DEVELOPMENT OF HEARING AID BENEFIT QUESTIONNAIRE FOR ADULTS

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A Dissertation Submitted in Part Fulfilment for the

Degree of Master of Science (Audiology),

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ALL INDIA INSTITUTE OF SPEECH AND HEARING

MANASAGANGOTHRI

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JUNE 2011

Dedicated to

My Beloved

MUMMY-PAPA,

BHAIYA, BHABHI

AND SISTER

CERTIFICATE

This is to certify that this dissertation entitled "Development of hearing aid benefit questionnaire for adults" is a bonafied work in part fulfilment for the degree of Master of Science (Audiology) of the student (Registration No. 09AUD017). This has been carried out under the guidance of a faculty of this Institute and has not been submitted earlier to any other University for the award of any other University for the award of any Diploma or Degree.

Mysore
June, 2011

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DECLARATION

This dissertation entitled **"Development of hearing aid benefit questionnaire for adults"** is the result of my own study under the guidance of Mrs. N. Devi, Lecturer, Department of Audiology, All India Institute of Speech and Hearing, Mysore and has not been submitted earlier to any other University for the award of any other Diploma or Degree.

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INTRODUCTION

The World Health Organization (2005) estimates indicated that 278 million people are affected by disabling hearing loss, two-thirds of whom live in developing countries. Hearing loss is a significant contributor to the global burden of disease in individuals, families, communities and countries.

Hearing loss can occur at any age due to various causes such as middle ear pathology, medicines, genetic etc. The extent of auditory disability totally depends upon the degree (mild, moderate, moderately severe, severe and profound) and type of loss like conductive, mixed or sensorineural hearing loss. Among all the types, sensorineural hearing loss has grave consequences of hearing impaired individuals especially in adults. The ability to understand speech deteriorates and the distortion is another factor that causes the greatest difficulty. As most of the adults are either student or employee and they will face more problems in day to day life working situations, as they are exposed to more listening environment such as classrooms, parties, office etc.

The effects of hearing loss are pervasive and far-reaching for individuals and their families. Northern & Downs (2002) stated that hearing loss affects social participation, emotional and behavioural well-being, employment status and quality of life. Fortunately, the effects of hearing loss can be limited by effective amplification and aural rehabilitation.

The first and fundamental step in the aural rehabilitation process involves amplification. A hearing aid is the primary tool in the rehabilitation process (Alpiner & McCarthy, 2000).

According to ASHA (1998) six major stages that constitute the hearing aid fitting process embedded in the rehabilitation plan are: Assessment, Treatment Planning, Selection, Verification, Orientation, and Validation. The assessment stage is essential to determine the type and degree of hearing loss. It will help in to determine the candidacy for amplification and to plan the intervention program. On the treatment planning stage, the audiologist, client, family/caregivers review the findings of the assessment stage and identify areas of difficulty and need. At the selection stage, the physical and electroacoustic characteristics of the desired hearing aids are defined. During the verification stage, the audiologist determines that the hearing aids meet a set of standardized measures that include basic electroacoustics, cosmetic appeal, comfortable fit, and real-ear electroacoustic performance. During the orientation stage, the audiologist counsels the client/ or his or her family members on the use and care of the hearing aids and explores the candidacy for assistive listening devices and audiologic rehabilitation assessment and treatment. During the validation stage, the audiologist determines the impact of the intervention on the perceived disability or hearing aid benefit attributable to the hearing loss.

Providing just amplification is not enough. The benefit through the hearing aid has to be measured for the overall outcome. A wide variety of hearing aid outcome measures have been developed over the past couple of decades. Most of these measures can be categorized as measures of aided performance, benefit, satisfaction, or use.

In contrast to measures of aided performance, hearing aid benefit is established by comparing aided performance to unaided performance within the same wearer or group of wearers. Benefit expresses the magnitude or degree of change from unaided to aided listening. Most often, it is calculated as a difference score,

rather than a ratio or proportion. It can be positive, negative, or neutral, depending on the relative effect the hearing aid has on performance (Humes, 1999).

According to Humes (1999), Objective measures of benefit include real-ear insertion gain (REIG = REAR - REUR) and changes in speech recognition scores associated with hearing aid use. Just as with aided speech recognition performance, there are many combinations of listening conditions that can be used to measure benefit in speech recognition. For objective benefit, test conditions must be identical in the aided and unaided conditions so that the effect of the hearing aid can be ascertained.

Subjective measures of benefit can also be obtained as well. Hearing aid wearers can provide sound-quality judgments, for example, for a variety of stimuli with and without their hearing aids with the goal of improving sound quality in the aided condition. Hearing handicap can be assessed prior to and after a period of hearing aid use with the difference indicating the subjective benefit or relative change in self-perceived handicap . The Hearing Handicap Inventory for the Elderly (HHIE; Ventry & Weinstein, 1982) has proven useful in this regard (Newman & Weinstein, 1988; Malinoff & Weinstein, 1989). Hearing aid wearers can also be asked to establish subjectively their aided and unaided performance in a variety of specified listening situations with the difference providing a subjective measure of benefit. The Profile of Hearing Aid Benefit (PHAB; Cox, Gilmore & Alexander, 1991) and, more recently, the abbreviated version of this instrument, the APHAB (Cox and Alexander, 1995), have both proven useful in this regard. In this approach, unaided and aided performance are either assessed at two different points in time (before and after a period of hearing aid use) or at one point in time after hearing aid use, but requiring

the wearer to recall how he or she functioned without the hearing aid in that same listening situation prior to hearing aid use.

Another separate dimension of outcome is hearing aid satisfaction. Satisfaction differs from benefit as it is not necessarily performance driven. For example, a patient can have a significant degree of benefit as measured on any aided and unaided tests, but report dissatisfaction as measured on a satisfaction scale.

Need for the study:

1. There are several self-report questionnaires (HAPI, COSI, APHAB, GHABP, PHAB etc.) to determine the benefits of the rehabilitations, however, these questionnaires that have been developed in the literature cannot be directly adapted or translated. There is a definite need to determine one such questionnaire to determine the benefit that suits with that of the Indian scenario.
2. With the advent of the new technology, there is an increase in different finer aspects (such as noise reduction strategies, increasing the number of channels, and feedback management strategies) of the hearing instruments that provide better listening situations for the individuals with hearing impairment. The questionnaire that has been developed in the past (HAPI, COSI, APHAB, GHABP, PHAB etc.) need to be reviewed and also those questions should be considered for further modifications to suit for the recent technology. This can further help in providing better fine tuning of the devices.
3. The self assessment scales that have been developed in the past especially meant for determining the hearing handicap (self assessment of hearing handicap, developed by Vanaja, 2000) focuses mainly on the listening difficulties in quiet and noisy situations. However, these rehabilitation procedures will impact on the psychological, social and other aspect which also has to be focused on. Due to the dearth of literature on the subjective or self reporting scales that are based both on the different listening situations and also on different aspects of daily living. A standardized self assessment questionnaire for Indian population with respect to various aspects is required to understand hearing needs of adult individuals with hearing impairment.

Objectives:

- To develop a questionnaire in English for evaluating hearing aid benefits in adults.
- To evaluate the usefulness of questionnaire as a measure of hearing aid benefits in adults using hearing aids.
- To compare the hearing aid benefit for analog hearing aid users and digital hearing aid users.
- To compare the perceived benefit by hearing aid users and their family members.

REVIEW OF LITERATURE

One of the first published self-reports of hearing aid outcome was the Scale of Self-Assessment of Hearing Handicap (High, Fairbanks, & Glorig, 1964). Self-report outcome measures with known psychometric properties are useful for determining the effectiveness of hearing aids. Effectiveness with amplification can be measured across several dimensions, including handicap reduction, acceptance, benefit, and satisfaction. Several different self-report measures of hearing aid outcome have been developed over the past two decades addressing each one of these dimensions. Humes and Humes (2004) have reported only self-report measures of hearing aid benefit and satisfaction that are the most significant components of a patients experience with hearing aids.

Hearing aid benefit can be defined as the difference between unaided and aided performance measured either objectively or subjectively. Hearing aid benefit can be measured objectively by comparing aided and unaided measures of speech recognition scores and subjectively through the use of self-report measures. Objective tests are completed using a pre-defined external standard; they are almost exclusively tests that take place within the laboratory. Therefore, self-report measures of outcome are a useful method of determining real-world benefits of hearing aid performance. Another separate dimension of outcome is hearing aid satisfaction. Satisfaction differs from benefit as they are not necessarily performance driven. For example, a patient can have a significant degree of benefit as measured on any aided and unaided tests, but report dissatisfaction as measured on a satisfaction scale (Taylor, 2007).

According to Cox (2003) there are at least three reasons to use self-report measures of benefit and satisfaction.

First, for largely economic reasons, health care is becoming more consumers driven. In this evolving system, the consumer decides what treatment is selected and when it is complete. The major indices of quality of service are self-report of outcome and satisfaction. Consumer-driven health care places an added emphasis on the patient's point of view. Therefore, it is critical to measure the real-world benefit and satisfaction of hearing aid use.

A second reason is related to the fact that many of these real-world experiences simply cannot be measured effectively in laboratory conditions. The traditional hearing aid outcome measures that were used to measure speech recognition in quiet and in noise, do not capture the true experiences of hearing aid use in everyday listening situations. In order to quantify the true impact hearing loss and its associated treatment have on activity limitations, lifestyles, etc., self-report measures of outcome should be used.

Third, even when laboratory conditions are used to simulate real-world listening situations they do not always resemble the patient's impression of the actual real-life situation.

Self report measures that assess benefit can be grouped into various classes. First, patients can be asked to make a direct assessment or the comparison of with and without the hearing aid. Alternatively, patient's views of their disability can be assessed both before and after the rehabilitation program. The scales have been listed in the chronological order. The various scales that have been used frequently are listed as follows:

Table 1

List of details of Questionnaires assessing hearing aid benefit, satisfaction and hearing disability or hearing handicap

	Questionnaire	Authors	Year
Benefit scales:			
HAPI	Hearing Aid Performance Inventory	Walden, Demorest & Hepler	1984
PHAP	Profile of Hearing Aid Performance	Cox & Gilmore	1990
PHAB	Profile of Hearing Aid Benefit	Cox, Gilmore & Alexander	1991
SHAPI	Shortened Hearing Aid Performance Inventory	Schum, Dillon	1992, 1994
APHAB	Abbreviated Profile of Hearing Aid Benefit	Cox & Alexander	1995
COSI	Client oriented scale of improvement	Dillon, James & Ginis	1997
PAL	Profile of aided loudness	Mueller and Palmer	1998
GHABP	Glasgow hearing aid benefit profile	Gatehouse	1999
IOI-HA	International Outcome Inventory-Hearing Aid	Cox et al.	2000
Satisfactory profiles:			
HAUQ	Hearing Aid User's Questionnaire	Forster & Tomlin	1988

SADL	Satisfaction with Amplification in Daily Life	Cox & Alexander	1999
Hearing handicap profile:			
HHS	Hearing Handicap Scale	High, Fairbanks & Glorig	1964
HPI	Hearing performance inventory	Giolas, Owens, Lamb & Schubert	1979
HHIE	Hearing handicap inventory for the elderly	Ventry & Weinstein	1982
HHIE-S	Hearing Handicap Inventory for the Elderly- Screening	Ventry & Weinstein	1983
RHPI	Revised Hearing Performance Inventory	Lamb, Owens & Schubert	1983
M-A Scale	McCarthy-Alpiner Scale of Hearing Handicap	McCarthy-Alpiner	1983
HHIE-SP	Hearing Handicap Inventory for the Elderly- Spouse	Newman & Weinstein	1986
CPHI	Communication Profile for the Hearing Impaired	Demorest & Erdman	1987
HHIA	Hearing Handicap Inventory for the adults	Newman, Weinstein, Jacobson & Hug	1990
CSOA	Communication Scale for Older Adults	Kaplan, Bailly, Brandt, Busacco & Pray	1997

Benefit scales:

I. Hearing aid performance inventory (HAPI)

Description:

- Walden, Demorest and Hepler (1984) developed Hearing Aid Performance Inventory (HAPI). It is a self-reported scale that measures success with amplification. It consists of 64 items which are organized into 4 subsections according to the listening situations.

✓ Noisy situation

✓ Quiet situations with speakers in proximity

✓ Situations with reduced signal information

✓ Situations with no speech stimuli

- It consists five-point rating scale which ranges from "very helpful" (1) to "hinders performance" (5).
- Schum (1992) modified HAPI and developed Shortened Hearing Aid Performance Inventory (SHAPI) which consists of total 38 items and Dillon develop Shortened HAPI (SHAPI) which consists of total 25 items to decrease administration time and increase reliability.

Interpretation and scoring:

- The scores of all the items are added together and averaged (leaving out the "not applicable" answers). If average score is closer to "1" then the person is getting benefit.

Advantages:

- The reliability of the HAPI is high (0.96), even though there is high inter-subject variability.
- This scale is helpful to determine self-perceived benefit of those individuals who have been using amplification.
- The shorted form (SHAPI) reduces administration and scoring time involvement.

Disadvantages:

- Common environments such as home and work place are represented several times throughout the questionnaire.
- This questionnaire focuses only on different listening situations, but other factors may also influence the hearing aid outcome such as social and emotional behavior, listening telephone and use of hearing aid, which has not been administered.
- Newman and Weinstein (1988) suggested that the items apply to a variety of listening environments; the HAPI may not be applicable to some elderly respondents.

II. Profile of Hearing Aid Performance (PHAP)

Description:

- PHAP was developed by Cox and Gilmore (1990). It was developed to measure aided performance in seven different dimensions. It is a 66 items self administered inventory.

- The PHAP is scored using three categories of speech communication and one environment sound category:
    - ✓ Speech communication under relatively favourable condition,
    - ✓ Speech communication under unfavourable condition that are not due primarily to background noise,
    - ✓ Speech communication in noise and
    - ✓ Perception of environment sounds.
- Cox, Gilmore, and Alexander (1991) expanded PHAP and developed Profile of Hearing Aid Benefit (PHAB). It consists of 66 items which are divided in seven subscales including familiar talkers, ease of communication, reverberation, reduced cues, background noise, aversiveness of sounds, and distortion of sounds. The goal of the PHAB is to measure hearing-aid benefit (unaided vs aided) across those seven dimensions.

Advantages:

- The PHAP and PHAB both have 66 items which is very descriptive assessment to measure hearing aid benefit.
- Cox and Gilmore (1990) showed good internal consistency reliability for the PHAP and its subscales which ranges from 0.70 to 0.91. Test-retest correlations range from 0.66 to 0.88.

Disadvantages:

- Cox and Rivera (1992) showed PHAB has ceiling effect in three subscales, low internal consistency and low test-retest correlation.
- PHAP and PHAB both have 66 items and are too long for clinical use.

III. Abbreviated Profile of Hearing Aid Benefit (APHAB)

Description:

- APHAB was developed by Cox and Alexander (1995). It is s shorthand version of PHAB. It consists of twenty-five items and divided into four subscales.
- It consists of 4 subscales.
    - ✓ Ease of Communication (EC)
    - ✓ Reverberations (RV)
    - ✓ Background Noise (BN)
    - ✓ Aversiveness of sounds (AV)
- The first three of these subscales assesses speech understanding in various everyday environments, and the last assesses negative reactions to more intense sounds (e.g. traffic sound).
- It consists of a 7-point Likert scale. The responses range from "always" (99%) to "never" (0%).

Interpretation and Scoring:

- Interpretation is based on unaided versus aided sub-score differences, as well as subscale patterns.
- Cox (1997) showed a difference of 22 points between the unaided and the aided scores is required to be certain of a significant difference between EC, RV, or BN conditions. Globally, the aided scores must exceed unaided scores on all 3 subscales by at least 10 points to establish true benefit from hearing aid use.

Advantages:

- The APHAB is widely used due to its brevity and high internal reliability and because its software is readily available and automatically scored.
- The graphical representation of APHAB provides a quick way for the audiologist to understand the patient's communication needs and the effect of amplification on those needs.

Disadvantages:

- The questions in the subscale "communication in background noise" are not relevant for all the patients.
- More research is needed to determine whether normative data are different for patients who use higher performance hearing aid.
- The APHAB is firmly anchored in the disability domain and pays little or no attention to the emotional and psychological consequences of impaired hearing or any of the aspects of service delivery that might affect outcome (Gatehouse, 2001).

IV. Client oriented scale of improvement (COSI)

Description:

- The Client Oriented Scale of Improvement (COSI) was developed by clinicians at the National Acoustic Laboratories (NAL) over several years in the early 1990s (cited in Sandlin, 2000). Dillon, James and Ginis (1997) developed norms for COSI over new hearing aid user adults.
- It consists of five situations of different listening conditions.

- There are two types of ratings to evaluate the COSI at the time which are recorded on the same sheet on which the situations were outlined.

  - ✓ Relative (degree of change): How much better do you hear in the situation (worse, No difference, slightly better, better, much better).

  - ✓ Absolute (final ability): How well do you do in this situation? I can hear: hardly ever, occasionally. Half of the time, most of the time, almost always.

Interpretation:

- The final assessment may highlight areas that require further improvement or counselling. Because the rehabilitation process is individualized according to patients needs and desires, the COSI helps clarify expectations, as well as remind the patient and clinician of original fitting goals.

Advantages:

- This questionnaire is quick in measuring hearing aid outcome and also helps assess patient needs.
- The COSI method is a statistically valid and more traditional questionnaire. This questionnaire is very relevant, compatible with normal interviewing technique and showed good test-retest reliability (Dillon, James & Ginis, 1997).

Disadvantages:

- This questionnaire uses two different types of rating which can confuse the hearing impaired individual and can also affect the outcome of hearing aid.

V. Profile of aided loudness (PAL)

Description:

- Mueller and Palmer (1998) developed the profile of aided loudness (PAL). It determines loudness restoration with amplification.
- There are 12 situations or noises in which the patient rates the loudness and the loudness satisfaction.
- The loudness rating uses a 7-point scale as "cannot hear" (0) to "uncomfortably loud" (7). The loudness rating is compared to the ratings of the normed (normal hearing) subjects. The target rating for each item is where 70% of the norm group selected that particular item. The acceptable rating is within $\pm$1 standard deviation from the target, which establishes the loudness profile rating. For Example: - Medium sounds such as average speech; the target is 4 +/- 1.

Interpretation and Scoring: There are four possible outcomes.

- Goal of normal aided loudness perception met, patient is satisfied.
- Goal of normal aided loudness perception met, patient is dissatisfied
- Goal of normal aided loudness perception not met, patient is satisfied
- Goal of normal aided loudness perception not met, patient is not satisfied

Each satisfaction rating is evaluated for each loudness level (soft, medium, and loud). The satisfaction profile is then compared to the loudness profile.

Advantages:

- This can be used with the high compression hearing aid such as WDRC or compression limiting.
- The PAL is easy to administered

Disadvantages:

- This questionnaire is very lengthy. As it assesses a individuals with many different situations and also with different intensity.
- It uses seven-point rating scale which is a broad range of choices that may decrease the reliability of the questionnaire.

VI. Glasgow hearing aid benefit profile (GHABP)

Description:

- The Glasgow hearing aid benefit profile developed by Gatehouse (1999).
- It evaluates the effectiveness of rehabilitation for adults with hearing impairment.
- The GHABP consists of questions related to different listening situation. It assesses the hearing impaired individuals in different areas i.e. Initial disability, Handicap, Reported hearing aid use, Reported benefit, Satisfaction, Residual disability.

Interpretation:

- Questions are examined individually, but in each case the higher the number associated with the particular answer the less difficulty.

Advantages:

- It takes less time to administer.
- Many different parameters (disability, handicap, hearing aid use, reported benefit, satisfaction, and residual disability) are measured at one single point of time.

Disadvantage:

- Gatehouse (2001) showed good correlation between initial disability and handicap, high hearing aid use but low hearing aid benefit, high residual disability and low satisfaction.

VII. *International Outcome Inventory – Hearing Aid (IOI-HA)*

Description:

- The International Outcome Inventory for Hearing Aids (IOI-HA) was developed by Cox el al., (2000).
- The International Outcome Inventory for Hearing Aids (IOI-HA) is a seven-item questionnaire designed to be generally applicable in evaluating the effectiveness of hearing aid treatments.
- It consists of seven questions on a 5-point rating scale, the goal of the IOI-HA is to assess benefit, satisfaction, and quality-of-life changes associated with hearing aid use.
- The IOI-HA has been normed on 154 adults (Cox, Alexander, & Beyer, 2003). The IOI-HA was designed to be used with other self-report tools, like the APHAB.

Advantages:

- This inventory is easy to administer and takes less time as compare to other profiles.
- This questionnaire is available in many different languages and also easily available.

