THE PROFILE OF GERIATRIC HEARING AID USERS

REGISTER NO. M.9106

AN INDEPENDENT PROJECT SUBMITTED AS PART FULFILMENT FOR
FIRST YEAR M.SC.[SPEECH AND HEARING] TO THE
UNIVERSITY OF MYSORE

ALL INDIA INSTITUTE OF SPEECH AND HEARING, MYSORE 570 006

MAY 1992

To

My beloved Paul,

and

Sweet little darlin's

Abi, Ebe, Reena, Renita & Divya

CERTIFICATE

This is to certify that the project entitled **"THE PROFILE OF GERIATRIC HEARING AID USERS"** is the bonafide work in part fulfilment for the First Year degree of Master of Science [Speech and Hearing], of the student with Register No. M.9106.

DIRECTOR
All India Institute of
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MYSORE-570006

MYSORE
May:1992

CERTIFICATE

This is to certify that the project entitled **"THE PROFILE OF GERIATRIC HEARING AID USERS"** has been prepared under my supervision and guidance.

MYSORE
MAY 1992

Dr. (Miss) S. Nikam
Guide

DECLARATION

This project is the result of my own study undertaken under the guidance of Dr.(Miss) S. Nikam, Professpr and Head of the Department of Audiology, All Induia Institute of Speech and Hering Mysore, and has not been Submitted earlier at any University for any otheer Diploma or Degree.

MYSORE

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The one who walks along with me in my ups and downs
My dear ***MAMA,***
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INTRODUCTION

The geriatric population, which is one of the major part of the society has been found to be contributing significantly to the betterment of society.

The well being of the geriatric population is very important for the maintenance of integrity in the society.

The well being of the older people will be at stake, due to several changes in social, psychological and biological processes that occurs concommittantly with age.

As we should know, there are some age related changes in the auditory system too. The effects of aging process on the human auditory system has been reported in the literature as early as 1800A.D. Zawaardemaker{1894) observed progressive deterioration of hearing for high frequency sounds with advancing age.

Among the five most prevalent chronic conditions affecting the physical health of elderly people, impairment of hearing or presbycusis ranks.second (Harris 1978).

Several estimates of the prevalence of the hearing impairment in the over 65 population exist, Chaffee(1967) says 90% of persons living in senior citizen environments have hearing impairment.

According to ASHA {1971) over 2 1/2 million elderly American citizens have a significant bilateral impairment.

Hull & Traynor (1977) state that presbycusis in varying degrees affects approximately 60% of individuals over 65 years of age.

The senate committee on aging (1968) has suggested that hearing loss restricts the quality of life for 30-50% of the elder citizens.

Jerger(1973) stated that the aging process produces systematic changes in each of the two critical dimensions of hearing impairment.

Loss in threshold sensitivity and loss in the ability to understand suprathreshold speech.

Sataloff's data (1966) reflects incidence of hearing loss in the elderly population is significantly high and the most common cause of hearing lossing presbycusis.

According to Glorig & Nixon (1960) the aging process reveals itself through changes in auditory sensitivity at 1000Hz beginning from the age of 30. The rate of decrease in auditory sensitivity for lOOOHz is about 3dB for every 10 years of age through 70 years. For 6 KHz the decrease in approximately 10dB for every 10 years through 70 years.

Presbycusis deficits seen in many cases is gradually sloping, gradually progressive, high frequency SN hearing loss. Hearing loss increases gradually at first and then accelerates more rapidly with increasing age, especially for the higher frequencies, Berger et.al(1977); Corso(1963); Glorig & Nixon(1962); Glorig & Roberts(1965). But not all the presbycusis hearing losses follow the typical audiometric configuration.

Burn(1968) reported that in presbycusis, progressive deterioration of hearing of high tones occured. From audiological studies on young, old people he found that the higher the frequency of the test tone, the greater was the hearing threshold and older the person the greater was the deterioration.

A cross sectional study was done by Eisdorfer & Wilkie (1972). It was a 7 year follow-up and the authors report on 92 individuals seen between 60-89 years, Auditory sensitivity decreased during the 7 year period. The amount of decrease for the group from 67-74 years was equivalent to the decrease, observed for the 75-82 year old group.

According to Mosciki et.al(1985), the estimated prevalence was found to be around 83% with the majority of the cases having SN hearing loss. There were no statistically significant sex difference at lOOOHz or below. Women had better hearing than men at 2000Hz and above.

Hincheliffe(1968) found that in a British sample the average threshold for males was poorer than those for the females. This difference was attributed to the cochlear damage due to noise to which the men had been exposed.

Ronald et.al(1980)studied the specific frequency and degree of hearing loss in 202 elderly nursing home resident (159 females, 43 males) and reported pure tone averages (500, 1000, 2000Hz) for the better ear showed a substantial deterioration in each decade interval beginning from ages in the 60s, and extending into the 90s. Mean threshold .... for the various age categories reveal a gradual decline in hearing with age at all frequencies and for the better ear puretone average. The mean within each group are generally similar at 500Hz and lOOOHz but show a drop of 5-8 dB at 2000Hz and a further drop of 13-17 dB at 4 KHz.

Next to the changes in hearing sensitivity, the deterioration in speech discrimination is the most common characteristics of age related changes in auditory function.

According to Geath (1948) the elderly individuals have more severe speech discriminating ability, ability that is what one would expect on the basis of their puretone threshold configuration.

Pestalozza & Shore (1955) studied speech discrimination in a group of subjects over 60 years of age. The reduction in speech discrimination could not be related to the degree of loss or slope of the audiometric configuration. They suggested that the reduced speech discrimination was related to the degenerative changes involving special ganglion cells and fibres of the 8th nerve.

Some researchers (Harbert & Mendulle'66, Kasden 1970) have related reduction in speech discrimination scores to the degrees of sensorineural hearing loss rather than age.

Harbert et.al (1966) showed reduced speech discrimination score for the W-22 word list for the individual over the age of 60 years having negative otologic histories and pure SN hearing losses. The reduced speech scores were more strongly related to degree of hearing loss than to subject age.

Jerger (1973) attributed reduction in SD scores with age when the presentation level was sufficiently intense to overcome the-attenuating effects across all frequencies.

