

# CHARACTERISTICS OF HEARING AID USERS

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An independent project submitted as part fulfillment for  
first year M Sc. (Speech and Hearing),  
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MYSORE - 570 006

MAY 1990

**TO MY PARENTS**

**CERTIFICATE**

*This is to certify that the project entitled*  
**CHARECTERISTICS OF HEARING AID USERS**  
*is the bonafide work in part fulfillment for the*  
*First year deegree of Master of Science (Speech & Hearing),*  
*of the student with Register No. M8921*

  
**DIRECTOR**

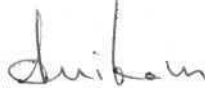
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**CERTIFICATE**

*This is to certify that this independent project entitled*

**CHARECTERISTICS OF HEARING AID USERS**

*has been prepared under my supervision and guidance.*

  
**Dr. (Miss) S. NIKAM**  
**GUIDE**

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## INTRODUCTION

Communication is an essential part of our life. The importance of it is realised by one and all, across cities and villages, races, culture and age. Audiologists have the responsibility of providing an effective way of rehabilitation for the hard of hearing population. One of the rehabilitation procedure in this aspect, is the prescription of a suitable hearing aid to a deserving candidate. The need for amplification for the hearing impaired has been emphasised by many like Alpiner (1978), Oyer and Oyer (1978), Pollack (1975), and Ross (1978). It has also been noted in the hard of hearing population, that in addition to their audiological problem, they also suffer from social consequences from auditory deprivation (such as embarrassment, guilt, loneliness and lowering economic status) which is more marked in elderly people (Hudgson and skinner 1975, Oyer and Oyer 1978, and others). On the other hand, children present a picture of, language deprivation, separation from peer group and inferiority complex as a result of the hearing loss (Sanders,1971). These world-wide studies and reports indicate that, there has been a growing demand for hearing aids and subsequently, a greater acceptance of these devices both outside and within the system. India too, is not an exception to such a phenomenon.

Due to this increased amount of awareness and acceptance of the hearing aid, one of the side effects noticed, especially,

in the urban population is the demand for hearing aids which are less visible, such as, the behind-the-ear and in-the-ear models. In view of these unique and other normal situation an audiologist would need to know both technical and non-technical information about his client, for dispensing a proper hearing aid. The technical information such as, the type and severity of hearing loss the patient has, types of hearing aids commercially available, the acoustic and other parameters of such devices, techniques to determine the most suitable hearing aid for the patient etc are the basic things audiologists look for. However, audiologists don't limit themselves only to such information. They also try to get non-technical information about the client. For example, one could find out the clients social and economic background. Such information would be necessary at the time of prescription of the hearing aid, especially in cases where the client can't afford expensive hearing aids.

In these situations, the role of an audiologist is not only limited to diagnostics alone, but also trying to define the characteristics of an average hearing aid user. This kind of a growing demand is being recognised in the world all over, and also in India, where patient oriented service is in great need.

In this regard, several studies have been carried out by Chelmark (1981), Hudgson and Skinner (1978), Maya (1986), Oyer and Oyer (1978) and others.



Chelmark (1981), has tried to define the characteristics of older age group. He reports some of the problems in these groups as lowering socio-economic status, loneliness and other associated physical problems. Hasten.R.N (1981) report that elderly people are known to have along with common problems with their younger counter parts, markedly reduced leadership positions, lessened adaptability, a tendency toward conservatism or personal rigidity, restricted mobility and a fixed and often times restricted income level.

Very few studies are available in Indian context. One such study has been carried out by Maya (1986), who has tried to define the characteristics of the older age groups. She reported that the elderly hearing aid user population consisted of literate and retired people with a joint family background. The auditory handicap was characterized by progressive loss as in presbycusis with associated visual, motor and systemic problems. Majority worn a body level hearing aid given free of cost under aids and appliances scheme. this indicates that many needed financial assistance.

The above mentioned studies have concentrated only on the elderly population. Hence, a study to know the characteristics of children and adult population as well, in the Indian context is warranted. The need for the financial assistance to help people purchase hearing aids is recognised all over world. U.S Senate Committee On Aging, 1971, has

reported that in U.S.A. one out of four senior citizens lived in poverty as compared to one out of nine younger persons. The government has recognised such a need and a program of the, " Aids and Appliances scheme of the Ministry of Welfare was initiated in 1983. A study to know who are all benefited by such a scheme is necessary.