Disadvantages:

- Stephens (2002) indicated two subscales of IOI-HA, one of which could be defined as a 'benefit' subscale and the other a 'residual problems' subscale. Both elements of COSI correlated with the 'benefit' subscale, but only the 'residual' measure of COSI related to the 'residual problems' subscale. There were no consistent relationships between the IOI-HA and a range of demographic factors.

Satisfaction inventories:

VIII. Hearing Aid User's Questionnaire (HAUQ)

Description:

- The Hearing Aid User's Questionnaire (HAUQ) was developed by Forster and Tomlin, 1988 (cited in Dillon, 2001). It contains questions that are related to hearing aid use, difficulties, and other satisfaction-related issues.
- Dillon, Birtles and Lovegrove (1999) reported the primary goal of HAUQ is to detect problems that may affect the person's ability to use and benefit from the hearing aid. Dillon described the questionnaire as:

✓ Questions 1 and 2 deal with usage of the hearing aid with the categories in question 2 scaled from 1-6.

- ✓ Question 3 deals with benefits, with “not at all” scaled as 1, “a little” scaled as a 2 and “a lot” scaled as 3.
- ✓ Question 4 deals with problems, with “no” scaled as 2 and “yes” scaled as 1
- ✓ Question 5-7 deal with satisfaction, each scaled from 1-4
- ✓ Question 8 attempts to find client’s assessment of weather they have problems that require another appointment
- ✓ Question 9-11 are open-ended questions to determine what the clients likes and dislikes are of the services and instruments they have received.

Advantages:

- This questionnaire is easy to administer and can be mailed to patients also.
- It measures many areas at one time usage, benefit, and satisfaction.

Disadvantages:

- Not much questions are there to assess hearing aid benefit.
- Little information is available on the HAUQ.

IX. Satisfaction with Amplification in Daily Life

Description:

- Cox and Alexander (1999) developed the satisfaction with amplification in daily life questionnaire (SADL).
- The SADL is a self-administered questionnaire designed as a clinical measure of satisfaction from the patient's point of view, though unlike the APHAB it is not administered in a two stage process (corresponding to unaided and unaided). It is administered after the event and the questions are all configured to have an implicit reference.

- SADL questionnaire contains 15 items from which can be formed a global score and four subscales. The four subscales are labelled positive effect, service and cost, negative features, and personal image. Examples of the items are:

  1. Positive effect: 'Reduction in how often you ask people to repeat themselves
  2. Service and cost: 'Competence of the dispenser
  3. Negative features: 'Feedback when the hearing aid is turned up
  4. Personal image: 'Does the hearing aid make you seem less capable.

Interpretation and Scoring:

- The global score is the mean of the scores for all the completed items. Subscales are scored separately by averaging the item responses. Cox and Alexander, (1999) showed higher the number, the more satisfied the patient is, whether it is on the individual subscale or the global scale.

Advantages:

- The SADL is short and does not take much time.
- It can be mailed to patients or filled out in the clinic which can save the clinician time.

Disadvantages:

- This questionnaire is not considering much listening conditions.
- Gatehouse (2001) suggested APHAB would be a superior instrument to the SADL for assessing benefit from higher technology hearing aids (like directional microphone, different signal to noise ratio etc.)

Hearing Handicap Profile

X. The Hearing Handicap Scale (HHS)

Description:

- High, Fairbanks and Glorig (1964) developed the hearing handicap scale. This was the first self-report questionnaire to assess hearing handicap.
- The HHS consisted of forty questions which focussed on speech perception, localization, telephone communication and noise situations.
- This questionnaire was divided in two forms (A & B) that have twenty questions each. The forms are used in pre and post-testing.
- This questionnaire uses 5 point rating scale which ranges from "almost always" to "almost never".

Interpretation and Scoring:

- Schow and Tannahill (1977) interpreted the scores for HHS i.e. scores of 0 to 20% indicate no hearing handicap, 21 to 40% indicate a slight handicap, 41 to 70% indicate mild-moderate handicap, 71 to 100%indicate severe handicap.

Advantages:

- High, Fairbanks and Glorig (1964) showed high internal consistency reliability (0.96) for each forms.
- This questionnaire is easy to administered and calculate.

Disadvantages:

- High, Fairbanks and Glorig (1964) reported that responses to the questions can be easily falsified and there is no internal means for determining the validity of a response.
- This questionnaire does not account for other areas of experience like social and emotional, psychological and vocational domain.

XI. Hearing Performance Inventory (HPI)

Description:

- Giolas, Owens, Lamb and Schubert (1979) developed Hearing Performance Inventory to assess the problems faced by hearing impaired person in daily life listening situation.
- It consist of 158 questions which consists of different domains like understanding speech, intensity, response to auditory failure, social, personal and occupational.
- It consists of five-point rating scale (1 to 5) where 1 indicating "least difficulty" and 5 indicating "maximum difficulty".
- Lamb, Owens and Schubert (1983) designed a revised shorter version of hearing performance inventory, it consist of ninety questions.

Advantages:

- It assesses individuals in different domains which make this questionnaire a good assessment and planning tool for a proper rehabilitation.

- It provides detailed information of the hearing impaired person difficulties in a wide variety of listening situations.

Disadvantages:

- It is a very lengthy questionnaire which takes lots of time to administer.
- Most of the situations are not experienced by older population.

XII. Hearing Handicap Inventory for the Elderly (HHIE)

Description:

- Ventry and Weinstein (1982) developed a Hearing Handicap Inventory for the Elderly. It consists of twenty-five items which was divided into emotional and social subscales.
- It assesses the effect of hearing impairment on social and emotional behavior in the elderly.
- The emotional scale assesses the patient's attitudes and emotional responses to his or her hearing loss. The social scale measures the perceived effects of hearing loss in a variety of social situations.
- Newman & Weinstein (1988) showed reduction in perceived social and emotional behavior after one year using a hearing aid and they also concluded HHIE is a valid tool to measure hearing aid benefit.
- HHIE has been used in numerous studies to measure the hearing aid benefit. Malinoff and Weinstein (1989) reported HHIE is a good tool to measure hearing aid benefit over time.

- There is a three point scale responses system, “yes” (4 points), “sometimes” (2 points), “no” /”not applicable” (0points). The maximum score is 100 and minimum is 0. Higher the score, greater is the perceived handicap.

Ventry and Weinstein (1983) developed a HHIE-Screening. It is a screening version of a Hearing Handicap Inventory for the Elderly (HHIE-S). It consists of ten items which is equally divided into each subscale.

HHIE-Spouse developed by Newman and Weinstein (1986). It is a 10 item scale, derived from the HHIE. It serves as a screening tool for profiling emotional and social aspects of hearing handicap through spouse.

Newman, Weinstein, Jacobson, and Hug (1990) developed Hearing Handicap Inventory for the Adults (HHIA) by modifying HHIE. It also consisted of twenty-five questions with emotional and social subscales. The difference between the two was that the former had questions that assessed the occupational effects of hearing loss. Newman, Weinstein, Jacobson and Hug (1991) reported good test-retest reliability (r= 0.93 to 0.97)

Interpretation and scoring:

- It consists of three point rating scale i.e. “yes” response receive 4 points, “sometimes” receives 2 and “never” receives 0 points. Scores for the total score range from 0 (no perceived handicap) to 100 (significant perceived hearing handicap)
- Newman and Weinstein (1989) showed higher the score greater the perceived hearing handicap and lower the score lesser the perceived hearing handicap.

Advantages:

- Ventry and Weinstein (1982) showed high reliability (0.94 to 0.95) for HHIE. They also showed high correlation of 0.87 between the two subscales and high internal consistency for each subscales.
- This questionnaire does not take much time to administer.

Disadvantage:

- Gatehouse (2001) reported less correlation between scores from the HHIE and speech identification scores, aided scores.

XIII. McCarthy–Alpiner Scale of Hearing Handicap

Description:

- McCarthy and Alpiner (1983) develop a McCarthy–Alpiner Scale of Hearing Handicap questionnaire.
- It consists of thirty-four items which assesses the psychological, social and vocational effects of hearing loss in adults.
- It consisted of two forms one was designed to be answered by the patients and one was answered by a family member. Family members may provide a different perspective of the patients' problem's problem.

Advantages:

- It provides a detailed analysis of psychological, social and vocational problem areas.
- It can be a useful tool in assessing hearing difficulty of the person.

- McCarthy and Alpiner (1983) reported good internal consistency with a Cronbach's alpha of 0.81.

XIV. Communication Profile for the Hearing Impaired

Description:

- Demorest and Erdman (1986) was developed Communication Profile for the Hearing Impaired (CPHI).
- It was developed to provide systematic and comprehensive assessment communication problems of hearing impaired adults.
- The CPHI contains one hundred forty five items which was divided into five subscales that are the communication performance scales, Communication importance, Communication Environment Scales, Communication Strategies Scales, and Personal Adjustment. Each subscale consisted of different question and assesses different areas.

Interpretation & scoring:

- Demorest and Erdman (1986) interpreted the scores they showed low score may suggest problems in a given area and higher score reflects effective communication.

Advantages:

- This scales consisted of many subscale which can help to assess a person with a hearing impairment in several different areas.
- Demorest and Erdman (1987) showed good reliability and validity for this questionnaire.

Disadvantages:

- This questionnaire is very lengthy to administer as compared to other handicap scales like the hearing handicap scale, hearing handicap inventory for the elderly.
- This questionnaire is very costly to purchase.

Communication scale for older adults: CSOA

Description:

- Kaplan, Bailly, Brandt, Busacco and Pray (1997) developed Communication scale for older adults (CSOA). It is a self-assessment scale that evaluates the communication strategies and attitudes of independent, older patients.
- It consists of seventy-two items which was divided into two subscales i.e. communication strategies and communication attitudes.
- The communication strategies scale assesses actual or perceived communication breakdowns and strategies pertaining to each situation. The communication attitudes scale evaluates the patient's attitude toward his or her hearing loss and self perceptions as a hearing impaired individual. It is also touches on other people's (friends and family) perceptions of the hearing loss.
- It consists of two types of rating scales i.e. a 3-point item response and a 5-point item response. On the 3-point scale, the responses are (1) Almost always, (2) sometimes (3) Never. If the patient answers "never", he or she receives a score of 3. The higher the score, more communication difficulty. The five-point scale is designed for those older adults who desire more choices.

Interpretation and Scoring:

- Kaplan, Bailly, Brandt, Busacco and Pray (1997) interpreted that as individual score on the communication strategies scale that exceeds 0.10 indicates benefit on the 3-point scale, and 0.04 or greater indicates benefit on the 5-point scale. For the communication attitude scale, a difference of 0.10 on the 3-point scale and of 0.11 on the 5-point indicates benefit.

Advantages:

- The CSOA assesses a hearing impaired individual in a large domain i.e. communication strategies and attitude which can very useful to help the person in the management.

Disadvantage:

- This scale is very lengthy as compare to other scales i.e. hearing handicap inventory for the elderly etc.

Vanaja (2000) developed a questionnaire for self- assessment of hearing handicap for Indian scenario. It assesses the hearing handicap of individuals in various situations such as familiar/unfamiliar, noisy/quiet, with/without visual clue. It consisted of fifty and a three point rating was used. Rating was used from most of the time (2) to seldom (0). Results showed good correlation self-perceived scores with the speech identification scores in quiet and noisy condition. It can be very helpful to predict degree of hearing loss.

Wood and Lutman (2004) compared speech recognition performance and self-reported benefit from linear analogue and advanced (digital) hearing aids 100 first-time hearing aid users with mild-to-moderate sensorineural hearing loss fitted

monaurally with a behind-the-ear (BTE) hearing aid in a single-blind randomized crossover trial were taken for the study. Aided speech recognition performance in noise was measured at speech levels of 65 and 75dB at a speech-to-noise ratio (SNR) of +2dB for closed sets of single words. Self-rated benefit was measured using the Abbreviated Profile of Hearing Aid Benefit (APHAB) and the Glasgow Hearing Aid Benefit Profile (GHABP). Quality of life, hearing aid use and user preferences were also assessed. Speech recognition scores with the digital aids were significantly better at 75dB than with the analogue aids. Self-reported benefit (APHAB, GHABP) and improvement in quality of life were generally not significantly different between analogue and digital aids, although aversiveness measured with the APHAB was significantly lower with digital aids, and satisfaction measured with the GHABP was greater. The digital aids were preferred significantly more often than the analogue aids. Overall, they showed advantages for advanced digital over simple linear analog aids in terms of both objective and subjective outcomes, although average differences are not large.

Magni, Freiberger and Tonn (2005) measured satisfaction between analog and digital hearing aid users. 40 subjects were interviewed. 20 were analog hearing aid users (Group I) and 20 were digital hearing aid users (Group II). The subjects had mild to moderate sensorineural hearing impairment, and were aged 45 to 95 years old. The hearing aid users completed the International Outcome Inventory for Hearing Aids (IOI-HA – Portuguese version) proposed by Cox, Stephens and Kramer (2002). The results showed that the users of digital hearing aid used the hearing aid longer every day than the analog hearing aid users. The users of Group II have fewer difficulties with the amplification at some situations than the users of Group I. Despite

the fact that users of Group I have presented mode deficit than the users of Group II, the results agree that all the subjects reported satisfaction with their hearing aids.

McCarthy and Alpiner (1983) administered McCarthy-Alpiner scale to sixty adults with hearing-impairment and their family members. The results revealed an overall low level of agreement between the subjects and family members for items representing the psychological, social and vocational parameters. The results support the need for inclusion of family members in counselling and help to provide a basis for aural rehabilitation planning and management. They concluded that as an important part of the aural rehabilitation process, it is essential that counselling has to be included for family members.

Newman and Weinstein (1986) administered Hearing Handicap Inventory for the Elderly (HHIE) and a modification of the HHIE for spouses (HHIE-SP) on 30 hearing-impaired elderly men and their spouses to measure perception of handicap. The results showed that the emotional and social effects of hearing impairment as perceived by the hearing impaired men was generally underrated by the spouses, such that low to moderate correlations between their perception of handicap emerged (r= 0.27 to 0.48)

METHOD

Subject selection criteria

Participants:

Inclusion criteria:

- 30 adults in the age range of 18-50 years.
- The pure-tone unaided thresholds were in the range from mild to moderately-severe sensorineural hearing loss (in frequencies between 250 Hz and 8000 Hz).
- The aided pure-tone threshold would be within the speech spectrum (in frequencies between 500 Hz to 4000 Hz).
- The speech identification scores would be in proportion to the pure-tone hearing thresholds. However, the aided speech identification scores should be more than 60%.
- Fitted with hearing aid (*monaural*) for at least 6 weeks (Dillon, 2001) and usage of hearing aid minimum 6 hours per day in most of the listening situation like home environment and outside environment.
- No otologic and neurological history.

Exclusion criteria:

- People with congenital hearing loss
- People with conductive or mixed hearing loss
- History of neurological and psychological problems.

Demographic Data

During the initial evaluation, certain demographic data was noted in terms of identification number, age, gender, occupation, cause, nature of loss, hearing aid type and duration of loss which can affect the expected outcome of the study. Aided and unaided speech scores are also considered during the time of subject selection.

Table 2:

Demographic details of participants

Characteristics	**Total no. of Subjects (N= 30)**
Gender	
Male	19
Female	11
Mean Age in years	(Mean-39.83 years)
18-30	4
31-40	10
41-50	16
Occupation	
Student	3
Business	7
Government or private employee	11
House wives	9
Nature	
Progressive	16
Static	14
Duration of Deafness (years)	
<3	22
>3	8
Speech Scores (Mean %)	
Unaided	40.17
Aided	88.33

Hearing Aids	
Analog	
Body level hearing aid	10
Behind the ear	0
Digital	
Behind the ear	13
In-the ear	1
In-the canal	6

INSTRUMENTATION

A calibrated (ANSI S 3.6-1996), dual channel diagnostic clinical audiometer OB-922 with TDH-39 headphone housed in MX-41/AR cushion with audio cups was used for pure tone audiometry for measuring air conduction thresholds and speech identification scores (using a calibrated microphone). Calibrated sound field audiometer (Madsen OB922 Version 2) used for measuring functional performance of hearing aid.

A calibrated Grason Stadler Tympstar (GSI-TS Version 2) was used to ensure the presence of normal middle ear function

A computer with Hi-PRO hardware and NOAH 3 software was used for programming the digital hearing aids.

Test environment

All the audiological tests were carried out in an acoustically sound treated room. The ambient noise levels would be within permissible limits (**ANSI S3.1, 1991**).

Procedure

This study was carried out in two phases:

Phase I- Development of the questionnaire

Phase II - Administration of the questionnaire on the hearing aid users.

Phase I: Development of the questionnaire

The questionnaire was developed in English language and questions were chosen based on the following:

1. Based on different listening situations (communication in quiet, in noise, listening over telephone, listening music) faced by normal hearing individual, according to the Indian scenario.
2. From few exiting questionnaire like the Abbreviated profile of hearing aid benefit, (Cox & Alexander, 1995), Client-Oriented Scale of Improvement (COSI), (Dillon, James & Ginnis, 1997), Glasgow Hearing Aid Benefit Profile (GHABP), (Gatehouse, 1999), Self assessment of hearing handicapped, (Vanaja, 2001).
3. Appropriate suggestions from the professionals (audiologists and speech &language pathologists).

Total 84 questions chosen were further divided into eight subscales in-terms of communication in favorable condition (quiet), communication in unfavorable condition (noisy condition & reverberation), listening over telephone, listening music, annoyance, social and emotional behavior, also care, usage and knowledge about hearing aids. And last subscale is based on the perceived benefits by family members of the hearing aid user.

Communication in favorable condition (quiet): This subscale consists of sixteen questions and assesses situations in which speech is at normal conversation level, visual cues are fully available, and low background noise and reverberation, e.g. Conversation with a family member in a quiet room.

Communication in unfavorable condition (noise & reverberation): This subscale consists of eighteen questions and assesses situations in which background noise are high, speech cues reduced because of reverberation and noise, e.g. Conversation with a friend in a market place.

Listening over telephone: It consists of ten questions. And assesses listening skill in which individuals with normal hearing conversing on a telephone in different environment e.g. difficulty listening to telephone conversation in quiet or noisy environment.

Listening to music: This subscale consists of five questions and assesses the situations in which normal hearing individuals listen to the music in a different environment like noise or quiet environment. This subscale also focused on the parameter of music like listening to lyrics and instruments.

Annoyance: It consists of six questions and assesses situation in which background sounds are too loud and continues, e.g. traffic noise, door bell etc..

Social and emotional behavior: This subscale consists of seven questions and it deals with the way the situation in which individuals with normal hearing interact with the environment, e.g. avoiding family parties or office parties.

Care and usage of the hearing aids: It consists of ten questions which are related to proper usage and care like cleaning of moulds, periodical programming and hearing check up.

Perceived benefit by family members: This subscale consists of twelve questions and assesses the perceived benefit of the family members of hearing aid user in different listening environment like quiet situation, background noise, telephone listening, social behavior etc.

Procedure:

The selected questions were evaluated by 20 speech and hearing professionals and 20 laymen for the validation of the questionnaire. Based on their suggestion appropriate modification were made in the questionnaire.

The developed questionnaire was also being translated into two other languages (Hindi & Kannada). The questionnaires were given to 20 native speakers of Hindi and Kannada for the validation of the questionnaire.

Prior to the administration of the questionnaire pure tone audiometry was done from 250 Hz to 8 KHz at octaves for air conduction stimuli and from 250 Hz to 4 KHz for bone conduction stimuli using modified Hughson-Westlake method (Carhart and Jerger, 1959). Speech audiometry was done using modified Tillman-Olsen method, 1973; inbuilt talk back system was used for speech audiometry.

Functional gain measurement was done to evaluate the hearing aid performance. Based on the results of above mentioned test suitable subjects who fulfilled our subject selection criteria were taken for the study.

PHASE II: ***Administration of the questionnaire on the hearing aid users***

- Once the subject fulfills the selection criteria, the aim, objective and the need for the study was explained to the patients.
- Consent form was filled once the client approves his/her participation in the study.
- Clients were advised to read the questionnaire before filling.
- The questionnaire is self administered, however, if the client requires assistance, the questionnaire can be interviewed assisted.
- The first seven subscale of the Questionnaire were administered to the subjects who are using their hearing aids (analog or digital) with the experience of at least 6 weeks. And the last subscale of same questionnaire was administered on family members of the hearing aid users. The rating and scoring would be similar to that used for the hearing aid users.
- For each statement of the questionnaire, participants were asked to make the judgment as to the percent of time. They were asked to rate each question on five point rating scale (**A**, **B**, **C**, **D** & **E**). There are five possible choices were given: **A**-never, **B**-Occasionally, **C**-half of the time, **D**-Generally and **E**-Always. Scoring for each point was 0% for response '**A**', 25% for '**B**', 50% for '**C**', 75% for '**D**' and 100% for '**E**'.
- For the first five (communication in favorable condition (quiet), communication in unfavorable condition (noisy & reverberation), aversiveness of different sounds, listening telephone, listening music, annoyance, care) and for the last two subscale (usage & knowledge about hearing aids and perceived benefit by family members of the hearing aid user), higher scores indicates

more perceived benefit in particular situation and lower scores indicates less perceived benefit.