It is thus clear from the foregoing that the elderly face a variety of communication problems because of their hearing handicap. They experience frustration because of an inability to understand what others are saying. It becomes easier for these people to withdraw from such situations where communication with others may take place/ rather than face embarassment from

frequent misunderstandings of statements or inappropriate responses. Many have serious doubts about their own ability to maintain a responsible position in the family or feel that they are losing their sanity, particularly when they may not know the cause for speech discrimination problems that they are experiencing.

It is difficult to discuss psychological and physiological aspects of aging independently, Alpiner(1965). The interaction between them is almost certain to be in continual operation and the result a vicious circle.

"Take care of the sense, and the sounds will take care of themselves" - Charles Lutwidge Dodgson.

Hearing loss attributed to the aging process is not amenable to medical or surgical treatment. The treatment or management of these patients are frequently "hit and miss".

To help ameliorate the problem, the need is felt for the establishment of aural rehabilitation program. One of the rehabilitation procedure in this aspect is the prescription of suitable hearing aids.

McCarthy (1976) says that audiologists have the technical skill and education to do hearing aid evaluations and the training to help the client become a better communication.

The need for amplification for the hearing impaired has been emphasized by many researchers like Alpiner(1978), Oyer & Oyer (1976). Pollack (1975) & Rose (1978). Many patients with a hearing loss due to presbycusis can be significantly helped with hearing aids.

These world wide studies and reports indicate that there has been a growing demand for hearing aids. India too, is not an exception to such a phenomenon.

Hearing aid fitting for geriatric population must take into consideration their unique problems like motivation, range of auditory capacities, communication needs, need for hearing, ability to learn use of a hearing aid, adjustment to amplification and investigation of other social, economic and psychological problems faced by such individuals. Other associated problems such as visual, motor difficulties should be taken care of while prescribing hearing aid to such people.

Some geriatric people may feel that he is just too old to "fool around with hearing aids and hearing rehabilitation". Thus motivation is an important factor while prescribing hearing aid to geriatric people.

In recent years, increasing amount of awareness and acceptance of hearing aids and increasing miniaturization of hearing aids and the controls the problem assumes much significance.

Considering all these factors, it is important that an audiologist who are considering dispensing hearing aids need to plan carefully. A detailed knowledge of both technical and non-technical information about his clients are very important.

The basic technical information the audiologist look for are the type, severity of hearing loss the patient has, speech discrimination scores, the 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.

They also try to get some non-technical information about the client such as, social, economic background, education and profession of the clients etc. Such information would be necessary at the time of prescription of a hearing aid. More personalised services are expected when hearing aids are procured on payment. Hence an audiologist must know the characteristics and needs of the clients.

Very few studies have been done in this regard. Chelmark (1981) has tried the characteristics of older age group. He reports of the problems in these groups as lowering socio-economic status, loneliness and other associated physical problems.

Very few studies are available in Indian context. In a study conducted by Maya(1986) to define the characteristics of

geriatric hearing aid users, she reported that, this group 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 Schemes. This indicates that many needed financial assistance.

In a study conducted by Suresh(1990) who has tried to define the characteristics of an average customer, he found out that, majority of the clients were in the age ranges of 0-5, 5-10 and 70 & above. Most of them had SN loss and were from rural background who needed financial assistance. A comparison of male to female numbers reveals that percentages of females seeking assistance was low. This could be due to social sttgma, lack of motivation and lack of awareness regarding the scheme (Maya, 1986).

The present study aimed at finding out the characteristics of geriatric hearing aid users in the recent years. This included:

(1) Age group frequently reported at AIISH.
(2) Relative distribution of rural and urban hearing aid users.
(3) To know social and economic background of these people.
(4) To know the relative distribution of male and female geriatric hearing aid users.
(5) To know the type and degree of hearing loss which needs amplification in most cases.

(6) To know the speech discrimination scores among such people.

(7) The usefulness of hearing aids in enhancing speech discrimination scores.

(8) The type of hearing aids preferred by different age group people.

(9) To know the occupation and economic condition of the people who are benefitted 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 helps in successful prescription of hearing aids and in planning the effective rehabilitation programmes based on the needs of the client. Such a study also gives the audiologist a clear picture of physical, social and psychological problems faced by the geriatric population.

METHODOLOGY

As mentioned earlier, the aim of the study was to obtain the characteristics of a geriatric hearing aid user that an audiologist encounters in his routine work.

Information regarding the following were sought from the case files of 1000 patients from 1989-1991. Random sampling method was used to select patients who had been evaluated at a speech and hearing centre which served as the data for this study.

Patients ranging in age from 50 years and above were considered for this study.

The following problems were sought to be answered:

(1) What would be the age and sex of an average geriatric customer?
(2) What is the percentage of rural population utilizing our services?
(3) How often do we encounter urban geriatric population?
(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 geriatric customer?
(6) What would be the severity of speech discrimination problem of an average geriatric customer?

(7) What would be the mostly recommended category of hearing aid and whether the purchase of the hearing aid was covered by any specific scheme?

(8) How useful is the hearing aid in promoting speech discrimination scores?

The information so obtained were put into the following categories:

(1) Profession: The profession was categorized as :

(a) Agriculturist [A]

(b). Government employee [GE]

(c) Private employee [PE]

(d) Retired government employee [Rtd.GE]

(e) Retired private employee [Rtd. PE]

(f) Business and Retired Businessmen [B]

(g) Self employment like tailors, carpenters, weavers, shop keepers, etc. [SE]

(h) Collie [C]

(i) Old age pension [OAP]

(j) Housewives [HW]

(2) Age: Age was categorised into class intervals of a decade each. The lower class interval is 50-60 and other class intervals 60-70, 70-80, 80-90, & 90 & above.

(3) Sex: Both male and female subjects were included.

(4) Rural and Urban: All major cities and towns were categorized under urban [U] and rest under rural [R].

(5) Type of hearing loss: The type of hearing loss was categorised into (a) conductive hearing loss, (b) mixed hearing loss, (c) sensori-neural hearing loss based on audiogram report.

(6) Degree of hearing loss: It was classified as mild, moderate, moderately severe, severe and profound based on audiogram report.