Dauglas, 1988 has reported a hearing aid survey, the purpose of it was to determine the availability of audiology services in hospitals. He had included all the hospitals and state department involved in hearing aid dispensing and categorized then as a nonprofit, for profit or state/federal government operated health care institutions. It was a questionnaire study. He reported that 80% of hospitals who replied back were operating as not for profit organization and majority of located in urban areas.

The present study differs from this in both purpose as well as in methodology. The present study is not only aimed at knowing the type of hearing aid dispensing undertaken, but also in identifying the a characteristics of an average customer. The methodology is modified to suit these purposes.

The present study is aimed at knowing :

1. The characteristics of children and adult population
2. The relative distribution of rural and urban hearing aid users

3. To know the social and economic background of these people
4. To know the occupation and economic condition of the people who are benefited by the free hearing aid distribution scheme in India called , the Aids and Appliances scheme, which was introduced by the ministry of welfare, Government of India.

Such a study would not only help in the successful dispensing of hearing aids at audiological clinics, but also help professionals in planning the rehabilitation programmes based on the needs of the client.

## METHODOLOGY

As mentioned earlier, the aim of the study was to obtain the profile of a hearing aid user that an audiologist encounters in his/her day-to-day practice.

Information regarding the following were sought from the case files of patients who had been evaluated at The All India Institute of Speech and Hearing (AIISH), Mysore, which served as the data for this study. These were :

1. What would be the age , sex and financial status of an average customer ?
2. How often do we encounter a geriatric patient ?
3. What is the percentage of rural population benefited by our scheme ?
4. People belonging to what profession are utilizing our services ?
5. What would be the type and severity of the hearing loss of an average customer. ?
6. Which type of hearing aid was recommended and whether the purchase of the hearing aid was covered by any specific scheme ?

The information so obtained were put into the following categories :

1. Profession ! The profession was categorised as,  
(1) government employee (GE) (2) employee in a private organisation (PE) (3) coolie (C) (4) agriculturist (Ag) (5) business (B) (6) others like tailors, carpenters, weavers and milk vendors.(SE)
2. Age ' Age was categorised into class intervals of a decade each. The uppermost class interval is 70 and above, the lower class interval is 0 to 5. The first two decades is divided into 0 to 5, 5 to 10, 10 to 15, 15 to 20 as the number of entries in these two decades were more.
3. Rural/Urban ! All the major cities and towns were categorised under urban (U) and the rest under rural (R).
4. Type of loss ! The type of hearing loss was categorised into three as (1) sensori-neural hearing loss (2) mixed hearing loss (3) conductive hearing loss, based on audiogram report.
5. degree of hearing loss ! The degree of hearing loss was classified as mild, moderate, moderately severe, severe and profound losses based on audiogram report.
6. The type of aids ! Hearing aids issued were categorised into (1) strong (S) (2) moderate (Mod) (3) mild (M) based on gain characteristics as per ISI standards.

7. Financial aid ! Hearing aids were categorised into  
(1) 100% benefit scheme (2) 50% benefit scheme  
(3) hearing aids which were bought , based on the scheme  
under which the hearing aids were issued.

The benefit scheme was introduced by The Ministry of Welfare, Government of India in 1983. It is called, "The Aids and Appliances Scheme". This scheme is wholly based on the financial income of the clients.

The data was collected for a period of one year i.e.1989. People requiring hearing aids reporting to a speech and hearing center (AIISH) were selected for the study. Only those cases seen at alternate months (even) were selected.

Table-1

FOR MALES :

AGE	TOTAL NO OF CASES	TOTAL NO OF HEARING AIDS GIVEN
0 - 5	103	96
5 - 10	87	77
10 - 15	36	33
15 - 20	32	19
20 - 30	44	37
30 - 40	25	17
40 - 50	40	32
50 - 60	39	30
60 - 70	72	47
70 & above	88	78
	576	470

Table indicating total number of hearing aid given to male population, in terms of age group.

TABLE 2

FOR FEMALES :

Age	TOTAL NO OF CASES	TOTAL NO OF HEARING AIDS GIVEN
0- 5	80	78
5-10	61	55
10-15	34	26
15 -20	9	7
20-30	12	6
30-40	9	3
40-50	25	19
50-60	21	13
60-70	20	9
70 & above	14	11
	285	227

Table indicating total number of hearing aid given to female population, in terms of age group.



