Hearing aids in the elderly: quality of life and inequality

Original Article

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Abstract

Objectives: To evaluate the impact of hearing aids (HA) on the quality of life of patients with presbycusis and identify the causes for not using them.
Study design: Retrospective cohort.
Materials and methods: The Hearing Handicap Inventory for the Elderly (HHIE) was applied to patients with presbycusis, with indication for HA, followed in the ENT Service of a tertiary hospital between 2021 and 2022. Patients who did not use HA answered the closed question "Why don't you use HA?".
Results: Ninety-nine patients were included in the study, 47% of which were HA users. In the group of HA users, the average score for HHIE decreased from 24 to 7 points after use. The group of patients who did not use HA pointed out economic problems (46%) as the main reason for not using it.
Conclusion: Our study confirmed the benefit of HA on quality of life and that limited financial resources are the main reason for non-use.

Keywords: Presbycusis; Hearing aids; Quality of life; Elderly

Introduction

Oral communication is essential in all age groups; it plays a fundamental role among older adults and requires good hearing. Hearing loss is a major public health problem among people aged over 65 years and is the third most common chronic disease, surpassed only by osteoarthrosis and hypertension[1]. However, only a small percentage of adults with hearing loss use hearing aids (HA)[2], which suggests that both patients with this condition and the involved healthcare professionals underestimate the potential benefits of HAs. It is very important to document these benefits because as the population ages, the number of individuals with hearing loss will continue to increase, leading to a growing demand

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for solutions[2]. According to the estimates of the Wo rld Health Organization (WHO), by 2025 there will be approximately 1200 million people aged over 60 years worldwide, and over 500 million individuals will experience presbycusis[3], which is an age-related gradual loss of hearing caused by physiological and degenerative processes associated with aging. Presbycusis is the most frequent cause of hypoacusis in older adults and affects 30% to 40% of individuals aged over 65 years[4,5].

Because presbycusis compromises the ability to communicate, older individuals are more prone to feel sadness, depression, insecurity, anxiety, and social isolation, along with loss of intellectual abilities and increased risk of dementia[6,7]. Several studies have indicated that hearing loss in older adults is associated with the development of cognitive decline and dementia. In fact, this condition affects cognitive abilities by leading to social isolation and changes in the brain structure and function. Hearing loss and its cognitive effects are highly prevalent among older patients but the latter can be prevented and treated with rehabilitation devices such as HAs, which unfortunately remain widely underused[8]. The use of an HA can reverse these effects, thereby providing the older population with a better quality of life. However, not all patients with presbycusis use HAs and various reasons have been identified for this lack of adherence[9].

Although this issue affects several patients and is very common in clinical practice, studies on the benefits of using HAs and non-adherence to them are scarce in Portugal. Thus, this study aimed to evaluate the impact of using HAs on the quality of life of patients with presbycusis and to determine the main causes of non-adherence to these devices.

Materials and Methods

This was a retrospective study of patients aged over 65 years who were followed-up at the outpatient clinic of the otorhinolaryngology (ORL) department of the Beatriz Ângelo (HBA) Hospital between 2021 and 2022. All patients had been diagnosed with presbycusis and had an indication for the use of an HA, i.e., patients over the age of 65 years with bilateral sensorineural hypoacusis with a threshold > 35 dB and associated complaints. The Hearing Handicap Inventory for the Elderly Screening Version - HHIE-S (Annex 1) questionnaire, developed by Ventry and Weinstein in 1982[10] and adapted to Portuguese by Martins and Serrano (2010)[11], was administered in-person to determine the severity of the perceived hearing loss and specific problems related to communication and quality of life. The HHIE -S is composed of 10 closed questions that were developed to assess the hearing loss and quality of life among older adults. It is composed of five social (S) items and five emotional response (E) items. The answer "yes" corresponds to 4 points, the answer "sometimes" yields 2 points, and the answer "no" corresponds to 0 points. The HHIE-S score varies between 0 and 40 points. A high score suggests an impaired quality of life associated with the hearing loss.

The questionnaire was answered twice, sequentially, one time regarding the period before the use of an HA and another time regarding the period during which an HA was used (at least three months), in the same chronological time. In addition, the mean scores of the answers for both periods were calculated.

Patients who despite having an indication for HA use did not buy one answered the additional closed question: "Why do you not wear an HA?", with the possible answers being "economic issues", "esthetic issues/shame", "I do not think I need one", and "friends or relatives having bad experiences".

