

Does Hearing Aid Fitting Limit Hearing Loss Consequences in Elderly?



Mustafa MWM*

Department of Otorhinolaryngology, South Valley University, Egypt

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***Corresponding author:** Mustafa MWM, Associate Professor of Audio vestibular Medicine, Department of Otorhinolaryngology, Audio vestibular Medicine Unit, Qena Faculty of Medicine, South Valley University, Egypt

Abstract

Purpose: To assess the daily life consequences of hearing loss in older adults and to explore the influences of hearing loss and effect of hearing aid on their daily life

Method: Thirty patients, their ages mean was 71.6 years, SD= 4.239, were consecutively recruited from the hospital audiology clinic. All participants were assessed by basic audiological evaluation. Personal affection was measured using McCarty Alpiner scale 1983. Arabic International Outcome Inventory for Hearing Aids was used to measure benefits of hearing aid use

Results: Moderate correlation was found between non-aided hearing measurements and psychological, social and vocational affection. Hearing aid affected hearing threshold positively ($p=0.00$) with positive correlation with age and no correlation with gender. IOI-HA showed Improvement of audiological profile of the patient almost show better personal outcome.

Conclusions: Daily life consequences of hearing loss and general life Satisfaction are closely related. Hearing aid is a beneficial rehabilitation method for presbycusis.

Keywords: Presbycusis; Age related hearing loss; Hearing aid; Aging process; Auditory rehabilitation

Introduction

Hearing loss has been referred to as an invisible disorder [1] and a silent disorder [2]. This might be related to the fact that health professionals often ignore hearing problems among the elderly. Such ignorance could be due to a focus on other diagnoses and sensory problems that frequently appear in older age and are often assessed with higher priority [3]. Furthermore, hearing loss is frequently denied, minimized or ignored by the older persons themselves. A considerable number of elderly do not apply for hearing aid fittings or any other form of professional help [4]. Age related hearing loss-presbycusis-represents the contributions of a lifetime of insults to the auditory system, including mainly ageing and noise damage.

Presbycusis is characterized by reduced hearing sensitivity and speech understanding in noisy environments and impaired localization of sound sources [2]. The loss of hearing sensitivity usually begins in the highest frequencies and leads to reduce ability to hear certain consonants, such as s, sh, f, v, t, p and b, which have energy in the range of 2000-8000Hz. These consonants are

essential to the understanding of speech and explain why the most common complaint associated with presbycusis is not that elderly subjects cannot hear, but rather that they cannot comprehend what is being said [2].

The concept of audiological rehabilitation has been defined as the following: "to include consideration and management of overall communication skills, psychological aspects of hearing loss, education of significant others, hearing aid orientation, emphasis on improving conversational and interactive skills, and use of assistive listening devices" [5]. There have been requests for audiological rehabilitation to focus on the functional effects of hearing loss in everyday life, such as activity limitation rather than hearing impairment itself [6]. This research is designed to address the consequences of hearing loss and the factors affecting preconceptions, expectations and experiences associated with hearing aids among older adults. The overall objective of this study is to obtain understanding and knowledge regarding hearing loss and hearing aid use among the elderly, to develop suitable audiological rehabilitation program for the Egyptian patient.

Patient and Methods

Thirty patients (20 males and 10 females) were randomly selected from the geriatric patients who attend to the Audio vestibular medicine Clinic, Otorhinolaryngology Department, Qena University Hospital. Hearing thresholds were measured before and after hearing aid fitting. Before hearing aid fitting also there is assessment of their psychological, social and vocational state. IOI-HA questionnaire was presented after use of the fitted HA for assessment of personal benefit of hearing aid.

Statistical Analysis

Statistics were done using the SPSS software (version 24). Data were displayed as mean with standard deviation and frequencies according to the type of data displayed. P value all over

the study was considered with confidence interval 95%. Paired Samples T test was used for the comparison between the two groups, Pearson correlation coefficient test, "T" test and F test were used also.

Result

The patient's major complaint was hearing loss; hearing aid fitting was the rehabilitation method. Twenty percent of the patients suffered from moderate hearing loss, 36.6% had moderately severe, 20% had severe hearing loss and 23.3% presented with profound hearing loss with speech discrimination score $57.73\% \pm 13.76\%$. Moderate positive correlation was found between the severity of hearing loss and psychological, social and vocational status of the patient by 58.8%, 58.8 % and 48.1% in order a (Table 1).

Table 1: Moderate positive correlation was found between the severity of hearing loss and psychological, social and vocational status of the patient.

	Mean± SD	Min	Max
Psychological	33.07±11.41	18	42
Social	45.20±10.15	34	50
Vocational	29.47±10.78	26	34

Hearing threshold showed high significant improvement after the use of hearing aid, hearing threshold for each frequency was measured with the following results (Figure 1). Speech discrimination also showed significant improvement. On trial to focus on factors affecting the hearing aid benefit age showed moderate positive correlation; being younger for the first time increase their

benefit of hearing aid use. On contrast gender didn't show effect on the benefit of hearing aid use. On assessment of personal outcome of the hearing aid using IOI-HA it resulted that Improvement of audiological profile of the patient almost show better personal outcome (Table 2).