Table-3  
HEARING AIDS GIVEN FOR THE YEAR 1989

Age	MALE			Total	FEMALE			Total	G.T.
	SN	M	C		SN	M	C		
0- 5	91	5	-	96	76	2	-	78	174
5-10	68	8	1	77	52	3	-	55	132
10-15	27	5	1	33	20	5	1	26	59
15-20	13	3	3	19	6	1	-	7	26
20-30	21	14	2	37	1	3	2	6	43
30-40	9	8	-	17	1	2	-	3	20
40-50	17	13	2	32	6	11	2	19	51
50-60	14	16	-	30	6	2	5	13	43
60-70	21	26	1	48	4	4	1	9	57
70 >	65	17	1	81	6	4	-	10	91
<b>Total</b>	<b>346</b>	<b>115</b>	<b>11</b>	<b>472</b>	<b>178</b>	<b>37</b>	<b>12</b>	<b>227</b>	<b>699</b>

Table indicating hearing aids given in terms of type of loss and age groups.

SN = Sensory-neural hearing loss.

M = Mixed hearing loss.

C = Conductive hearing loss.

GT = Grand Total

TABLE.4

100% BENIFIT HEARING AIDS							
AGE	GE	PE	SE	B	AG	RTD	COOLIE
0-5	7	7	12	2	35	-	23
5-10	4	5	7	4	36	-	11
10-15	6	-	7	-	15	-	5
15-20	1	-	-	3	11	-	5
20-30	5	-	1	3	11	-	3
30-40	2	-	2	1	4	-	2
40-50	2	-	6	2	10	-	3
50-60	5	-	1	-	10	3	2
60-70	-	-	4	5	26	10	1
70 & >	-	-	7	3	17	19	5
	32	12	47	23	175	32	58

Table indicating hearing aids issued under 100% benefit scheme in terms of profession and age group.

(Profession for age groups 0-5, 5-10, 10-15, 15-20, is the client's father's profession)

TABLE.5

50% BENIFIT HEARING AIDS							
AGE	GE	PE	SE	B	AG	RTD	COOLIE
0-5	6	1		3	-	-	
5-10	2	1	-	-	-	-	-
10-15	2	1	-	-	-		
15-20	1	-	-	-	-		
20-30	-	-	-	-	-		
30-40	-	-	-	-	-		
40-50	2	-	3	-	-	-	
50-60	2	-	1	-	-	-	
60-70	1	-		-	-	-	-
70 & >	-	-		-	-	-	
	16	3	4	3	1		

Table indicating hearing aids issued under 50% benefit scheme in terms of profession and age group.

(Profession for age groups 0-5, 5-10, 10-15, 15-20, is the client's father's profession)

TABLE.6

HEARING AIDS WHICH WERE BOUGHT							
AGE	GE	PE	SE	B	AG	RTD	COOLIE
0-5	7	1	1	2	1	-	
5-10	4	1	-	1	-	-	
10-15	1	-	-	-	-	-	
15-20	-	-	-	-	-	-	
20-30	-	-	1	1	1	-	
30-40	2	-	1	-	-	-	
40-50	1	1	1	1	-	-	
50-60	6	-	-	-	-	-	
60-70	2	1	1	1	-	1	
70 & >	-	-	1	-	-	2	
	23	4	6	6	2	3	

Table indicating hearing aids which were bought in terms of profession and age group.

(Profession for age groups 0-5, 5-10, 10-15, 15-20, is the client's father's profession)

## RESULTS AND DISCUSSION

The data collected and tabulated indicate the following :

Majority is in the SN loss group. Number of males is more in all the age groups. Majority is in the age groups of 0-5. The analysis of the data in this study shows the following.

The age of clients seeking audiological help range from 10 month to 116 yr old.

Majority were in the age ranges of 0-5, 5-10 and 70 and above category.

Where as in 0-5 & 5-10 category, the number of males and females were nearly equal, in 70 and above category, there is a large difference.

In terms of regional distribution, majority of clients belongs to southern region of Karnataka, Kerala and Tamil nadu.

The Average customer would fall into the age group of 0-5 category. The males and females numbers are 96 and 78. Among males, large number of people are from rural background (65%), with agriculture as main source of income. Hearing aids issued are through 100% benefit scheme for these. Typically they are prescribed a binaural hearing aid with v

cord and belonging to strong category with accessories such as AP 180 receiver and ear mold to both ears. The hearing loss is congenital in the majority of the cases.