The data were analyzed using the Statistical Package for Social Sciences (SPSS), version 28.0 (SPSS Inc, IBM, Armonk, NY). Categorical data are expressed as numbers and percentages and continuous data are expressed as mean, standard deviation, and variation. The paired sample t-test was used to compare two numerical proportions. Statistical significance was set at $p < 0.05$.

Table 1
Mean score of each question in the questionnaire for the group of HA users, before and after its use

Question	Pre HA Mean	Post HA Mean	Difference
Does a hearing problem cause you to feel embarrassed when meeting new people?	2,72	0,68	2,04
Does a hearing problem cause you to feel frustrated when talking to members of your family?	2,57	0,74	1,83
Do you have difficulty hearing when someone speaks in a whisper?	2,28	0,98	1,30
Do you feel handicapped by a hearing problem?	2,00	0,29	1,71
Does a hearing problem cause you difficulty when visiting friends, relatives, or neighbors?	2,36	0,93	1,43
Does a hearing problem cause you to attend religious services less often than you would like?	2,70	0,91	1,79
Does a hearing problem cause you to have arguments with your family members?	2,48	0,81	1,67
Does a hearing problem cause you difficulty when listening to the TV or radio?	3,15	0,99	2,16
Do you feel that any difficulty with your hearing limits or hampers your personal or social life?	2,42	0,46	1,96
Does a hearing problem cause you difficulty when in a restaurant with relatives or friends?	1,60	0,51	1,09

Results

The study included 99 patients, of which 56 were women (56.5%), aged between 65 and 88 years (76.3 ± 6.9 years). Forty-seven patients wore an HA (62% were women) and 52 patients did not (52% were women), although they were prescribed one.

In the group of patients who used HAs, the mean HHIE-S score after at least three months of wearing the device improved from 24 points (intermediate level of perceived impaired hearing) to 7 points (mild level of perceived impaired hearing), thereby showing a statistically significant improvement in the patient's quality of life ($p = 0.003$) (Table 2).

For the period before the use of a HA, 82% of the patients answered "yes" or "sometimes" to the question "Does a hearing problem cause you to attend religious services less often than you would like?", and 67% of the patients answered "yes" or "sometimes" to the question "Does a hearing problem cause you to have arguments with your family members?".

In the present study, the highest variation in the mean HHIE-S score after the use of an HA was obtained for the item "Does a hearing problem cause you difficulty when listening to the TV or radio?". This suggest that the use of an HA and subsequent hearing improvement allowed these patients to listen to the radio or TV and reduced their feeling of isolation, while helping them to keep up-to-date with cultural matters and mentally stimulated.

The question with the lowest score variation

Table 2
Average questionnaire score of the group of HA users and non-users

	Mean score of the questionnaire	Mean score of the questionnaire after the use of an HA
Users of HA	24	7
Non-users of HA	22	-

HA, hearing aid

was "Does a hearing problem cause you difficulty when in a restaurant with relatives or friends?". The score remained low probably because most of these older patients do not have the habit of going to restaurants.

In the first questionnaire, administered before the use of an HA, the HHIE-S scores in the group of patients who did not wear an HA were similar to those obtained in the group of HA users, with a mean score of 22 (intermediate level of perceived hearing impairment) (Table 2). The answers to the closed question "Why do you not wear an HA?" were as follows: "economic issues" (46%); "esthetic issues/ shame" (18%), and most of these patients were women (80%); "friends or relatives having bad experiences" (17%); and "I do not think I need one" (19%) (Table 3).

Discussion

Our results demonstrate that the use of an HA improves the quality of life of patients by reducing the psychological, social, and emotional effects of hypoacusis, which is an insidious chronic health condition that can be devastating in the absence of an intervention[7]. In fact, we observed a significant improvement in the HHIE-S score after the use of an HA, reflected by the better social and emotional condition of the patients, which in turn translated into a better quality of life. This indicates that wearing an HA may have a considerably positive impact on the aging process as a whole. Notably, a recent meta-analysis showed that the cognitive ability of HA users was better than that of non-users and the conclusion was that treating hearing loss with HAs may delay the effects of cognitive decline[12].

