Original Article

JCMCTA 2025 ; 36 (2) : 31-34
DOI: https://doi.org/10.3329/jcmcta.v36i2.86916

Clinical and Audiological Profiling of Hearing Loss in Patients Over 40 Years: A Cross-Sectional Study of 150 Patients

Sanjoy Das[1*] Tuli Sen[2]

Abstract

Background: Hearing Loss is a common public health issue among middle aged and elderly individuals, with significant effects on communication, social functioning and quality of life.Hearing loss in elderly patients is one of the commonest health issue now a days in Bangladesh. Noise pollution, Ototoxicity, Genetic predisposition, Metabolic disorders, Otological diseases etc. are contributing more or less for this major health issue. In this study we have tried to analyze the clinical presentation, audiological characteristics and etiological profile of hearing loss in patients presenting after the age of 40.

Material and methods: This is a prospective cross-sectional study was conducted at Medical Centre Hospital, Chattogram from January 2023 to July 2024. 150 consecutive patients aged >40 years presenting with a chief complaint of hearing loss underwent detailed history-taking, otoscopic examination, and pure-tone audiometry. HRCT of temporal bone and MRI of brain were done in selected cases to establish the diagnosis of Idiopathic hearing loss. Data on presentation, type, degree, and configuration of hearing loss were analyzed. Data were analyzed using SPSS version 26. Descriptive statistics were presented as means ± standard deviation for 'continuous variables' and as numbers and percentages for 'categorical variables'

Results: The mean age of presentation was 62.4 ± 11.8 years. The most common presenting symptom was difficulty in hearing speech in noise (86.7%) followed by tinnitus (68%) and requiring increased television volume (61.3%). The most frequent type of hearing loss was sensorineural (72%) followed by mixed (18.7%) and conductive (9.3%). Bilateral symmetrical hearing loss was present in 78% of cases. Presbycusis was the leading etiological diagnosis (44.7%) followed by noise-induced hearing loss (20.7%) and chronic otitis media (12.7%). A significant portion of patients (59.3%) never sought medical advice prior to testing.

Conclusion: Hearing loss in adults over 40 is predominantly sensorineural, bilateral, and characterized by high-frequency loss. Difficulty understanding speech in noisy environments is the most debilitating symptom. There is a significant gap between the perception and reality of hearing impairment, underscoring the need for proactive screening and counseling in this age group.

Key words : Audiometry; Aged;; Hearing loss; Middle aged; Presbycusis; Sensorineural hearing loss; Tinnitus.

1. Assistant Professor of ENT
Chittagong Medical College, Chattogram.
2. Medical Officer of ENT
Medical Centre Hospital, Chattogram.

***Correspondence:** **Dr. Sanjoy Das**
Cell : 01716 62 10 35
E-mail: dr.sanjoydas1984@gmail.com

Submitted on : 24.09.2025
Accepted on : 20.10.2025

Introduction

Hearing loss is one of the most prevalent chronic health conditions affecting older adults, with significant implications for communication, quality of life, cognitive function and social isolation.[1,2] The global prevalence of disabling hearing loss rises sharply with age, affecting nearly 25% of people in their 60s and over 50% of those in their 70s and beyond. [3]

The presentation of hearing loss in this demographic is heterogeneous. While age-related hearing loss (Presbycusis) is the most common cause, its onset and progression are influenced by a lifetime of cumulative insults, including noise exposure, ototoxic medications, cardiovascular health and genetic predisposition.[4,5] Furthermore, conditions like otosclerosis, Meniere's disease, and chronic otitis media can present or progress in mid-to-late adulthood.[6,7]

The initial symptoms are often subtle and insidious, typically involving difficulty understanding speech, particularly in challenging listening environments, which frequently leads to a delayed presentation for medical evaluation.[8,9] This delay can exacerbate the psychosocial consequences of hearing impairmen.[10]

A detailed understanding of how hearing loss presents in patients over 40 is crucial for early identification, appropriate etiological diagnosis, and timely intervention. This study aims to profile the clinical and audiological characteristics of hearing loss in 150 patients presenting to a tertiary care institution.

