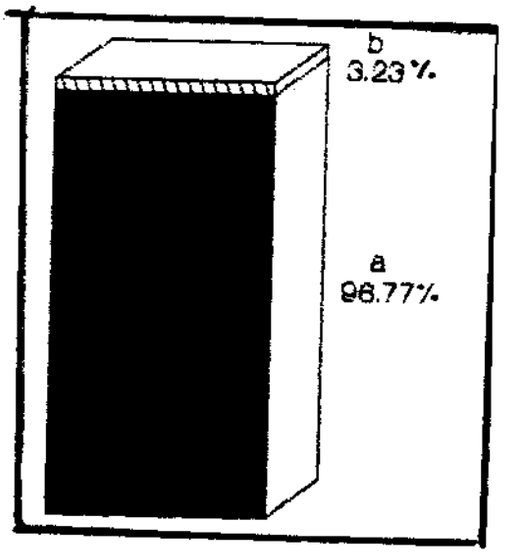
Option	Number	Percentage
a) When there is no sound	14/31	45.16%
b) When sound coming is weak	15/31	48.39%
c) When sound is not clear	1/31	3.23%
d) Not changed so far	1/31	3.23%



Majority of the subjects changed their cell when either there was no sound or when the sound was weak. Only one subject changed the cell when the sound was not clear. Differences in the pattern of changing the cell when either there was no sound or when the sound was weak reflects the way the subjects have been counselled and also their **individual habits.**

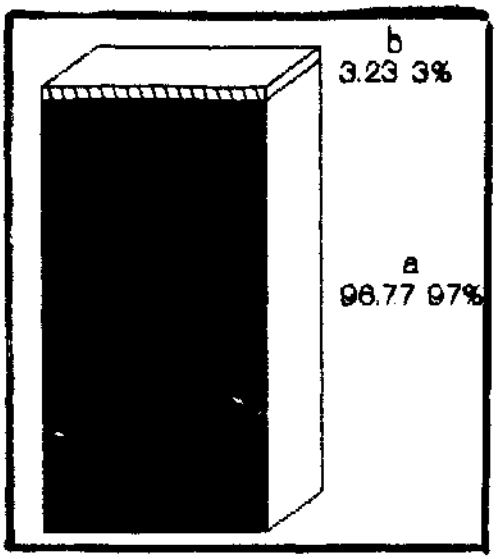
7. Do you have a battery charger?

Option	Number	Percentage
a) No	30/31	96.77
b) Yes	1/31	3.23%



8. Do you have a chargeable batteries?

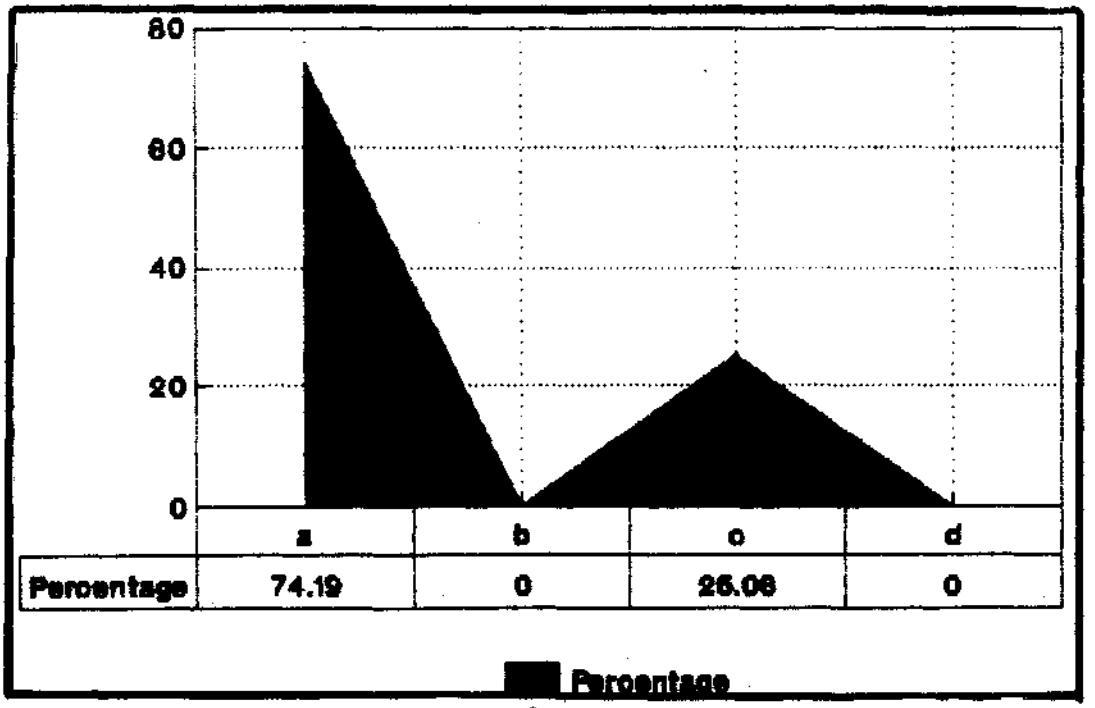
Option	Number	Percentage
a) No	30/31	96.77%
b> Yes	1/31	3.23%



Only one subject in the present study used a battery charger and chargeable batteries, the other subjects either did not know that they were available or thought that they costed a lot.

9.How do you check the cord?

