

Measuring Hearing Aid Outcomes of Government Funded Hearing Aids in India

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ABSTRACT

Introduction: Hearing loss is one among the persistent sensory deficiency in human populations, involving more than 250 million public in the world. Hearing aids are electrical equipments that aid in optimizing acuity of speech or other sounds. Outcome measures have been of rising concern to audiologists, consumers and hearing aid manufacturers.

Aim and Objective

- To assess the user satisfaction of government funded hearing aids
- To assess the digital quality of free hearing aids provided by the government

Method: The study was done on patients who were provided with behind the ear hearing aids in a free hearing aid distribution camp under Assistance to Disabled persons for purchasing / fitting of aids / appliances (ADIP) scheme. A survey was done for 100 subjects by administering the SADL.

Results: The SADL satisfaction scores showed high satisfaction ratings for almost all the aspects of the questionnaire. Approximately 80 % of the individuals using the hearing aids provided a positive feedback and were tremendously satisfied with the performance of the hearing aid.

Conclusion: Hence to conclude, ADIP scheme hearing aids do satisfy the users in most of the features such as speech understanding, speaking over phone and enhanced hearing.

Key words - Hearing aids; Outcome measures; Government funded

INTRODUCTION

Hearing is the capability to identify sounds by detecting vibration

differences in the environment, through an organ like the ear. Hearing loss is one among the persistent sensory deficiency in human populations, involving more than 250 million public in the world. India alone has 63 million people (6.3%) enduring from hearing loss. [1] Outcome of hearing impairment include lack of ability to understand speech sounds, regularly producing a condensed capability to communicate, hindrance in language attainment, educational difficulty, societal separation and stigmatization. [2] According to 2005 survey of World Health Organization, 278 million people have hearing loss. The incidence of deafness in south-eastern region of Asia ranges from 4.6% to 8.8%. [2] Keeping this in deliberation the task of aural remedy exists. Aural rehabilitation is the process of reducing hearing loss induced problems in function, activity, contribution and excellence of life through a mixture of sensory rehabilitation, teaching, auditory training, and counseling. [3]

Hearing aids are electrical equipments that aid in optimizing acuity of speech or other sounds. [4] Outcome measures have been of rising concern to audiologists, consumers, hearing aid manufacturers, third-party payers, and researchers alike, although not at all times for the similar reasons. [5-7] Service providers have established that self-reports of disability and handicap provide valuable insight into the influence of impairment on every day living and support preparation

and execution of a rehabilitative plan that sensibly addresses the necessities of the individual with hearing loss. Additionally, self-assessed conclusion data can be used to document the advantage of the management plan and can point to areas that are meeting expectations as well as those that require improvement. [8] Numerous questionnaires have been designed to know the degree of satisfaction on the whole. Satisfaction changes with practice, usage, expectations, attitude, personality, hearing aid types, sound quality and listening environments.

The Satisfaction with Amplification in Daily Life (SADL), a self-assessment test [9] accomplishes the need for a clinically practical tool by providing useful insight to the multidimensional aspects of satisfaction. The scale has 15 items related to prospects like usage of hearing aid, and gives a global score representing overall satisfaction, as well as four subscales scores about satisfaction in the areas of "Positive Effect", "Service and Cost", "Negative Features", and "Personal Image". [9] Respondents are asked to point to their rank of satisfaction on a scale from one (not at all) to seven (tremendously). [8]

Objectives:

- To assess the satisfaction of government funded hearing aids
- To assess the digital quality of free hearing aids provided by the government

METHOD

Participants: The study was done on patients who were provided with free behind the ear hearing aids in a free hearing aid distribution camp under Assistance to Disabled persons for purchasing / fitting of aids / appliances (ADIP) scheme. It was mandatory for the patients to have Disability Certificate (Disability of >40%), BPL card (A low income group certificate) and ADHAAR Card (Address and identity proof) to avail the hearing aids under the free hearing aid scheme. ALPS TURBO III CAP Hearing aid was provided during the camp. A total of 200 patients were benefited

under this service including both pediatric and adult patients.

Inclusion criteria: Individuals within age range of 20 to 70 years who are using hearing aid for more than 6 months were included.

Exclusion criteria: Individuals less than 20 years of age and subjects who have not used hearing aids for more than 2 months were excluded from this study.

