

## PATTERNS OF HEARING LOSS IN ELDERLY MALES- DATA FROM A TERTIARY CARE CLINIC IN INDIA

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### ABSTRACT

#### BACKGROUND

Hearing impairment is present in at least one-third of the population above 65 years of age. This loss of hearing leads to difficulty in social or professional interactions, social isolation depression individually. Besides in the working population above, it results in loss of efficiency and financial burden. This study has been undertaken to study the pattern of hearing in the above 50 years males who attended the E.N.T. OP in our tertiary care hospital for various ear-related complaints.

#### MATERIALS AND METHODS

This cross-sectional study was carried out in the E.N.T. Department, Government Mohan Kumaramangalam Medical College between 6th August 2012 and 30<sup>th</sup> May 2015. 486 male patients with complaints related to ear were included. Those patients who had otitis media or had undergone ear surgery were excluded.

#### RESULTS

Hearing impairment was detected in 62% of the study population, although only 10% reported to the clinic due to complaints of hearing loss by family. Noise-induced hearing loss was detected in 27.5% of the patients.

#### CONCLUSION

Routine audiological evaluation especially in adults in the over 50 age group should be a priority. There should be more emphasis on adopting strategies to prevent noise-induced hearing loss and on rehabilitating the above 50 hearing impaired in our society.

#### KEYWORDS

Hearing Impairment, Adults, Tertiary Care, Noise-Induced Hearing Loss.

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#### BACKGROUND

Disabling hearing loss refers to a greater than 40 decibels (dB) hearing loss in the better hearing ear in adults.<sup>1,2</sup> Over 360 million people (5% of the world's population) have disabling hearing loss, the majority of who live in middle and low-income countries. In the population over 65 years of age, approximately one-third of people are affected by disabling hearing loss. The prevalence in this group is highest in Asia Pacific, South Asia and sub-Saharan Africa.

Hearing loss ranges from mild, moderate and severe to profound. It can affect one ear or both ears and leads to difficulty in not only hearing, but also conversational speech.

The causes can be divided into congenital and acquired causes. Some of the acquired causes of hearing loss are

infectious diseases such as meningitis, measles and mumps, chronic ear infections, collection of fluid in the ear (otitis media), use of particular drugs such as some antibiotic and antimalarial medicines, injury to the head or ear, excessive noise, including occupational noise such as that from machinery and explosions, and recreational noise such as that from personal audio devices, concerts and sporting events, ageing, particularly due to degeneration of sensory cells and foreign bodies or wax blocking the ear canal.<sup>1</sup>

In adults, hearing loss can lead to social isolation and stigma, loneliness, embarrassment, depression, psychiatric disturbance, relationship difficulties, restricted career choices, relatively low earnings and occupational stress.<sup>2-5</sup> Due to poor communication skills, those with hearing loss perceive their social skills as poor, which may lead to reduced self-esteem contributing to a failure in their roles. Some authors have also stated that patients may be afraid to consider hearing loss as a problem and are subsequently afraid to seek aid. This may further lead to disability and handicap in these individuals.<sup>6,7</sup>

Pure tone audiometry is a simple diagnostic tool, easy to perform and gives valuable information regarding degree,

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type, configuration of hearing loss and further management planning.<sup>8</sup> It is routinely done in our department in those patients complaining of hearing impairment. This study was done to examine the patterns of hearing loss in males over 50 years reporting to our department.

## MATERIALS AND METHODS

This cross-sectional prospective study was carried out in the ENT Department, Government Mohan Kumaramangalam Medical College, Salem, between 6th August 2012 and 30th May 2015.

### Inclusion Criteria

Male patients over 50 years of age with complaints related to the ear visiting the E.N.T. for the first time were clinically examined and included in the study.