- For the sixth subscale (social and emotional behavior), higher scores indicate poor social and emotional behavior and less score indicates a good social and emotional behavior.
- Again the same questionnaire was administered to the randomly selected participants after two weeks, for the test-retest reliability of the questionnaire.

Scoring:

Scoring of questionnaire was carried out and initially values were assigned to each answer from the index. The values were denoted in percentage from 1%-100%. For each subscale, average unaided score and average aided scores were calculated in percentage. The global score is the mean of the scores for all items in the subscales i.e. communication in favorable condition (quiet), communication in unfavorable condition (noisy condition & reverberation), aversiveness of different sounds, listening over telephone, listening music, annoyance, social and emotional behavior, care, usage & knowledge about hearing aids and perceived benefit by family member of the hearing aid user.

In order to compare perceived benefit by family members and hearing aid users scoring was differed. For comparison, same questions were selected from user's responses and then values were averaged for unaided and aided responses, and then compared with the value obtained from family members.

RESULTS AND DISCUSSIONS

The data obtained after administration of hearing aid benefit questionnaire developed in phase I was subjected to statistical analysis, to check if the developed questionnaire is psychometrically robust, demonstrating adequate reliability and validity.

Using statistical analysis SPSS version (10 & 17) the results are discussed under the following steps:

I. To compare the mean benefit scores between unaided and aided condition across different subscales in analog and digital hearing aid user
II. To compare the benefit perceived by the family members and the hearing aid users.
III. To compare the percentage scores for participants across different questions under each subscale.
IV. To evaluate the test-retest reliability of the developed questionnaire.

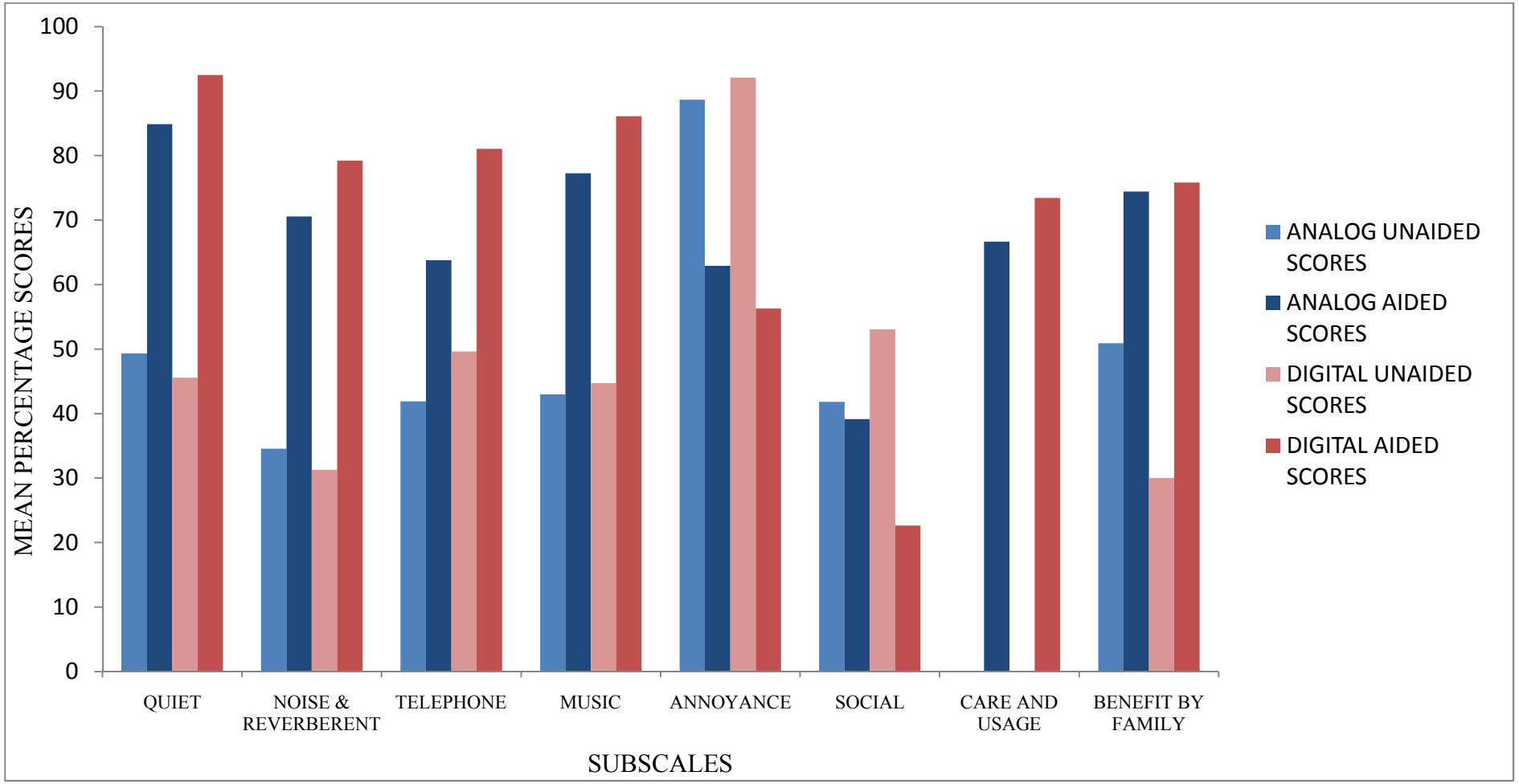
I. To compare the mean benefit scores between unaided and aided condition across different subscales in analog hearing aid user and digital hearing aid users

In order to compare the mean benefit scores between unaided and aided in analog and digital hearing aid user across different subscales (communication in quiet, noise & reverberation, listening to music, annoyance and social & emotional behavior) mixed ANOVA was carried out and non-parametric test was done for other subscales (listening over telephone, care and usage of hearing aid, perceived benefit by family member and user) because of an unequal number of participants responses. And in order to compare the significant difference between both the conditions (unaided & aided) paired t-test and Wilcoxon Signed Rank test was carried out in each group.

Table 3

Mean and Standard deviation for unaided and aided scores across different conditions (unaided & aided) and subscales in (analog and digital hearing aid uses)

Subscales	Analog hearing aid users					Digital hearing aid users				
	N	UNAIDED		AIDED		N	UNAIDED		AIDED	
		Mean (%)	SD	Mean (%)	SD		Mean (%)	SD	Mean (%)	SD
Communication in quiet situation	10	49.32	21.84	84.86	11.56	20	45.56	20.61	92.47	4.67
Communication in noisy & reverberant situation	10	34.57	24.19	70.57	17.33	20	31.29	19.73	79.21	10.25
Listening over telephone	6	41.89	22.89	63.79	19.52	19	49.62	18.20	81.04	14.98
Listening to music	10	42.96	29.43	77.27	18.93	20	44.73	24.93	86.12	14.03
Annoyance	10	88.67	19.02	62.90	21.83	20	92.08	8.64	56.30	20.88
Social & emotional behaviour	10	41.83	28.07	39.13	23.18	20	53.06	29.64	22.66	18.36
Care and usage of hearing aid	10	-	-	66.67	12.86	20	-	-	73.44	14.32
Perceived benefit by family	5	50.90	27.68	80.92	10.42	5	30.00	17.59	75.83	10.48



Graph 1: Mean scores for unaided and aided condition across different subscales in both analog and digital hearing aid users.

Table 3 & graph 1 reveals mean percentage scores of analog and digital hearing aid users for all eight subscales in both unaided and aided condition. The mean percentage scores of the aided condition are higher than the unaided condition except for two subscales i.e. annoyance and social & emotional behavior. And across groups mean percentage scores are slightly higher for digital hearing aid users than analog hearing aid users.

Comparison of scores within those using analog hearing aids:

In order to compare the scores between unaided and aided condition for different subscales, paired t-test was carried out for five subscales (communication in quiet, noise, listening to music, annoyance and social & emotional behavior) and Wilcoxon signed rank test was carried out for other subscales (listening over telephone, usage & care, perceived benefit by family and user)**.**

Table 4

Comparison between unaided and aided condition in analog hearing aid users by paired t-test.

Subscales with conditions	**t (1, 9)**	**Sig. (2-tailed)**
Quiet unaided vs quiet aided	-8.765	.000
Noise unaided vs noise aided	-9.423	.000
Music unaided vs music aided	-7.297	.000
Annoyance unaided vs annoyance aided	5.698	.000
Social unaided vs social aided	0.344	.739

Table 5

Comparison between unaided and aided condition in analog hearing aid users by Wilcoxon Signed Rank test.

Subscales with conditions	**Z**	**Sig. (2-tailed)**
Telephone unaided vs telephone aided	-2.207	0.027
Perceived benefit of family members unaided vs perceived benefit of family members aided	-2.023	0.043

From the Table 4 & 5 we can see that the aided condition are significantly higher than the unaided condition except in one subscale i.e. social and emotional behaviour which showed no significant difference in both the unaided and aided conditions [$t(1,9) = 0.344$; $p>0.05$] .

Unaided condition:

From the table 3, the mean percentage scores of unaided condition ranges from 34% to 89%. Lowest score obtained for communication in unfavorable condition (34.57%) which shows participants were having more difficulty in noise to understand speech and higher score obtained for the annoyance subscale (88.67%). Higher scores in annoyance subscale showed participants were more comfortable with environmental sounds unaided condition.

In the unaided condition, standard deviation scores are in between 19% to 30%. Standard deviation for the subscales are large enough to indicate that at the level of subscales there was considerable variability among the participants in terms of exposure and degree of hearing loss. The largest standard deviation observed from the table 3 is for listening to music (29.43%) and social and emotional behaviour

subscales (28.07%). And the lowest standard deviation was observed for annoyance (19.02%) as most of the participants were reporting more comfortable with the environmental sounds like traffic noise, door bell, cooker whistle.

Aided condition:

The mean percentage scores range from 39% to 85%. The lowest score in aided condition was obtained for social and emotional behavior subscale (39.13%) which shows good social and emotional behavior with the hearing aid and highest scores was obtained for listening in a quiet situation (84.86%). As they reported that with the hearing aid they were getting more benefit in quiet situation especially at home as compared to other situation like noise, listening over telephone, listening to music.

In the aided condition, standard deviation scores are in between 10% to 24%. Standard deviation for the subscales are large enough to indicate that at the level of subscales there was considerable variability among the participants in term of their use of hearing aid and degree of hearing loss. The largest standard deviation observed from the table 2 is for annoyance (21.83%) and social and emotional behaviour (23.18). and the lowest standard deviation was observed for perceived benefit by family members (10.42%) as most of the family members were getting benefit in listening situations.

Comparison of scores within those using digital hearing aid:

From the Table 3, mean scores of the aided condition are significantly higher than the unaided condition in most of the subscales except in annoyance and social & emotional behavior subscales.

In order to compare the unaided and aided condition for all subscales, paired t-test was carried out for five subscales (communication in quiet, noise, listening music, annoyance and social & emotional behavior) and Wilcoxon signed rank test was carried out for other subscales (telephone, usage & care, perceived benefit by family and users)**.**

Table 6

Comparison between unaided and aided condition in digital hearing aid users by paired t-test.

Subscales with conditions	**t (19)**	**Sig. (2-tailed)**
Quiet unaided vs quiet aided	-11.113	.000
Noise unaided vs noise aided	-11.273	.000
Music unaided vs music aided	-8.508	.000
Annoyance unaided vs annoyance aided	8.593	.000
Social unaided vs social aided	4.454	.000

Table 7

Comparison between unaided and aided condition in digital hearing aid users by Wilcoxon Signed Rank test.

Subscale with conditions	**Z**	**Sig. (2-tailed)**
Telephone unaided vs telephone aided	-3.342	0.001
Perceived benefit of family members unaided vs aided	-2.023	0.043

From Table 6 & 7, there is a significant difference (p<0.05) between both unaided and aided conditions. So, the aided scores are significantly higher for communication in quiet, noise, listening to telephone, listening to music, care & usage

of hearing aid and perceived benefit by family member subscales compare to unaided scores. Scores for social & emotional behavior are much lower than unaided condition. This shows there is a good social and emotional behavior with the hearing aid condition. So, that means perceived benefit more for aided condition than the unaided condition. But for annoyance subscale, scores are significantly lower for aided condition than the unaided condition that means they were not comfortable with environmental sounds like traffic noise, door bell, cooker whistle etc.

Unaided condition:

The mean percentage scores ranges from 30% to 93%. Lowest score was obtained in the listening in noisy condition (31.29%) and perceived benefit by family members (30.00%) and higher score was obtained for the annoyance subscale (92.08%). Higher scores in annoyance subscale showed participants were more comfortable with environmental sounds without the hearing aid.

In the unaided condition, standard deviation scores are in between 8% to 30%. Standard deviation for the subscales were large enough to indicate that at the level of subscales there was considerable variability among the participants in terms of exposure and degree of hearing loss. The largest standard deviation observed from the table 3 is for listening to music (24.93%) and social & emotional behaviour (29.64%). The lowest standard deviation was observed for annoyance (8.64%).

Aided condition:

Mean percentage scores ranges from 22% to 93%. The lowest score in aided condition was obtained for social and emotional behaviour (22.66%) which shows improvement in social and emotional behavior after fitting of the aid than the unaided

condition and highest scores was obtained for listening in quiet situation (92.47%) which shows they perceived more benefit with the hearing aid in quiet situations than the other situations like listening in unfavorable (noise and reverberant), listening music, listening telephone.

In the aided condition, standard deviation scores are in between 4.67% to 20.88%. Standard deviation for the subscales were large enough to indicate that at the level of subscales there was considerable variability among the participants in term of degree of hearing loss, or usage of hearing aid. The largest standard deviation observed from the table 3 is for annoyance (20.88%) and social & emotional behaviour (18.36%) and lowest Standard Deviation observed for listening in quiet situations (4.67%).

In order to compare the scores between analog and digital hearing aid user across different subscales, MANOVA test was carried out for 5 subscales (communication in quiet, noise, music, annoyance, social) and because of the unequal number of participation in other subscales (telephone listening, care & usage of hearing aid, perceived benefit by family members), Mann-Whitney test was carried out to find significant difference.

Table 8

Comparison between analog and digital hearing aid users for unaided condition and aided condition by MANOVA.

Subscales	Analog vs Digital hearing aid users			
	UNAIDED		AIDED	
	t(1,28)	**Sig.**	**t(1, 28)**	**Sig.**
Communication in quiet	.214	.647	6.679	.015
Communication in noise & reverberation	.159	.693	2.972	.096
Listening to Music	.030	.864	2.103	.158
Annoyance	.467	.500	.647	.428
Social & emotional behaviour	.992	.328	4.506	.043

Table 9

Comparison between analog and digital hearing aid users for unaided and aided condition by Mann-Whitney Test.

Subscales	Analog vs Digital Hearing aid users			
	UNAIDED		AIDED	
	Z	**Sig.**	**Z**	**Sig.**
Listening over telephone	-0.48	0.63	-2.29	0.22
Care and usage of hearing aid	-	-	-1.524	0.127
Perceived benefit by family	-1.358	0.175	-0.522	0.602

From the table 8, in unaided condition all the five subscales (communication in quiet, noise, listening music, annoyance and social & emotional behavior) has got $p>0.05$ value which shows that there is no significant difference between analog hearing aid users and digital hearing aid users in unaided condition.

In aided condition, two subscales (quiet and social & emotional bahavior) has got $p<0.05$ value which shows there is a significant difference between the two groups. In quiet situations, digital hearing aid users has got higher scores than analog hearing aid users which shows that there is a more perceived benefit in quiet situations by digital hearing aid users than the analog hearing aid users. In social & emotional behavior subscale, digital hearing aid users has got lesser scores than analog hearing aid users which shows that there is good social interaction with the outside environment by digital hearing aid users than the analog hearing aid users. Wood and Lutman (2004) showed advantages for advanced digital over simple linear analog aids in terms of both objective and subjective outcomes, although average differences are not large.

Result of MANOVA cross checked with non-parametric Mann-Whitney test because of unequal sample size between the groups. Results of Mann-Whitney test matched with MANOVA.

From table 9, other 3 subscales in both the condition (unaided and aided) has got $p>0.05$. So, there is a no significant difference between the analog and digital hearing aid users in both the condition (unaided and aided) between the Analog and Digital hearing aid users.

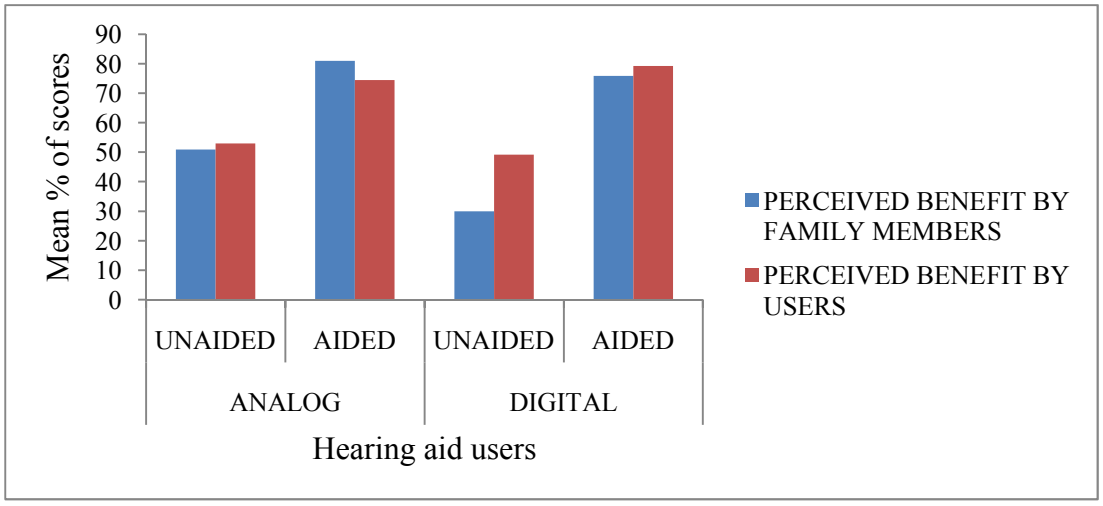
II. To compare the benefit perceived by the family members and the hearing aid users.

In order to compare perceived benefit by the family members and hearing aid user, first mean values were calculated and then for the comparison Mann-Whitney test was performed.

Table 10

Mean scores and standard deviation of perceived benefit by family members and hearing aid users for unaided and aided condition in both analog and digital hearing aid users.

Conditions	**Analog hearing aid users**				**Digital hearing aid users**			
	UNAIDED		AIDED		UNAIDED		AIDED	
	Mean (%)	**SD**	**Mean (%)**	**SD**	**Mean (%)**	**SD**	**Mean (%)**	**SD**
Perceived benefit by family	50.90	27.68	80.92	10.42	30.00	17.59	75.83	10.48
Perceived benefit by user	52.99	19.59	74.41	15.68	49.17	11.083	79.17	11.12



Graph 2: Mean scores for perceived benefit by family members and users between unaided and aided conditions in both analog and digital hearing aid users.

Graph 2 was obtained for the unaided and aided conditions for perceived benefit by family members and user in both analog & digital hearing aid users to show the comparison between the two groups.

In analog hearing aid users, unaided mean scores for family members and users are 50.9% to 52.99% and for aided condition scores are 80.92% to 74.4%. Family members showed slightly more perceived difficulty in unaided condition for user than the actual hearing aid users but in aided condition hearing aid users reported little benefit in aided condition than the family members.

In digital hearing aid users, unaided mean scores for family members and users are 30% and 49.17% and for aided condition scores are 75.83% and 79.17%. In both the condition (unaided and aided) family members showed slight perceived difficulty in unaided condition and less perceived benefit for hearing aid users in aided condition. So as conclusion family members feel less perceived benefit and

more perceived difficulties for the hearing aid user than the actual hearing aid user. Newman & Weinstein (1986) showed that the hearing-impaired individual tended to perceive their hearing loss as more handicap than the spouses. As a measure of hearing aid benefit, Newman & Weinstein (1988) showed reduction in perceived handicap, as measure using the HHIE, was greater for the hearing aid users than for their spouses.

Table 11

Comparison between benefit perceived by family members and hearing aid users for unaided and aided condition by Mann-Whitney Test.