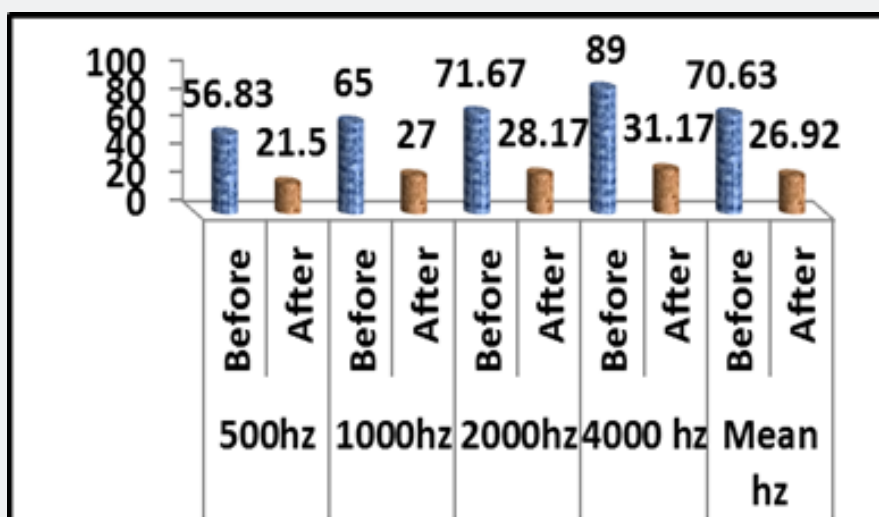


Figure 1: Hearing threshold showed high significant improvement after the use of hearing aid, hearing threshold for each frequency was measured with the following results.

Table 2: On assessment of personal outcome of the hearing aid using IOI-HA it resulted that Improvement of audiological profile of the patient almost show better personal outcome.

	Mean± SD	Min	Max
IOI-HA	28.63±2.36	25	33

Discussion

Most patients presented to the clinic had moderately severe hearing loss 36.6%. The severe degree of hearing loss is attributed to the long duration that passed before the patient’s search for medical help. Less than this communication and social life almost is not severely affected. Most patients were males nearly 66%. According to Jonsson Radi et al. [7] presbycusis is more common in males perhaps due to synergism of multiple risk factors such as noise exposure and smoking. The finding that experienced activity limitation and general life affection was significantly associated with increased hearing loss (Table 1) are consistent with previous studies that show hearing-impaired older adults report greater difficulties with functional activities and more co-morbidities than older adults without, or with slight, hearing loss in agreement with Barrenan et al. and Motl Robert W et al. [8,9].

A wide range of problems can arise with increasing hearing loss. Hearing loss has a considerable effect on psychological state of the patient and activities of daily life in agreement with Dalton et al. and Davis et al. [10,11]. As hearing impairment affects communication, subsequently it will also affect social participation. Elderly with a sensory loss frequently experience conversational breakdown and perceive themselves as poor Conversation- alists (Table1) in harmony with Anderson et al. reported 2013. presbycusis can not only lead sufferers to reduced quality of life, isolation, dependence and frustration, but also affect the healthy people around as shown in (Table1) in agreement with Parham K [12]. Our finding that perceived participation restriction is associated with general life satisfaction fits well with earlier studies that demonstrate that hearing impairment reduces quality of life [13]. Even mild hearing loss can lead to severe disability, thereby negatively influencing the lives of the elderly according to [14].

Our finding perceived that hearing range of the patient with age related hearing loss is greatly improved with the use of hearing aid (Figure 1). Significant change in pure tone measurements before and after hearing aid fitting was reported as (P-value > 0.001). Barbosa et al. [15]. reported that the percentage of patients with severe hearing handicap decreased from 45.6% to 8.8% with hearing aid use. Getting older increase the chance of having age related hearing loss but, hearing aid fitting almost give better results (according to our study) conflicting with [16] whose study reported that no relationship between age and the net result of hearing aid. Vestergaard et al. [16] in contrast reported that gender has no relationship with how the patient gets benefit from the hearing aid as well as this research did. Staehelin et al. [17] reported that there may be a difference according to gender in

the personal impact of hearing aid but not in the test results. Our study revealed that most of patients got the promising outcome from the hearing aid, going on depth this mean that the factors of IOI-HA questionnaire are nearly fulfilled [18] (Table 2).

Conclusion

Remarkable limitations of daily activity associated with increased hearing loss, health conditions and general life satisfaction in closely related and perceived participation restriction was significantly associated with decreased life satisfaction.

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