JCMCTA 2025 ; 36 (2) : 31-34
DOI: https://doi.org/10.3329/jcmcta.v36i2.86916

Materials and methods

This prospective cross-sectional study was conducted at Medical Centre Hospital, Chattogram, after obtaining approval from the Institutional Ethics Committee. A total of 150 patients aged >40 years who presented with a primary complaint of hearing loss between January 2023 and July 2024 were enrolled.

Inclusion criteria

- Patients aged > 40 yrs with self-reported hearing impairment, confirmed by clinical and audiometric evaluation.
- Patients gave written informed consent to become part of this study.

Exclusion criteria

- Patients with acute ear infection, traumatic ear injuries, congenital hearing loss
- Patients who were unwilling to participate.

All participants underwent:

- Structured Interview : A detailed history was taken regarding the duration, progression and nature of hearing loss, associated symptoms (Tinnitus, vertigo, otalgia, otorrhea) history of noise exposure, otological surgery, systemic illnesses and ototoxic drug use.

- Otoscopic Examination: To assess the external auditory canal and tympanic membrane.

- Pure-Tone Audiometry (PTA) : Conducted in a soundproof booth using a calibrated audiometer (Interacoustics AC40). Air conduction thresholds were measured at 250, 500, 1000, 2000, 4000 and 8000 Hz, and bone conduction thresholds at 500, 1000, 2000, and 4000 Hz.

- Diagnosis : The etiological diagnosis was made by the senior author based on history, examination, and audiometric findings.

- Imaging study : HRCT of the Temporal bone and MRI of Brain were done in selected case specially to rule out Idiopatic causes of hearing loss.

Statistical Analysis: Data were analyzed using SPSS version 26. Descriptive statistics were presented as means ± standard deviation for continuous variables and as numbers and percentages for categorical variables.

Resullts

Table I Demographic Characteristics and Presenting Symptoms (n=150)

Characteristics	Number	Percentage (%)
Mean Age (Years)	62.4±11.8	
Male	82	54.7%
Female	68	45.3%
Difficulty in noise	130	86.7%
Tinnitus	102	68.0%
Required Increased TV volume	92	61.3%
Difficulty on telephone	85	56.7%
Vertigo	38	25.3%
Aural fullness	35	23.3%

Table II Audiological Profile of the study population

Characteristics	Variable	Number	Percentage (%)
Type of hearing Loss	Sensorineural (SNHL)	108	72%
	Conductive (CHL)	14	9.3%
	Mixed (MHL)	28	18.7%
Laterality	Bilateral	133	88.7%
	Unilateral	17	11.3%
Symmetry	Symmetrical	117	78%
(Bilateral causes)	Asymmetrical	16	10.7%
Degree of Loss	Mild	54	36%
(Better ear)	Moderate	45	30%
	Moderately-severe	27	18%
	Severe	18	12%
	Profound	06	04%

Table III Audiometric Configuration of Hearing loss (Worse Ear, n=150)

Configuration	Number	Percentage (%)	Typical description
Sloping	97	64.7%	High frequency loss
Flat	31	20.7%	Equal loss
Precipitous frequencies.	12	08%	Sharp drop at high
Rising Frequencies.	06	04%	Better hearing at high
Others (Cookie-bite, etc.)	04	2.6%	Mid frequency loss

Table IV Etiological Diagnosis of Hearing Loss (n=150)

Etiology	Number	Percentage (%)
Presbycusis	67	44.7%
Noise Induced Hearing Loss (NIHL)	31	20.7%
Chronic Otitis Media	19	12.7%
Meniere's Disease	08	5.3%
Otosclerosis	07	4.7%
Sudden SNHL	05	3.3%
Idiopathic	13	8.6%

JCMCTA 2025 ; 36 (2) : 31-34
DOI: https://doi.org/10.3329/jcmcta.v36i2.86916

Table V Treatment Seeking and Rehabilitation Behavior (n=150)

Behavior/Intervention	Number	Percentage (%)
Never sought medical advice	89	59.3%
Consulted ENT specialist	61	40.7%
Previously used hearing aids	18	12%
Interested in rehabilitation	77	51.3%