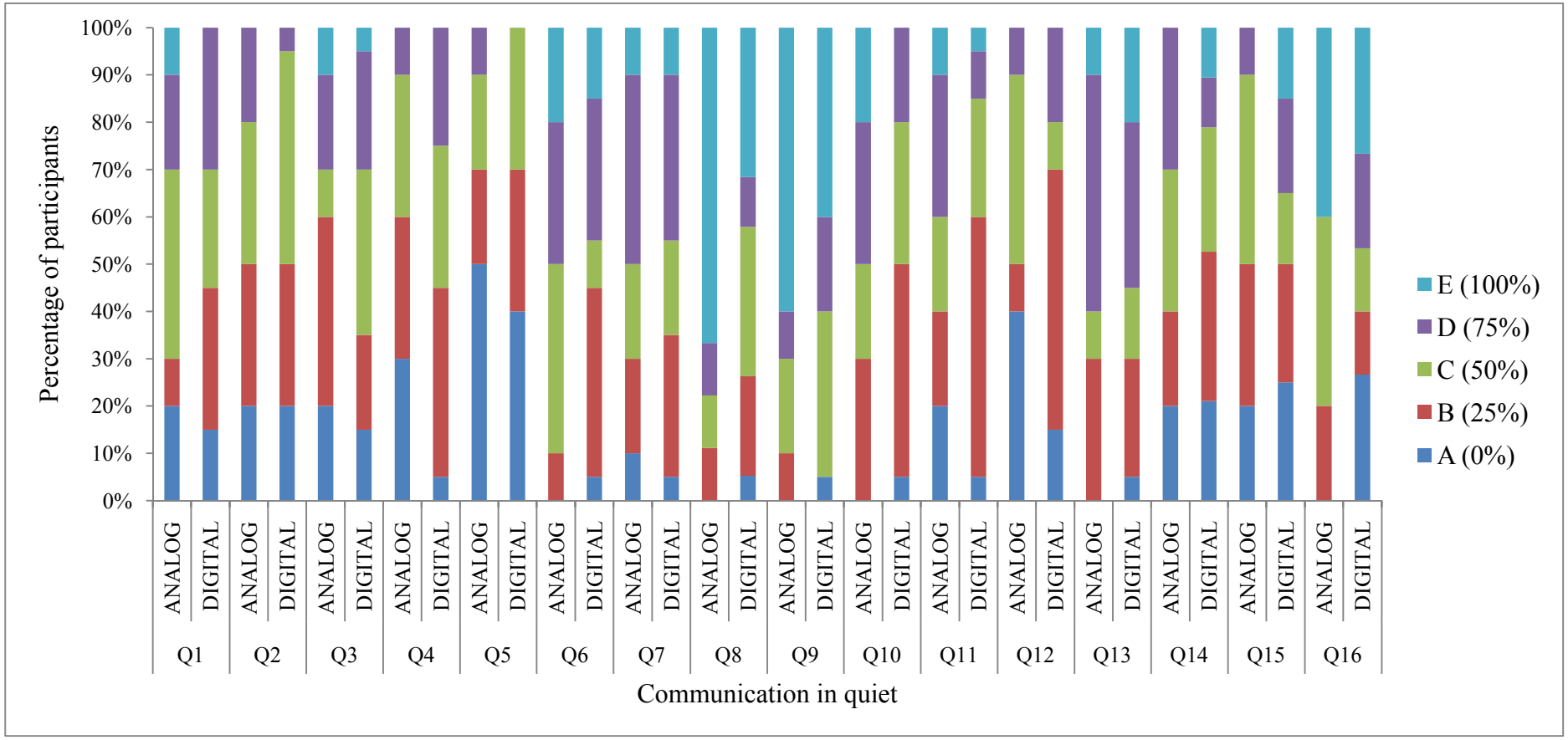
	Analog hearing aid users		**Digital hearing aid users**	
	Z	**Sig.**	**Z**	**Sig.**
Family unaided – user unaided	-0.405	0.686	-2.023	0.043
Family aided – user aided	-1.214	0.225	-1.051	0.500

In order to compare perceived benefit by family members and hearing aid user across analog & digital hearing aid users, Mann-Whitley Test was performed (Table 11). The value showed that there is no significance difference (p>0.05) between perceived benefit by family members and users in both unaided and aided conditions except for perceived benefit by family members and users in digital hearing users for unaided condition that shows there is a significant difference (p<0.05) in that family members showed more perceived difficulties than the digital hearing aid users.

III. To compare the percentage scores for analog and digital hearing aid users participants across different questions under each subscale.

Descriptive analysis was done by calculating the percentage of participants rated from A to E on a 5-point rating scale for each question. Percentage of participant's data (analog and digital) hearing aid users are calculated for each question for both unaided and aided condition.

Communication in favorable condition (in quiet):



Graph 3: Percentage of participants (analog and digital hearing aid users) scores for each questions for communication in quiet situations in unaided condition.

Graph 4: Percentage of participants (analog and digital hearing aid users) scores for each questions for communication in quiet situations in aided condition.

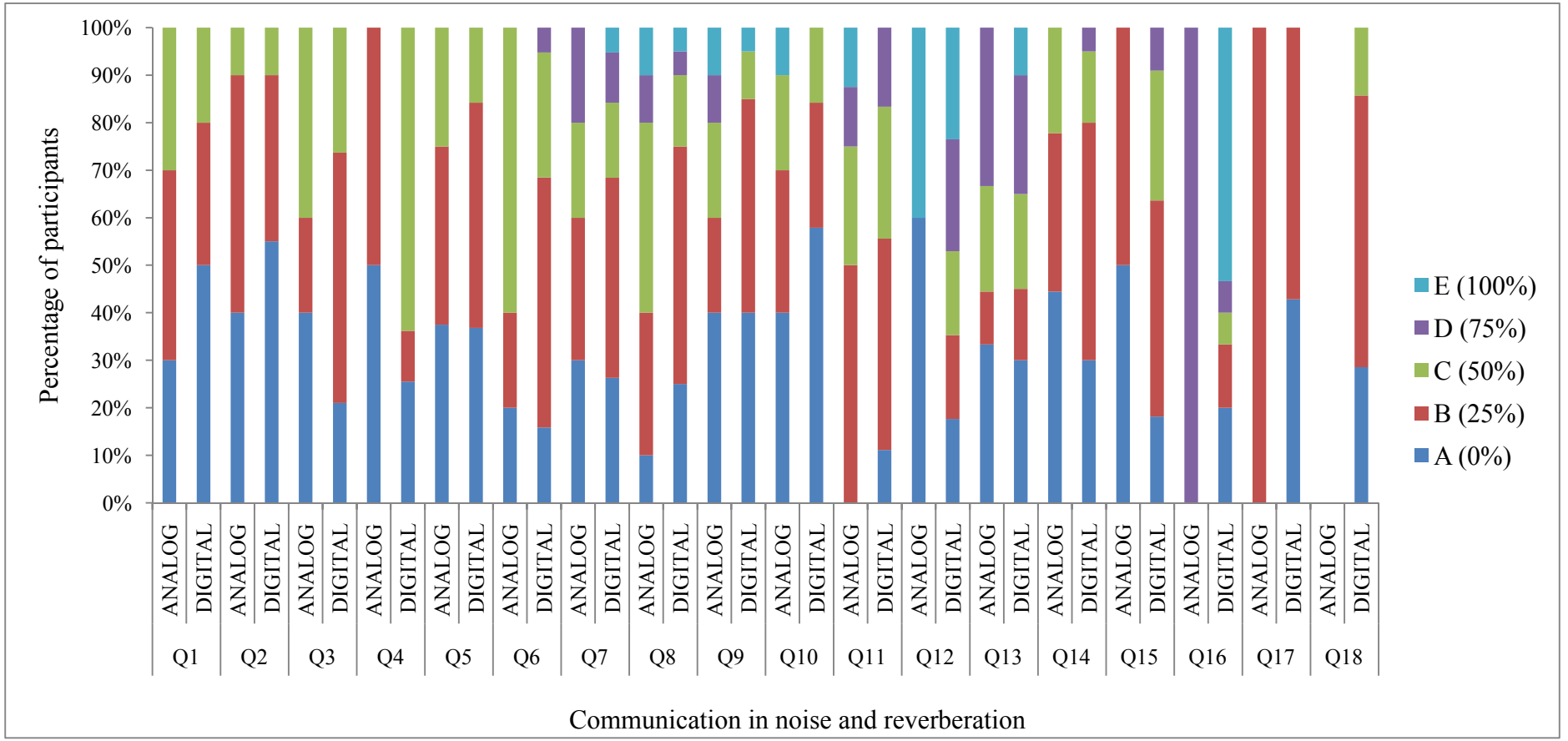
From the graph 3 & 4 we can see that in the unaided condition, 60 percentage of participants rated B & C i.e. 25% and 50% in both analog and digital hearing aid users except Q8 & Q9 where more participants rated 100% of response as they were having less speech distortion problem and understanding speaker's (male/female) speech without the hearing aid condition and Q 5 where 50 percentage of participants rated 0% of response because they were having more difficulty in hearing soft speech.

In the aided condition in all the questions more than 50 percentage of participants rated E (100%) than the unaided condition in both the groups (analog and digital hearing aid users). As they were getting more benefit in quiet situations which was more for digital hearing aid users.

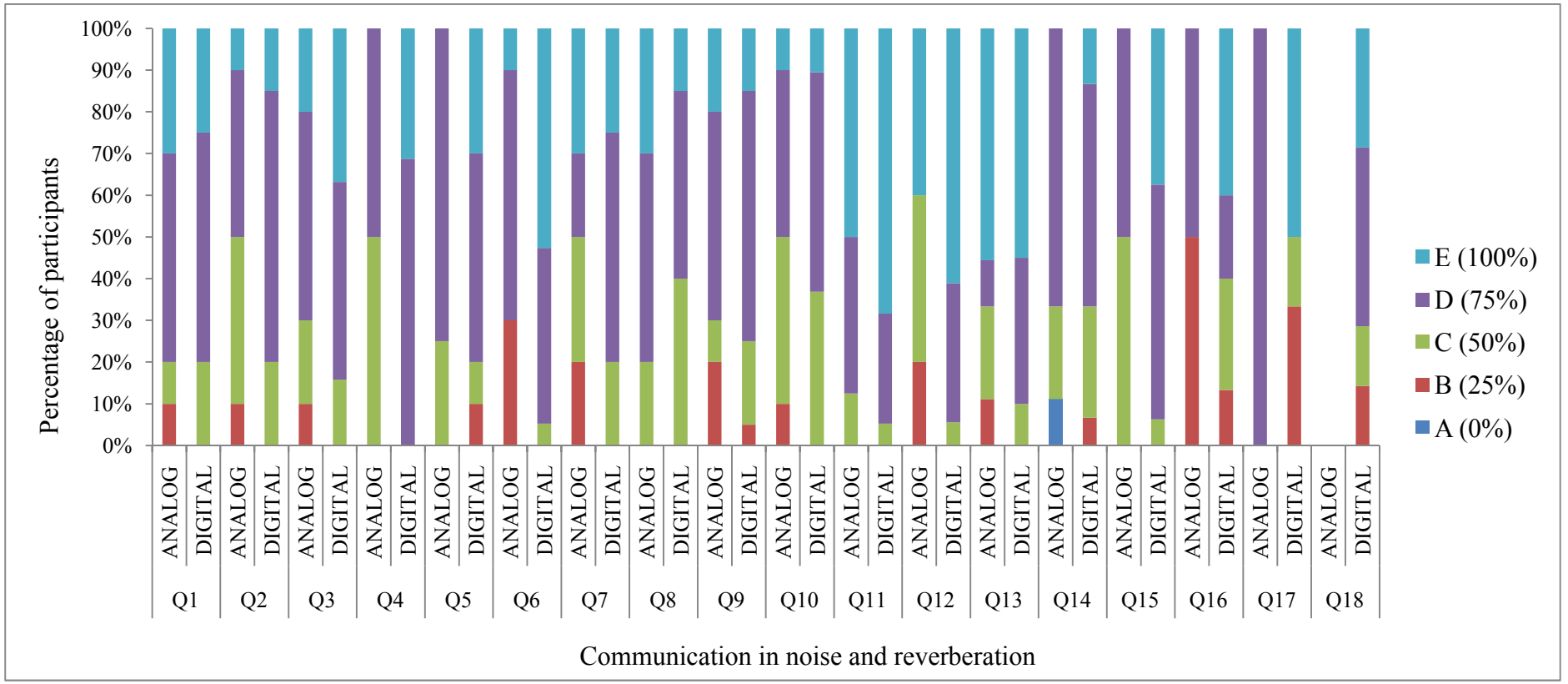
In the aided condition high percentage (50%) of participants rated E i.e. 100% and very less number of participants (<10%) rated A & B that is 0% and 25%. In digital hearing aid users, high number of participants rated "E" i.e. 100% than the analog hearing aid users.

It means with the hearing aid all the participants were getting benefit as compared to the unaided condition for the communication in favorable condition (quiet). In group comparison, digital hearing aid users were getting more benefit as compare to analog hearing aid users.

Communication in unfavorable condition (noise and reverberation):



Graph 5: Percentage of participants (analog and digital hearing aid users) scores for each questions for communication in noise and reverberation situations in unaided condition.



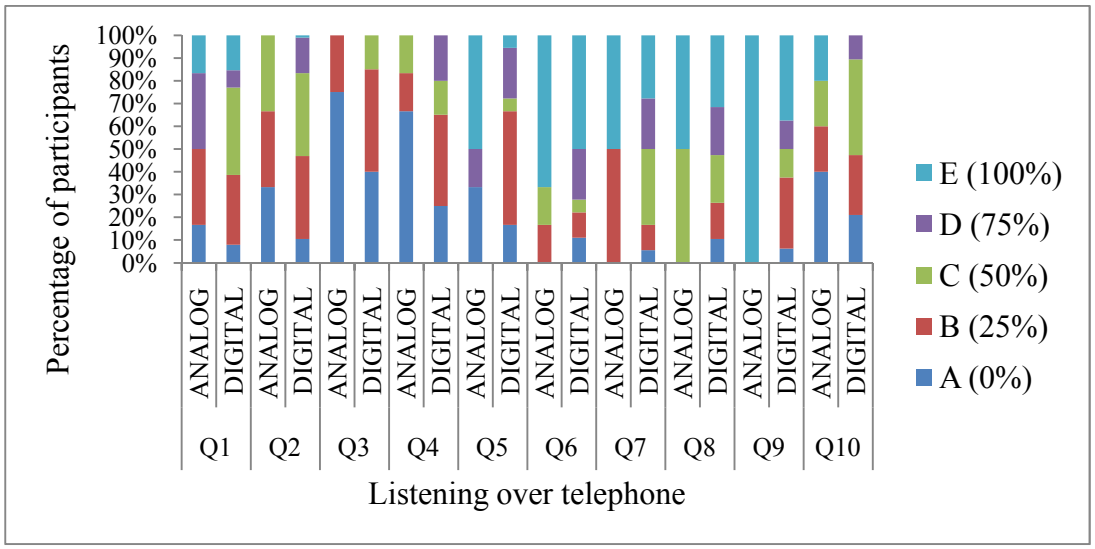
Graph 6: Percentage of participants (analog and digital hearing aid users) scores for each questions for communication in noise and reverberation situations in aided condition.

From the graph 5 & 6, in unaided condition, more 30 percentage of participants rated A & B i.e. 0% and 25% which shows poor communication in noisy condition except Q4 and Q6 where more number of participants rated "C" i.e. 50% as they were having fifty percentage of difficulty in conversing in a restaurant and in a friend group.

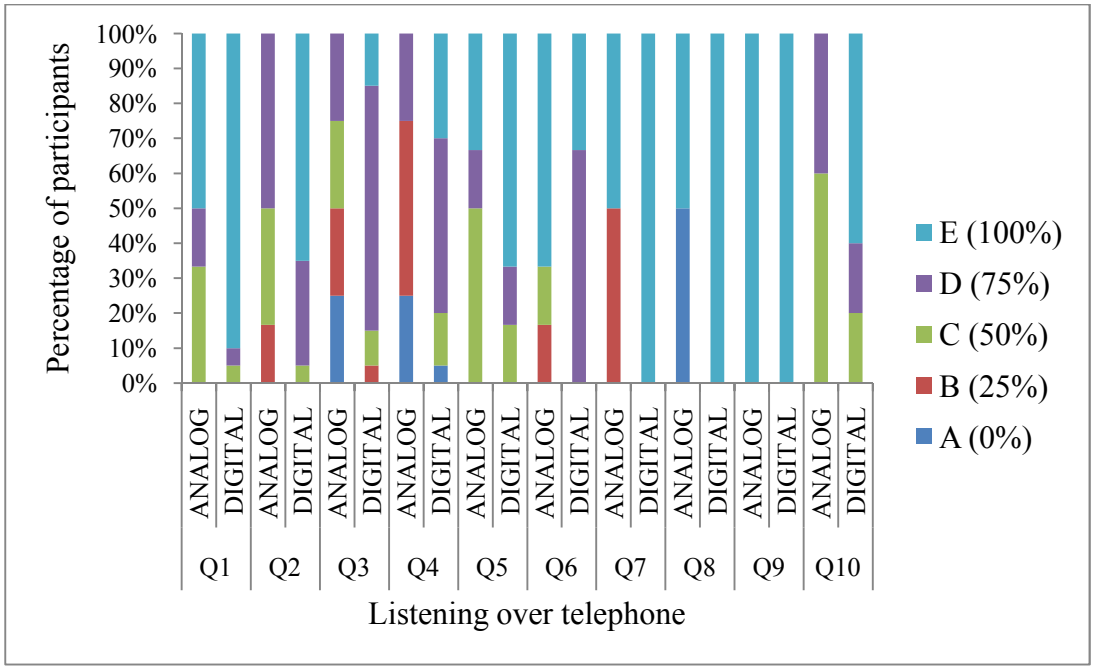
In the aided condition, in most of the questions more than 40 % of participants rated E i.e. 100% and 30% of participants rated 75% than the unaided condition in both analog and digital hearing aid users. As both the groups were getting more benefit with the hearing aid. In digital hearing aid users, slightly more number of participants rated "E" than the analog hearing aid users.

It means with the hearing aid all were getting the benefit as compared to the unaided condition for the communication in unfavorable condition. In group comparison, digital hearing aid users were getting little more benefit as compare to analog hearing aid users but scores are not significantly different (p>0.05).

Listening over telephone:



Graph 7: Percentage of participants (analog and digital hearing aid users) scores for each questions for listening over telephone in unaided condition.

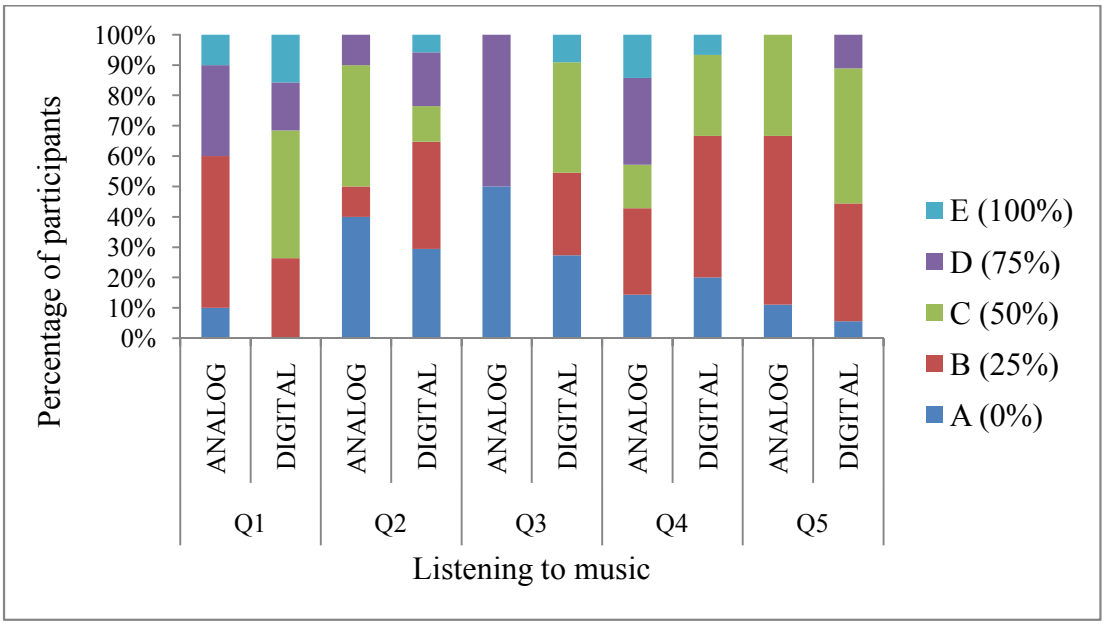


Graph 8: Percentage of participants (analog and digital hearing aid users) scores for each question for listening over telephone in aided condition.