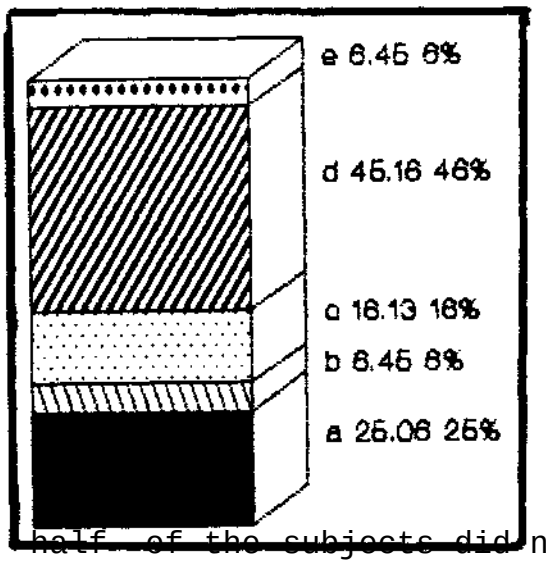
Options	Number	Percentage
a) By listening	23/31	74.19%
b) By means of an instrument	0/31	0
c) Don't check	8/31	25.06%
d) Don't know how to check	0/31	



One fourth of the subjects did not check the cord. The reason for not checking the cord was not investigated. The rest of the subjects checked the cord by listening to the aid.

10. How often do you check the cord?

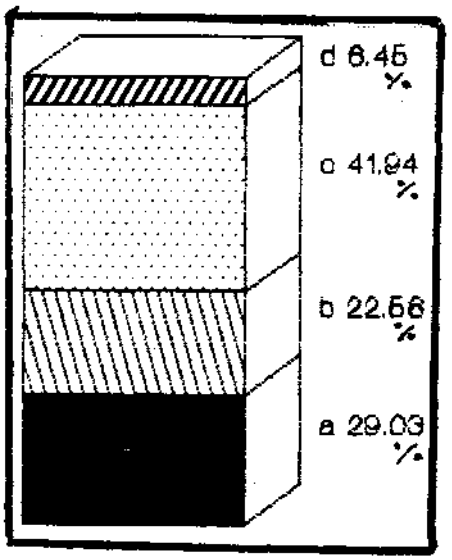
Options	Number	Percentage
a) Once a day	8/31	25.06%
b) Once a week	2/31	6.45%
c) Once a month	5/31	16-13%
d) Not at all	14/31	45.16%
e) Don't know to check	2/31	6.45%
f) Other	0/31	0



Nearly half of the subjects did not check the cord regularly. This reflects that the awareness about the need to check the functioning of the aid was inadequate.

11. When do you get a new cord?

Options	Number	Percentage
a) When cord breaks	9/31	29.03%
b) When sound comes 'on' and off	7/31	22.58%
c) When there is no sound coming	13/31	41.94%
d) Have not bought	3/31	6.45%
e) Will consult professionals	0/31	0



About half of the subjects changed the cord when there was no sound, the rest of the subjects changed the cord when the sound came 'on' and 'off' or was intermittent or when the cord broke. Differences in the results indicate to the differences in counselling.

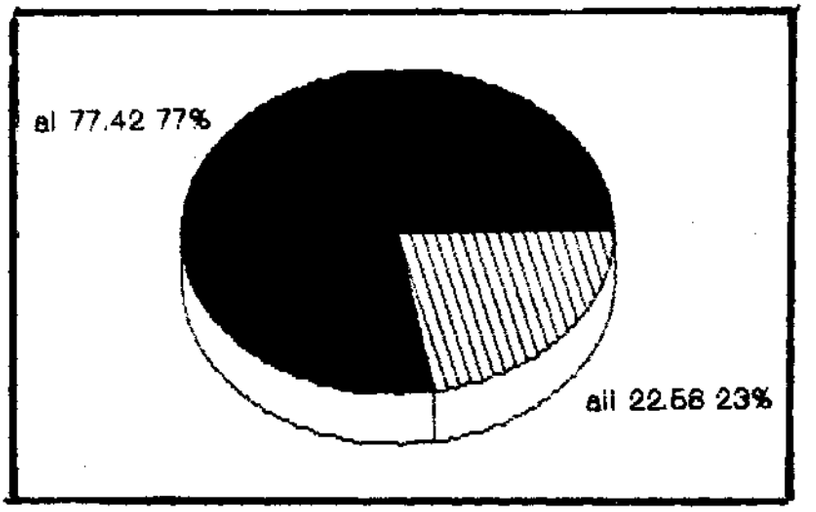
12.Which type of receiver do you buy when necessary?

Options	Number	Percentage
a) Not bought even once	31/31	100%
b) As advised by professionals	0	0
c) Only certain type of receiver	0	0
d) Other	0	0

None of the subjects had bought a new receiver but majority of them reported that they would consult the professional before buying one.

13.At which control of tone and volume control the hearing aid is being used?

Options	Number	Percentage
a) Volume control		
i) Use of prescribed volume control	24/31	77.42%
ii) Use a higher volume control	7/31	22.58%