Discussion

This study provides a detailed snapshot of how hearing loss manifests in patients over 40 seeking care at a tertiary institution. The mean age of presentation in the seventh decade suggests a significant delay between the onset of symptoms and the decision to seek professional help, consistent with global reports.[8,9] In our study we found moderate to severe hearing loss was 60% (Total) is slightly higher than Chinese meta-analysis showing 45% in middle aged and elderly.[11] Globally Moderate to complete hearing loss affects 5% population but up to 21% in South East Asia.[12]

In our study the mean age of the participants was 62.4±11.8, which was apparently consistent with the findings of Haung GJ et al.[13] In our study we found a slight Male preponderance which is consistent with a population based study.[14] The prevalence of tinnitus in our study was 68%, which is much higher than the population estimates of 16.9%.[14] This finding is again likely reflecting the clinical nature of our study sample.

The most common presenting symptom difficulty understanding speech in noise (86.7%) is the hallmark of cochlear pathologies like Presbycusis and Noise Induce Hearing Loss (NIHL). This occurs due to the disproportionate loss of high-frequency hearing and the associated decline in temporal processing and frequency resolution, which are critical for parsing speech in challenging acoustic environments.[15,16] The high prevalence of tinnitus (68%) further adds to the communicative handicap and reduces quality of life.[17]

Audiologically, the predominance of bilateral, symmetrical, sloping sensorineural hearing loss (72%) confirms that inner ear dysfunction is the primary issue in this age group. The etiological distribution, with presbycusis and NIHL accounting for nearly two-thirds of cases, highlights the impact of both aging and lifetime environmental exposures on auditory function.[4,5,18] The presence of conditions like chronic otitis media (12.7%) underscores the need for ongoing otological care throughout adulthood.[7] Age related Sensorineural Hearing Loss (Presbycusis) and Noise Induce Hearing Loss are the two most common cause of deafness in middle aged and elderly population worldwide, the finding is also consistent with the 'Global Burden OF Disease Study"[12]

A critical finding from this study is the significant lack of awareness or underestimation, a significant number of patient didn't seek any medical advice before(59.3%, Table 5). This "perceptual gap" is a major barrier to rehabilitation, as individuals who do not recognize their impairment are unlikely to pursue interventions like hearing aids, which have been shown to improve quality of life and potentially mitigate cognitive decline.[2,17,18] This underscores the importance of proactive questioning about hearing difficulties and routine audiometric screening in primary care settings for adults over 50.[21, 22] The low rate of Hearing aid use (12%) in our study is consistent with previous reports indicating 16% of people 20-69 have ever used a hearing aid.[23]

Limitations

This was a single-center study with a sample from a tertiary care hospital, which may not be fully representative of the general population. The etiological diagnosis, particularly for presbycusis, was clinical and based on exclusion, as advanced imaging and genetic testing were not routinely performed. Cross sectional study limits inference on progression. Due to financial and availability constraints we couldn't able to perform some sophisticated investigations like Electro-cochleography, Auditory Brainstem Response (ABR) Brain Evoked Response Audiometry (BERA) etc. which may have fortified our diagnosis and findiings.

Conclusion

Hearing loss in patients over 40 is predominantly a bilateral, high-frequency sensorineural deficit, most commonly caused by age-related changes and noise exposure. Its most debilitating effect is the impaired ability to communicate in noisy settings, leading to social and functional limitations.

JCMCTA 2025 ; 36 (2) : 31-34
DOI: https://doi.org/10.3329/jcmcta.v36i2.86916

A substantial number of patients underestimate their hearing impairment, leading to delayed presentation. These findings emphasize the need for greater public awareness, routine screening in older adults and individualized counseling to bridge the gap between perception and reality, thereby facilitating timely and effective audiological rehabilitation.

Recommedation

Hearing loss in elderly patient is becoming a social problem in our country. Access to proper rehabilitation is still far away. Both national and local management should be forged to tackle this issue properly. Large multiple institution based study is thus required to address this burning issue properly and set a proper national guideline to help the handicapped persons. Thus we recommend :

- Routine audiometric screening in early 40s.
- Promote hearing protection.
- Raise awareness regarding hearing health.
- Improve availability of Hearing aids.