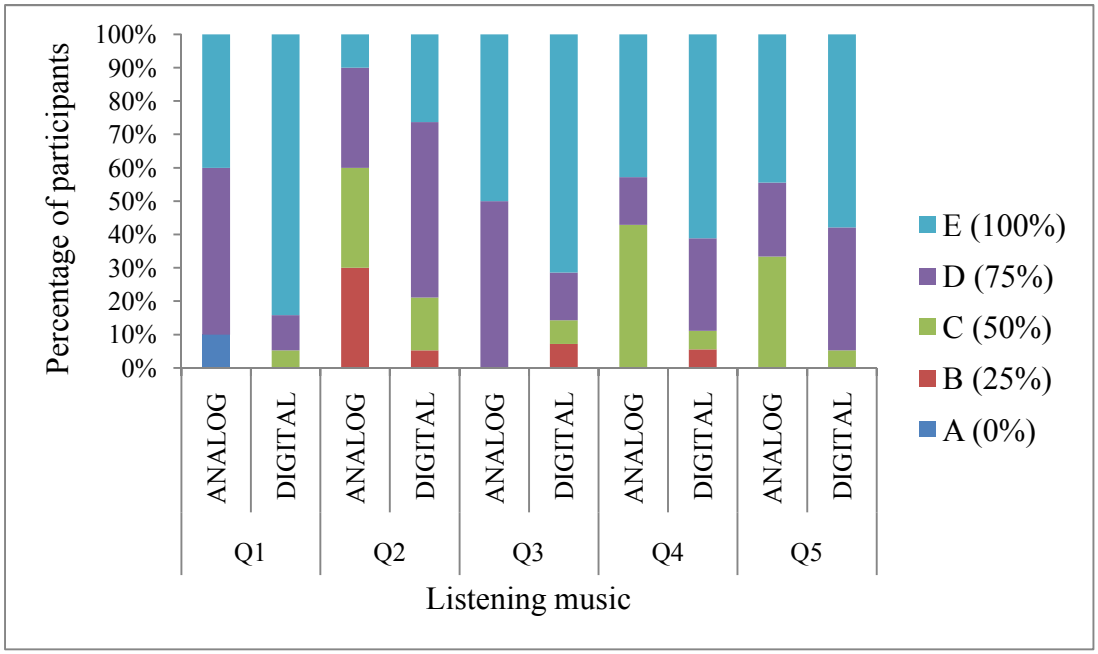
Graph 7 & 8 reveals that more than 40 % of participants in the unaided condition got a response score of 0% or 25% except in Q6 where more percentage of participants rated 100% because they had no tolerance problem while conversing on telephone.

In aided condition, more percentage of participants (>60%) in digital hearing aid users rated 100% than the analog hearing aid users (35%) which shows that digital users were getting benefit than analog hearing aid users for listening over telephone. But the difference between the groups was not significantly different.

Listening to music:



Graph 9: Percentage of participants (analog and digital hearing aid users) scores for each questions for listening to music in unaided condition.

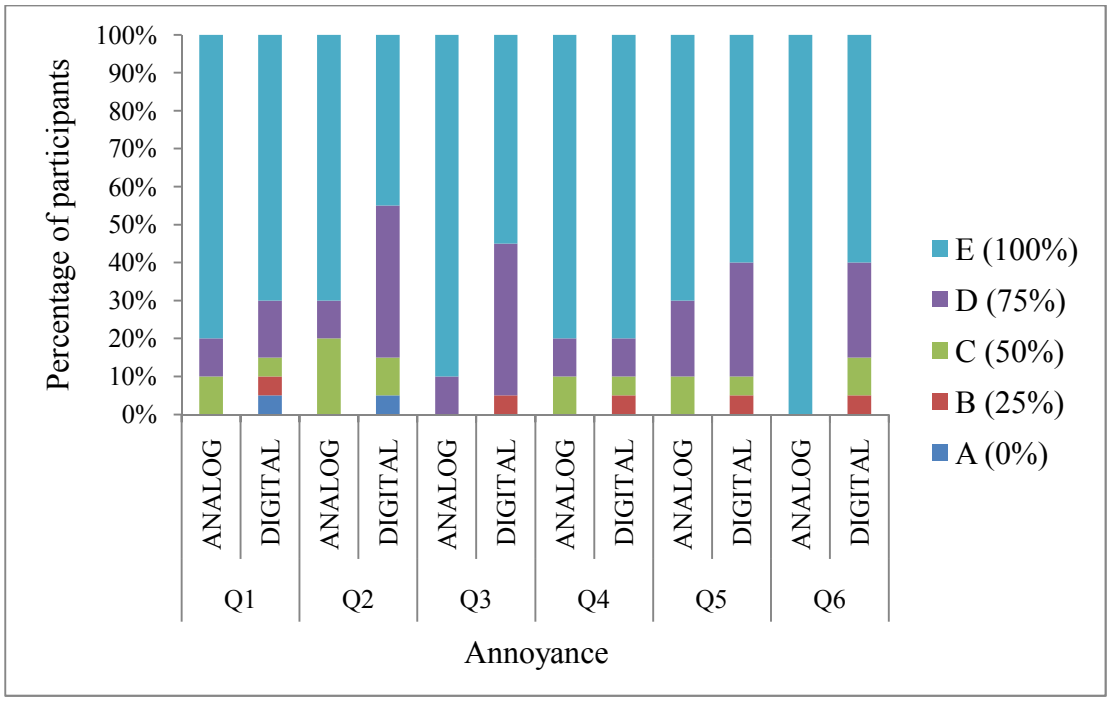


Graph 10: Percentage of participants (analog and digital hearing aid users) scores for each questions for listening music in aided Condition

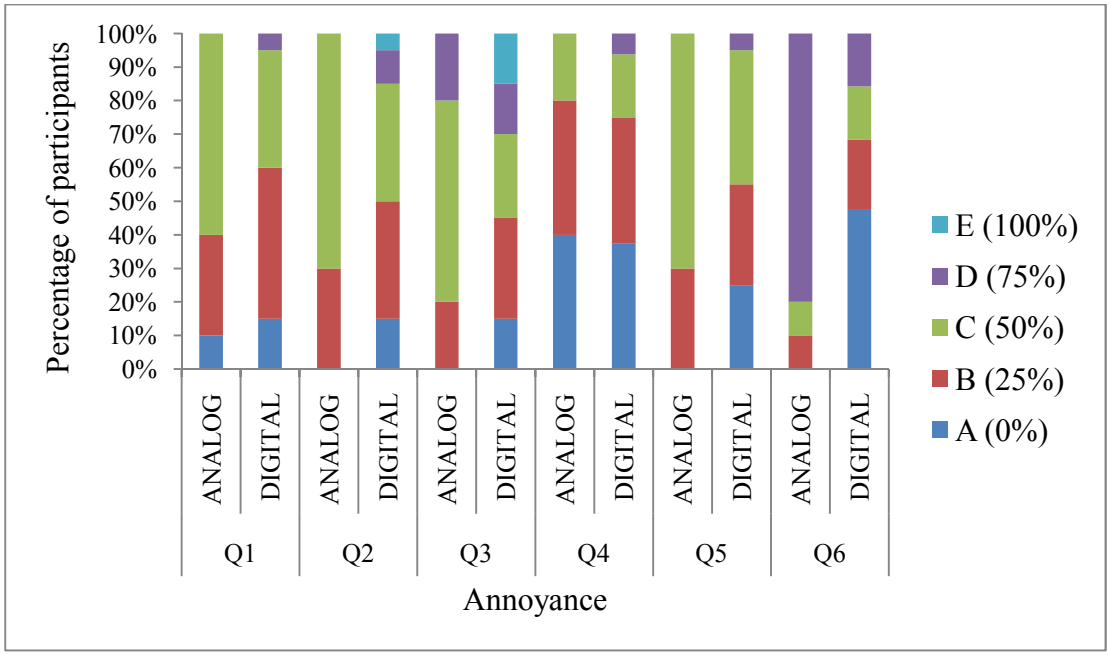
Graph 9 & 10 revels that more than 60 percentages of participants in the aided condition has got a response score of 100% or 75% for all of the questions as compared to the unaided condition. In the unaided condition a high percentage of participants (60%) got a response score of 25% or 50%. It means that all participants were getting benefit with the hearing aid.

In aided condition, more percentage of participants (60%) in digital hearing aid users rated 100% than the analog hearing users (40%) which shows that digital hearing aid users were getting slightly more benefit for listening music than analog users. But the difference between the groups was not significantly different.

Annoyance:



Graph 11: Percentage of participants (analog and digital hearing aid users) scores for each questions for annoyance in unaided condition.

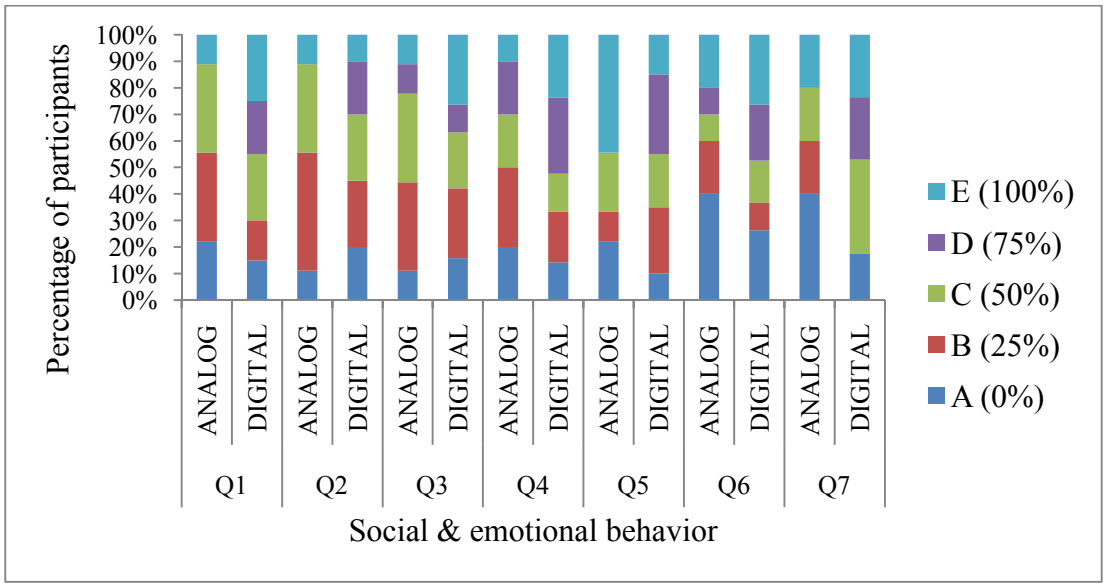


Graph 12: Percentage of participants (analog and digital hearing aid users) scores for each questions for annoyance in aided condition.

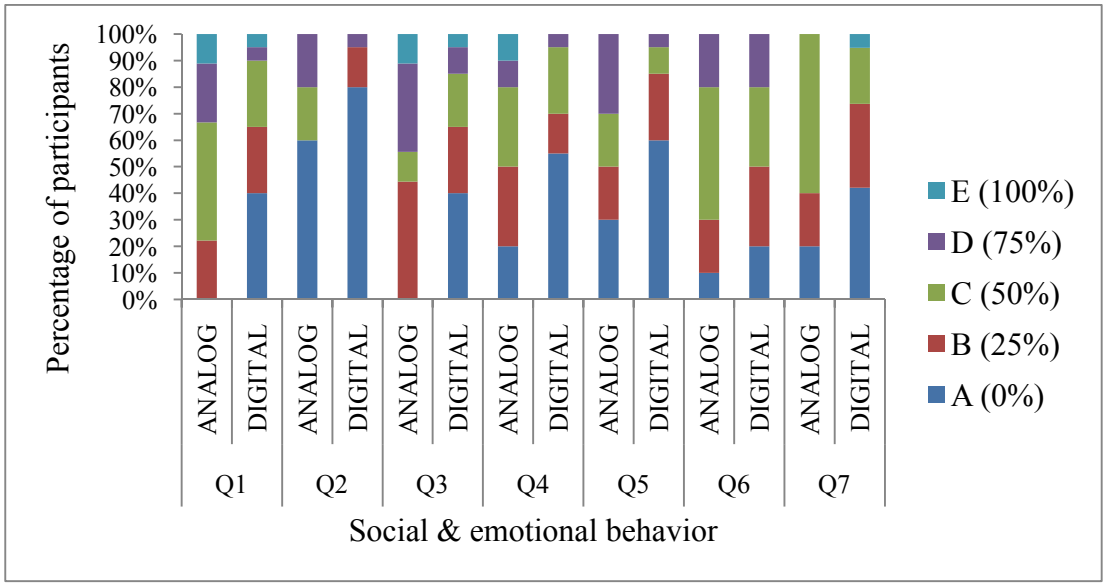
From the graph 11 & 12 we can see that in the aided condition in each question more percentage of participants (>60%) rated B & C that is 25% and 50% compared to the unaided condition. In unaided condition more percentage of participants (>80%) rated 100% or 75% which shows participants were more comfortable to the environmental sounds in unaided condition than aided condition from environmental sounds.

In aided condition, slightly more percentage of participant (70%) rated 25% or 50% in analog hearing aid users than the digital hearing aid users (55%). It shows that analog hearing aid users had more annoyance problem or not comfortable with the environmental noise than the analog hearing aid users. But both the group had annoyance problem with the hearing aid than without hearing aid which is significantly different.

Social and emotional behavior:



Graph 13: Percentage of participants (analog and digital hearing aid users) scores for each questions for social and emotional behavior in unaided condition.



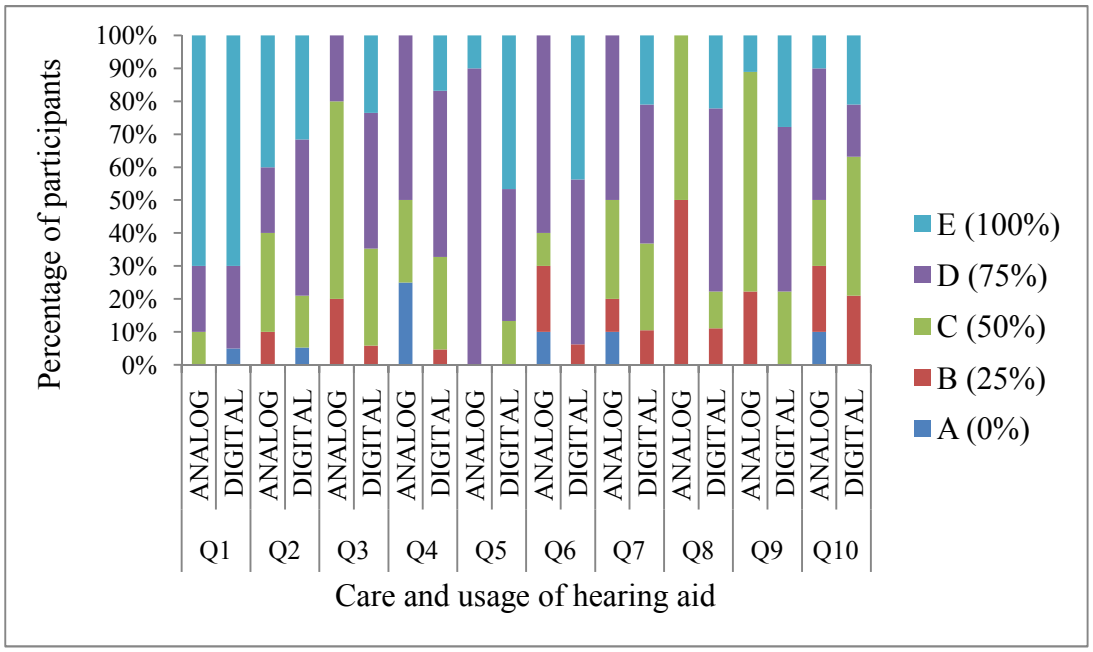
Graph 14: Percentage of participants (analog and digital hearing aid users) scores for each questions for social and emotional behavior in aided condition.

From the graph 13 & 14 we can see that social and emotional behavior in unaided condition more percentage of participants (50%) rated “B & C” that is 25%

and 50% while in the aided condition more percentage of participants (48%) rated "E" that is 0% which shows good social and emotional behavior after wearing hearing aid as without the hearing aid participant were felt less social interaction with the outside environment.

In aided condition, more percentage of participants (48%) rated 100% in digital hearing aid users than the analog hearing aid users (20%). There is no significant difference between the unaided and aided condition in analog hearing aid users but there is a significant difference in digital hearing aid users which shows in the aided condition digital hearing aid users depicting more benefit and having good social and emotional behavior than analog hearing aid users. Newman & Weinstein (1988) revealed a significant reduction in the perceived emotional and social effects of hearing impairment following one year of hearing aid use by using HHIE.

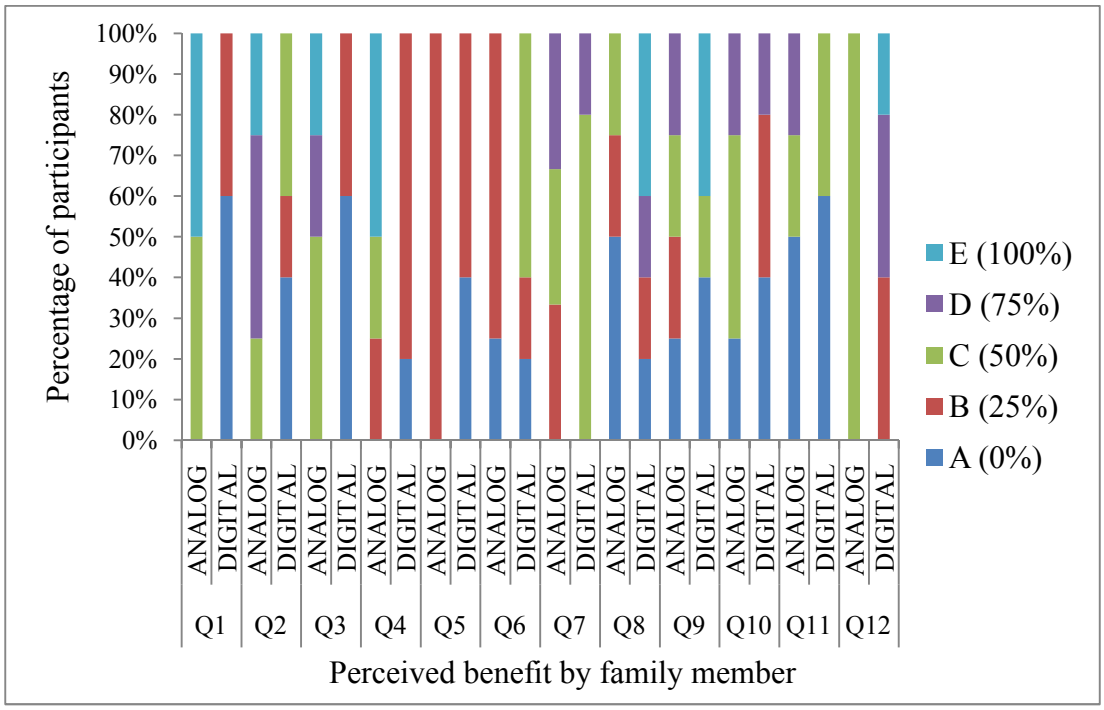
Care and usage of hearing aid:



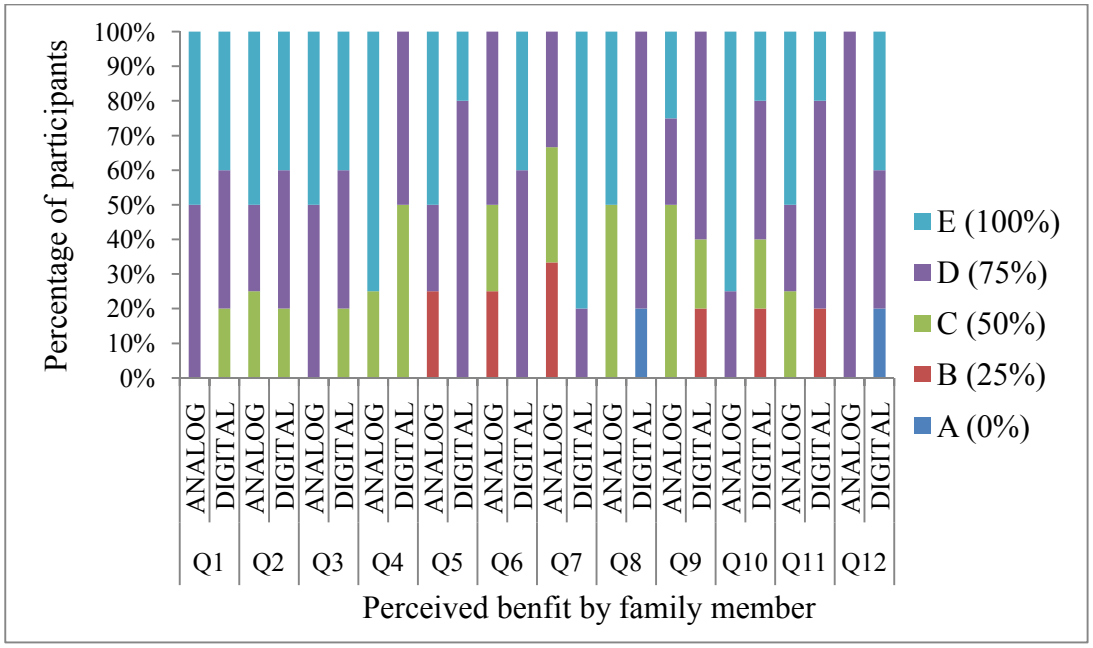
Graph 15: Percentage of participants (analog and digital hearing aid users) scores for each questions for care and usage of hearing aid in aided condition.