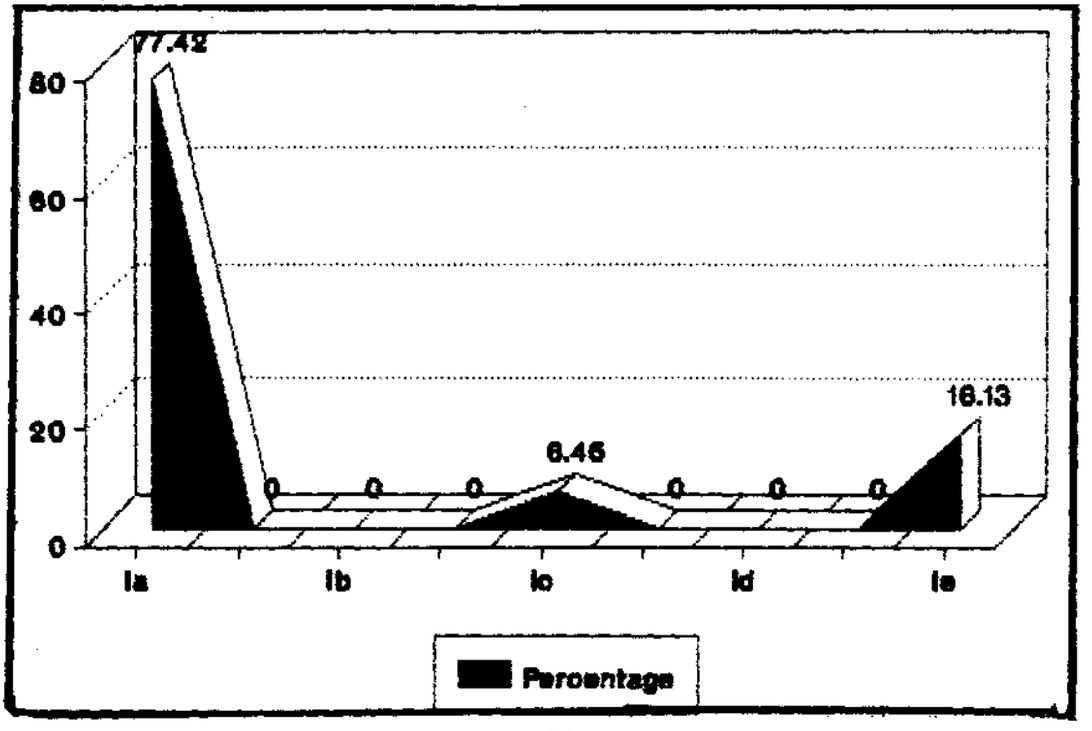
b) Tone control

Option	Number	Percentage
i) Use prescribed tone control	31/31	100%
11) Use other tone controls	0	0

All the subjects used the prescribed tone control. Majority of the subjects used the prescribed volume control. These could be attributed to through counselling in this regard.

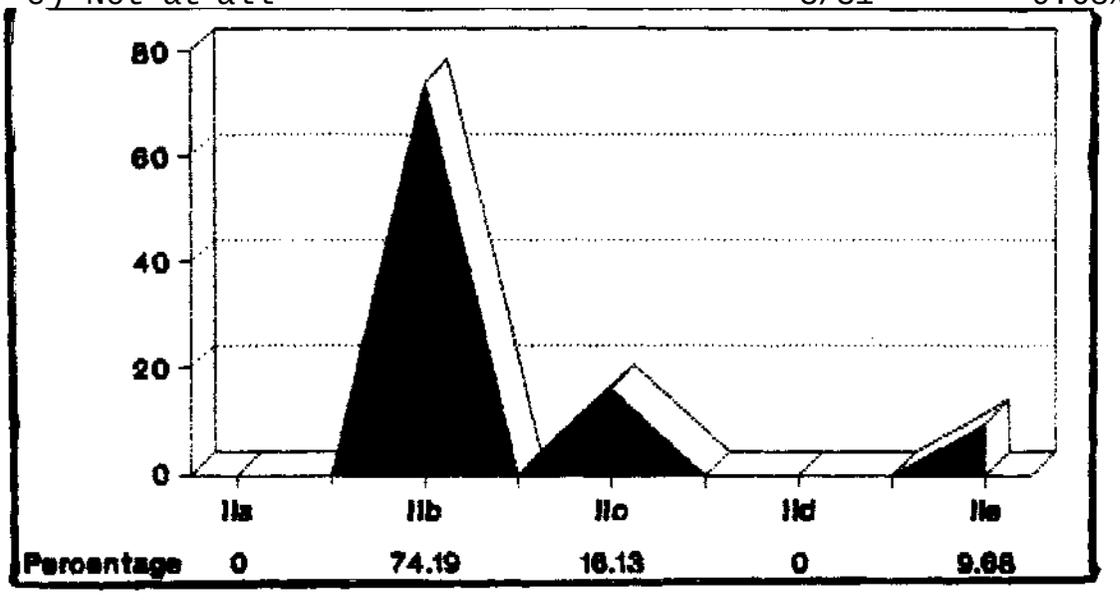
14. When do you change the volume control setting?

Option	Number	Percentage
i) To higher no.		
a) When battery is weak	24/31	77.42%
b) When battery is new	0/31	0
c) While watching TV	2/31	6 45%
d) In a noisy place	0/31	0
e) Not at all	5/31	16.13%



11) To lower No.

Options	Number	Percentage
a) When battery is weak	0/31	0
b) When battery is new	23/31	74.19%
c) In a noisy place	5/31	16.13%
d) In situation such as	0/31	0
e) Not at all	3/31	9.68%



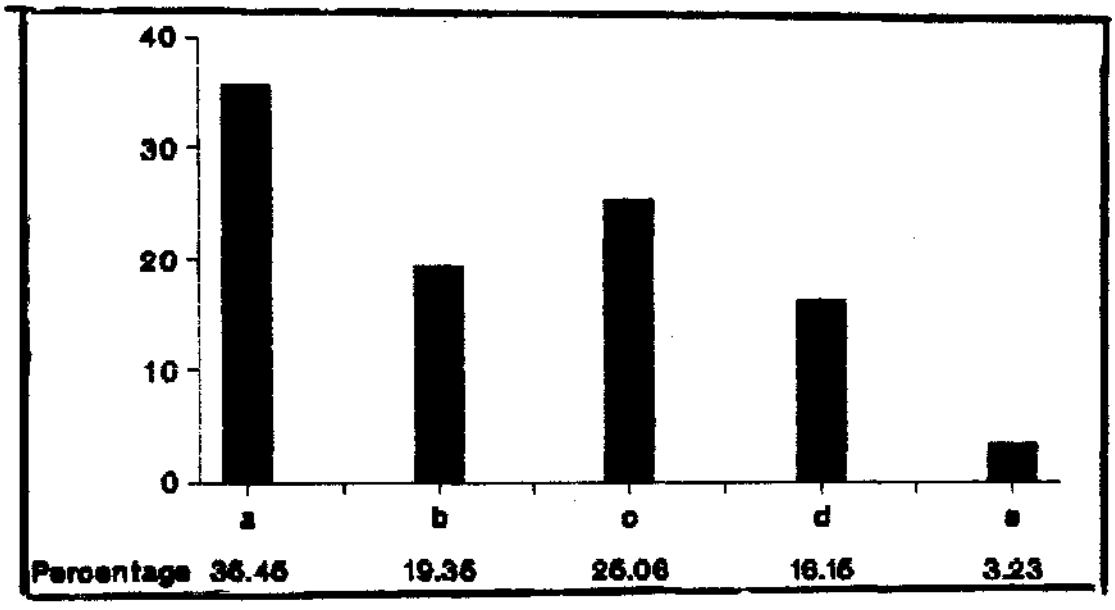
Majority of the subjects varied the volume control to a higher or a lower number depending on their needs, but very few of them did not change the volume control.