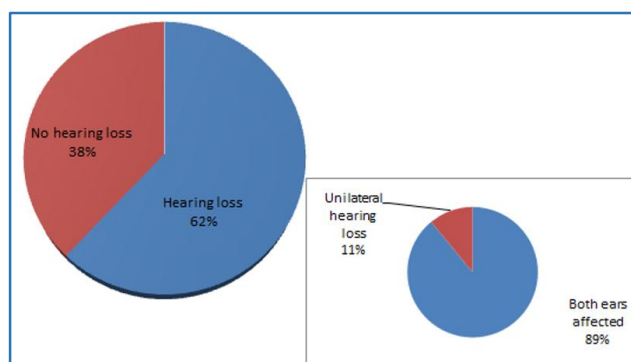
### Exclusion Criteria

Patients with chronic suppurative otitis media, those who had undergone ear surgery, history of trauma to the ear or head injury were excluded. Data from 486 cases of hearing impaired people attending the department was collected by interviewing the cases as per questionnaire from history, examinations and audiograms of the patients. The degree of hearing loss measurement was classified as mild: 20-40 dB; Moderate: 41-60 dB; Severe: 61-80 dB; Profound: >81 dB.

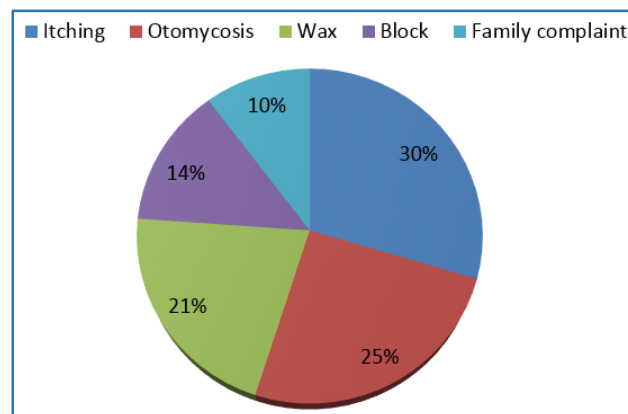
## RESULTS

### Hearing Impairment and Patient Reported Symptoms

In the study population, hearing impairment of varying degrees was detected in 62% of patients. Of these patients, 89% had bilateral hearing impairment and 11% had unilateral hearing impairment (Figure 1). The age of the patients in this study ranged from 50 to 70 years of age with a mean age of 53.4 years. Of these, 66 patients (14%) complained of a block, 50 patients (10%) reported due to complaints by the family of hearing loss, 144 patients (30%) complained of itching, 123 patients (25%) had a history of fungal infection (otomycosis) or complained of pain and block indicative of a otomycosis and 103 patients (21%) complained of wax in one or both ears (Figure 2).



**Figure 1. Hearing Loss Pattern Distribution**



**Figure 2. Patient Reported Symptoms**

### Degree of Hearing Loss

The degree of hearing loss was classified as mild, moderate, severe and profound (Table 1).

Degree of Hearing Loss	Right Ear (n)%	Left Ear (n)%
Mild	(62) 32	(53) 27
Moderate	(128) 66	(128) 67
Severe	(5) 2	(11) 6
Profound	-	-

### Type of Hearing Loss

High frequency sensorineural hearing loss was diagnosed in 23 patients. 81 patients had moderate sensorineural hearing loss and 6 patients had severe sensorineural hearing loss. Noise-induced hearing loss was detected in 134 (27.57%) of the population with a 4K Dip seen in 104 patients and a 4K-6K dip was seen in 30 patients.