Procedure:

Questionnaire Satisfaction with Amplification in Daily Life (SADL) ([Appendix 1](#)) was used in this study. Questionnaire was translated into Kannada from English by professional translators, and was verified by authors. We conducted a survey for 100 subjects by administering questionnaire consisting of 15 items which were rated under 7-point rating scale, where A indicated not at all and G indicated tremendously. The questionnaire was divided into four subtests based on type of questions Positive Effect (Items 1,3,5,6,9 and 10), Service and Cost (Items 12,14 and 15), Negative Features (2,7 and 11), and Personal Image (4, 8 and 13). Question 15 in service and cost was not considered as the hearing aid provided was free of cost. For the subtests 'negative features' and 'personal image', scoring was considered in a reverse mode where A indicated tremendously and G indicated not at all. Subjects were instructed to listen to the questions and options and then to rate their experience with the hearing aid. Responses were recorded and tabulated.

RESULTS

Descriptive statistics was carried out to find out the frequency of responses for each question across 100 subjects. The following figures show the percentage of responses for each question based on ratings given by the hearing aid users.

Positive Effect

The Positive Effect subscale includes questions 1, 3, 5, 6, 9, and 10 of the SADL. Participants reported tremendous

contentment levels for items involving enhancement in understanding familiar conversation (80%). 75% of the hearing aid users indicated that frequency of repetitions asked by the hearing aid user greatly reduced after wearing the aid and of the sound derived from their hearing aids was rated as considerably natural by 70% of the

participants. Almost 80 % of the beneficiaries pointed out tremendous level of satisfaction for better self confidence and 75% of the individuals were greatly pleased when asked whether gaining their hearing aids was in their best interest and whether having it was worth the intricacy.

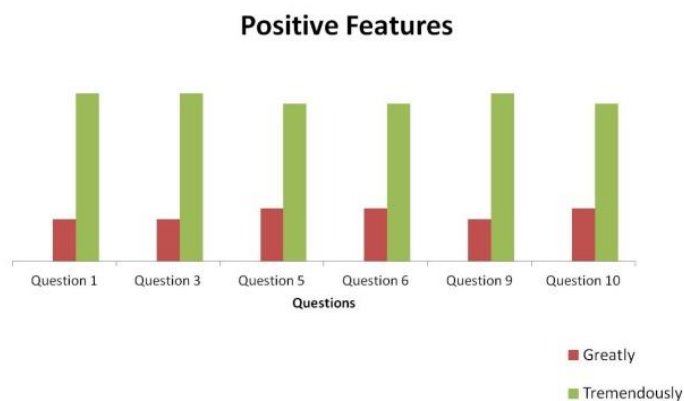


Figure 1: Graphical Representation of percentage of responses for Positive Effect.

Service and Cost

This subscale is made up of questions 12 and 14. All individuals who participated in the study (100%) opined that the services they obtained while receiving the aids were tremendous and. specially, users were to a great extent satisfied with the proficiency of the audiologist and indicated a great level of satisfaction with the reliability of their hearing aids.

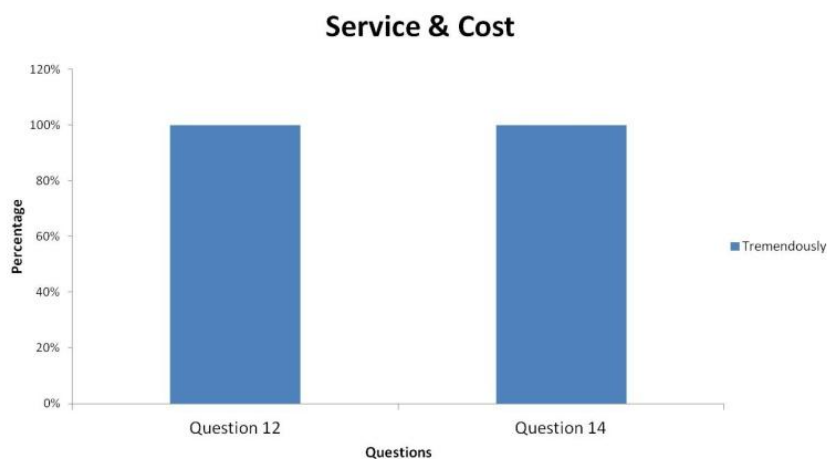


Figure 2 – Graphical Representation of percentage of responses for Service & Cost.

Negative Features

This subset has Items 2 and 7 which are reversed items and 11. 70 % of individuals opined that there was no difficulty while using the provided hearing aid and only 20% of them reported a slight discomfort, mainly due to feedback and cosmetic appearance. Participants were a little troubled with environmental sounds amplified by the hearing aids. However the patients complained of poor build quality and frequent physical damage of the hearing aid,

which was not included in the questionnaire and hence couldn't be quantified. Clients also had difficulty in adverse environment such as noisy situations and group discussion. This complication can be attributed to limited programming options available in the aid which in turn hinders the accessibility and hence restricting the audiologist for further fine tuning.