GE	PE	PROFESSION*				C	RURAL/URBAN	
		SE	B	AG	R		U	
7	7	12	2	35	23	54	23 -M	
						35	24 -F	

M - MALES F - FEMALES

\*Profession listed above are the clients fathers profession.

	SN	TYPE OF LOSS		C	HEARING AID		
		M			S	MOD	M
MALE	91	5			36	30	15
FEMALE	76	2			15	25	18

The characteristics of customers belonging 5-10 category are as follows. The males are large in number 53.85% and females of 42.35%. Among males large number of people are from rural background (69%) with agriculture as their main source of income. The hearing aid is provided through 100% benefit scheme. The hearing aid is of binaural body aid, belonging to strong category with accessories like ear-moulds, v cord and AP 270 receiver.

GE	PE	PROFESSION*				RURAL/URBAN	
		SE	B	AG	C	R	U
4	5	7	4	36	11	22	11 -M
						28	8 -F

M - MALES F - FEMALES

\*Profession listed above are the clients fathers profession.

	TYPE OF LOSS			HEARING AID		
	SN	M	C	S	MOD	M
MALE	68	8	1	35	19	8
FEMALE	52			33	11	6

70 and above : The characteristics of these people are as follows: males have a majority of 70%. The average person in their category will be a male of an urban area, being a retired government employee and is benefitted through 100% benefit scheme. Majority had the education upto metric/SSLC.

GE	PE	PROFESSION				RURAL/URBAN	
		SE	B	AG	C	R	U
19(Rtd)		7	3	17	5	13	24-M
						2	8-F

M - MALES F - FEMALES

	TYPE OF LOSS			HEARING AID		
	SN	M	C	S	MOD	M
MALE	65	17	1	29	24	22
FEMALE	6	4	-	5	4	2

1) From the results (TABLE 1 & 2) it is evident that a majority of the people who have hearing aids, belongs to 0-5, 5-10 and 70 and above age groups, followed by 60-70 age groups. The causes of hearing loss is usually congenital in case of children and presbycusis in elder population. The clients belonging to the young adult group are comparatively less in number. This decrease in the number of young adult group may be related in general to the incidence of hearing loss in different age groups. The incidence of hearing loss is reported to be more in 1st decade, in case of children.

Alpiner (1978), has reported the following statistics, age groups incidence of hearing loss in percentage.

Prior to 45 years	4%
Between 45-64 years	11.5%
65 - 74 years	2.3%
Above 75 years	39.9% of total population.

The supplementary reason could also be, lack of awareness and lack of proper knowledge on hearing aids among general population.

2) Comparison of male to female numbers reveals the following. There is very little difference between the number of males and females in 0-5 and 5-10 groups. Where as there is a significant difference in older age groups.



This low percentage of female customers could be due to social stigma, lack of motivation, and lack of awareness regarding the scheme (Maya P.N., 1986). This aspect needs further exploration.

3) The condition for which the maximum number of hearing aids given are bilateral SN hearing loss, mixed loss and conductive hearing loss, respectively. The most common cause seems to be presbycusis, congenital conditions, middle ear infections and otosclerosis. An extensive work on this aspect is covered by researcher like, vanaja 1985, Brcunik, 1979, etc. (TABLE 3)

The Low percentage of conductive loss people benefited from aid could be due to several factors such as,

- Intermittent nature of infection.

Proper medical attention given earlier resulting normal or mild hearing loss.

- Patients preferring operation to hearing aids.

4) The unilateral hearing loss cases who commonly, have sought help are, either 1) one ear with severe to preferred degree of SN-loss and other ear normal. 2) One ear mild SN loss and other severe to profound mixed loss.

They are likely to experience problems in day to day listening situations. They were recommended CROS aids.

5) The present study (TABLE 4,5 & 6) also shows that the majority are the beneficiaries of 100% subsidiary scheme. This indicates that the scheme has been useful in meeting the peoples requirements and needs.

6) Occupation of the people who have utilized 100% benefit scheme. They are class III and Class IV government employee, farmer or labours in agricultural lands, coolies, small business men, tailors, carpenters etc. Majority reports no fixed income and a few may have quoted a lesser income than their average. The occupation of the people ranged from porter, cook, beedi worker, milk-vendor to retired teacher and aurvedic professor.