GOODMAN'S CLASSIFICATION;

Hearing level (in dB)	Classification
0 - 26	Normal
27 - 40	Mild
41 - 55	Moderate
56 - 70	Moderately severe
71 - 90	Severe
More than 90	Profound

(7) Degree of speech discrimination loss: Degree of speech discrimination loss was classified as mild, moderate, severe, profound and poor discrimination scores.

SDS (in percentage)	Classification
100	Normal
80- 100	Mild
50-80	Moderate
40 - 50	Severe
< 40	Profound
Could not obtain SDS	Poor

(8) The category of aids: Hearing aids issued were categorised into (a) mild[m] (b) moderate [mod],(c) Strong [s] based on gain characteristics as per ISI standards.

(9) Type of hearing aids: Hearing aids issued were categorised based on the placement as:

(a) Body level hearing aids [B]

(b) Behind-the-ear hearing aid [BTE]

(c) In-the-ear hearing aid [ITE]

(d) Spectacle hearing aid [SHA]

(10) Usefulness of hearing aid: Usefulness of hearing aid was categorised as -

(a) Usefulness in auditory mode [A]

(b) Useful in auditory visual mode [AV]

(c) Hearing aid used for ease of listening [EOL]

(d) Hearing aid used for awareness of stimulus [AW]

(11) Financial aid : Beneficiaries of hearing aids were categorized into those receiving (a) 100% benefit (100%) , (b) 50% benefit (50%), (c) those who purchased their hearing aids (P).

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 collected manually was tabulated.

RESULTS

The data collected are scored and convereted into percentages and results are presented in tables and discussed.

TABLE-1: Showing distribution of the geriatric hearing aid users in the various age groups.

Age range(in years)	% of males	% of females	Total
50 - 60	19.5	9.5	29.0
60 - 70	27.2	21.0	48.2
70 - 80	*6.9*	4.4	11.3
80 - 90	7.8	1.7	9.5
90 & above	2.0	-	2.0
Grand Total	63.4	36.6	100.0

Table-1 shows the range of subjects both males and females in different age groups. From this table it can be seen that the majority of the subjects were in the age group of 60-70 years followed by the age group 50-60 years. The percentage of hearing handicapped reported aove 90 years was minimum. The upper age limit reported was 98 years.

It also shows that there were greater number of males in all age groups and maximum number being inthe age group of 60-70 years. Maximum percentage of females reported was in the age group 60-70 years. It is obvious from the table, the percentage

of females with hearing handicap seeking assistance is "Nil" in the age group 90 years and above.

TABLE-2: Distribution of subjects according to their profession.

Occupation	% of subjects
A	25.6
GE	6.0
PE	5.5
Rtd.GE	10.4
Rtd.PE	8.0
B	9.6
SE	5.0
C	16.7
HW	7.6
OAP	5.6

A : Agriculturist
GE : Government employee
PE : Employee in private Institution
Rtd.GE : Retired government employee
Rtd.PE : Retired employee of private Institution
B : Business and retired businessmen
SE : Self employment
C : Coolie
HW : Housewife
OAP : Old age pension

This table shows a majority of the subjects belonging to middle and lower class family. Most of them had agriculture as their main occupation followed by daily wage workers. People working in government and private Institutions were also reported but their percentage is less.

TABLE-3: Distribution of subjects according to their place from where they are.

Place	% of males	% of females
Rural	40.2	28.7
Urban	23.2	7.9

This table shows majority of the subjects were from rural areas, mostly in and around Karnataka, Kerala and Tamilnadu.

TABLE-4: Showing distribution of geriatric hearing aid users according to their type of hearing loss.

Age group (in years)	Type of loss		
	Mixed	SN	Conductive
50 - 60	7.9%	19.0%	2.1%
60 - 70	14.6%	29.1%	4.5%
70 - 80	4.0%	5.4%	1.9%
80 - 90	2.0%	7.5%	-
90 & above	-	2.0%	-
TOTAL	28.5%	63.0%	8.5%

TABLE-5:Showing the distribution of subjects according to the degree of hearing loss.

Degree of loss	% of males	% of females	Total
M	1.3	3.2	4.5
MO	6.3	11.2	17.5
MS	20.1	7.9	28.0
S	25.7	6.3	32.0
P	10.5	8.0	18.5

M - Mild MO - Moderate MS - Moderately severe

S - Severe P - Profound

Table 4 & 5 shows type and degree of hearing loss of subjects mostly reported at a speech and hearing clinic.

A majority of the subjects had SN loss followed by mixed loss ranging from moderate to profound degree. Maximum population fall into severe SN loss group followed by mixed loss and moderately severe degree of loss.

Distribution of SD scores among subjects.

TABLE-6: Showing distribution of subjects according to their speech discrimination scores.

SDS	% of subjects	
N (100%)	6.5	N - Normal
M (80-100%)	14.5	M - Mild
MO (60-80%)	29.0	MO - Moderate
S (40-50%)	10.0	S - Severe
PR (< 40%)	9.5	PR - Profound
P	30.5	P - Poor SDS

This table shows majority of the subjects had poor discrimination scores.(This includes people on whom SDS testing could not be done as the presentation level exceeding the audiometric maximum level and those who gave a very poor or no response). This was followed by moderate SDS. 6.5% of the geriatric population were reported to have normal SDS.

TABLE-7: Showing distribution of geriatric hearing aid users according to the type of hearing aids they received.

Type of aids	% of males	% of females
B	56,.9	32.8
BTE	5..4	4.8
IE	1,.1	-

B - Body level hearing aids
BTE - Behind the ear hearing aids
IE - In the ear hearing aids

From this table it can be observed that the percentage of body level hearing aids prescribed was more and percentage of In-the-ear hearing aids was very less.

TABLE-8: Showing distribution of geriatric hearing aid users according to the category of hearing aids they received.

Hearing aids according to their gain	% of subjects
M	16
MO	51
S	33

M - Mild gain category of hearing aid
MO - Moderate gain category of hearing aid
S - Strong gain category of hearing aid

This table shows moderate gain hearing aids formed the major group followed by strong gain hearing aids.

TABLE-9: Distribution of subjects according to usefulness of hearing aids.