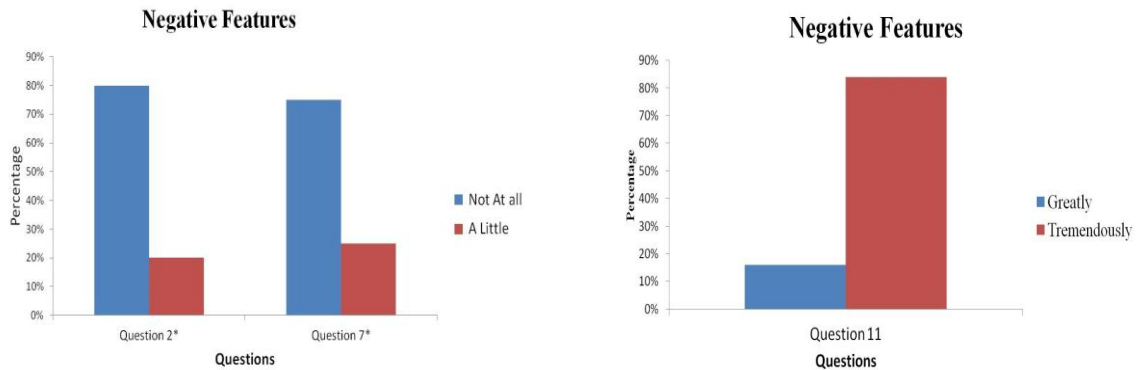


Figure 3 and 4– Graphical Representation of percentage of responses for Negative features.
*Representing questions which are scored in a reverse manner.

Personal Image

The subscale consists of questions 4, 8, and 13 which are scored in a reverse manner. Participants reported great levels of satisfaction on this. Furthermore, 80% of individuals were not much concerned about the appearance of the aid. 75% of the hearing aid users disagreed on question 4, which shows that the hearing did not make them seem less capable rather made them more independent and capable.

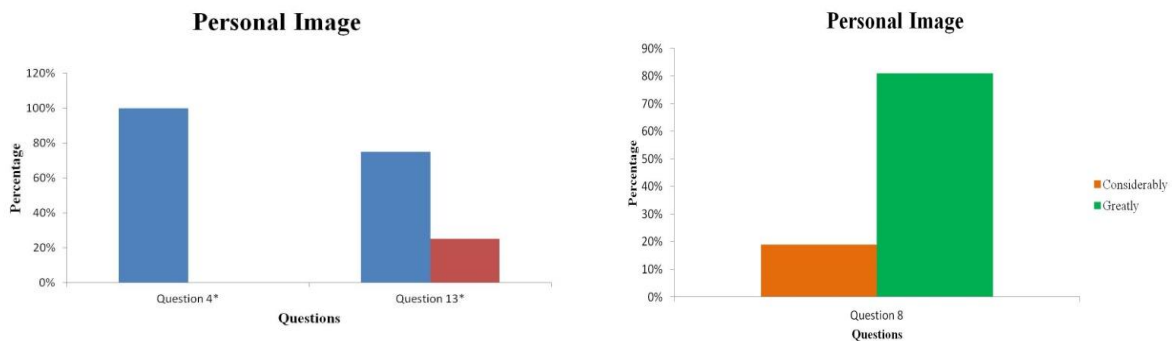


Figure 5 and 6 – Graphical Representation of percentage of responses for Personal Image.
*Representing questions which are scored in a reverse manner.

DISCUSSION

The results determined that, in general there was a great level of partaker contentment with amplification of the hearing aid. This is in agreement with abundant other studies done on Australian hearing aid users. [10] Outcome of the current study is in agreement to the SADL data, [11] which had participants of almost similar age and gender. In contrast, SADL scores for the current study were high than 12-24 month post fitting group, probably

because the data were collected in the current study was at an earlier stage post fitting. [11] The satisfaction for the individuals in the present study may more strongly be similar to the normative data, if measured at a later stage post fitting [12] as was the case while it was correlated their 12–24 month post fitting participant group with interim norms. [13]

CONCLUSION

This research has contributed SADL data for the hearing aid users provided with free hearing aids through ADIP scheme of the Indian government. Relatively a few variables that can persuade satisfaction levels were recognized amongst all SADL subscales and those are apparent degree of hearing intricacy with no hearing aids, quantity of earlier hearing aid practice, and style of hearing aid. The SADL satisfaction scores were appreciably correlated to all other measures inspected, as well as single-item satisfaction, hearing aid use, hearing aid benefits, and its challenges. Hence to conclude, ADIP scheme hearing aids do satisfy the users in most of the features such as speech understanding, speaking over phone and enhanced overall hearing. Further improvements will be of great leverage for the users and providers, which makes using hearing aid more affordable and consumer friendly.