7) People belonging to profession of Class I and Class II officers like manager, Engineers and Business men have bought the aids or recieved the prescription to buy the aid outside.

8) The geographic distribution shows that a majority are from the southern regions of Karnataka, Kerala and Tamil nadu. This indicates an increased awareness among people of belonging to these areas. The majority of geriatric population (60-70 & 70 & > ) are from Mysore or places around mysore. It is likely that people is other areas procure hearing aids from centers in their respective areas. The location of the institute allows an easy accesses to the

people of Karnataka, parts of Kerala and Tamil nadu bordering southern parts of Karnataka.

9) The number clients in the age groups of 0-5 shows an increase in awareness among public and motivation among them to seek help. The lowest age of the client while reporting at the institute is 10 month and the highest has been 116 years.

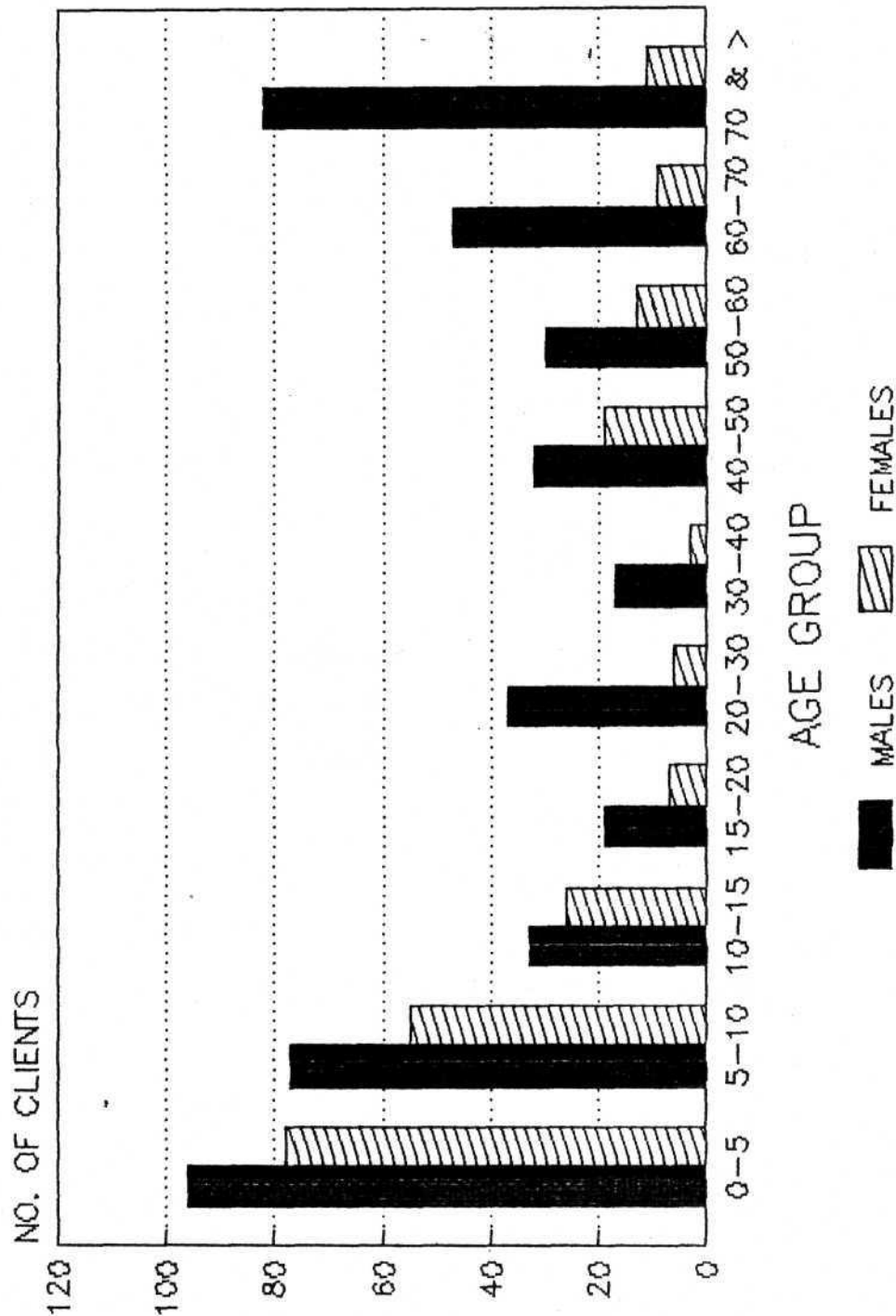
10) The number of clients in the age group 5-10 (132) caution us on the need for public education, as the majority in this group have a congenital hearing loss and seeking help for the first time.