15.What do you use? Earmold/Ear tip

Option	Number	Percentage
a) Earmold	31/31	100%
b) Eartip	0	0

16.How often do you clean your earmold?

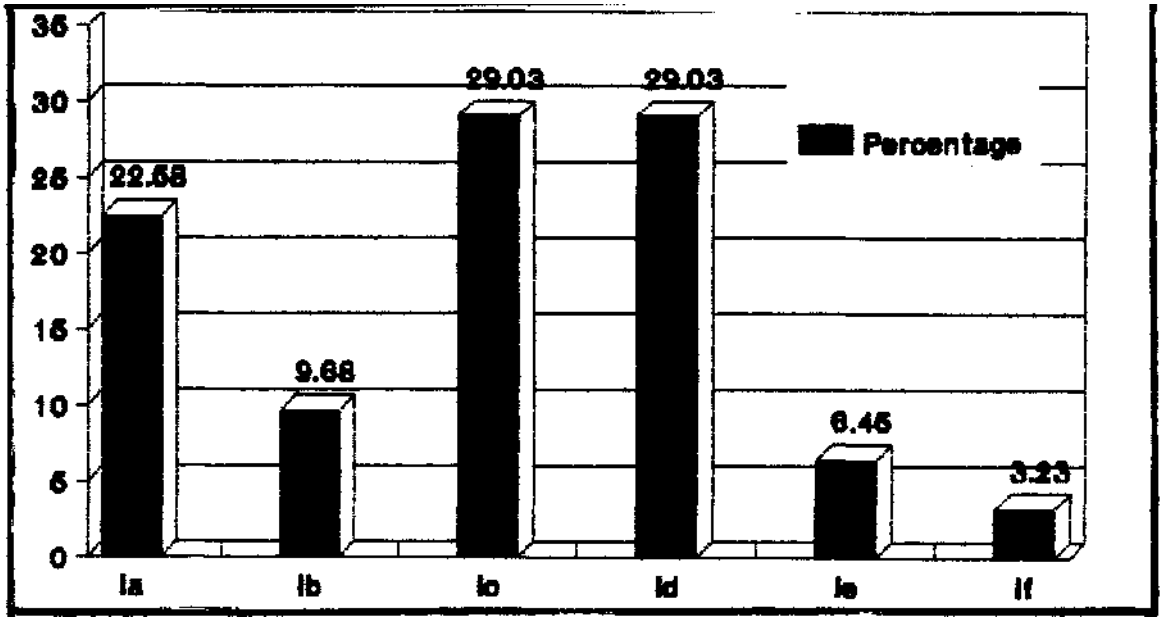
Option	Number	Percentage
a) Once **a week**	11/31	35.45%
b) Once in 15 days	6/31	19.35%
c) Once in a month	8/31	25.06%
d) Don't clean	5/31	16.15%
e) When dirty	1/31	3.23%



Except a few subjects the rest cleaned their earmolds and those of them who did not clean did not state any specific reason except a few felt that the earmolds would break if it was washed. Thorough counselling is needed in this regard.

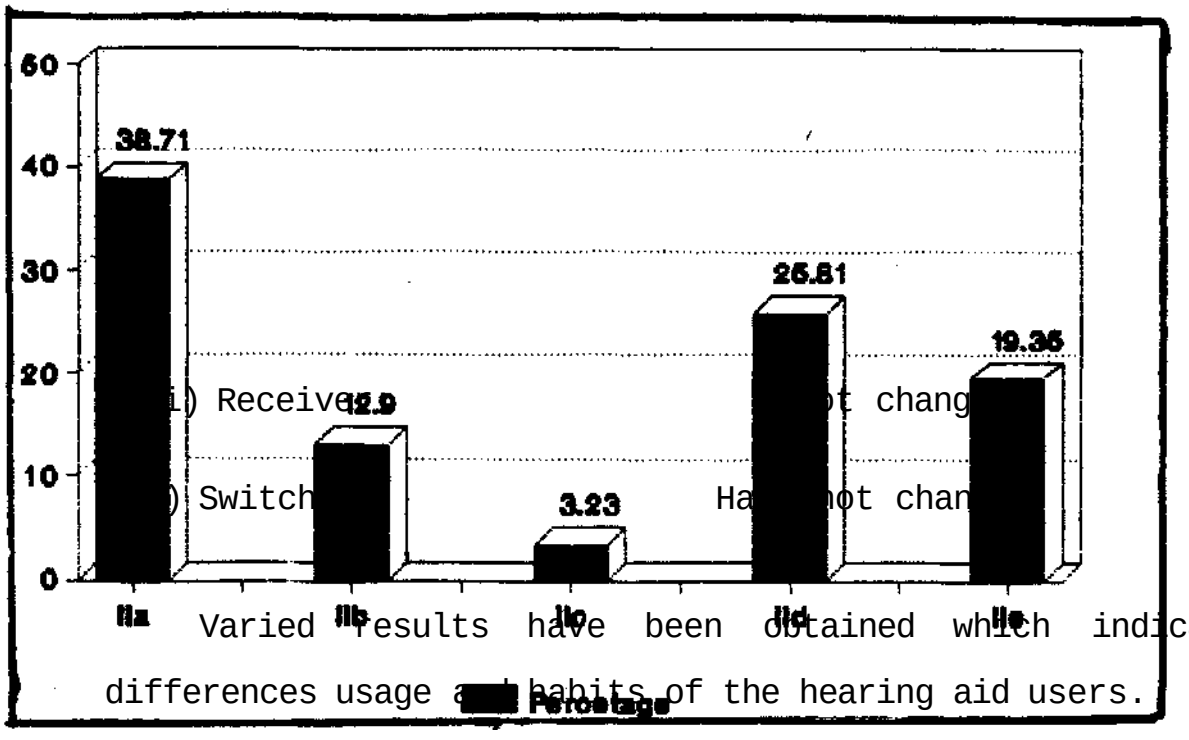
17. How many days/weeks do the following components of the hearing aid last?

