Section: Otorhinolaryngology

Original Research Article

PATTERN AND ETIOLOGICAL SPECTRUM OF HEARING LOSS AMONG PATIENTS ATTENDING A TERTIARY CARE HOSPITAL: A CROSS-SECTIONAL STUDY

Ramesh Ola[1], Sachin H Garud[2], Aniket R Buche[3]

[1]Assistant Professor, Department of Otorhinolaryngology, Government Medical College, Barmer, Rajasthan, India.
[2]Associate Professor, Department of Otorhinolaryngology, Vilasrao Deshmukh Government Medical College, Latur, Maharashtra, India.
[3]Associate Professor, Department of Otorhinolaryngology, Government Medical College, Akola, Maharashtra, India.

Received : 06/01/2026
Received in revised form : 28/01/2026
Accepted : 25/02/2026

Keywords:
Hearing Loss; Conductive Hearing Loss; CSOM; Pure Tone Audiometry; Etiology.

Corresponding Author:
Dr. Ramesh Ola,
Email: rameshola7@gmail.com

DOI: 10.47009/jamp.2026.8.2.139

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2026; 8 (2); 748-753

ABSTRACT

Background: Hearing loss is a common clinical problem encountered in ENT practice and contributes significantly to communication difficulty, reduced quality of life, and functional impairment. The etiological profile varies across regions and healthcare levels, and tertiary care hospitals receive a wide spectrum of preventable and non-preventable causes. Describing the pattern and etiological spectrum of hearing loss in a hospital setting helps in prioritizing early diagnosis, targeted treatment, and appropriate rehabilitation services. **Aim:** To assess the demographic distribution, clinical presentation, audiological pattern (type, laterality, degree, and configuration), and etiological spectrum of hearing loss among patients attending a tertiary care hospital. **Materials and Methods:** A hospital-based cross-sectional study was conducted in the Department of Otorhinolaryngology at a tertiary care hospital. A total of 200 patients aged 12–81 years presenting with complaints of decreased hearing were included using systematic random sampling. All participants underwent detailed history taking and complete ENT examination including otoscopy. Bedside tuning fork tests (512 Hz) and pure tone audiometry were performed to classify the type and degree of hearing loss. Etiological diagnosis was made based on clinical findings and audiological evaluation, with additional tests performed when clinically indicated. **Results:** The mean age of participants was 41.52 ± 18.92 years, with the largest group in 22–31 years (23%). Gender distribution was nearly equal (female 50.5%, male 49.5%). Besides hearing difficulty (100%), ear discharge (29%) and tinnitus (13%) were common associated complaints. Conductive hearing loss was the predominant type (64%), followed by sensorineural hearing loss (32.5%) and mixed loss (3.5%), with bilateral involvement frequently observed. Most patients had mild to moderate hearing impairment, especially in bilateral cases. Low-frequency audiometric patterns were more common than high-frequency patterns. The leading etiologies were CSOM (33%), presbycusis (20.5%), impacted wax (19.5%), and otosclerosis (11%). **Conclusion:** Conductive hearing loss due to middle ear disease, particularly CSOM, was the most common presentation in this tertiary care cohort, with a substantial proportion of preventable or treatable causes. Early detection and timely ENT and audiological management can reduce disability and improve outcomes.

INTRODUCTION

Hearing loss is one of the most frequent sensory impairments encountered in clinical practice and remains a major contributor to communication disability across the life course. It can affect children, adolescents, adults, and older persons, and its consequences extend beyond reduced audibility to include limitations in speech understanding, educational attainment, employability, and social participation. At a population level, the burden is substantial: the World Health Organization estimates that more than 1.5 billion people live with some degree of hearing loss, and a large proportion require rehabilitation services; projections indicate a continuing rise over coming decades, driven by