11) the number of people with BTE hearing aids are given below. It shows that BTE was prescribed in all age groups and for both the sex (Males 14, Females 7), majority is in the young adult and middle age group. This is probably related to the motivation of the people.

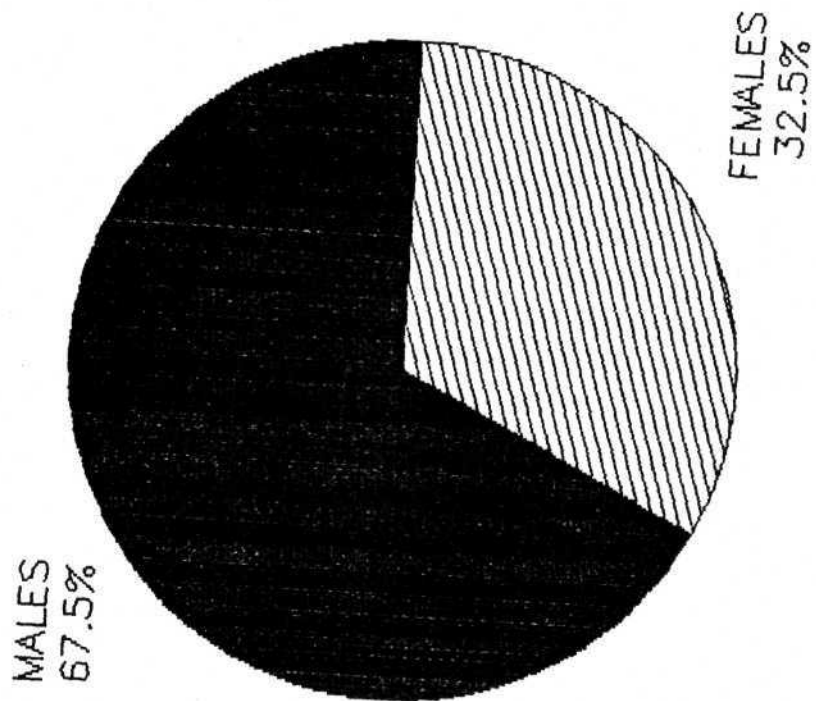
AGE	0-5	5-10	10-15	15-20	20-30	30-40
No of BTE	1 (173)	1 (131)	2 (57)	1 (25)	2 (41)	2 (18)
AGE	40-50	50-60	60-70	70& above		
NO of BTE	4 (47)	4 (39)	2 (54)	2 (53)		