Option	Number	Percentage
i) Cell		
a) 1 week	7/31	22.58%
b) 15 days	3/31	9.68%
c) 1 month	9/31	29.03%
d) months	9/31	29.63%
e) 3 months	2/31	6.45%
f) 2 days after charging	1/31	3.23%



ii) Cord

Options	Number	Percentage
a) 2-3 months	12/31	38.71%
b) 3-4 months	4/31	12.90%
c) 4-5 months	1/31	3.23%
d) 5-6 months	8/31	25.81%
e) Not changed	6/31	19.35%



Varied results have been obtained which indicates differences usage and habits of the hearing aid users.

18. Should the hearing aid be removed in the following condition?

Option		Number	Percentage
a) Washing your face	Yes	31/31	100%
b) When it is raining	Yes	31/31	100%
c) When you are conversing with someone	No	31/31	100%
d) While you are asleep	Yes	31/31	100%

All the subjects answered these questions correctly, this could be attributed to thorough counselling in this regard.

19.Are the controls easily manipulated?

Option	Number	Percentage
Yes	31/31	100%
No	0	0

All subjects could manipulate their hearing aid without any difficulty this could be because they were all using body worn aid with control which can be manipulated easily.

20.What amount it costs to buy spares?

Option	Range
a) Battery	Rs.5.75 - 8.00
b) Cord	12.00 - 15.00
c) Battery charger	100.00
d) Receiver	None had bought a receiver

Most of the users were able to specify the cost of the cell and cord, none had bought a receiver or replaced a switch and one subject who used a battery charger specified the approximate cost of it.

21.What expenses are incurred towards the aid per month?

Range Rs.5.75 to 20.00

None of the subjects specified the exact cost incurred towards the aid. The expenses ranged from Rs.2.00 to 5.75 rupees per month.

22.What is the travelling expenditure towards the purchase of spares and hearing aid repairs?

Expenses ranged from Re.20/- to 31/- per month.

None of the subjects knew the exact amount that they spent on travelling.

Questionnaire-3

A three point rating scale was used for all the questions. Every question was scored and the answers were given scores of 2, 1 or 0. For example: The question 'can you hear a dog barking from a distance of 8'? An answer 'most often' received a score of 2, an answer 'some time' received a score of 1, and 'never 'received a score of 0.

Similarly, the question 'How often do you ask people to talk slowly/repeat when you cannot understand what is being said?' An answer 'most often' received a score of 0, an answer 'sometimes' received a score of 1, an answer never received a score of 2.

The maximum score a person could obtain was 44. Maximum score obtained by a subject in the present study was 42 and the minimum score obtained was 18.

Audiometric data which was available for all the 31 subjects were utilized to analyze if there was a significant difference in the benefit derived with varying degree of hearing loss and type of hearing loss.

The subjects were divided into three groups based on the degree of hearing loss. There were thirteen subjects with moderate hearing loss, eight with severe hearing loss and ten with profound hearing loss. ANOVA was applied to check if there was a significant difference in the benefit derived. A value of 11.78 was obtained. This value was significant at 0.05 and 0.01 level. A 't' test was applied to find if there was a difference between the groups. It was found that the 't' score for moderate and severe group was 4.97 which was highly significant at 0.01 level. 't' score comparing severe and profound groups was 1.60 which was not significant at .05 level. 't' scores for moderate and profound groups was 3.3 which was highly significant at 0.01 level.

The subjects were divided into two groups based on the type of hearing loss. Sixteen subjects had sensori-neural hearing los and fifteen had mixed hearing loss. A 't' test was applied to see if there was a difference in the benefit derived between the groups. 't' score obtained was 0.22 which was not significant at 0.05 level.

The subjects were also divided into three age groups. Seven subjects were aged between 55 and 65 years, eighteen subjects were aged between 66 and 75 years, and six others were aged between 76 years and 85 years. ANOVA was applied to check if there was an influence of age on benefit derived. A value of 1.82 was obtained which was not significant at 0.05.

The subjects were also divided into three groups based on the number of hours they used their aid. Eight subjects used their aid less than 6 hours a day, eight subjects used their hearing aid between 6-12 hours a day and fifteen subjects used their aid for more than 12 hours. ANOVA was applied to check for significant difference between the groups. A value of 1.15 was obtained which was not significant at 0.05 level.

DISCUSSION

All subjects included in the study were interviewed, twenty-nine subjects answered the questions asked without any assistance, two subjects (85 years old and 82 years old) took assistance from the individuals who accompanied them. Whenever possible the answers given by the subjects were cross checked if they were accompanied by anyone (family members and friends).

This study included subjects who were aged between 55-85 years. Maximum number of subjects (18 in number) were in the age range of 65-75 years. There were six subjects between 76-85 years and eight subjects between 55-60 years of age. There were fewer subjects in the older age groups as most of the subjects included in this study were volunteers who enrolled themselves and participated in the hearing aid users week. Most often since older individuals suffer from health problems and mobility problems such programs are not very accessible to them. Fewer subjects were found between 55-60 years also. This may be because people in this age group prefer less visible aids like BTEs and ITE aids. Since most often they are employed and also because the (camp) 'hearing aid users week' was conducted on

week days only, when they are busy with their work there were fewer subjects in this group.

Maximum number of subjects (twenty of them) obtained free hearing aids. These individuals were most often 76-85 years old, few were 66-75 years old. Seven individuals obtained hearing aid paying full cost and six individuals obtained aid paying 50 percent of the cost. These individuals were in the age range of 55-75 years predominantly.