Acknowledgements

We want to thank our patients and their family members for their kind co-operation throughout. All of them help me in every aspect during data collection period which acts as a valuable source of information upon which the whole study has been constructed. We also want to thank stuff nurse and supporting stuffs of Medical Centre Hospitals for their constant support during data collection period and during technical preparation of the study.

Contribution of authors

SD-Conception, design, acquisition of data, data analysis, drafting, critical revision & final approval.

TS-Conception, acquisition of data, interpretation of data, drafting, critical revision & final approval.

Disclosure

Both the authors declared no competing interest.

References

1. World Health Organization. World report on hearing. Geneva: WHO. 2021.

2. Livingston G, et al. Dementia prevention, intervention and care: 2020 report of the Lancet Commission. Lancet. 2020;396(10248):413-446.

3. Goman AM, Lin FR. Prevalence of Hearing Loss by Severity in the United States. Am J Public Health. 2016;106(10):1820-1822.

4. Gates GA, Mills JH. Presbycusis. Lancet. 2005;366(9491):1111-1120.

5. Liberman MC. Noise-induced and age-related hearing loss: new perspectives and potential therapies. F1000Res. 2017;6:927.

6. Markou K, Goudakos J. An overview of the etiology of otosclerosis.Eur Arch Otorhinolaryngol. 2009;266(1):25-35.

7. Acuin J. Chronic suppurative otitis media: Burden of illness and management options. World Health Organization. 2004.

8. Simpson AN et al. Prevalence of hearing loss and hearing aid use among adults in the United States. JAMA Neurol. 2023;80(2):180-187.

9. McCormack A, Fortnum H. Why do people fitted with hearing aids not wear them?. Int J Audiol. 2013;52(5):360-368.

10. Shukla A et al. Hearing Loss, Loneliness, and Social Isolation: A Systematic Review. Otolaryngol Head Neck Surg. 2020;162(5):622-633.

11. Perishan Li et al. Eur Arch Otorhinolaryngol. 2024; 280 (11) : 4723-4737.

12. Hearing loss prevalence and tears lived with disability. 1990-2011 : Findings from the Global Burden of Disease study. 2019 :945.

13. Haung GJ et ai. The global prevalence of complete hearing loss in 204 countries and territories from 1992 to 2021 : A systemic analysis for the global burden of disease study 2021; Front. Public Health. 2025; 13;2025.

14. Dawes P et al. Hearing in middle age : A population snapshot of 40-69 years olds in the UK. Ear Hear. 2014; 35(3) : e44-e51.

15. Pichora-Fuller MK. Cognitive decline and hearing loss: Exploring the link. The Hearing Journal. 2015;68(5):10-13.

16. Humes LE et al. The effects of age on sensory thresholds and temporal gap detection in hearing, vision and touch. Atten Percept Psychophys. 2009;71(4):860-871.

17. Baguley D, McFerran D, Hall D. Tinnitus. Lancet. 2013;382(9904):1600-1607.

18. Le Prell CG et al. Noise-induced hearing loss and its prevention: Integration of data from animal models and human clinical trials. J AcoustSoc Am. 2019;146(5):4051.

19. Dawes P et al. Hearing loss and cognition: The role of hearing AIDS, social isolation and depression. PLoS One. 2015;10(3):e0119616.

20. Amieva H et al. Self-Reported Hearing Loss, Hearing Aids, and Cognitive Decline in Elderly Adults: A 25-Year Study. J Am GeriatrSoc. 2015;63(10):2099-2104.

21. US Preventive Services Task Force. Screening for Hearing Loss in Older Adults: US Preventive Services Task Force Recommendation Statement. JAMA. 2021;325(12):1196-1201.

22. Nieman CL et al. The Baltimore HEARS Pilot Study: An Affordable, Accessible, Community-Delivered Hearing Care Intervention. Gerontologist. 2017;57(6):1173-1186.

23. Hearing loss statistics 2025. More Common than you might think; National council on aging. 2024.