Usefulness of hearing aid	% of subjects
"A" mode	39..5
"AV" mode	51..5
AW	4..0
EOL	5..0

A - Speech discrimination in auditory mode
AV - Speech discrimination in auditory visual mode
AW - Awareness
EOL - Ease of listening

This table shows a majority of the geriatric people used hearing aid to aid speech discrimination in auditory visual mode.

TABLE-10: Showing the distribution of subjects according to the Type and means of procurement of hearing aids.

Schemes under which hearing aids were issued	% of subjects
100%	61
50%	14
P	25

This table shows a majority of the subjects benefitted by our free hearing aid scheme.

TABLE-11: Showing subjects belonging to different groups of profession benefitted by different schemes.

Profession	100%	50%	P
A	18.3%	2.5%	4.8%
HW	4.1%	1.0%	2.5%
PE	1.2%	-	4.3%
GE	2.0%	-	4.0%
Rtd.PE	4.8%	-	3.2%
Rtd.GE	7.4%	1.2%	1.8%
SE	5.0%	-	-
B & Rtd.B	3.8%	2.6%	3.2%
C	14.1%	1.0%	1.6%
OAP	5.6%	-	-

This table shows a larger percentage of subjects got the hearing aids free of cost, mostly people who had agriculture, coolie, and retired people and pensioners.

DISCUSSION

(1) From the results it is evident that a majority of the geriatric people who havegot hearing aids belong to 60-70 years of age group followed by 50 - 60 years of age group. The cause of hearing loss mostly reported is presbycusis. The upper age limit was 98 years which indicated that the geriatric population did not consider age as a hinderance in wearing hearing aid.

Alpiner's data (1978) of incidence of different age groups reported.

Prior to 45 years	4% of hearing loss was reported.
Between 45-64 years	11.5% of hearing loss was reported.
65 - 74 years	2.3% of hearing loss was reported.
Above 75 years	39.9% of hearing loss was reported.

The reduced percentage of subjects reported above the age 70 years could be explained on the basis, lack of awareness, lack of proper knowledge on hearing aids, the limited mobility, and perhaps due to other illnesses.

Harless and Rupp(1972) in describing a hearing rehabilitation program for elderly persons, cite several unique factors about the program. One deals with transportation. More than half of the clients said that they would not participate if the program were held elsewhere.

(2) Comparison of male to female percentages reveals more number of males reported to seek professional assistance and were ready to wear hearing aids.

The low percentage of female cases requiring assistance could be explained on certain grounds such as social stigma, lack of motivation, nonacceptance of their handicap, inability to come on their own, economic dependency which makes difficult for them to travel and incur expenditure.

(3) A majority of the subjects who reported to have received hearing aids belonged to rural areas. Low percentage of urban cases could be due to social stigma, nonaccpetance or negligence of their handicap, lack of awareness regarding the scheme, and increasing availability of adequate speech and hearing professionals in the urban area. Thus the average geriatric case reported were males mainly from rural area with agriculture or daily wage as their main source of income.

(4) The condition for which the maximum number of hearing aids given are moderate and severe SN loss followed by mixed loss. A lower percentage of people having -conductive loss was reported could be because geriatric people having mild loss accept hearing deficiency as part of the process of growing old and they feel they can manage without amplification.

Willeford (1971) stresses that the elderly person presents himself for professional assistance only after considerable urgency for amplification urge by family and friends.

Also factors such as:

- Intermittent nature of infection
- Proper medical attention given earlier resulting in normal or mild hearing loss.
- Patients preferring operation to hearing aids.

(5) People belonging to lower grade, government, private employees, farmers and labourers in lands, coolies have maximally utilized our 100% benefit scheme. People belonging to class I & II employees, retired officers, engineers and businessmen have bought the hearing aids either giving full cost of 50% or received the prescriptions to buy the aid outside. This could be explained on the basis of their socio-economic status.

(6) Larger groups of subjects had poor discrimination scores followed by moderate discrimination scores. This could be explained on certain grounds such as elevation of auditory threshold, lowering of speech discrimination may be due to senile changes of the auditory nervous system.

Schecknecht, Igarashi (1964) emphasize that deafness of aging is caused by independent degenerative changes in the

auditory neural pathways in the cochlea, brain and auditory nerve resulting in reduced discrimination ability.

(7) Maximum percentage of geriatric population were prescribed body level hearing aids, mostly moderate category of hearing aid. Most of them were prescribed "S" cord with AN 180 and AP 180 receiver.

The unilateral hearing loss cases who commonly have sought help are, either (a) one ear with moderately severe to severe degree of SN loss, (b) one ear mild SN loss and other severe to profound mixed loss.

As they were experiencing problems in day-to-day listening situations they were recommended hearing aid for the better ear. There was less percentage of geriatric people who received mild gain hearing aid. This could be because:

sometimes they don't overcome discrimination difficulties with hearing aid, and are prefered to manage without amplification.

some are advised by audiologist to manage without amplification due to nonavailability of mild gain hearing aids.

(8) Most of the geriatric hearing aid users were presecribed body level hearing aids could be explained on the basis of cost of the hearing aids, free benefit scheme of body level hearing aids.

(9) The request for BTEs are observed to be increasing among both urban, rural population. This could be explained on the basis of increasing awareness and motivation that the kind of amplification chosen be least visible kind and also the willingness to incur expenditure to improve their communication ability.

(10) Very few cases were prescribed In-the-ear hearing aids. It could be because of the high cost of ITE and finer dextrity required to operate it.

(11) A majority of the elderly people were using hearing aids to facilitate speech discrimination in the auditory visual mode.

Erbers research (1975) suggested that most hearing impaired patients typically receive speech through both auditory and visual modalities during everyday communication or to maximize perception of speech information. While prescribing hearing aids additional problems such as paresis, dementia, aphasia, visual problems etc. were noted and advised regarding the same.

People who were using hearing aids in "AV" mode were counselled and taught carefully to speech read.

(12) Larger group of geriatric people received hearing aids free of cost indicating our scheme has been very helpful and reflect the success of public education program initiated by the speech and hearing professionals.

SUMMARY AND CONCLUSION

The purpose of the present study was to know the characteristics of the average geriatric hearing aid user seeking professional help in a speech and hearing clinic.

The subjects chosen for the study were those registered and examined in a speech and hearing centre. The required information were collected from the case files. The data collected was presented in a tabular form.

On the basis of results obtained, the following conclusions may be drawn.