A very interesting fact that this study reveals is that all the subjects started using the aid from the date of obtaining the aid. This may be because twenty-five of the thirty-one subjects were volunteers who enrolled themselves and attended the hearing aid users week indicating that they were a highly motivated lot. Six subjects interviewed at their residence were also using their aid regularly and had high level of motivation.

For the subjects in the study, it took 1-2 weeks (58.06 percent) 1-2 months (19.35 percent) and more than 2 weeks (12.90 percent) to adjust to the aid. Some of them (9.68 percent) were unable to adjust to the hearing aid. Reason for which was not investigated in the present study.

Findings of this study is very similar to Lazenby's study (1986), where 65 percent of the subjects got adjusted to the aid in less than two weeks. There is a poor correlation between this study and a study conducted by Rosendale (1993) who opined that majority of individual get adjusted to their aid in 16.7 days.

Number of researchers over the years have assessed the level of satisfaction with the fitted aids. The present study reveals that 64.52 percent of them were satisfied with their aid, 25.8 percent found it adequate, and 9.68 percent were not satisfied. Those who were not satisfied with the aid had poor speech discrimination scores. These findings are very similar to study conducted by Smedley in 1990 on elderly hearing aid users, who reported that 60 percent were satisfied with their aids and 10 percent dissatisfied. It is also similar to the finding of an Indian study conducted by Manjula in 1986 who found that 67 percent of the patients were satisfied with the aids. But, there are a number of studies conducted by Alberti (1984), Parving and Rossen (1990), Kerlinger (1990), Davis et al. (1992) who report of higher percentage of satisfaction.

In this study it was found that 48.39 percent of the subjects used hearing aid for more than 12 hours, 25.8 percent used for 6-12 hours and 25.81 percent used for less than 6 hours. Schow et al. in 1992 conducted a study where in 42 percent used their aids for 12 hours and more. This finding is very similar to our study. But most of the studies gave varied results. Studies conducted by Blood and Danheur (1976); Carstairs (1973), Manjula (1986), Maya (1987), Murlow, Rosendale (1993) have resulted in varied opinions. A number of studies have been conducted which evaluated the frequency of hearing aid usage using various time intervals.

The present study revealed that about 80.65 percent of the subjects have kept in touch with professionals after the hearing aid was recommended, 19.35 percent have not kept in touch with professionals. These findings contradict Rassi and Harford's study (1968) where they reported that 75 percent of the patients who purchase aids did not return for re-evaluation. Heed for re-evaluation should be stressed during counselling.

After the aid was obtained it was found that 38.41 percent did not get their hearing evaluated periodically, 64.5 percent got hearing evaluated once in 6 months, 9.68

percent once in a year, 25.81 percent once in 2 years, 12.90 percent once in three years once in 5 years 6.4 percent. 38.7 percent had not got their hearing evaluated because lack of awareness that periodic hearing evaluation was necessary.

Questionnaire-2

Of the thirty-one subjects only 22.5 percent of the subjects felt that there was a need to service their aids regularly. 19.35 percent felt it was not necessary and 51.61 percent did not know that the aid needs to be serviced. These results indicated that only 82.58 percent were well aware as to how the hearing aid needs to be maintained. Since most of them who said that there was no need to get their aids serviced were unable to give an acceptable reason.

61.29 percent of the subjects could identify the parts which were not working, while 33.70 could not do so. In the present study, the subjects had atleast used their aid for four months, but still only 61.29 percent could identify the defective part, which may be because, the users were less aware about some important aspect of hearing aid care and maintenance.

Majority of the subjects checked their hearing aid daily (58.56 percent), 6.45 percent checked their aid once a week and 22.58 percent checked once a month. Only 9.68 percent did not check their aid (repeatedly) regularly who stated that they checked the aid when the sound from the aid stopped, was not clear or when it came on/off.

All the subjects listened to the sound coming from the aid to check the cell. All but 19.35 percent of the individuals, did not check their cell. No specific reasons were obtained for not checking the cell inspite of the fact that all of them knew how to check the cell. 45.16 percent of the individuals changed the cell when there was no sound, 48.39 percent changed the cell when the sound coming was weak. These were the two predominant answer that were given, only 3.23 percent changed the cell when sound coming from the aid was not clear and 3.23 percent (1 subject) had not changed the cell. Almost equal number of subjects changed cell when there was no sound or when the sound was weak, these reflect individual habits and the pattern of information delivered during counselling and number of hours the hearing aid is used per day.

Only one subject (3.23 percent) used a battery charger and chargeable batteries. The subject charged his battery

for 8 hours and used the aid for two days continuously for (12 hours each). Rest of the subjects were not aware of fact that battery charger and chargeable batteries were available (for body level aids).

74.19 percent of the subjects stated that they checked the cord by listening to the aid. 15.96 percent did not check the cord. But 45.16 percent did not check the cord regularly. Rest of the subjects checked the cord once a day (25.06 percent), once a week (6.45 percent) or once a month (16.3 percent). Nearly equal number of subjects checked their cord and did not check their cord. This reveals that the awareness about the need to check the functioning of the aid and its parts were inadequate. These aspects need to be stressed during counselling.

Subjects changed the cord when the cord broke (29.03 percent) when sound came on and off (22.58 percent) and when there was no sound coming from the aid 41.94 percent. 6.45 percent (two subjects) had not changed the cord even once. Spread of scores could again be attributed to differences in counselling and hearing aid usage.

None of the subjects had bought a receiver even once. When asked about the type of receiver they would buy when necessary, majority of the subjects were unable to give details and reported that they would consult a professional when the need arises.

All the subjects used the prescribed tone control setting 77.42 percent used the prescribed volume control. Only 22.58 percent used a higher volume control. High percentage of subjects used the prescribed volume control and tone control, this may be because, most of the subjects had obtained hearing aid through the Institute and while the individuals were counselled the pamphlets on 'the care of the hearing aid' or' Getting to know your aid were given which contains printed information about the tone and volume control (prescribed for the person). The correct positioning of the tone and volume control is also emphasised during counselling.