From the graph 15 we can see that in the aided condition in each question more percentage of participants (>50%) rated D & E that is 75% and 100%. In digital hearing aid users, more percentage of participants (>70%) rated 100% or 75% than the analog hearing aid users (50%) which shows participants were using the hearing with the care. We can say that digital hearing aids are easy to use and handle. But the difference between the analog and digital hearing aid users is not significantly different, which indicates that irrespective of the hearing aid, the care taken by the hearing aid users are the same.

Perceived benefit by family members:



Graph 16: Percentage of participants (analog and digital hearing aid user's family members) scores for each questions for perceived benefit by family members in unaided condition.



Graph 17: Percentage of participants (analog and digital hearing aid user's family members) scores for each question for perceived benefit by family members in aided condition.

From the graph 16 & 17 we can see that in the aided condition in each question more percentage of participants (>50%) rated D & E that is 75% and 100% compared to the unaided condition(<30%). In unaided condition more percentage of participants (>70%) rated 0%, 25% or 50% which shows hearing aid user's family members were feeling more difficulty without the hearing aid.

In aided condition, more percentage of user's family members (70%) rated 75% & 100% in analog hearing aid users than the digital hearing aid user (50%) which shows family members of analog hearing aid users perceived more benefit than the digital hearing aid users. But the differences between both the groups are not statistically different.

IV. To evaluate the test-retest reliability of the developed questionnaire

Test retest reliability of questionnaire was assessed by calculating the scores obtained on a retest after 2 week using the same questionnaire on a five randomly selected participants.

Table 12:

Reliability coefficient α values for unaided and aided condition

	Cronbach's alpha
UNAIDED	0.999
AIDED	0.998

Test retest reliability for hearing aid benefit questionnaire was assessed by finding reliability coefficient "Cronbach's α" for both the conditions (unaided and aided) in all subscale. **Table 12** reveals that reliability coefficient "Cronbach's α" has got a value ($p \geq 0.05$), which indicates there is good retest reliability for the hearing aid benefit questionnaire for all the subscale for both aided and unaided condition.

Results showed that there is significant difference in mean percentage scores between unaided and aided conditions in both analog and digital hearing aid user groups. This result indicating there is a perceived hearing aid benefit in both the groups (analog and digital hearing aid users). There was higher mean percentage scores in the favorable situations (quiet) as compared to unfavorable situations (noise and reverberation), which indicated more perceived hearing aid benefit in quiet listening situations than the more difficult listening situations (noisy & reverberant environment) in both analog and digital hearing aid users. The results are consistent with other studies using subjective measures that suggested decrease in perceived hearing aid benefit in unfavorable condition and also uncomfortable with the hearing aid (Cox & Alexander, 1995). For perceived hearing aid benefit between the group comparison, results showed that there is no significant difference in scores for communication in noise & reverberation, listening to telephone, listening to music, annoyance, care & usage of hearing aid and perceived benefit by family members, between the analog and digital hearing aid users. But there is a significant difference between in scores for communication in quiet and social & emotional behavior, which was higher for digital hearing aid users. It indicated that digital hearing aid users were getting more perceived benefit in quiet situation than the analog hearing aid users because of the advantage of digital technology over the analog technology and digital hearing aid users also showed good social and emotional behavior than the analog hearing aid user, this difference might be because of cosmetic appearance of the hearing aid. The highest mean percentage scores for digital hearing aid users in quiet situation may be because of the good processing technology for digital aids than the analog hearing aids. Wood and Lutman (2004) also showed advantages

for digital hearing aid over simple linear analog hearing aids in terms of both objective and subjective outcomes, but differences noticed was not large. The developed questionnaire has got a reliability value >90% for all the subscales in both conditions aided and unaided which indicates the high test-retest reliability of the questionnaire as a clinical tool. So, the result of the study described above was the hearing aid benefit questionnaire is an efficient tool in quantifying hearing aid benefit in adults.

SUMMARY & CONCLUSION

Several tests are available to assess hearing aid benefit which can be divided into objective and subjective tests. In objective tests, speech identification tests are an excellent way to measure the benefit of hearing aids. But these tests provide score in a specific environment which can adequately be simulated in the test room. Subjective test include self-reported questionnaire. Questionnaires are very helpful to measure the benefit or communication effectiveness across many environments or in environments that cannot accurately be specified or simulated.

The purpose of the study was to develop a questionnaire in English to measure hearing aid benefit for adults according to the Indian scenario. Questionnaire was developed only for adults as they are more exposed to different listening environment in daily life situations than the very young and older individuals. The study also focused on to measure perceived benefit in different hearing aid users (analog and digital) in different listening conditions (quiet, noise, telephone, music).

A questionnaire was developed to assess hearing aid benefit of adults in different situations such as communication in quiet, communication in noise, listening over telephone, listening music, annoyance, social and emotional behavior, care and usage of hearing aid and last perceived benefit by family members. The eighty-four items in the questionnaire were chosen based on the experience of the professionals, literature in the field and the assessment of communication needs of individuals.

Before administering the questionnaire following information were obtained:

- Air-conduction and bone conduction thresholds for pure-tones from 250 Hz to 8000 Hz and 250 Hz to 4000 Hz respectively at octave intervals'

- Speech identification score for bisyllables
- Tympanogram and acoustic reflexes thresholds,
- Aided speech identification scores for bisyllables.

After collected all these information, questionnaire was administered to measure the hearing aid benefit in different listening situations.

The data collected was analysed using SPSS version (10 and 17). The result of the study indicates that hearing aid benefit questionnaire for adult hearing aid user is a reliable and valid measure of assessing hearing aid benefit in real life situations (quiet, noise etc.).

The result of the study showed that the aided scores for different listening situations (quiet, noise, telephone, listening phone, listening music) were higher than the unaided scores which indicates observable hearing aid benefit in analog and digital hearing aid users. For annoyance, the aided scores were lower than the unaided scores in both analog and digital hearing aid users which indicate that they are not comfortable in hearing loud environmental sounds.

But there is no significant difference between the analog and digital hearing aid users for different subscales except for quiet and social & emotional behavior in which digital hearing aid users performed comparatively better.

This study was also focused on measure of perceived benefit by hearing aid user and their family members. The study showed that there is no significant difference between the benefit perceived by hearing aid users and their family members. But this information is very helpful in counselling for the hearing aid user and their family members which may help in increase perceived benefit for the hearing aid user.

The results of the present study have the following clinical applications.

Implications of the study:

1. This questionnaire can be used to measure hearing aid benefit as a screening in outreach programs where facilities and manpower for carrying out objective evaluation are limited like rural areas.
2. This questionnaire can be used to obtained information from an individual's hearing complaints with the hearing which cannot be possible through conventional audiometric testing. The information can be utilized while counselling the hearing impaired individual and his/her family members.
3. The last subscale of the questionnaire (perceived benefit by family members) can help in to measure the family point of view towards the patient's problem and this information also helpful in counselling for hearing aid user's family members to provide support and motivation to the patients.
4. Administering this questionnaire on the family members will enlighten them the need of support to the hearing aid users.
5. Information obtained by means of the questionnaire can be very helpful to do fine tuning for digital hearing aid according to the patients need.
6. Also helpful in the selection of the hearing aid and assistive listening device according to persons difficulty like difficulty in listening telephone or music.

Future research:

1. Further research may be carried out to study the effect of other factors on hearing aid benefit outcome such as personality, age of onset of hearing loss, socio-economic status, occupation and life style of the individual.

2. To compare the correlation between objective and subjective hearing aid benefit measures on the same age group of subjects (adults).
3. Also to compare by administering questionnaire to different age group of subjects like adults vs older.
4. To study the sensitivity and specificity of the scale in screening for measuring hearing aid outcome when the scale is administered by other professionals like social worker, special educator.
5. To evaluate the efficacy of the questionnaire in determining the need for amplification.

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APPENDIX A

HEARING AID BENEFIT QUESTIONNIRE FOR ADULTS

Case name: ..... **Case number**: .....

Age/Sex: ..... **Date**: .....

Education: ..... **Occupation**: .....

Cause of deafness: ..... **Onset of deafness:** .....

Nature: ..... **Duration of deafness:** .....

Pure Tone Average: Rt...... **Speech identification scores: Rt.**.....

Lt..... **Lt**.....

Degree and Type of hearing loss: .....

Tympanogram: ..... **Reflexes: .**.....

Aided warble tone scores: .....

Speech identification scores (Aided ear): .....

Hearing aid name: ..... **Type of hearing aid:** .....

Duration of hearing aid use: .....

INSTRUCTION: Please tick (✓) the answer (**A**, **B**, **C**, **D**, and **E**) that comes close to your everyday experience. Notice that each choice includes a percentage. For example, if a statement is true about 50% of the time, circle '**C**' for that question.

If you have not experience the situation we describe, leave that item blank.

Scoring as follows:

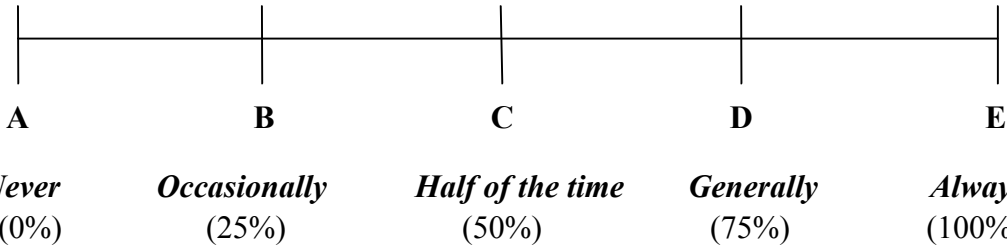
A = *Never* (**0%**)

B = *Occasionally* (**25%**)

C = *Half of the time* (**50%**)

D = *Generally* (**75%**)

E = *Always* (**100%**)



1. COMMUNICATION IN FAVOURABLE CONDITION (IN QUIET):

Questions	Without hearing aid	With hearing aid
Are you able to understand speech from a distance of 3-4 feet?	**A B C D E**	**A B C D E**
Are you able to understand speech from a distance of 4-5 feet?	**A B C D E**	**A B C D E**
Are you able to follow the family member's conversation?	**A B C D E**	**A B C D E**
Are you able to interact at home without asking any repetition?	**A B C D E**	**A B C D E**
Are you able to listen to the soft speech?	**A B C D E**	**A B C D E**
Are you able to follow speaker conversation without feeling it's too loud?	**A B C D E**	**A B C D E**

Questions	Without hearing aid	With hearing aid
Are you able to understand speech without looking for lip-movements?	**A B C D E**	**A B C D E**
Do you understand speech without hearing any distortion?	**A B C D E**	**A B C D E**
Are you able to understand speaker's speech (male/female)?	**A B C D E**	**A B C D E**
Are you able to hear the sound from front direction?	**A B C D E**	**A B C D E**
Are you able to hear the sound from side (right or left) direction?	**A B C D E**	**A B C D E**
Are you able to hear the sound from back direction?	**A B C D E**	**A B C D E**
Are you able to monitor your own voice while speaking to others?	**A B C D E**	**A B C D E**
Are you able to listen television with the same volume as others in your home?	**A B C D E**	**A B C D E**
Are you able to understand the dialogues while watching television?	**A B C D E**	**A B C D E**
Are you able to listen to the radio?	**A B C D E**	**A B C D E**

2. COMMUNICATION IN UNFAVOURABLE CONDITION (IN NOISY AND REVERBERENT CONDITION):

Questions	Without hearing aid	With hearing aid
Are you able to understand speech from a distance of 3-4 feet in noisy situation (e.g. group, office)?	**A B C D E**	**A B C D E**
Are you able to understand speech from a distance of 4-5 feet in noisy situation (e.g. office, group discussion)?	**A B C D E**	**A B C D E**
Are you able to understand conversation of family members when the television is on?	**A B C D E**	**A B C D E**

Questions	Without hearing aid	With hearing aid
Are you able to follow conversation with your friend or family member in a restaurant?	**A B C D E**	**A B C D E**
Are you able to follow conversation with shopkeeper in a market place?	**A B C D E**	**A B C D E**
Are you able to listen to conversations when you are in a group of friends?	**A B C D E**	**A B C D E**
Are you able to understand speech without looking for lip-movements in a noisy situation?	**A B C D E**	**A B C D E**
Are you able to localize sound from front direction in a noisy situation?	**A B C D E**	**A B C D E**
Are you able to localize sound from back direction in a noisy situation?	**A B C D E**	**A B C D E**
Are you able to understand conversations in social gatherings such as marriage, party etc?	**A B C D E**	**A B C D E**
Are you able to follow the conversation of your friend or family member in a park?	**A B C D E**	**A B C D E**
Are you able to understand the announcements in a railway station?	**A B C D E**	**A B C D E**
Are you able to understand the announcements in a bus stand?	**A B C D E**	**A B C D E**
Are you able to follow conversation inside a moving bus?	**A B C D E**	**A B C D E**
Are you able to follow conversation inside a car when stereo is on?	**A B C D E**	**A B C D E**
Are you able to follow the dialogues in a movie theatre?	**A B C D E**	**A B C D E**
Are you able to follow the lectures in a classroom?	**A B C D E**	**A B C D E**
Are you able to follow the conversation of your friend inside a shopping mall?	**A B C D E**	**A B C D E**

3. LISTENING OVER TELEPHONE:

Questions	Without hearing aid	With hearing aid
Are you able to hear the ringing of telephone?	**A B C D E**	**A B C D E**
Are you able to listen to telephone conversation in a quiet situation (e.g. bedroom, office cabin etc.)?	**A B C D E**	**A B C D E**
Are you able to converse through mobile phone in a market place (e.g. shopping mall, general store, vegetable market)?	**A B C D E**	**A B C D E**
Are you able to converse on telephone without asking any repetition?	**A B C D E**	**A B C D E**
Are you able to hear the voice clearly on telephone without hearing any distortion?	**A B C D E**	**A B C D E**
Are you able to follow the conversation without any tolerance problem?	**A B C D E**	**A B C D E**
Are you able to recognise male speaker's voice through telephone?	**A B C D E**	**A B C D E**
Are you able to recognise female speaker's voice through telephone?	**A B C D E**	**A B C D E**
Are you able to recognise child speaker's through telephone?	**A B C D E**	**A B C D E**
Are you able to listen to telephone/mobile phone conversation in telecoil mode?	**A B C D E**	**A B C D E**

4. LISTENING TO MUSIC:

Questions	Without hearing aid	With hearing aid
Are you able to listen to the music in quiet situation (e.g. home, office cabin?	**A B C D E**	**A B C D E**
Are you able to follow the music playing in a high background noise (e.g. marriage, birthday party)?	**A B C D E**	**A B C D E**
Are you able to follow the music while driving the car?	**A B C D E**	**A B C D E**

Questions	Without hearing aid	With hearing aid
Are you able to recognise the musical instruments (e.g. tabla, guitar, piano, and drum) while listening to music?	**A B C D E**	**A B C D E**
Are you able to follow the lyrics (wordings) of the song in quiet situation (e.g. home, office room)?	**A B C D E**	**A B C D E**

5. ANNOYANCE:

Questions	Without hearing aid	With hearing aid
Do you feel comfortable listening to home environmental sounds (e.g. cooker whistle, door bell, alarm, telephone ring)?	**A B C D E**	**A B C D E**
Do you feel comfortable hearing traffic noise (e.g. bike/scooter/truck)?	**A B C D E**	**A B C D E**
Are you able to tolerate the sound when you pass through noisy environment (e.g. construction area, factory, office)?	**A B C D E**	**A B C D E**
Do you feel comfortable about the sound produced while eating?	**A B C D E**	**A B C D E**
Do you feel comfortable while listening to television?	**A B C D E**	**A B C D E**
Are you able to tolerate children's scream while playing without any irritation?	**A B C D E**	**A B C D E**

6. SOCIAL AND EMOTIONAL BEHAVIOUR:

Questions	Without hearing aid	With hearing aid
Do you feel embarrassed when meeting new people?	**A B C D E**	**A B C D E**
Do you feel frustrated when talking to members of your family?	**A B C D E**	**A B C D E**

Questions	Without hearing aid	With hearing aid
Do you avoid your friends?	**A B C D E**	**A B C D E**
Do you feel frustrated when talking to co-workers or friends?	**A B C D E**	**A B C D E**
Do you feel left out when you are with a group of people?	**A B C D E**	**A B C D E**
Do you feel nervous in different noisy listening situations?	**A B C D E**	**A B C D E**
Do you avoid family parties or office parties?	**A B C D E**	**A B C D E**

7. CARE AND USAGE OF HEARING AID:

Questions	With hearing aid
Do you know when to change the hearing aid battery?	**A B C D E**
Do you check whether your hearing aid is in working condition, every time when you switch it on?	**A B C D E**
Do you wear the hearing aid in most of the listening conditions?	**A B C D E**
Are you able to change the program settings of your hearing aid appropriately according to the listening situation? (telecoil, noisy situation, music, etc.)	**A B C D E**
Are you comfortable in wearing your ear moulds?	**A B C D E**
Do you clean your ear moulds at a regular interval as advice?	**A B C D E**
Do you know what to do, if there is squealing in your hearing aid?	**A B C D E**
Do you go for reprogramming of your hearing aid periodically?	**A B C D E**
Are you concerned about hygiene of your hearing aid?	**A B C D E**
Do you visit your audiologist periodically for hearing testing?	**A B C D E**

8. PERCEIVED BENEFIT BY FAMILY MEMBERS:

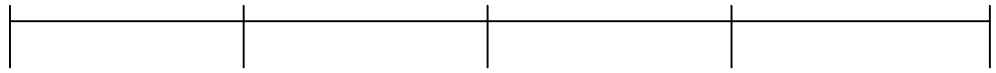
Questions	Without hearing aid	With hearing aid
Do you think that the person is able to follow the conversation with family member without missing any information?	**A B C D E**	**A B C D E**
Do you think that he/she able to interact at home without asking any repetition?	**A B C D E**	**A B C D E**
Do you think that he/she is able to understand soft speech while conversation?	**A B C D E**	**A B C D E**
Do you think that he/she is able to understand family member's conversation while television is on?	**A B C D E**	**A B C D E**
Do you think that he/she is able to understand conversation in social gathering such as friend's party, marriage?	**A B C D E**	**A B C D E**
Do you think that he/she is able to listen to the telephone conversation in a quiet situation?	**A B C D E**	**A B C D E**
Do you think that he/she is able to listen to the music in home?	**A B C D E**	**A B C D E**
Do you think that he/she is feeling comfortable or not getting irritated in listening to home environment sounds (cooker whistle, door bell, alarm, telephone ring, water pump noise)	**A B C D E**	**A B C D E**
Do you think that he/she is comfortable to hear traffic noises?	**A B C D E**	**A B C D E**
Do you think he/she can converse you without frustration?	**A B C D E**	**A B C D E**
Do you that he/she mixes with friends or group of people without avoiding them.	**A B C D E**	**A B C D E**
Do you think he/she takes part in family parties or office parties?	**A B C D E**	**A B C D E**

APPENDIX II

ಸೂಚನೆ: ನಿಮ್ಮ ದಿನನಿತ್ಯದ ಅನುಭವಕ್ಕೆ ಹತ್ತಿರವಾದ ಉತ್ತರವನ್ನು (✓) ಗುರುತು ಮಾಡಿ.
ಉದಾಹರಣೆ: ನಿಮ್ಮ ಉತ್ತರ 50% ಸರಿ ಇದ್ದಲ್ಲಿ 'C' ಅಕ್ಷರವನ್ನು (✓) ಗುರುತು ಮಾಡಿ.