( ) number of body level hearing aids

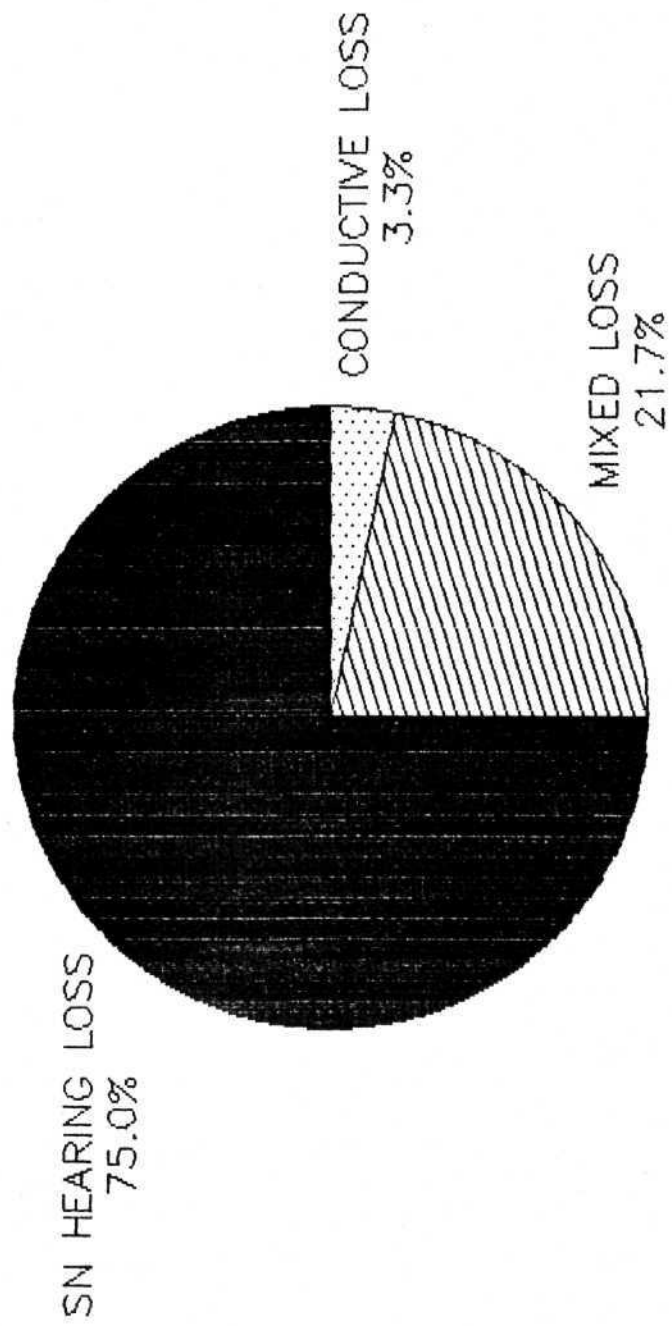
TABLE INDICATING TOTAL NUMBER OF HEARING AIDS ISSUED TO MALES & FEMALES WITHIN ONE YEAR (1989) FOR DIFFERENT AGE GROUPS



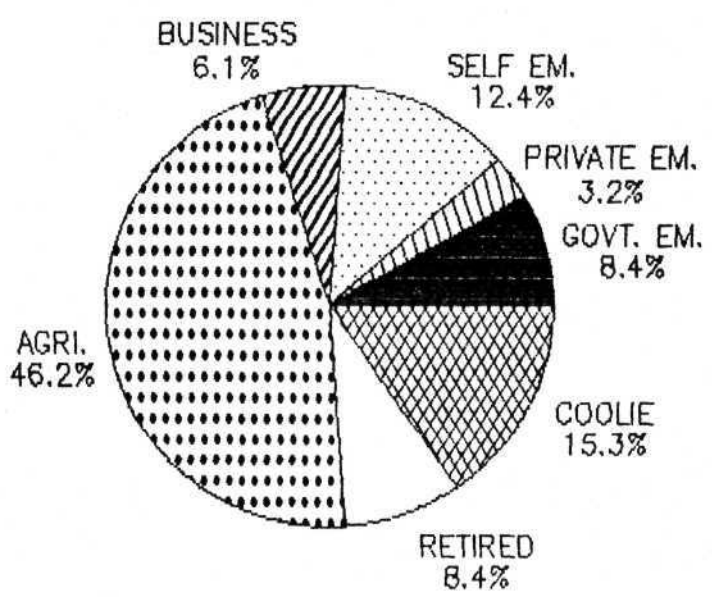
PIE CHART INDICATING MALE & FEMALE RATIO  
OF HEARING AID USERS



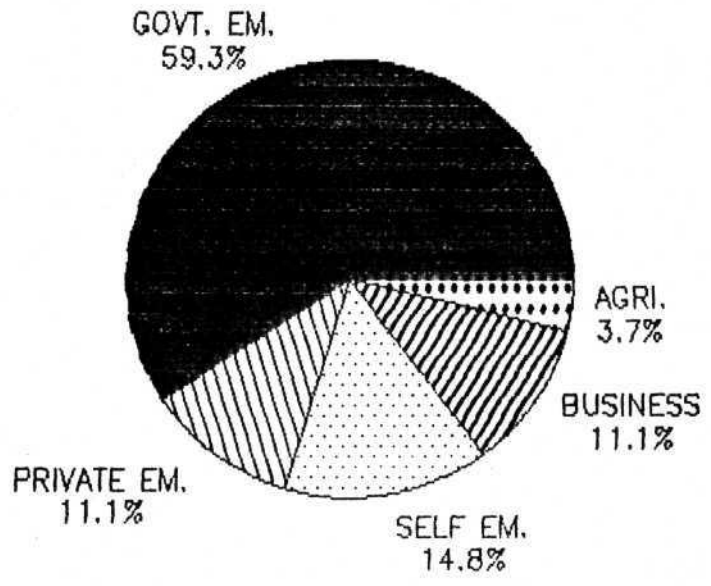
PIE CHART SHOWING HEARING AID  
DISTRIBUTION TO DIFFERENT TYPE OF  
HEARING LOSS



