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Presbyacusis-Related Depression and Hearing Aid Use – A Review

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Review Article

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Abstract: Presbyacusis (age-related hearing loss) is common in the elderly. It impairs communication and triggers several effects on functional abilities and health, damaging everyday activities and causing personal frustration, self-isolation, anxiety and other negative emotions, paranoia, relationship problems, stress, decreased quality of life and depression. It is widely acknowledged as a cause for depression in the elderly, although in practice, the relationship is often not recognized and interventions are not promptly made available to improve the quality of life of the elderly. This paper is a review of the epidemiology, theoretical and empirical basis of the relationship between presbyacusis and hearing loss, and evidence that prompt intervention with hearing aids improves the quality of life in elderly people with presbyacusis.
Keywords: Presbyacusis, age-related hearing loss, depression, hearing aids, rehabilitation.

INTRODUCTION

Presbyacusis is age-related hearing loss and is common in older adults [1]. It is one of the three most common diseases in elderly people. It is a progressive, bilateral, sensorineural hearing loss that occurs in older people as they age, a multifactorial process driven by environmental factors and exacerbated by concurrent disease [2]. According to the World Health Organization (WHO), hearing loss is defined as the inability to hear normally - that is, the ability to hear a sound that is about as loud as a whisper, or 25 decibels (dB) [3].

Presbyacusis impairs communication, an essential need that allows for acquisition of knowledge and experiences, and helps people to remain active in personal, social and family life. When communication is damaged, it triggers several effects on functional abilities and health, damaging everyday activities and causing personal frustration, self-isolation, anxiety and other negative emotions, paranoia, relationship problems, stress, decreased quality of life and depression [4].

Hearing loss is widely acknowledged as a cause for depression in the elderly, although in practice, the relationship is often not recognized and interventions are not promptly made available to improve the quality of life of the elderly. This paper is a review of the epidemiology, theoretical and empirical basis of the relationship between presbyacusis and hearing loss, and evidence that prompt intervention with hearing aids improves the quality of life in elderly people with presbyacusis.

EPIDEMIOLOGY OF PRESBYACUSIS

The prevalence of presbyacusis is high among the elderly. Although various estimates have been given all the figures are high and the prevalence increases with increasing age. It has been reported that Hearing loss of 25 dB or more affects about 37 percent of adults 61 to 70 years of age, 60 percent of adults 71 to 80 years of age, and more than 80 percent of adults older than 85 years [5]. An epidemiologic study of hearing loss among the elderly found that 94 % of men and 76% of women aged 58 to 88 years old had some form of hearing loss based on audiometric evaluations [6]. Also high are the estimates from a Norwegian survey which estimated hearing loss using pure tone audiometry and found the prevalence to be 60.2 % among participants 60 to 79 years old and 91.0% among participants 80 years and older [7].

Presbyacusis appears to be commoner among men [8]. Hannaford et al found that 56 % of men aged

75 years and older reported current difficulties with hearing compared to 40.6 % of women aged 75 years and older [9]. It has also been found that the degree of hearing loss is usually higher in males [10]. According to the World Health Organization, approximately one third of people over 65 years of age are affected by disabling hearing loss (hearing loss greater than 40 decibels (dB) in the better hearing ear in adults). with the prevalence greatest in South Asia, Asia Pacific and sub-Saharan Africa [11]. However, there is evidence that the prevalence is on the increase as population-based data from developed countries show an increased prevalence of hearing impairment because of the increasing longevity [12]. Proportionally, there is an increasing need for hearing rehabilitation [13]. Despite this increasing prevalence and need, hearing loss is under recognized and undertreated in the elderly [14].

DEPRESSION IN PRESBYACUSIS

There is a strong association between hearing loss and depression. Studies have shown that the prevalence of moderate to severe depression was higher among those with hearing loss compared with those without hearing loss [15] and that even a slight hearing loss gives rise to increased problems of speech recognition in noise and reduced feeling of wellbeing [16].

Hearing loss has been referred to as the invisible disability [17] and a silent disorder [18]. It is usually unperceived with health professionals often not noticing it among the elderly. This may be due to a focus and heightened priority given to other diagnoses, and other more evident cognitive, sensory and motor problems that frequently appear in older age [19]. Even the elderly with hearing impairment themselves are not always aware of the condition and of all the consequences of the impairment; they do not always know what they are missing. Several studies have however shown that untreated hearing loss gives rise to several disabilities leading to a feeling of being excluded, reduced social activity, isolation, poorer quality of life and an increased prevalence of symptoms of depression.

Normal conversation uses frequencies of 500 to 3,000Hz at 45 to 60dB. The normal hearing threshold, at which whispers can be perceived is 25dB. After 60 years of age, hearing typically declines by about 1 dB annually, although the rate of decline can be more in elderly people with medical conditions like diabetes mellitus and hypertension, and a history of exposure to loud noise. As hearing threshold worsens, there is a gradual loss of hearing acuity. The ability to perceive whispers and softer sound goes first, followed by loss of the ability to perceive normal voice and a progressive feeling of isolation in the environment. The hearing loss may however remain largely imperceptible until it becomes disabling. Disabling hearing loss in adults refers to hearing loss greater than 40 decibels (dB) in the better hearing ear in adults. Men usually experience greater hearing loss and earlier onset compared with women [20].