ನಿಮಗೆ ನಾವು ಸೂಚಿಸಿರುವ ವಿಷಯವು ಅನುಭವಕ್ಕೆ ಬರದಿದ್ದಲ್ಲಿ ಆ ವಿಷಯವನ್ನು ಬಿಟ್ಟುಬಿಡಿ

A – ಯಾವಗಲು ಇಲ್ಲ **(0%)**
B – ಕೆಲವು ಸಲ **(25%)**
C – ಅರ್ಧದಷ್ಟು ಬಾರಿ **(50%)**
D – ಹೆಚ್ಚು ಸಲ **(75%)**
E – ಯಾವಾಗಲೂ **(100%)**



A	B	C	D	E
ಯಾವಗಲು ಇಲ್ಲ (0%)	**ಕೆಲವು ಸಲ** (25%)	**ಅರ್ಧದಷ್ಟು ಬಾರಿ** (50%)	**ಹೆಚ್ಚು ಸಲ** (75%)	**ಯಾವಾಗಲೂ** (100%)

೧. ಶಾಂತ ವಾತಾವರಣದಲ್ಲಿ ಕೇಳುವಿಕೆ

ಪ್ರಶ್ನೆಗಳು	ಶ್ರವಣ ಯಂತ್ರವಿಲ್ಲದೆ	ಶ್ರವಣ ಯಂತ್ರದೊಂದಿಗೆ
(3 -4) ಅಡಿ ದೂರದಿಂದ ನಿಮಗೆ ಮಾತು ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
(4 -5) ಅಡಿ ದೂರದಿಂದ ನಿಮಗೆ ಮಾತು ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ನಿಮ್ಮ ಕುಟುಂಬ ಸದಸ್ಯ ರೊಂದಿಗೆ ಸುಲಭವಾಗಿ ಸಂಭಾಷಿಸಲು ಆಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಮತ್ತೆ ಮತ್ತೆ ಏನೆಂದು ಕೇಳದೆ ಮನೆಯವರೊಂದಿಗೆ ಮಾತನಾಡಲು ಆಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಮೃದುವಾದ ಮಾತುಗಳು ನಿಮಗೆ ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**

ಪ್ರಶ್ನೆಗಳು	ಶ್ರವಣ ಯಂತ್ರವಿಲ್ಲದೆ	ಶ್ರವಣ ಯಂತ್ರದೊಂದಿಗೆ
ಮಾತನಾಡುವಾಗ ಇತರರ ಮಾತುಗಳು ಜೋರಾಗಿ ಕೇಳದೆ ಹಿತವಾಗಿ ಕೇಳುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಮಾತನಾಡುವವರ ತುಟಿ ಚಲನೆಯನ್ನು ಗಮನಿಸದೆಯೆ ನಿಮಗೆ ಮಾತು ಚೆನ್ನಾಗಿ ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ನಿಮಗೆ ಕರ್ಕಷರಹಿತವಾಗಿ ಮಾತುಗಳು ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಗಂಡು/ಹೆಣ್ಣು ಧ್ವನಿ ಕೇಳುವಾಗ ನಿಮಗೆ ಮಾತು ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಮುಂದಿನಿಂದ ಬರುವ ಶಬ್ದಗಳು ನಿಮಗೆ ಚೆನ್ನಾಗಿ ಅರ್ಥವಾಗುತ್ತವೆಯೆ?	**A B C D E**	**A B C D E**
ಪಕ್ಕದಿಂದ(ಬಲ/ಎಡ) ಬರುವ ಶಬ್ದಗಳು ನಿಮಗೆ ಚೆನ್ನಾಗಿ ಅರ್ಥವಾಗುತ್ತವೆಯೆ?	**A B C D E**	**A B C D E**
ಹಿಂದಿನಿಂದ ಬರುವ ಶಬ್ದಗಳು ನಿಮಗೆ ಚೆನ್ನಾಗಿ ಅರ್ಥವಾಗುತ್ತವೆಯೆ?	**A B C D E**	**A B C D E**
ಮಾತನಾಡುವಾಗ ನಿಮ್ಮದೇ ಧ್ವನಿಯನ್ನು ಸರಿಯಾಗಿ ಗ್ರಹಿಸಿ ಮಾತನಾಡಲು ಸಾಧ್ಯವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ದೂರದರ್ಶನದ ಶಬ್ದವನ್ನು ನೀವು ಬೇರೆಯವರಷ್ಟೆ ಇಟ್ಟು ಕೇಳುತ್ತೀರ?	**A B C D E**	**A B C D E**
ದೂರದರ್ಶನದಲ್ಲಿನ ಮಾತುಗಳು ನಿಮಗೆ ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ರೇಡಿಯೊ ವನ್ನು ನೀವು ಸುಲಭವಾಗಿ ಆಲಿಸುತ್ತೀರ?	**A B C D E**	**A B C D E**

೨. ಗದ್ದಲ ವಾತಾವರಣದಲ್ಲಿ ಕೇಳುವಿಕೆ

ಪ್ರಶ್ನೆಗಳು	ಶ್ರವಣ ಯಂತ್ರವಿಲ್ಲದೆ	ಶ್ರವಣ ಯಂತ್ರದೊಂದಿಗೆ
ಗದ್ದಲ ವಾತಾವರಣದಲ್ಲಿ (3-4) ಅಡಿ ದೂರದಿಂದ ನಿಮಗೆ ಮಾತು ಅರ್ಥವಾಗುತ್ತದೆಯೆ (ಆಫೀಸು, ಗುಂಪು)?	**A B C D E**	**A B C D E**
ಗದ್ದಲ ವಾತಾವರಣದಲ್ಲಿ (4-5) ಅಡಿ ದೂರದಿಂದ ನಿಮಗೆ ಮಾತು ಅರ್ಥವಾಗುತ್ತದೆಯೆ (ಆಫೀಸು, ಗುಂಪು)?	**A B C D E**	**A B C D E**
ದೂರದರ್ಶನವು ಚಾಲ್ತೀಯಲ್ಲಿದ್ದಾಗ ನಿಮ್ಮ ಕುಟುಂಬದವರ ಮಾತುಗಳು ಅರ್ಥವಾಗುತ್ತದೆಯೇ?	**A B C D E**	**A B C D E**

ಪ್ರಶ್ನೆಗಳು	ಶ್ರವಣ ಯಂತ್ರವಿಲ್ಲದೆ	ಶ್ರವಣ ಯಂತ್ರದೊಂದಿಗೆ
ಹೊಟೆಲಿನಲ್ಲಿ ನಿಮ್ಮ ಪರಿವಾರದವರೊಂದಿಗೆ ಮಾತನಾಡುವಾಗ ನಿಮಗೆ ಸುಲಭವಾಗಿ ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಅಂಗಡಿಯವರ ಜೊತೆಗೆ ಸುಲಭವಾಗಿ ವ್ಯವಹರಿಸಲು ಸಾಧ್ಯವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ನಿಮ್ಮ ಸ್ನೇಹಿತರ ಗುಂಪಿನಲ್ಲಿದ್ದಾಗ ಸಂಭಾಷಣೆಯು ಅರ್ಥವಗುತ್ತದೆಯೇ?	**A B C D E**	**A B C D E**
ಸುತ್ತಮುತ್ತಲು ಗದ್ದಲ ಇರುವಾಗ ತುಟಿ ಚಲನೆಯನ್ನು ಗಮನಿಸದೆಯೆ ನಿಮಗೆ ಮಾತು ಚೆನ್ನಾಗಿ ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಸುತ್ತಮುತ್ತಲು ಗದ್ದಲವಿರುವಾಗ ಮುಂದಿನಿಂದ ಬರುವ ಶಬ್ದಗಳು ನಿಮಗೆ ಚೆನ್ನಾಗಿ ಅರ್ಥವಾಗುತ್ತವೆಯೆ?	**A B C D E**	**A B C D E**
ಸುತ್ತಮುತ್ತಲು ಗದ್ದಲವಿರುವಾಗ ಹಿಂದಿನಿಂದ ಬರುವ ಶಬ್ದಗಳು ನಿಮಗೆ ಚೆನ್ನಾಗಿ ಅರ್ಥವಾಗುತ್ತವೆಯೆ?	**A B C D E**	**A B C D E**
ಮದುವೆ ಹಾಗು ಇತರ ಸಭೆ ಸಮಾರಂಭಗಳಲ್ಲಿ ಮಾತು ಚೆನ್ನಾಗಿ ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಉದ್ಯಾನವನದಲ್ಲಿ(ಪಾರ್ಕ್) ನಿಮ್ಮ ಜೊತೆ ಮಾತನಾಡುವವರ ಮಾತು ಸರಿಯಾಗಿ ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ರೈಲು ನಿಲ್ದಾಣಗಳಲ್ಲಿ ಪ್ರಕಟನೆಗಳು ನಿಮಗೆ ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಬಸ್ ನಿಲ್ದಾಣಗಳಲ್ಲಿ ಪ್ರಕಟನೆಗಳು ನಿಮಗೆ ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಬಸ್ಸಿನಲ್ಲಿ ಪ್ರಯಾಣಿಸುತ್ತುರುವಾಗ ನಿಮಗೆ ಮಾತು ಸರಿಯಾಗಿ ಕೇಳಿಬರುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಕಾರಿನಲ್ಲಿ ಸ್ಟೀರಿಯೊ ಹಾಕಿರಬೇಕಾದರೆ ಜನರ ಮಾತು ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಸಿನಿಮಾ ಹಾಲುಗಳಲ್ಲಿ ನಿಮಗೆ ಪಾತ್ರಧಾರಿಗಳ ಸಂಭಾಷಣೆ ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಶಾಲಾಕೊಠಡಿಗಳಲ್ಲಿ ಪಾಠಗಳು ಸರಿಯಾಗಿ ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಅಂಗಡಿಯೊಳಗೆ ನಿಮ್ಮ ಸ್ನೇಹಿತನ ಮಾತುಗಳು ನಿಮಗೆ ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**

೩. ಫೋನಿನಲ್ಲಿ ಮಾತನಾಡುವಿಕೆ:

ಪ್ರಶ್ನೆಗಳು	ಶ್ರವಣ ಯಂತ್ರವಿಲ್ಲದೆ	ಶ್ರವಣ ಯಂತ್ರದೊಂದಿಗೆ
ದೂರವಾಣಿಯ ಕರೆ ನಿಮಗೆ ಕೇಳುತ್ತದೆಯೆ?	A B C D E	A B C D E
ಗದ್ದಲವಿಲ್ಲದಿದ್ದಾಗ ದೂರವಾಣಿಯಲ್ಲಿ ನೀವು ಸುಲಭವಾಗಿ ವ್ಯವಹರಿಸುತ್ತೀರ (ಮನೆ, ಮಲಗುವ ಕೊಠಡಿ , ಆಫೀಸು ಕ್ಯಾಬೀನು)?	A B C D E	A B C D E
ಸುತ್ತಲು ಗದ್ದಲವಿದ್ದಾಗ(ಉದಾ:ಮಾರುಕಟ್ಟೆ, ಅಂಗಡಿ) ಮೊಬೈಲ್ ನಲ್ಲಿ ಸುಲಭವಾಗಿ ವ್ಯವಹರಿಸಲು ಸಾಧ್ಯವಾಗುತ್ತದೆಯೆ?	A B C D E	A B C D E
ಪುನಃ ಪುನಃ ಏನೆಂದು ಕೇಳದೆ ಮೊಬೈಲ್ ನಲ್ಲಿ ಮಾತನಾಡಲು ಆಗುತ್ತದೆಯೆ?	A B C D E	A B C D E
ಫೋನಿನಲ್ಲಿ ಮಾತು ಸರಿಯಾಗಿ ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	A B C D E	A B C D E
ಮೊಬೈಲ್‌ನಲ್ಲಿ ಮಾತನಾಡುವಾಗ ಮಾತುಗಳು ಜೋರಾಗಿ ಕೇಳದೆ ಹಿತವಾಗಿ ಕೇಳುತ್ತದೆಯೆ?	A B C D E	A B C D E
ಮೊಬೈಲ್‌ನಲ್ಲಿ ಗಂಡಸಿನ ಧ್ವನಿ ಸರಿಯಾಗಿ ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	A B C D E	A B C D E
ಮೊಬೈಲ್‌ನಲ್ಲಿ ಹೆಂಗಸಿನ ಧ್ವನಿ ಸರಿಯಾಗಿ ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	A B C D E	A B C D E
ಮೊಬೈಲ್‌ನಲ್ಲಿ ಮಕ್ಕಳ ಧ್ವನಿ ಸರಿಯಾಗಿ ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	A B C D E	A B C D E
ಟೆಲಿಕಾಯ್ಸ್ ವೋಡ್ನಲ್ಲಿ ನಿಮಗೆ ಮಾತು ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	A B C D E	A B C D E

೪. ಸಂಗೀತ ಕೇಳುವಿಕೆ

ಪ್ರಶ್ನೆಗಳು	ಶ್ರವಣ ಯಂತ್ರವಿಲ್ಲದೆ	ಶ್ರವಣ ಯಂತ್ರದೊಂದಿಗೆ
ನಿಮಗೆ ನಿಶಬ್ದವಾದ ಪರಿಸರದಲ್ಲಿ ಸಂಗೀತ ಚೆನ್ನಾಗಿ ಕೇಳುತ್ತವೆಯೆ (ಮನೆ,ಕಛೇರಿ ಕೊಠಡಿಗಳಲ್ಲಿ ,ಆಫೀಸು ಕ್ಯಾಬೀನು)?	A B C D E	A B C D E
ಸುತ್ತಮುತ್ತಲು ಗದ್ದಲವಿರುವಾಗ ನಿಮಗೆ ಸಂಗೀತ ಚೆನ್ನಾಗಿ ಕೇಳುತ್ತವೆಯೆ (ಮದುವೆ ಸಮಾರಂಭ, ಹುಟ್ಟು ಹಬ್ಬದ ಸಮಾರಂಭ)?	A B C D E	A B C D E
ಕಾರನ್ನು ಚಾಲನೆ ಮಾಡುವಾಗ ನಿಮಗೆ ಸಂಗೀತ ವನ್ನು ಆಲಿಸಲು ಆಗುತ್ತದೆಯೇ?	A B C D E	A B C D E

ಪ್ರಶ್ನೆಗಳು	ಶ್ರವಣ ಯಂತ್ರವಿಲ್ಲದೆ	ಶ್ರವಣ ಯಂತ್ರದೊಂದಿಗೆ
ಬೇರೆ ಬೇರೆ ಸಂಗೀತ ವಾದ್ಯಗಳ ಶಬ್ದವನ್ನು ಕೇಳಿ ಅವುಗಳನ್ನು ಗುರುತಿಸಲು ನಿಮಗೆ ಸಾಧ್ಯವಾಗುತ್ತದೆಯೆ (ತಬಲ, ಗಿಟಾರು, ಡ್ರಮ್ಮು)?	**A B C D E**	**A B C D E**
ಸುತ್ತಮುತ್ತಲು ಗದ್ದಲವಿಲ್ಲದಿದ್ದಾಗ ಹಾಡಿನ ವಾಕ್ಯ/ಪದಗಳು ನಿಮಗೆ ಅರ್ಥವಾಗುತ್ತದೆಯೇ? (ಮನೆ,ಕಛೇರಿ ಕೊಠಡಿಗಳಲ್ಲಿ ಆಫೀಸು ಕ್ಯಾಬೀನು)?	**A B C D E**	**A B C D E**

೫. ಕಿರಿಕಿರಿ/ತೊಂದರೆ

ಪ್ರಶ್ನೆಗಳು	ಶ್ರವಣ ಯಂತ್ರವಿಲ್ಲದೆ	ಶ್ರವಣ ಯಂತ್ರದೊಂದಿಗೆ
ಮನೆಯಲ್ಲಿನ ದಿನನಿತ್ಯದ ಶಬ್ದಗಳು (ಕುಕ್ಕರ್,ಅಲಾರ್ಮ್,ವಸ್ತುಗಳ ಬೀಳುವಿಕೆ) ನಿಮಗೆ ತೊಂದರೆಯನ್ನುಂಟು ಮಾಡುವುದಿಲ್ಲವೇ?	**A B C D E**	**A B C D E**
ನೀವು ಟ್ರಾಫಿಕ್ ನ ವಾಹನಗಳ ಶಬ್ದಗಳನ್ನು ಆರಾಮವಾಗಿ ಕೇಳಬಹುದೆ?	**A B C D E**	**A B C D E**
ಬಹಳ ಗದ್ದಲವಿರುವ ಜಾಗಗಳಲ್ಲಿ (ಮನೆ ಕಟ್ಟುವಾಗ ಬರುವ ಶಬ್ದ,ಕಾರ್ಖಾನೆ) ಬರುವ ಶಬ್ದಗಳನ್ನು ನಿಮಗೆ ಸಹಿಸಲು ಆಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಊಟ ಮಾಡುವಾಗ ಬರುವ ಶಬ್ದಗಳು ಹೆಚ್ಚಿನಿಸದೆ ಹಿತವಾಗಿ ಕೇಳುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ದೂರದರ್ಶನ ನೋಡುವಾಗ ನಿಮಗೆ ಅದರ ಶಬ್ದ ಹೆಚ್ಚೆನಿಸದೆ ಹಿತವಾಗಿ ಕೇಳುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಮಕ್ಕಳು ಆಟವಾಡುವಾಗ/ಅಳುತ್ತಿರುವಾಗ ಬರುವ ಶಬ್ದವು ಕರ್ಕಷರಹಿತವಾಗಿ ಕೇಳುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**

೬. ಸಾಮಾಜಿಕ ಹಾಗು ಭಾವನಾತ್ಮಕ ನಡುವಳಿಕೆ

ಪ್ರಶ್ನೆಗಳು	ಶ್ರವಣ ಯಂತ್ರವಿಲ್ಲದೆ	ಶ್ರವಣ ಯಂತ್ರದೊಂದಿಗೆ
ಹೊಸಬರೊಂದಿಗೆ ಮಾತನಾಡುವಾಗ ನಿಮಗೆ ಸಂಕೋಚವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಮನೆಯವರೊಂದಿಗೆ ಮಾತನಾಡುವಾಗ ನಿಮಗೆ ಕೋಪ ಬರುತ್ತದೆಯೇ?	**A B C D E**	**A B C D E**

ಪ್ರಶ್ನೆಗಳು	ಶ್ರವಣ ಯಂತ್ರವಿಲ್ಲದೆ	ಶ್ರವಣ ಯಂತ್ರದೊಂದಿಗೆ
ನಿಮ್ಮ ಗೆಳಯರೊಂದಿಗೆ ಮಾತನಾಡುವ ಸಂಧರ್ಭಗಳಿದ್ದಾಗ ಅವುಗಳಿಂದ ತಪ್ಪಿಸಿಕೊಳ್ಳುತ್ತೀರ ?	**A B C D E**	**A B C D E**
ನಿಮ್ಮ ಕೆಲಸದ ಜೊತೆಗಾರರೊಂದಿಗೆ, ಗ್ರಾಹಕರೊಂದಿಗೆ ಮಾತನಾಡುವಾಗ ನಿಮಗೆ ಕೋಪ ಬರುತ್ತದೆಯೇ?	**A B C D E**	**A B C D E**
ಗುಂಪಿನಲ್ಲಿ ಮಾತನಾಡುವುದರಿಂದ ನೀವು ತಪ್ಪಿಸಿಕೊಳ್ಳುತ್ತೀರ?	**A B C D E**	**A B C D E**
ಸುತ್ತಮುತ್ತಲು ಗದ್ದಲವಿರುವಾಗ ನಿಮಗೆ ಗೊಂದಲವೆನಿಸುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಮನೆ ಅಥವ ಕೆಲಸದ ಸಾಮಜಿಕ ಸಮಾರಂಭಗಳಿಂದ ನೀವು ದೂರವಿರುತ್ತೀರ?	**A B C D E**	**A B C D E**