1) More number of male geriatric patients seek professional assistance than female geriatric patients.
2) A majority of both male and female geriatric people were reported in the age group 60-70 years.
3) A majority of geriatric hearing aid users were from rural area.
4) A majority of patients were of lower economic status with no fixed income in a year.

   Thus the average geriatric cases reported were mainly from rural area having agriculture or coolie as their main source of income.
5) A majority of the subjects who reported at the centre had severe SN loss with poor speech discrimination scores.

6) The aid mostly recommended is a body level hearing aid usually of moderate category with single cord with AN 180 and AP 180 receiver.

7) The request for BTEs are observed to be increasing both in urban and rural population.

8) A majority of the subjects used the hearing aid to enhance speech discrimination in "AV" mode.

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

10) More awareness and public education regarding the amplification types and benefits are still needed. Follow up survey of hearing users is to be carried out to know the efficacy of hearing aid use.

11) Since the geriatric aural rehabilitation programs are very few, the need for such programs exist.

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ABBREVIATIONS

PROFESSION:

A	- Agriculturist
B	- Business and retired businessmen
C	- Coolie
GE	- Government employee
HW	- House wife
OAP	- Old age pension
PE	- Employee in private Institution
Rtd.GE	- Retired government employee
Rtd.PE	- Retired private employee
SE	- Self employed

PLACE:.

R	- Rural
U	- Urban

TYPE OF LOSS:

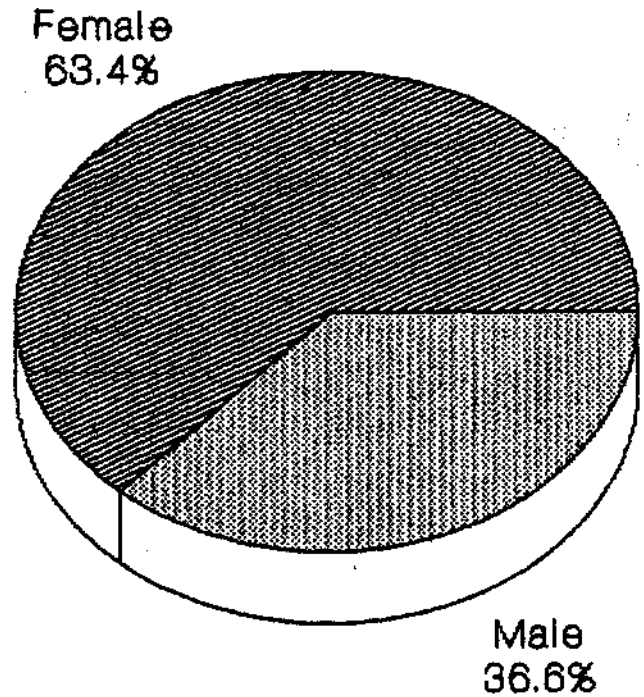
M	- Mixed hearing loss
SN	- Sensori neural hearing loss
C	- Conductive hearing loss

TYPE OF HEARING AID:

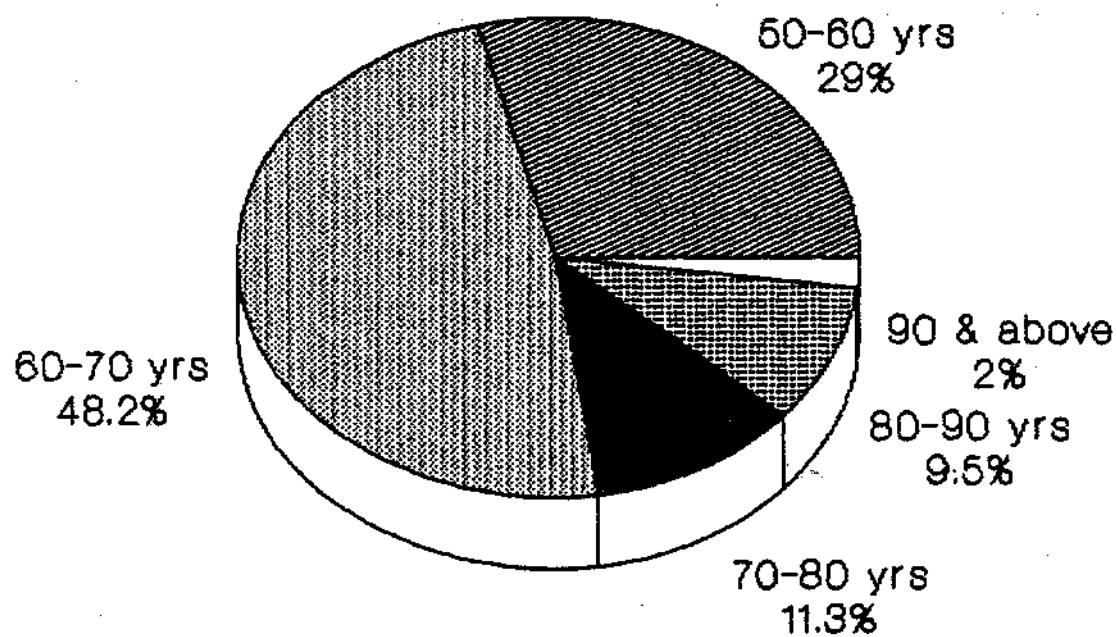
B	- Body level hearing aid
BTE	- Behind-the-ear hearing aid
IE	- In-the-ear hearing aid

USEFULLNESS OF HEARING AID:

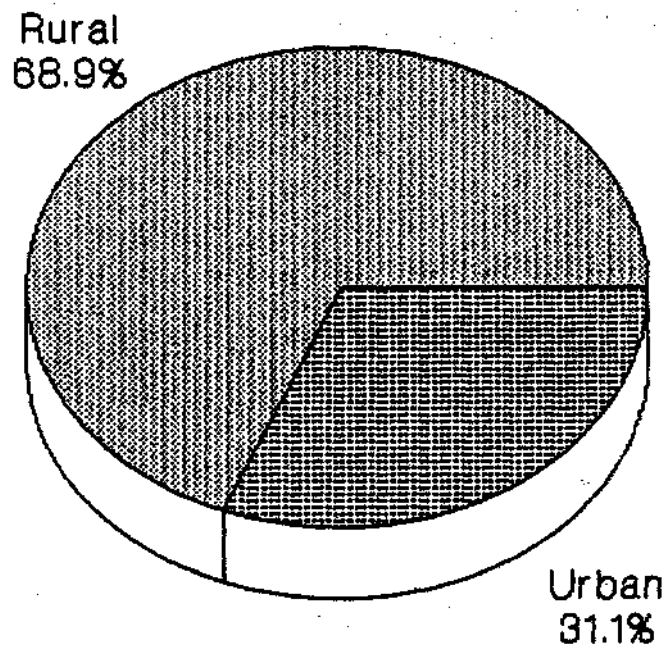
A	- Speech discrimination in audio mode
AV	- Speech discrimination in audio-visual mode
AW	- Awareness
EOL	- Ease of listening



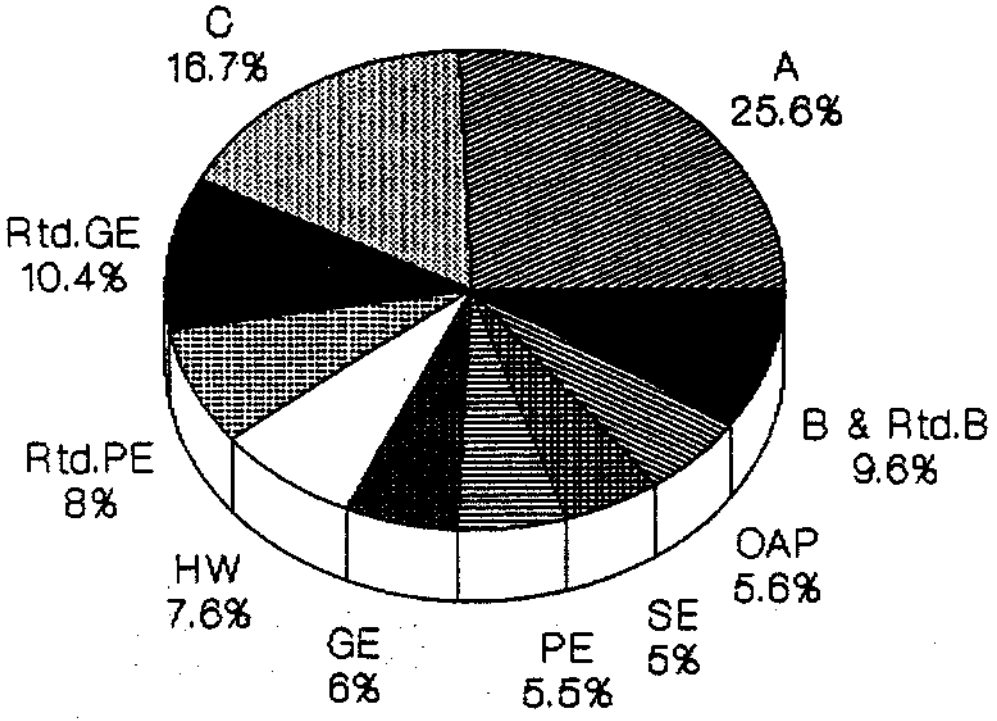
Pie chart indicating male and female ratio of hearing aid users.



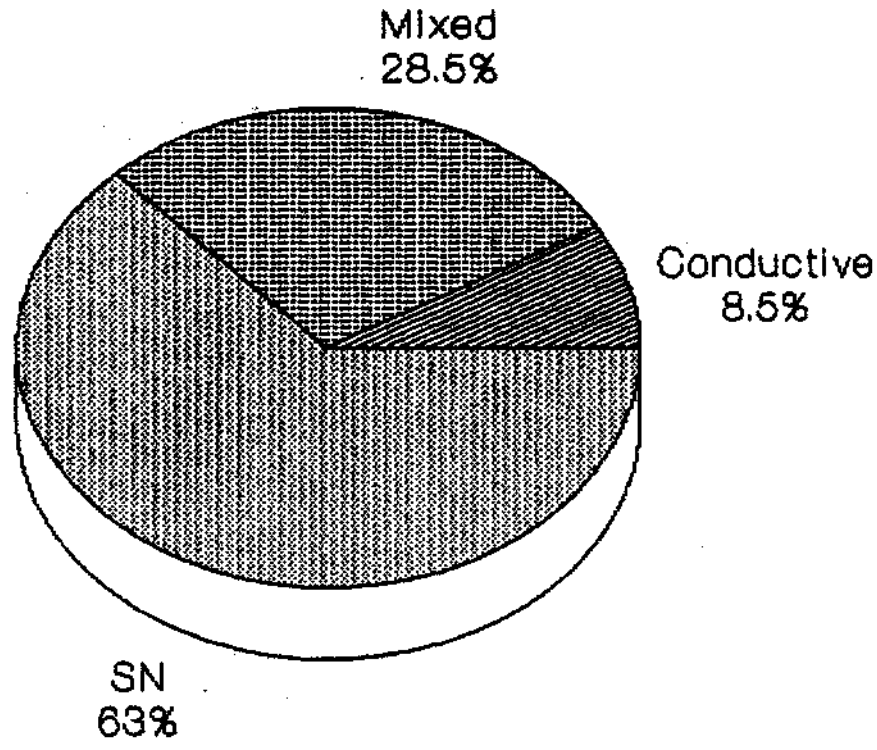
Pie chart showing percentage of people in different age groups.



