

# Chapter 10

## AGE-RELATED HEARING LOSS

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### Introduction

The World Health Organization (WHO) defines ages 65 and older as elderly. The population of 65 years old and elderly people in Turkey reached 8.2% (6 million 495 thousand 239 people) by the end of 2015. This ratio is expected to reach 10.2% in 2023 and 21% in 2050. (Kepekçi A.B. 2018)

The entire hearing system is undergoing to change with aging. These changes can lead to hearing loss air conduction and bone conduction in the patients. Structural and functional changes in the transmittal system are the most common problems in the ear at older ages. (Maurer JF, 1979).

Sensorineural hearing loss (SNHL) is more frequently seen in elderly patients. Using ototoxicity effective drugs for the ear, listening too loud music during youth, working for long years in noisy environments, and biological aging is important factors that cause damage to hairy cells inside the ear. (Menner, 2003).

The most important risk factor for hearing problems in inner ear problems named cochlear hearing loss is the age of the patient. (Mościcki, Elkins, Baum, & McNamara, 1985) The most important feature of age-related hearing loss is the lack of clarity seen especially on pure hearing thresholds and problems with understanding speech.

Presbycusis, when the outer hair cells in the cochlea deteriorate with age, a symmetrical SNHL with high frequencies become evident. Other causes of SNHL are chronic exposure to traumatic noise levels and acoustic trauma. (Flood & Goldenberg, 2011).

Presbycusis is defined as an age-related hearing loss and it is the common cause of hearing the loss in adults worldwide (Nelson & Hinojosa, 2006). The World Health Organization (WHO) estimates that by the 2025 year, the number of people over 60 age will be 1.2 billion, and 500 million of them will suffer from presbycusis (Sprinzl & Riechelmann, 2010).

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In Do Carmo and colleagues study, there was a significant relationship between women and audiometric high and low tone changes. Moller and Kryter have attributed this to women who are exposed to less harmful voices than men, due to their professions. In England, age-related high-frequency hearing loss in adults has been shown to occur in males after age 30, and in females by age 50 (Davis, 1995).

Both genders show a gradual increase in hearing thresholds. According to the histological studies performed by Crowe and colleagues and Schuknecht has shown adaptiveness in both genders. (Crowe, Guild, & Polvogt, 1934, SCHUKNECHT, 1964). Many other authors have described higher hearing thresholds at higher frequencies in the elderly (Alberti, 1977, Corso, 1977, Glorig & Nixon, 1962; Hinchcliffe, 1964; Russo, 1988, 1993).

Gates GA and colleagues reported that, although men had worse hearing thresholds, there was no difference between hearing thresholds according to gender (Gates, Cooper, Kannel, & Miller, 1990).

Our study also showed a significant decrease in both men and women due to age at high frequencies ( $p < 0.05$ ) (Figure 2 - 3). In elderly men, high frequencies in pure audiometry were significantly worsened ( $p < 0,05$ ) compared to middle age and young people (Table 2).

The lack of comparative analysis of risk factors for wider study groups for presbycusis is the main limitation of this study. Studies with more extensive screening tests will provide guidance for elderly rehabilitation.

Clinicians should play an important role in increasing the quality of life of the patient with additional hearing support apparatus by evaluating the hearing loss in elderly individuals with simple screening tools and directing those needed to ear, nose, throat and audiology clinics.

It is known that a significant reduction in the perception scores of the employees who are exposed to hearing loss is known to occur; hearing instrument, cochlear implant or additional treatment methods. Clinicians must have awareness and knowledge to provide early and appropriate care in this area.

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