Despite the positive impact of wearing an HA, unfortunately not all patients had access to this treatment, with "economic issues" being the main reported cause among non-users. It is important to highlight the lack of financial resources in the Portuguese population as well as the lack of social support for a condition that affects a high percentage of the population and increases the risk of developing several disorders, namely depression, anxiety, and dementia. According to decree-law no. 93/2009 of April 16: "State support for assistive devices is 100%" and "assistive devices are provided directly to the patients and not through reimbursement"[13]. The amount of money destined for funding assistive devices is determined annually by a joint order of the members of the government responsible for the finance, social security, health, and education areas[13].

However, according to our results, 46% of the patients with presbycusis did not wear an HA for economic reasons, despite the device's positive impact on the quality of life in patients who used an HA. These data suggest that the money budgeted for this purpose is insufficient to cover the needs of all these patients in a timely manner, even with a medical prescription and social assistance request. For a condition that is so impactful on the life and health of these patients, this percentage is too high for a developed country like Portugal.

According to a systematic review, stigma is perceived as an important factor affecting the attitude and opinion of people regarding hearing impairment and rehabilitation with HA[14]. In our study, 18% of the patients reported not wearing an HA for "esthetic issues/shame",

Table 3
Answers to the question "Why do you not wear an HA?" from non-users of HA

Why do you not wear an HA?	% of patients
"Economic issues"	46%
"Esthetic issues/shame"	18%
"Friends or relatives having bad experiences"	17%
"I do not think I need one"	19%

most of these being women (80%). In addition, 19% patients answered “I still don’t need one”, although they were prescribed the device and family members often stated otherwise. Therefore, a high percentage of these patients do not wear an HA due to the associated stigma.

Moreover, 17% of patients answered “friends or relatives having bad experiences”. Individuals who are not academically qualified, especially in the so-called hearing rehabilitation centers whose sole purpose is to sell HAs, are taking over the various activities of audiologists as a result of lack of legislation and regulations for medical devices. Thus, many patients try to reduce their HA expenses and end up having a bad experience, which contributes to the generalization of the erroneous idea that all HAs are ineffective.

Recently, in August 2022, the Food and Drug Administration (FDA) in the US allowed the purchase of HAs without prescription. Consumers aged 18 years and over with perceived hearing loss were thus allowed to buy HAs in shops without the need for tests, prescription, or adaptation by an audiologist. The aim of this measure was to promote competition in the industry and thus lower the prices of HAs[15]. Although it is important to foster competition in the industry to lower prices, it is also necessary to improve the quality control of the HAs available for sale, because poor quality/adaptation and confusion between HAs and personal sound amplification devices may contribute to “bad experiences” and subsequently, lack of adherence. In the UK, HAs are still classified as Class IIa medical devices (intermediate to low risk) and are regulated by the Medicines and Healthcare products Regulatory Agency. HAs are provided by the National Health Service (NHS) because of their classification (medical devices), which is an advantage because they are free, as are the batteries, repairs, and follow-up visits. However, there is a long waiting time[16].

With increasing life expectancy, it is essential to provide older people access to a treatment that contributes significantly to their quality of life. Consequently, ORL specialists, general practitioners, and audiologists are mainly responsible for addressing and removing the stigma that devalues the benefits derived from HAs. It is important to raise awareness among patients and health professionals about the positive effects of these devices (and of the importance of buying the adequate and adapted HA), such as better communication with family members and friends and preserving the cognitive abilities and psychological well-being that are essential for a good quality of life. Moreover, it is very important to emphasize the lack of financial resources in the Portuguese population as well as the paucity of social support for a condition that affects a high percentage of the population and increases the risk of developing other disorders such as depression, anxiety, and dementia.

The main limitations of the present study are as follows: it was restricted to one hospital; the questionnaires on the periods before and after the use of an HA were administered in the same chronological time; the degree of hypoacusis was not evaluated; and it was a subjective assessment (quality of life).

Conclusion

The findings of our study confirm the positive impact of wearing an HA on the quality of life of older adults with presbycusis. Limited financial resources to buy an HA was reported as the main reason for not wearing one. Therefore, it is essential to raise awareness among both health professionals and patients about the favorable impact of using an HA, as well as to increase the investment in the social sector for the rehabilitation of hearing among older adults.

Conflicts of Interest

The authors declare that there is no conflict of interests regarding the publication of this paper.

Data Confidentiality

The authors declare having followed the protocols in use at their working center regarding patients' data publication.

Protection of humans and animals

The authors declare that the procedures were followed according to the regulations established by the Clinical Research and Ethics Committee and to the 2013 Helsinki Declaration of the World Medical Association.

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Availability of scientific data

There are no datasets available, publicly related to this work.

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