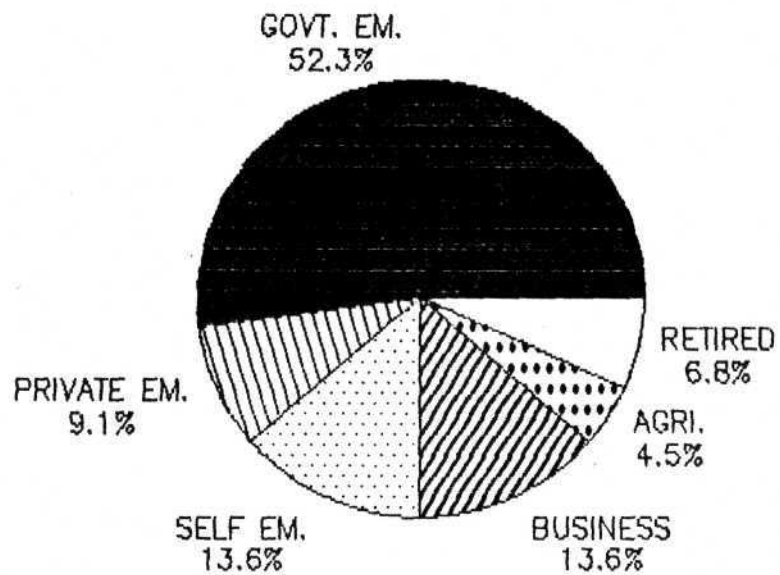
PIE CHART SHOWING DISTRIBUTION OF DIFFERENT OCCUPATION UNDER 100% BENEFIT SCHEME



PIE CHART SHOWING DISTRIBUTION OF DIFFERENT OCCUPATION UNDER 50% BENEFIT SCHEME



PIE CHART SHOWING DISTRIBUTION OF  
DIFFERENT OCCUPATION FOR HEARING AIDS  
BOUGHT





### SUMMARY AND CONCLUSION

1) The average customer is a infant of age group 0-5, from a rural background with agriculture as main source of income. The patients are of lower economic status with no fixed income in a year. The hearing aid recommended is a body level aids with V cord and AN 180 receiver with an ear mold.

2) The geriatric population is characterized by a customer who is either retired or on the verge of retirement with a drop in income or in the guardianship of son or daughter. He is ideally a middle income person. The aid recommended is usually a body level aid with S cord with AN 180 receiver.

3) The request of BTE's are observed to be increasing in both children age group as well as middle age group people. Hence the recommendation of BTE depends both on age groups as well as income of the client.

4) The scheme has been helpful as a majority of the hearing aid recipients have utilized such a scheme.

5) There were more number of male hearing aid users than female users. There were a substantially less number of female above 70 yr receiving hearing aids.

More awareness and education is needed in younger age groups.

6) Both children and older age people have approached the audiologist for help, lowest age being 10 months and oldest being 116 years. Age is not a factor to hinder a person from receiving benefits from amplification.

7) Follow-up survey of hearing aid users of all age groups is to be carried out to know the efficacy of hearing aid use.

8) The people who are not benefitted are to be probed and reasons are to be investigated .

9) People are to be encouraged to use such unconventional methods of amplification, like CROSS.

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## **ABBREVIATIONS**

### PROFESSIONS:

GE = GOVERNMENT EMPLOYEE

PE = EMPLOYEE IN PRIVATE SECTOR

SE = SELF EMPLOYED (LIKE, TAILORS, CARPENTERS, ETC.)

B = BUSINESS

AG = AGRICULTURE

C = COOLIE

### TYPE OF AID:

S = HEARING AID OF STRONG CATEGORY

MOD = HEARING AID OF MODERATE CATEGORY

M = HEARING AID OF MILD CATEGORY

### TYPE OF HEARING LOSS:

SN = SENSORY NEURAL HEARING LOSS

M = MIXED HEARING LOSS

C = CONDUCTIVE HEARING LOSS

R = RURAL

U = URBAN