## DISCUSSION

Hearing impairment is a leading cause of disease burden. Global prevalence of hearing impairment (defined as an average hearing level of 35 decibels or more in the better ear) in 2008 was estimated to be 12.2% (9.7-16.2%) for males >15 years of age. The prevalence adult hearing impairment is substantially higher in middle and low-income countries than in high-income countries.<sup>9</sup> In India, 63 million people (6.3%) suffer from significant auditory loss and the estimated prevalence of adult onset deafness was found to be 7.6%. The prevalence of hearing impairment was found to be 10.2%. Severe hearing loss accounted for 24.4% and mild hearing loss for 15.9%.<sup>10,11</sup>

In our study, the decision to include males over 50 years was considered due to this age group consisting of a segment of workforce in the society who had experience in their respective fields. Hearing impairment would lead to suboptimal work output thereby significantly impacting this segment of society. This group of patients would be financially constrained and thus rehabilitation of their potential hearing impairment would be difficult leading to their isolation. Patients with chronic suppurative otitis media, those who had undergone ear surgery, history of trauma to the ear or head injury were excluded because the hearing impairment in these patients if any would have been

diagnosed and treated already. Only 10% of patients in our study reported to the clinic with family complaints of hearing impairment. A majority of patients were unaware of their hearing impairment of varying degrees.

There are three types of hearing loss commonly encountered in clinics- conductive, sensorineural and mixed (a combination of sensorineural and conductive hearing loss). Middle ear disorders are usually responsible for conductive hearing loss. In conductive hearing loss, there is no transmission of sound into the inner ear. Some causes are ear wax build up, external or middle ear infections (otitis externa or media), foreign body in the ear canal, tympanosclerosis, otosclerosis, allergy with serous otitis media, trauma or erosion to the ossicular chain and perforation of the tympanic membrane. Diagnosis is made by audiometry by which an "air-bone gap" can be observed.<sup>12</sup>

In our study, symptoms of blockage or wax could most often be correlated with a conductive pattern of hearing loss based on audiogram findings. A mixed pattern of hearing loss was not very common in our study and was observed only in one patient.

Disorders of the cochlea or the cochlear nerve are responsible for sensorineural hearing loss. Some common causes are ototoxic medications (such as high-dose aspirin or certain strong diuretics); advanced age, where the pattern is called presbycusis; immune disorders; Meniere's disease and noise exposure. Trauma mostly affects hearing when there is a temporal bone fracture or patients are older in age. The most common sensorineural hearing loss is a high-frequency hearing loss typically associated with noise exposure or ageing or often both. Severe Sensorineural Hearing Loss (SSNHL) is characterised by rapidly progressing hearing impairment over seconds to days.<sup>13</sup> Sensorineural pattern of hearing loss is diagnosed through audiometry in which a significant hearing loss without the "air-bone gap" (that is characteristic of conductive hearing disturbances) can be observed.

Noise-Induced Hearing Loss (NIHL) is a permanent hearing loss due to prolonged exposure to high levels of noise.<sup>13</sup> A sign of NIHL is the classical audiometric dip at 4 kHz. It has also been observed that 6 kHz involvement is an indicator of NIHL.<sup>14</sup> Worldwide, 16% of the disabling hearing loss in adults is attributed to occupational noise with a range of 7 to 21% in various regions.<sup>15</sup> Published studies of NIHL from India are limited and small and have been conducted in specific populations such as tractor-driving farmers, employees in the heavy engineering industry, weavers in textile mills and drug and pharmaceutical firms.<sup>14,16-20</sup> In our study, 27.57% of the population had NIHL indicating an increased prevalence in the over 50 male population.

Audiologists also categorise hearing loss into general categories of mild, moderate, severe and profound based on the degree of hearing loss (measured in decibels (dBs)). In our study, patients most often had moderate hearing loss (66-67%).

## CONCLUSION

A large number of people in the society are not aware that they have a hearing impairment; almost 90% of our study population came for non-related conditions. Our study also highlights the high number of patients diagnosed with noise-induced hearing loss at our tertiary care centre in a short span of time. Further comparative analysis between prevalence at different time periods is warranted. Interventions to prevent noise-induced hearing loss by different agencies have to be planned. The importance of routine audiological evaluation especially in adults in the over 50 age group should also be a priority. Logistics have to be worked out by authorities concerned to focus on rehabilitating the above 50 hearing impaired in our society.

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