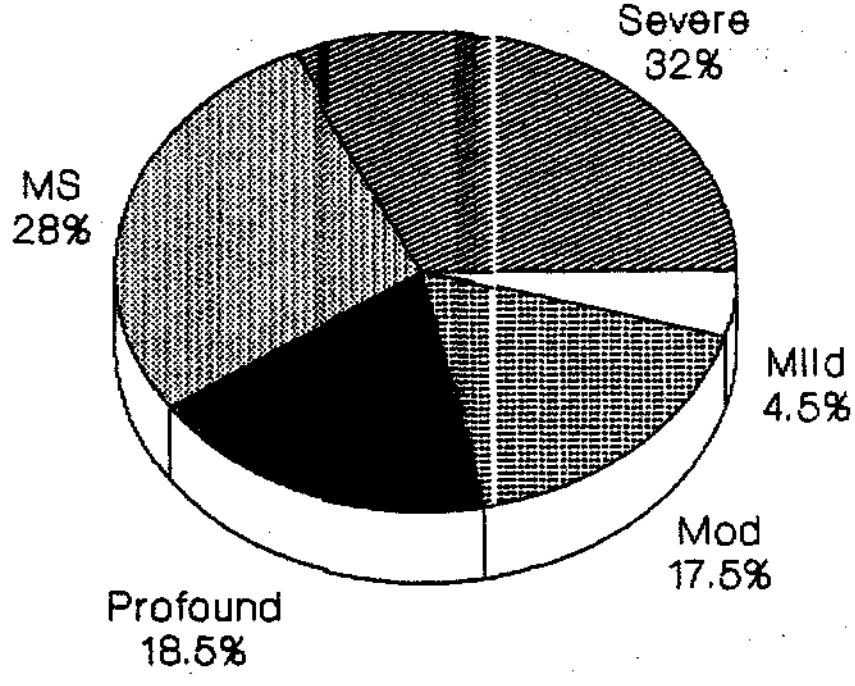
Pie chart showing the distribution of subjects according to their place



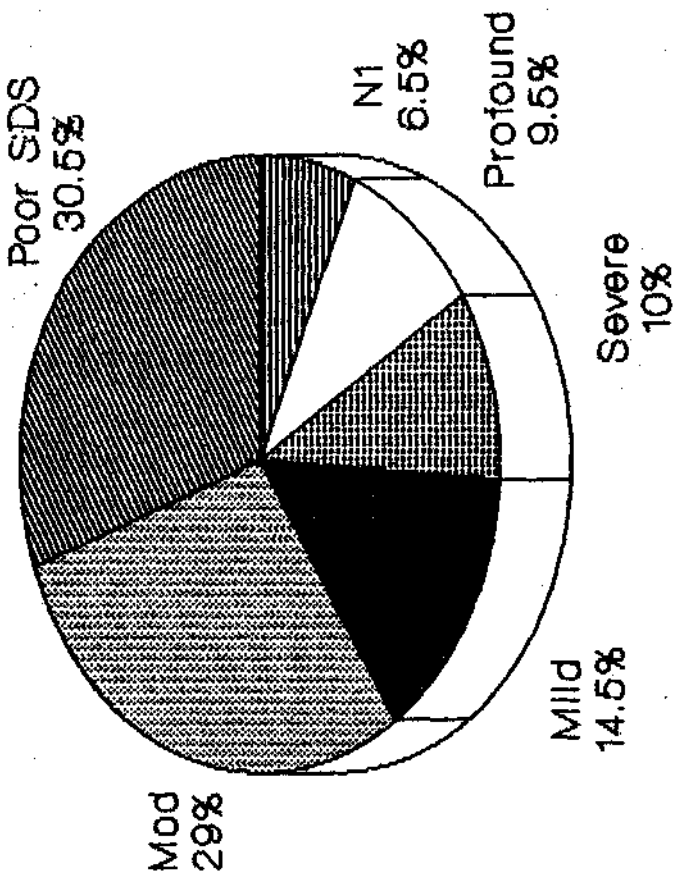
Pie chart showing the distribution of subjects according to their profession.



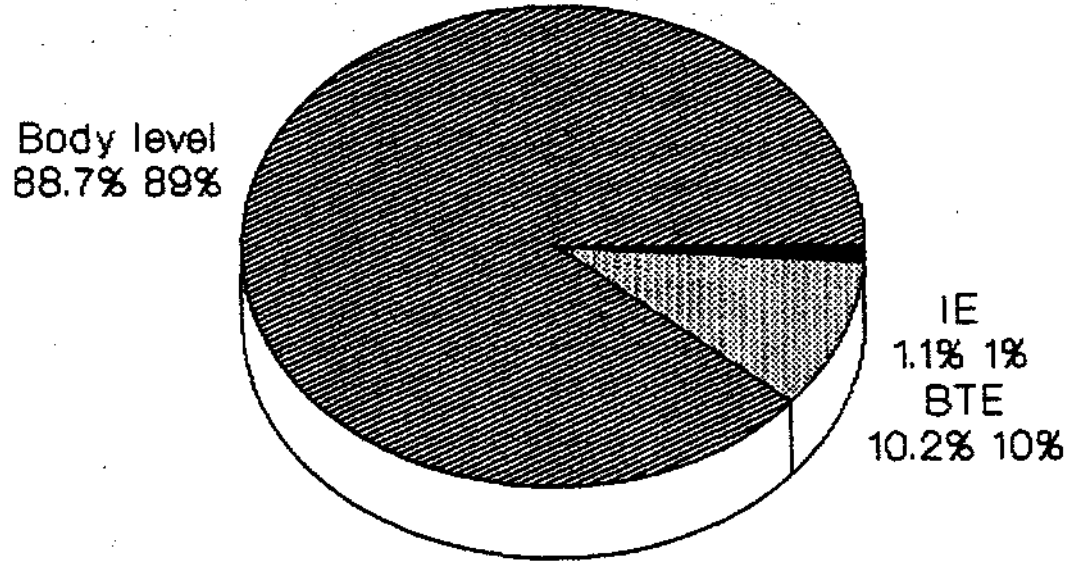
Pie chart showing the distribution of subjects according to their type of hearing LOSS