೭. ಶ್ರವಣ ಯಂತ್ರದ ಬಳಕೆ ಹಾಗು ನಿರ್ವಹಣ

ಪ್ರಶ್ನೆಗಳು	ಶ್ರವಣ ಯಂತ್ರವಿಲ್ಲದೆ
ನಿಮ್ಮ ಶ್ರವಣ ಯಂತ್ರದ ಬ್ಯಾಟರಿಯನ್ನು ಯಾವಾಗ ಬದಲಾಯಿಸಬೇಕೆಂದು ನಿಮಗೆ ತಿಳಿದಿದೆಯೆ?	**A B C D E**
ಪ್ರತಿ ಸಲ ಶ್ರವಣ ಯಂತ್ರವನ್ನು On ಮಾಡಿದಾಗಲೂ ಅದು ಕೆಲಸ ಮಾಡುತ್ತಿದೆಯೆ ಎಂದು ನೀವು ಪರೀಕ್ಷಿಸುತ್ತೀರ?	**A B C D E**
ನೀವು ದಿನನಿತ್ಯದ ಎಲ್ಲ ಸಂದರ್ಭಗಳಲ್ಲೂ ಶ್ರವಣ ಯಂತ್ರವನ್ನು ಉಪಯೋಗಿಸುತ್ತೀರ?	**A B C D E**
ಸುತ್ತ ಮುತ್ತಲಿನ ಸಂದರ್ಭಗಳಿಗೆ ತಕ್ಕಂತೆ ಬೇರೆ ಬೇರೆ ಪ್ರೋಗ್ರಾಮ್(ಕ್ರಮ ವಿಧಿಯನ್ನು) ನೀವು ಉಪಯೋಗಿಸುತ್ತೀರ?	**A B C D E**
ಕಿವಿಅಚ್ಚು ಹಾಕಿಕೊಳ್ಳಲು ನಿಮಗೆ ಹಿತವೆನಿಸುತ್ತದೆಯೆ?	**A B C D E**
ನಿಮ್ಮ ಕಿವಿಯ ಮೋಲ್ಡನ್ನು ನೀವು ಅಗಾಗ ಸ್ವಚ್ಛಗೊಳಿಸುತ್ತೀರ?	**A B C D E**
ಶ್ರವಣ ಯಂತ್ರದಿಂದ ಶಬ್ದ ಹೊರಬಂದರೆ/ಫೀಡ್ ಬ್ಯಾಕ್ ಬಂದರೆ ಏನು ಮಾಡಬೆಕೆಂದು ನಿಮಗೆ ತಿಳಿದಿದೆಯೆ?	**A B C D E**
ನೀವು ಅಗಾಗ ನಿಮ್ಮ ಶ್ರವಣ ಯಂತ್ರದ ಪ್ರೊಗ್ರಾಮಿಂಗ್ ಬದಲಾಯಿಸಿಕೊಳ್ಳಲು ಹೋಗುತ್ತೀರ?	**A B C D E**
ನಿಮ್ಮ ಶ್ರವಣ ಯಂತ್ರದ ಸ್ವಚ್ಛತೆಯ ಬಗ್ಗೆ ನಿಮಗೆ ಗಮನವಿರುತ್ತದೆಯೆ?	**A B C D E**
ಹೇಳಿದ ಸಮಯಕ್ಕೆ ಸರಿಯಾಗಿ ನೀವು ಆಡಿಯಾಲಜಿಸ್ಟ್ (ಶ್ರವಣ ತಜ್ಞರ)ಬಳಿಗೆ ಹೋಗುತ್ತೀರ?	**A B C D E**

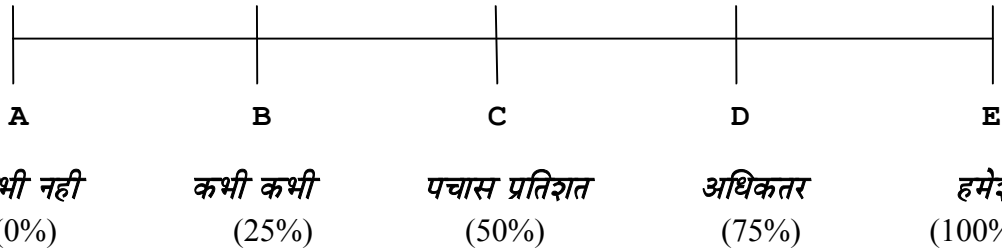
೮. ಶ್ರವಣ ಯಂತ್ರದಿಂದ ಉಂಟಾದ ಉಪಯೋಗದ ಬಗೆಗೆ ಪರಿವಾರದವರ ಅನಿಸಿಕೆ

ಪ್ರಶ್ನೆಗಳು	ಶ್ರವಣ ಯಂತ್ರವಿಲ್ಲದೆ	ಶ್ರವಣ ಯಂತ್ರದೊಂದಿಗೆ
ಪರಿವಾರದವರೊಂದಿಗೆ ಸುಲಭವಾಗಿ ವ್ಯವಹರಿಸಲು ಸಾಧ್ಯವಾಗುತ್ತಿದೆ ಎಂದು ನಿಮಗೆ ಅನ್ನಿಸುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಮತ್ತೆ ಮತ್ತೆ ಏನೆಂದು ಕೇಳದೆಯೆ ನಿಮ್ಮ ಮಾತುಗಳನ್ನು ಪರಿವಾರದವರು ಅರ್ಥಮಾಡಿಕೊಳ್ಳುತ್ತರೆಯೆ?	**A B C D E**	**A B C D E**
ಮೃದುವಾದ/ಮೆಲ್ಲನೆಯ ಮಾತುಗಳು ಅವರಿಗೆ ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ದೂರದರ್ಶನ(ಟೀವಿ) ಚಾಲನೆಯಲ್ಲಿದ್ದಾಗ ನಿಮ್ಮ ಮಾತು ಅರ್ಥವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಮದುವೆ ಮತ್ತು ಇನ್ನಿತರ ಜನರ ಗದ್ದಲವಿರುವ ಸಂದರ್ಭಗಳಲ್ಲಿ ಅವರಿಗೆ ಚೆನ್ನಾಗಿ ಕೇಳುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಮೊಬೈಲ್‌ನಲ್ಲಿ ಸುಲಭವಾಗಿ ವ್ಯವಹರಿಸಲು ಅವರಿಗೆ ಸಾಧ್ಯವಾಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಮನೆಯ ದಿನನಿತ್ಯದ ಶಬ್ದಗಳನ್ನು (ಎದಾ: ಕುಕ್ಕರ್, ಬೆಲ್, ನೀರು ಸುರಿಯುವುದು, ಪಾತ್ರೆ ಬೀಳುವಿಕೆ) ಅವರು ಸುಲಭವಾಗಿ ಸಹಿಸುತ್ತಾರೆಯೆ?	**A B C D E**	**A B C D E**
ಸಂಗೀತ ಅವರಿಗೆ ಚೆನ್ನಾಗಿ ಕೇಳುತ್ತದೆಯೆಂದು ನಿಮಗೆ ಅನ್ನಿಸುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ವಾಹನಗಳ ಟ್ರಾಫಿಕ್ ಶಬ್ದವನ್ನು ಅವರಿಂದ ಸಹಿಸಿಕೊಳ್ಳಲು ಆಗುತ್ತದೆಯೆ?	**A B C D E**	**A B C D E**
ಮನೆಯವರೊಂದಿಗೆ ಮಾತನಾಡುವಾಗ ಅವರು ಗೊಂದಲವಿಲ್ಲದೆಯೆ ಸುಲಭವಾಗಿ ವ್ಯವಹರಿಸುತ್ತಾರೆಯೆ?	**A B C D E**	**A B C D E**
ಅವರು/ಅವಳು /ಅವನು ಗೆಳಯರೊಂದಿಗೆ ಸುಲಭವಾಗಿ ಸೇರಿ ಮಾತನಾಡುತ್ತಾರೆಯೆ?	**A B C D E**	**A B C D E**
ಮನೆ/ಸಾಮಾಜಿಕ ಒಕ್ಕೂಟಗಳಲ್ಲಿ (ಉದಾ:ಮದುವೆ) ಅವರು ಸುಲಭವಾಗಿ ವ್ಯವಹರಿಸುತ್ತಾರೆಯೆ?	**A B C D E**	**A B C D E**

APPENDIX C

अनुदेश:– कृप्या उन उत्तर **(A, B, C, D, E)** पर (✓) लगाईए जिन्हे आप हर रोज अनुभव करते है। ध्यान रखिये हर एक उत्तर कुछ प्रतिशत रखता है। जैसे अगर आपके अनुसार कथन **50%** समय सही रहा है, तो **C** पर (✓) लगाईए।
अगर आपने हमारे द्वारा दी हुई स्थिति का अनुभव नही किया है, तो उसे खाली छोड़ दीजिये।
गणना कुछ इस तरह है:

A= कभी नही **(0%)**
B= कभी कभी **(25%)**
C= पचास प्रतिशत **(50%)**
D= अधिकतर **(75%)**
E= हमेशा **(100%)**



१. शान्त वातावरण मे सुनना

प्रश्न	बिना मशीन के	मशीन के साथ
क्या आप 3–4 फ़ीट की दूरी से हो रही बातचीत को समझ पाते है?	**A B C D E**	**A B C D E**
क्या आप 4–5 फ़ीट की दूरी से हो रही बातचीत को समझ पाते है?	**A B C D E**	**A B C D E**
क्या आप परिवार के सदस्यों के बीच चल रही बातचीत को समझ पाते है?	**A B C D E**	**A B C D E**
क्या आप घर पर हो रही बातचीत को बार–बार पुछे बिना समझ पाते है?	**A B C D E**	**A B C D E**

प्रश्न	बिना मशीन के	मशीन के साथ
क्या आप धीमी आवाज की बातचीत को समझ पाते है?	**A B C D E**	**A B C D E**
क्या आप बिना किसी ऊँची आवाज के सुने वक्ता की बातचीत को समझ पाते है?	**A B C D E**	**A B C D E**
क्या आप होठों की गतिविधियों को देखे बिना शब्दो को समझ पाते हो?	**A B C D E**	**A B C D E**
क्या आप बिना किसी विकृति के शब्दो को समझ पाते हो?	**A B C D E**	**A B C D E**
क्या आप वक्ता (पुरुष/महिला) की आवाज को पहचान पाते है?	**A B C D E**	**A B C D E**
क्या आप अपने सामने से आने वाली आवाज को समझ पाते है?	**A B C D E**	**A B C D E**
क्या आप दाँये/बाँये की तरफ़ से आने वाली आवाज को समझ पाते है?	**A B C D E**	**A B C D E**
क्या आप अपने पीछे की तरफ़ से आने वाली आवाज को समझ पाते है?	**A B C D E**	**A B C D E**
क्या आप दूसरो से बातचीत करते समय अपनी आवाज पर नियंत्रण रख पाते हो?	**A B C D E**	**A B C D E**
क्या आप उतनी ही आवाज पर टी.वी. सुन पाते है जितनी आवाज पर आपके घर के सदस्य सुनते है?	**A B C D E**	**A B C D E**
क्या आप टी.वी. देखते समय शब्दो को समझ पाते हो?	**A B C D E**	**A B C D E**
क्या आप रेडियो स्पष्ट रुप से सुन पाते है?	**A B C D E**	**A B C D E**

२. शोर जैसे वातावरण मे सुनना

प्रश्न	बिना मशीन के	मशीन के साथ
क्या आप शोर वाले वातावरण मे 3–4 फ़ीट की दूरी से हो रही बातचीत को समझ पाते हो?(जैसे– ऑफ़िस में, समूह में)	**A B C D E**	**A B C D E**
क्या आप शोर वाले वातावरण मे 4–5 फ़ीट की दूरी से हो रही बातचीत को समझ पाते हो? (जैसे– ऑफ़िस में, समूह में)	**A B C D E**	**A B C D E**
क्या आप टी.वी. सुनते समय परिवार के सदस्यों के बीच चल रही बात–चीत को समझ पाते हो?	**A B C D E**	**A B C D E**
क्या आप रेस्टोरेन्ट मे दोस्तो या अपने परिवार के सदस्यों के बीच चल रही बातचीत को समझ पाते हो?	**A B C D E**	**A B C D E**
क्या आप बाज़ार मे दुकानदार से हो रही बातचीत को समझ पाते हो?	**A B C D E**	**A B C D E**
क्या आप दोस्तो के बीच हो रही बातचीत को समझ पाते हो?	**A B C D E**	**A B C D E**
क्या आप शोर वाली जगह पर वक्ता के होठों की गतिविधियों को देखे बिना बातचीत को समझ पाते हो?	**A B C D E**	**A B C D E**
क्या आप शोर वाली जगह जैसे कि रेलवे स्टॅशन, बाज़ार मे अपने सामने से आने वाली आवाज की दिशा का पता लगा लेते है?	**A B C D E**	**A B C D E**
क्या आप शोर वाली जगह जैसे कि रेलवे स्टॅशन, बाज़ार मे पीछे से आने वाली आवाज की दिशा का पता लगा लेते है?	**A B C D E**	**A B C D E**
क्या आप शादी या किसी समारोह जैसी जगहो पर हो रही बातचीत को समझ पाते है?	**A B C D E**	**A B C D E**
क्या आप बाग मे आपके दोस्तो या फ़िर परिवार के सदस्यो के बीच हो रही बातचीत को समझ पाते है?	**A B C D E**	**A B C D E**

प्रश्न	बिना मशीन के	मशीन के साथ
क्या आप रेलवे स्टेशन पर दी जा रही सूचनाओ को समझ पाते हैं?	**A B C D E**	**A B C D E**
क्या आप बस स्टैन्ड पर दी जा रही सूचनाओ को समझ पाते हैं?	**A B C D E**	**A B C D E**
क्या आप चलती हुई बस मे हो रही बातचीतो को समझ पाते हैं?	**A B C D E**	**A B C D E**
क्या आप कार मे स्टीरियो के चलते समय, हो रही बातचीत को समझ पाते हैं?	**A B C D E**	**A B C D E**
क्या आप थिएटर में फ़िल्म में चल रहे संवादो को समझ पाते हैं?	**A B C D E**	**A B C D E**
क्या आप कक्षा मे हो रहे लेक्चर को समझ पाते हैं?	**A B C D E**	**A B C D E**
क्या आप शापिंग मॉल मे दोस्तो के बीच हो रही बातचीत को समझ पाते हैं?	**A B C D E**	**A B C D E**

३. टेलीफोन सुनते समय

प्रश्न	बिना मशीन के	मशीन के साथ
क्या आपको टेलीफोन की घन्टी सुन पाते हैं?	**A B C D E**	**A B C D E**
क्या आप शान्त वातावरण मे फोन/मोबाईल पर हो रही बातचीत को समझ पाते हैं? (घर के शान्त कमरे मे)	**A B C D E**	**A B C D E**
क्या आप बाज़ार मे मोबाईल पर हो रही बातचीत को समझ पाते है?	**A B C D E**	**A B C D E**
क्या आप फोन पर पर हो रही बातचीत को बार–बार पुछे बिना समझ पाते है?	**A B C D E**	**A B C D E**

प्रश्न	बिना मशीन के	मशीन के साथ
क्या आप फोन पर बातचीत बिना किसी विकृति के कर पाते हो?	**A B C D E**	**A B C D E**
क्या आप फोन पर हो रही बातचीत के धवनि स्तर को बिना किसी परेशानी के सुन पाते हैं?	**A B C D E**	**A B C D E**
क्या आप फोन पर बात करते समय पुरुष की आवाज़ को पहचान पाते हो?	**A B C D E**	**A B C D E**
क्या आप फोन पर बात करते समय महिला की आवाज़ को पहचान पाते हो?	**A B C D E**	**A B C D E**
क्या आप फोन पर बात करते समय बच्चे की आवाज़ को पहचान पाते हो?	**A B C D E**	**A B C D E**
क्या आप टेलीकोइल स्थिती पर फोन पर बात सुन पाते हो?	**A B C D E**	**A B C D E**

४. संगीत सुनना

प्रश्न	बिना मशीन के	मशीन के साथ
क्या आप शान्त वातावरण मे(घर,दफ्तर) संगीत सुन पाते हो?	**A B C D E**	**A B C D E**
क्या आप बहुत ज्यादा शोरगुल मे बज रहे संगीत को समझ पाते हो (शादियो मे, जन्मदिन पार्टी मे)?	**A B C D E**	**A B C D E**
क्या आप कार चलाते समय संगीत समझ पाते हो?	**A B C D E**	**A B C D E**
क्या आप संगीत सुनते समय विभिन्न वाद्य यन्त्रो की आवाज को पहचान पाते हो?	**A B C D E**	**A B C D E**
क्या आप शान्त वातावरण मे गाने के बोल/शब्दो को समझ पाते हो?	**A B C D E**	**A B C D E**

५. आवाज़ के प्रति व्यवहार

प्रश्न	बिना मशीन के	मशीन के साथ
क्या आप घर मे हो रही आवाज़ो को सुनने मे सुविधाजनक महसूस करते है (दरवाजे की घन्टी,टेलीफोन की घन्टी)?	**A B C D E**	**A B C D E**
क्या आप यातायात के शोर को सुनने मे सुविधाजनक महसूस करते है (कार,स्कूटर)?	**A B C D E**	**A B C D E**
क्या आप शोर वाले वातावरण से गुजरते समय आवाज को सहन कर पाते हो (कारखाना, दफ़्तर)?	**A B C D E**	**A B C D E**
क्या आप खाना खाते समय होने वाली आवाज़ से सुविधाजनक महसूस करते है?	**A B C D E**	**A B C D E**
क्या आप टी.वी. सुनते/देखते समय सुविधाजनक महसूस करते है?	**A B C D E**	**A B C D E**
जब बच्चे खेलते समय चीखते है, तो क्या आप उनकी आवाज को सहन कर पाते है?	**A B C D E**	**A B C D E**

६. सामाजिक और भावनात्मक व्यवहार

प्रश्न	बिना मशीन के	मशीन के साथ
क्या आपको नए लोगो से मिलते समय शर्मिन्दगी महसूस होती है?	**A B C D E**	**A B C D E**
क्या आप अपने परिवार के लोगो से बात करते समय निराशा महसूस करते है?	**A B C D E**	**A B C D E**
क्या आप अपने दोस्तो को नजर अन्दाज करते है?	**A B C D E**	**A B C D E**
क्या आप अपने सह–कर्मियो या दोस्तो से बात करते समय निराश महसूस करते है?	**A B C D E**	**A B C D E**
जब आप अपने दोस्तो के साथ होते है तो आप अपने आप को अलग महसूस करते है?	**A B C D E**	**A B C D E**

प्रश्न	बिना मशीन के	मशीन के साथ
क्या आप शोरगुल वाले वातावरण में बेचैनी महसूस करते है?	**A B C D E**	**A B C D E**
क्या आप घर और दफ़्तर के समारोहो को नजर अन्दाज करते है?	**A B C D E**	**A B C D E**

७. श्रवण यंत्र के देखभाल और उपयोग / देखरेख

प्रश्न	मशीन के साथ
क्या आप जानते है, कि कब आपको अपने श्रवण यंत्र की बैट्री बदलनी है?	**A B C D E**
क्या आप हमेशा श्रवण यंत्र को ओन करते समय जाँचते है, की वह काम कर रहा है या नही?	**A B C D E**
क्या आप सुनने वाली हर जगह (घर,दफ्तर) पर श्रवण यंत्र पहनते हैं?	**A B C D E**
क्या आप सुनने की स्थिती/जगह के अनुसार अपने श्रवण यंत्र के प्रोग्राम बदल पाते हो(टेलीकोइल, शोर वाली जगह)?	**A B C D E**
क्या आप अपने कान का साँचा पहनने मे आराम महसूस करते है?	**A B C D E**
क्या आप अपने कान का साँचा बताये गए निर्देषो के अनुसार साफ करते है?	**A B C D E**
श्रवण यंत्र को पहनने के बाद भी अगर आवाज बाहर आए तो आप जानते है कि क्या करना है?	**A B C D E**
क्या आप समय– समय पर अपने श्रवण यंत्र की दुबारा प्रोग्रामिन्ग के लिए जाते है?	**A B C D E**
क्या आप अपने श्रवणयंत्र की देखभाल के प्रति जागरूक हैं?	**A B C D E**
क्या आप अपने श्रवणवैग्ञानिक के पास समय–समय पर कान की जाँच के लिए जाते है?	**A B C D E**

८. परिवार के सदस्यो के प्रति लाभ:

प्रश्न	बिना मशीन के	मशीन के साथ
क्या आपको लगता है, की वह परिवार मे चल रही बातचीत को बिना छुटे समझ पाता/पाती है?	**A B C D E**	**A B C D E**
क्या आपको लगता है, कि वह घर पर हो रही बातचीत को बार–बार पुछे बिना समझ पाता/पाती है?	**A B C D E**	**A B C D E**
क्या आपको लगता है कि वह धीमी आवाज की बातचीत को समझ पाता/पाती है?	**A B C D E**	**A B C D E**
क्या आपको लगता है कि वह टी.वी. चलते समय परिवार के सदस्यो के बीच चल रही बातचीत को समझ पाता/पाती है?	**A B C D E**	**A B C D E**
क्या आपको लगता है कि वह शादी, पार्टी जैसे समारोह मे बातचीत को समझ पाता/पाती है?	**A B C D E**	**A B C D E**
क्या आपको लगता है कि वह शान्त वातावरण (घर,दफ्तर)मे फोन पर बातचीत समझ पाता/पाती है?	**A B C D E**	**A B C D E**
क्या आपको लगता है कि वह घर पर सगींत सुन पाता/पाती है?	**A B C D E**	**A B C D E**
क्या आपको लगता है कि वह घर मे हो रही आवाज(पानी की मोटर, अलार्म, दरवाजे की घन्टी) को सुनते समय सुविधाजनक महसूस करता/करती है?	**A B C D E**	**A B C D E**
क्या आपको लगता है, कि वह यातायात का शोर सहन कर पाता/पाती है?	**A B C D E**	**A B C D E**
क्या आपको लगता है, की वह बिना किसी निराशा के घर के सद्स्यो से बातचीत कर पाता/पाती हैं?	**A B C D E**	**A B C D E**
क्या आपको लगता है, वह दोस्तो/लोगो को नजर अंदाज किये बिना उनसे मिलता/मिलती है?	**A B C D E**	**A B C D E**
क्या आपको लगता है, वह घर या दफ़्तर के समारोह को नजर अन्दाज नही करता/करती है?	**A B C D E**	**A B C D E**