Most often subjects changed volume control depending on whether the battery was new or old. Some subjects increased the volume control while 16.13 percent lowered the volume control in noisy place. 16.13 percent did not increase and 9.68 percent did not decrease volume control at all. High percentage of them changed the volume control depending

on the battery (new or old). This points out to the fact that each person is prescribed the aid best suitable to him/her which is simulating his/her ear to some extent and hence can easily adapt to changes in the environment.

All subjects used earmolds. Except 16.13 percent, all of them cleaned their earmold once a week (35.48 percent), once in 15 days (19.35 percent), once a month (25.06 percent) and when dirty (3.23 pecent). It was found that most of the subjects who failed to clean the aid were in the older age group (75-85 years) who needed assistance to do so or who thought earmolds would break if cleaned.

Subjects in the study have given varied opinions about the life span of the cell and cord. They reported that the cell lasted for 1 weekto 3 months and cords lasted from2-3 months to5-6 months. These variations were expected beause they bought the parts from different places.

None of the subjects had difficulty in manipulating the hearing aids. All subjects knew when to use their aid and when to remove them. This could be attributed to the thorough counselling regarding hearing aid use at the time of hearing aid issue.

Majority of the subjects in the study specified the cost of the cell and cord, since they had not bought a receiver or replaced a switch the subject had no idea about the cost of these spares. Cost mentioned for the cell and cord were within the market rates.

Expenditure towards the aid ranged from Rs.5.75 to 20/- per month. Most subjects did not know the exact amount they spent on travelling. The amount specific varied from 3/- to 20/- Rupees per month.

Questionnaire -3

In the present study four variables were considered to ascertain whether they influenced the benefit derived from the hearing aid.

It was found that degree of hearing loss had a significant effect on the benefit derived from the aid. There was a significant difference in the benefit derived between the moderate hearing loss group and severe hearing lose group, moderate hearing loss group and profound hearing loss group. There was no significant difference between severe and profound hearing loss group. This study does not support Kapteyn's study (1977) who reported that there is poor relationship between satisfaction, benefit in relation to degree of hearing loss and discrimination and that they are mainly dependent on psycho social factors.

But there was no significant difference between the sensory-neural hearing loss group and mixed hearing loss group in the benefit derived. This may be because the type of hearing loss alone may not be a potential factor to cause the of difference but may be related to factors like degree of hearing loss, age etc.

Contrary to the popular belief, there is no difference in the benefit derived across age groups. This points out to the fact that age alone is not a potential factor to determine the benefit.

It was also found that there was no significant difference in the benefit derived between groups who used their aid for < 6 hours, 6-12 hours, >12 hours. This may be because subjects use of hearing aid depends on his needs. It may be speculated that based on their needs, aids were utilized and benefit derived.

SUMMARY. CONCLUSION AND RECIMMENDATION

SUMMARY

The study aimed at evaluating the knowledge elderly hearing aid users had about the care and maintenance of body worn hearing aids and to evaluate the effects of age, hours of use, type of hearing loss and degree of hearing loss on the benefit derived. Three questionnaires were employed in the study and data was collected by a direct interview.

Thirty-one subjects who were using body worn hearing aids were included in the present study. The subjects were in the age range of 55-85 years with a mean age of 69.74 years. In questionnaire 1 and 2 data collected were tabulated and a percentage analysis was carried out, in the questionnaire 3 analysis of variance and tests of significance were used.

On the basis of the responses following conclusions were drawn:

1) Hearing aid care and maintenance: More than half of the subjects were aware or had adequate knowledge about the

care and maintenance of their hearing aid. However, the results still points out that a large percentage of users lack adequate knowledge about care and maintenance.

2) More than half of the subjects were satisfied with their hearing aids, but the rest anticipated much more from the hearing aid due to which they found the hearing aid Just adequate. Higher percentage of satisfaction in this study when compared to other Indian studies (Manjula, 1986; Maya, 1987) may be because of better hearing aid selection procedures.

3) Only one subject was using chargeable cells and chargers which reflects that the awareness about the chargeable cells and battery charger was not adequate. Most of the subjects were not aware that the chargeable batteries were available.

4) Benefits derived: Age, hours of use and type of loss had very little effect on the benefit derived. But subjects with milder hearing loss derived better benefits when compared to subjects with severe and profound hearing loss.

5) The present study indicated to the fact that optimum time for hearing aid usage was 1-2 weeks and optimum hours of hearing aid usage was 8 hour a day.

RECOMMENDATIONS:

Based on the results, and conclusion the following recommendation are made:

1. The hearing aid users should be systematically counselled regarding all aspects of hearing aid care, maintenance, and trouble shooting.
2. The importance of regular follow up and periodic hearing evaluation must be emphasised.
3. Regular follow up programme must be carried out.
4. Users should be made aware of the availability of battery charger.
5. Limitation of the type of hearing aid being used should be explained in detail.
6. Self asessment questionnaire should be developed and administered to assess the overall listening ability of the subject, before hearing aid selection and prescription.

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APPEHDIX A

QUESTIONNAIRE - I (GENERAL INFORMATION)

Date: Serial No.

Case Name: Reg.No.