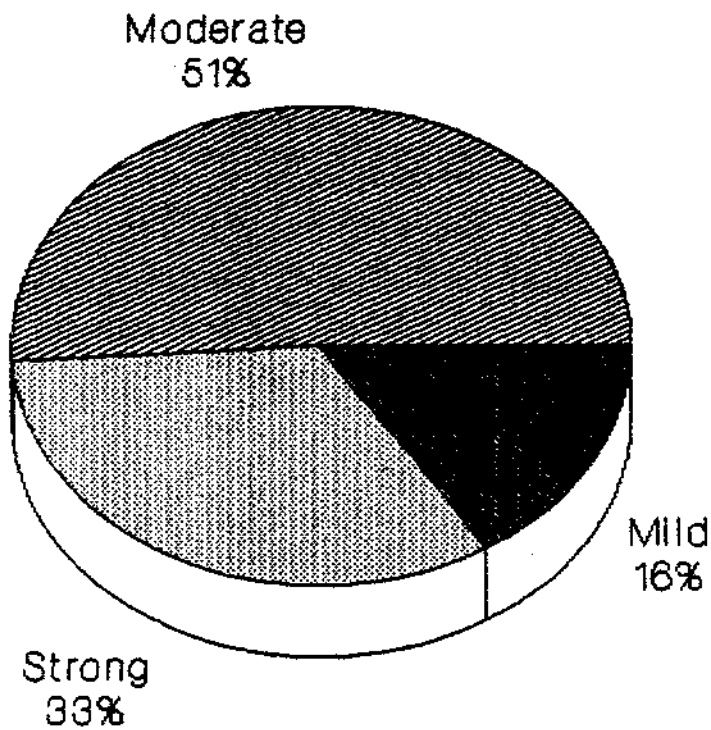
Pie chart showing the distribution of subjects according to their degree of hearing loss



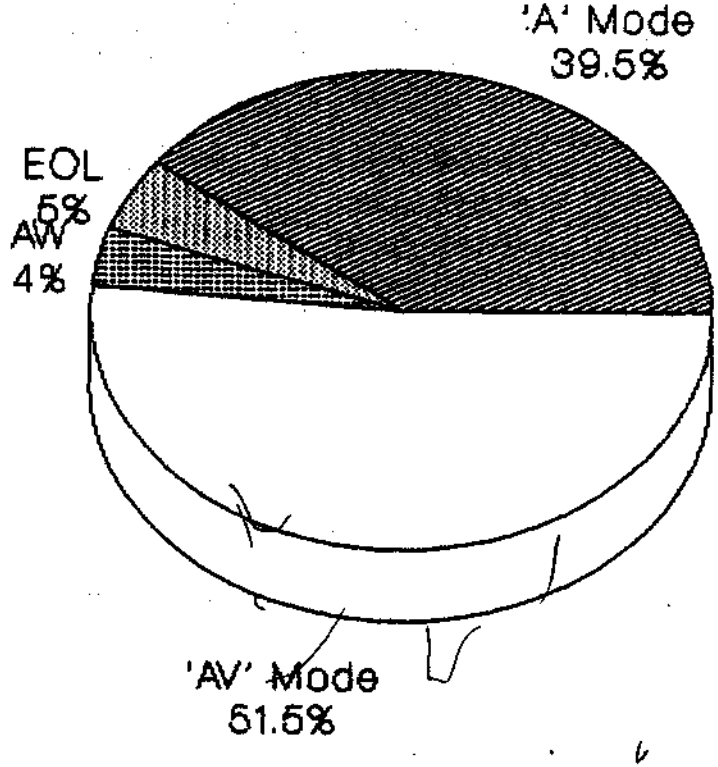
Pie chart showing the distribution of subjects according to their speech discrimination scores.



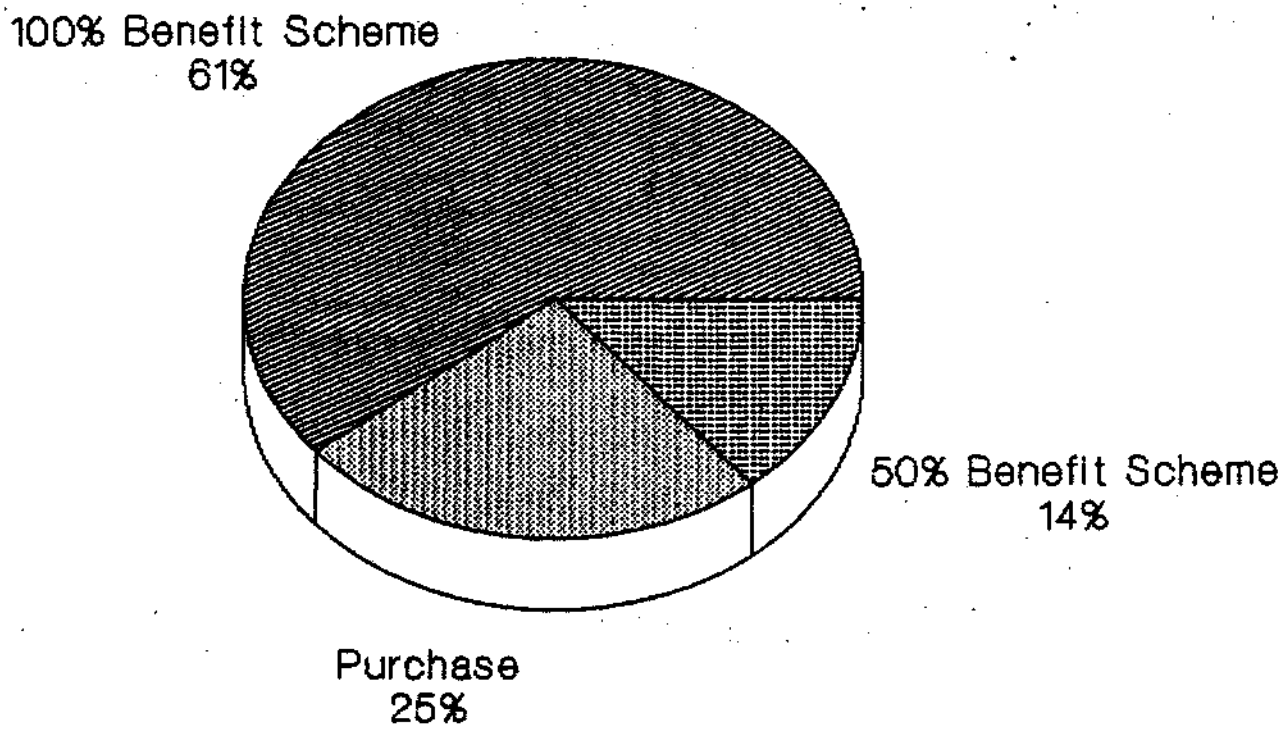
Pie chart showing the distribution of subjects according to the type of hearing aids they received



Pie chart showing distribution of hearing aids according to their gain.



Pie chart showing distribution of subjects according to the usefulness of hearing aids



Pie chart showing distribution of subjects according to the type and means of procurement of hg.aids