Thus, presbyacusis leads to a reduced ability to detect, identify and localize sounds quickly and reliably, problems in recognizing speech especially in difficult environments for example in noisy places, and consequently a reduced ability to communicate. This often results in withdrawal from a variety of social activities in a bid to avoid detection and embarrassment and if not treated may have serious emotional and social effects affecting the overall well-being and mental health of the affected individual. At this vulnerable age, they feel cut off from family members and friends, even when these are physically available. The state mirrors Helen Keller's words: blindness cuts us off from things, but deafness cuts us off from people [21].

A longstanding untreated hearing loss in the elderly is therefore often found associated with depression. People with hearing loss are at much higher risk of experiencing mental ill-health [22] and have been found to be 2.45 times more likely to develop depression [23]. Depressive symptoms that are common in presbyacusis include loss of interest in activities, irritability, bad and empty mood, sadness, short memory, feelings of hopelessness and paranoid tendencies. These feelings worsen as hearing ability declines [24]. Hearing loss has also been associated with economic burdens and this is known to further impact on the patient's mood [25,26].

Despite the consequences of untreated hearing loss, it is frequently denied, minimized or ignored by the older persons themselves. A considerable number of elderly people with hearing loss do not seek professional help [27] and a great number of them even reject provision of hearing aids in spite of considerable hearing loss [28, 29, 30]. This tends to increase the risk of worsened mental health.

EFFECTS OF HEARING AIDS ON DEPRESSION IN PRESBYACUSIS

Hearing loss does not necessarily have to lead to depression. Depression screening and referral for treatment could help to improve quality of life and allow patients to re-engage. A hearing test and subsequent rehabilitation could make the difference as hearing aids have been found to reduce the incidence of depression in presbyacusis as well as improve mental health symptoms in presbyacusis patients with depression. Nine out of ten people have a significant improvement in their quality of life after receiving hearing aids [31].

The principal tool used in hearing rehabilitation in the elderly is the hearing aid. A hearing aid is a personal electroacoustic device, typically worn in or on the ear of persons with impaired hearing, which primarily serves to amplify sound arriving at the wearer's ear to compensate for hearing loss [32]. A wide range of hearing aids is available today and advances in digital technology has greatly boosted the gain and adaptability that can be achieved from hearing aids.

Hearing aids can be body or ear-level devices and can be worn behind the ear, in the ear or even built into eyeglasses frames. Technological advances have also made it possible for modern hearing aids to be smaller, more effective and more dependable [33]. The basic types are body-worn hearing aids (the most powerful hearing aids, primarily used for the most severe hearing losses), behind-the-ear hearing aids (hang behind the ear), in-the-ear aids (fit into the concha of the auricle), in-the-canal aids (fit more deeply in the canal), completely-in-the-canal aids **(**small canal devices with lateral end 1 to 2 mm inside the opening of the ear canal terminating close to the tympanic membrane). A variety of modern personal and environmental assistive hearing devices can help improve the gain from these aids. There is a wide range that the patient can choose from depending on preference and degree of loss. Hearing rehabilitation in aims to reduce auditory deprivation, thereby improve the communication ability of the patient. Thus, hearing aids are fitted with care to minimize residual auditory deprivation [34].

Hearing aids can significantly improve cognitive, emotional, psychological and social well-being in patients over the age of 65 [35, 36]. In terms of improving communication difficulties it has been reported that both the affected people and family benefit from hearing aid use. There are better relationships, more confidence, better person-to-person conversation, group conversation, listening to television and communication with family [24, 37].

Also, patients who begin wearing hearing aids experience improved overall mental health. People with hearing loss that is not treated are more likely to experience depression, worry and paranoid tendencies compared to those who wear hearing aids. Depressive symptoms in people with hearing loss have been found to be overcome by wearing hearing aids in all age groups and particularly in adult and elderly population [38, 39, 40]. An improvement in social engagement has also been noted. Presbyacusis patients who use hearing aids are more likely than non-users to be involved in their neighborhoods and in group social activities etc. [24, 39].

Despite the fact that hearing aids can help improve patients' lives, the average span of time from patient realization of hearing loss to purchase of hearing aids is eight years [41]. Various reasons for the rejection of hearing aids have been proposed. These include cost, cosmetic considerations, fear of being stigmatized, denial or subjective opinion of no-need and poor motivation. [42, 43, 44]. The most common and most important reason is denial when the patient feels that the hearing was not bad enough or that they could do without one [40]. Advocates need to work to remove these barriers. Special consideration and attention also needs to be given to the class who possess the aids but will not use them [45] for the above reasons or because they find it difficult to adapt to the aids.

CONCLUSION

Hearing aids provide benefits for elderly people in hearing and understanding conversational speech in quiet and some noise conditions, and they reduce the communication disability imposed by hearing loss. Nevertheless, most elderly people with hearing loss are either not offered hearing rehabilitation or do not choose to use amplification, because of an array of complex psychological and social factors. Yet studies have shown that people with hearing loss are at much higher risk of experiencing mental ill-health, such as depression, and that presbyacusis patients who do choose to undergo hearing rehabilitation avoid such symptoms if they have not developed them and those who have developed them experience relief. There is therefore a need for more advocacy to facilitate early diagnosis of presbyacusis [46] and the provision of adequate facilities for treatment and rehabilitation of elderly people with hearing loss within a framework of adequate support for the ageing population.

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