Age: Occupat ion: Language:

Information about the hearing aid:

a) Name of the hearing aid

b) Type

c) Model No.

d) Serial No.

e) Indian or imported

f) Receiver

g) Cord

1. When was the hearing aid obtained?
2. How did you get the hearing aid?
   a) Purchased paying full cost
   b) Purchased paying 50% of the cost
   c) Free/Donation (specify the source)
   d) Others.
3. Since when the hearing aid being used?
   a) From date of obtaining the hearing aid
   b) Sometime after obtaining the hearing aid
   c) Don't remember
   d) Others

4. How long did it take to adjust to your hearing aid?

   a) 1-2 weeks (b) 1-2 months (c) more than 2 months (iv) others

5. How many hours do you use the hearing aid in a day?

6. To what extent are you satisfied with your hearing aid?

   a) Completely satisfied

   b) Find it adequate

   c) Not satisfied (Qive reason)

7. Have you kept in touch With professionals after the hearing aid has been recommended/procured?

   a) Yes

   b) No

8. How often do you get your hearing evaluated?

   a) Once in 3 months I

   b) Once in 6 months I

   c) Once in a year

   d) Others

APPENDIX B

QUESTIONNAIRE II - CARE AND MAINTENANCE INVENTORY

1. Do you think that the hearing aid needs to be serviced frequently?
   a) Yes. If yes how often 1) Once in 3 months
   ii) Once in 6 months
   iii) Once in a year
   b) No
   c) Don't know
2. When the hearing aid is not working? Can you identify the parts not working?
   a) Yes (which parts) (b) No
3. How often do you check your hearing aid?
   a) Once a day
   b) Once a week
   c) Once a month
   d) Don't know how to check.
   e) Don't check.
4. How do you check the cell?
   a) By listening to the aid
   b) By using a voltmeter
   c) Don't check
   d) Don't know how to check.

5. How often do you check the cell?
   a) everyday
   b) Once a week
   c) Once in a month
   d) Don't check
   e) Others.
6. When do you change the cell?
   a) When there is no sound at all from the hearing aid
   b) When sound coming from the hearing aid is weak
   c) When sound from the hearing aid is not clear
   d) Not changed so far.
7. Do you have battery charger?
   a) If yes a) Which one ...
      b) Where did you get it...
      c) How much did it cost?
   b) No.
8. Do you have a chargeable batteries?
   a) Yes
   b) No
9. How do you check the cord?
   a) By listening
   b) By means of an instrument
   c) Don't check
   d) Don't know how to check

10. How often do you check the cord?

    a) Once a day

    b) Once a week

    c) Once a month

    d) Not at all

    e) Don't know how to check

    f) Others

11. When do you get a new cord?

    a) When the cord breaks in V / Y / S

    b) When the sound comes 'on' and 'off'

    c) When there is no sound coming

    d) Have not bought

    e) Will consult professionals.

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

    a) Any receiver

    b) As advised by Audiologists/Speech Pathologists

    c) Only certain types of receiver with the following mark and symbol such as ...

    d) Not bought even once

    e) Others.

13. At which setting of tone and volume control is the aid being used? What was recommended?

14. When do you change the volume control settings?

    a) To a higher number

    i) When battery is weak

ii) When battery is new

iii) In a noisy place

iv) In situations such as

v) Not at all

b) To a lower number

i) When battery is weak

ii) When battery is new

iii) In a noisy place

iv) In situations such as .

15. Do you use an earmold or ear tip with your hearing aid?

16. How often do you clean your earmold or ear tip?

a) Once a week

b) Once in 15 days

c) Once a month

d) Don't clean.

e) When dirty

17. For how many days/weeks/months do the following components of the hearing aid have lasted in your experience?

a) Cell (b) Cord (c) Switch (d) Receiver

18. Should the hearing aid be removed in the following situations?

a) Washing your face Yes/No

b) When it is raining Yes/No

c) When you are convrsing with someone Yes/No

d) While you are asleep Yes/No

19. Do you have difficulty manipulating the controls?

20. The amount it costs youto buy spares?

    a) Battery

    b) Cord

    c) Battery charger

    d) Switch

    e) Receiver

21. Expenses towards the hearing aid per month

22. What is the travelling expenditure towards purchase of spares and hearing aid repairs?

APPENDIX C

QUESTIONNAIRE III : HEARING AID BENEFIT SCALE

A. NON-HEARING (While you are wearing the hearing aid)

1. Can you hear a dog barking from a distance of 8'.

   a) Most often (b) Sometimes (c) Never

2. Can you hear when someone rings the door bell?

   a) At 8 ft (i) Most often (ii) Sometimes (iii) Never

   b) At 15 ft. (i) Most often (ii) Sometimes (iii) Never

3. Can you hear the telephone ring?

   i) From 5 ft. a) Most often (b) Sometimes (c) Never

   ii) From 8 ft. a) Most often (b) Sometimes (c) Never

4. Can you hear a vehicle horn?

   i) At 8 ft. a) Most often (b) Sometimes (c) Never

   ii) At 15 ft. a) Most often (b) Sometimes (c) Never

   iii) At 25 ft. a) Most often (b) Sometimes (c) Never

B. SPEECH HEARING (While you are wearing the hearing aid)

1. Do you have difficulty understanding what is being said inspite of hearing it?

   a) Most often (b) Sometimes (c) Never

2. Do you face any tolerance problem in day to day situation?

   a) Most often (b) Sometimes (c) Never

f

3. How often do you ask people to talk slowly/repeat when you cannot understand what is being said?

   a) Most often (b) Sometimes (c) Never

4. Can you identify familiar voices?

   a) Most often (b) Sometimes (c) Never

5. Do you increase the volume control setting of your TV from that set for others at home?

   a) Most often <b) Sometimes (c) Never

6. Do you have difficulty in understanding speech from a distance of 3 ft. at home?

   (1) With visual clues

   a) Most often (b) Sometimes (c) Never

   (ii) Without visual clues

   a) Most often (b) Sometimes (c) Never

7. Do you have difficulty in group conversation?

   (i) With visual clues

   a) Most often (b) Sometimes (c) Never

   (ii) Without visual clues

   a) Most often (b) Sometimes (c) Never

8. Do you have difficulty understanding speech of an unfamiliar person?

   a) Most often (b) Sometimes (c) Never

9. Do you have difficulty in understanding familiar person's speech?

   a) Moat often (b) Sometimes (c) Never

10. Can you understand what is being said in TV programs?

    a) Most often (b) Sometimes (c) Never

11. Can you understand what is being said in Radio programs?

    a) Most often (b) Sometimes (c) Never

12. How do you understand in a meeting with a speaker?

    Ex. In a lecture hall, theater or church?

    a) Most often (b) Sometimes (c) Never