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Appendix 1

SATISFACTION WITH AMPLIFICATION IN DAILY LIFE

NAME _____ DATE OF BIRTH ___/___/___ TODAY'S DATE ___/___/___

INSTRUCTIONS

Listed below are questions on your opinions about your hearing aid(s). For each question, please circle the letter that is the best answer for you. The list of words on the right gives the meaning for each letter.

Keep in mind that your answers should show your general opinions about the hearing aids that you are wearing now or have most recently worn.

A Not At All
B A Little
C Somewhat
D Medium
E Considerably
F Greatly
G Tremendously

1. Compared to using no hearing aid at all, do your hearing aids help you understand the people you speak with most frequently? A B C D E F G
2. Are you frustrated when your hearing aids pick up sounds that keep you from hearing what you want to hear? A B C D E F G
3. Are you convinced that obtaining your hearing aids was in your best interests? A B C D E F G
4. Do you think people notice your hearing loss more when you wear your hearing aids? A B C D E F G
5. Do your hearing aids reduce the number of times you have to ask people to repeat? A B C D E F G
6. Do you think your hearing aids are worth the trouble? A B C D E F G
7. Are you bothered by an inability to get enough loudness from your hearing aids without feedback (whistling)? A B C D E F G
8. How content are you with the appearance of your hearing aids? A B C D E F G
9. Does wearing your hearing aids improve your self-confidence? A B C D E F G
10. How natural is the sound from your hearing aids?
How helpful are your hearing aids on MOST telephones with *NO* amplifier or loudspeaker?
(If you hear well on the telephone *without* hearing aids, check here) A B C D E F G
12. How competent was the person who provided you with your hearing aids? A B C D E F G

(Continued)

- A Not At All
- B A Little
- C Somewhat
- D Medium
- E Considerably
- F Greatly
- G Tremendously

13. Do you think wearing your hearing aids makes you seem less capable? A B C D E F G
14. Does the cost of your hearing aids seem reasonable to you? A B C D E F G
15. How pleased are you with the dependability (how often they need repairs) of your hearing aids? A B C D E F G

Please respond to these additional items.

EXPERIENCE WITH CURRENT HEARING AIDS	LIFETIME HEARING AID EXPERIENCE (includes all old and current hearing aids)	DAILY HEARING AID USE	DEGREE OF HEARING DIFFICULTY (without wearing a hearing aid)
<input type="checkbox"/> Less than 6 weeks <input type="checkbox"/> 6 weeks to 11 months <input type="checkbox"/> 1 to 10 years <input type="checkbox"/> Over 10 years	<input type="checkbox"/> Less than 6 weeks <input type="checkbox"/> 6 weeks to 11 months <input type="checkbox"/> 1 to 10 years <input type="checkbox"/> Over 10 years	<input type="checkbox"/> None <input type="checkbox"/> Less than 1 hour per day <input type="checkbox"/> 1 to 4 hours per day <input type="checkbox"/> 4 to 8 hours per day <input type="checkbox"/> 8 to 16 hours per day	<input type="checkbox"/> None <input type="checkbox"/> Mild <input type="checkbox"/> Moderate <input type="checkbox"/> Severe

FOR AUDIOLOGISTS USE ONLY	
HEARING AID FITTING:	
Right Ear Make _____ Model _____ Ser. No. _____ Fitting Date _____ Style CIC ITC ITE BTE	Left Ear Make _____ Model _____ Ser. No. _____ Fitting Date _____ Style CIC ITC ITE BTE
HEARING AID FEATURES (check all that apply)	
<input type="checkbox"/> Directional Microphone <input type="checkbox"/> Multiple Microphones <input type="checkbox"/> Multi-channel <input type="checkbox"/> Remote Control <input type="checkbox"/> Multi-program <input type="checkbox"/> No Volume Control	<input type="checkbox"/> Peak Clipping <input type="checkbox"/> Compression Limiting <input type="checkbox"/> TILL <input type="checkbox"/> WDRC <input type="checkbox"/> BILL <input type="checkbox"/> T-Coil
<input type="checkbox"/> Other _____ _____ _____	

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