ISSN (O): 2687-5365; ISSN (P): 2753-6556

demographic transition and ongoing exposure to preventable risks such as chronic ear disease, ototoxic medications, and excessive noise.[1] In low- and middle-income settings, barriers such as delayed recognition, constrained access to audiological services, and limited rehabilitation pathways can amplify disability even when the primary cause is treatable. Clinically, hearing loss is best understood as a heterogeneous entity rather than a single diagnosis. It may be unilateral or bilateral, sudden or gradual in onset, fluctuating or progressive, and mild to profound in degree. The commonly used physiological classification—conductive, sensorineural, and mixed—reflects the location of pathology and guides subsequent evaluation and management. Conductive hearing loss typically arises from external or middle ear conditions that interfere with sound transmission, such as impacted cerumen, tympanic membrane perforation, otitis media with effusion, chronic suppurative otitis media, or ossicular abnormalities. Sensorineural hearing loss results from cochlear or retrocochlear dysfunction, including presbycusis, noise-induced injury, ototoxic damage, genetic susceptibility, infectious causes, and less commonly tumors or neuropathies. Mixed hearing loss combines elements of both. In resource-constrained environments, a practical and system-oriented approach to ear and hearing care is increasingly advocated, emphasizing early detection and basic interventions at the point of first contact; WHO notes that hearing screening, ear examination, and initial ear and hearing care interventions can be delivered effectively by trained non-specialist providers, strengthening referral pathways to specialist services when needed.[2] The Indian context is particularly important because of its large population, variability in risk exposures, and differences in access to preventive and rehabilitative services across regions. Although multiple community and hospital studies exist, national estimates are challenged by heterogeneity in definitions, age groups, and testing strategies. A comprehensive synthesis of the Indian literature has highlighted wide-ranging prevalence values across age strata, with otitis media repeatedly emerging as a prominent contributor to childhood hearing loss, while age-related hearing loss becomes increasingly important in older adults.[3] This mixed epidemiological profile implies that tertiary care hospitals often receive a blend of preventable conductive disorders and irreversible sensorineural losses that require long-term rehabilitation. Yet, local hospital-based evidence remains essential because the "etiological spectrum" is shaped by regional patterns of infection, health-seeking behavior, occupational and recreational noise exposure, medication practices, and referral mechanisms. Hearing loss also has implications that extend beyond the ear, influencing psychosocial wellbeing and broader health outcomes. Communication difficulties may progressively reduce participation in conversations, family interactions, and community activities, thereby increasing loneliness and social isolation outcomes that have been consistently associated with hearing loss in systematic evidence syntheses.[4] These impacts provide additional justification for timely diagnosis and intervention, particularly in adults and older individuals who may otherwise normalize symptoms and delay care. From a health-system perspective, understanding the typical clinical presentation (such as hearing difficulty with otorrhea, tinnitus, or aural fullness) and correlating these symptoms with objective audiological profiles can support efficient triage, appropriate investigations, and targeted patient counselling. Pure tone audiometry remains central to characterizing hearing loss in outpatient ENT settings because it provides an objective estimate of hearing thresholds and allows classification by type, degree, and configuration. Hospital-based PTA audits from India demonstrate how patterns shift across age groups and clinical contexts—for example, retrospective audiometry analyses in tertiary settings have shown that sensorineural loss becomes more common with increasing age, while mixed and conductive components contribute substantially at younger ages depending on the underlying disease profile.[5] Among preventable etiologies, chronic suppurative otitis media remains a key concern because it can produce not only conductive hearing loss but also an additional sensorineural component, particularly with longer disease duration and recurrent inflammation. Contemporary prospective evidence from tertiary care cohorts has documented that a measurable proportion of CSOM patients may demonstrate sensorineural involvement on PTA, supporting the need for timely disease control and hearing assessment rather than assuming purely conductive impairment.[6] Similarly, ototoxicity is a clinically relevant and potentially preventable cause of sensorineural hearing loss across age groups, especially in patients exposed to aminoglycosides, chemotherapeutic agents, antimalarials, or other ototoxic compounds; recent reviews emphasize that ototoxic injury can affect cochlear and vestibular structures and highlight the importance of monitoring and risk mitigation as part of safe prescribing and longitudinal care.

MATERIALS AND METHODS

The study aimed to describe the clinical pattern of hearing loss and the etiological spectrum among patients presenting to the ENT outpatient services during the study period. A total of 200 patients attending the ENT outpatient department with complaints of decreased hearing were included in the study. Patients of either sex who were clinically evaluable and provided consent were enrolled.

Methodology

Participants were selected using systematic random sampling from the outpatient attendance. Patients presenting with hard of hearing of any etiology were included. Patients with congenital deaf–mutism and

ISSN (O): 2687-5365; ISSN (P): 2753-6556

those in whom reliable clinical or audiological assessment could not be completed were excluded.

Each participant underwent detailed history taking regarding onset, duration, progression of hearing loss, associated symptoms (ear discharge, tinnitus, vertigo, otalgia), prior ear infections, trauma, noise exposure, ototoxic drug history, and comorbid illness. A complete ENT examination was performed with special emphasis on ear evaluation. Otoscopy was carried out to assess the external auditory canal and tympanic membrane, noting abnormalities such as impacted wax, perforation, retraction, infection, or other visible pathology.

Bedside hearing assessment was performed using 512 Hz tuning fork tests (Rinne, Weber, and absolute bone conduction) to clinically differentiate conductive, sensorineural, and mixed hearing loss. Pure tone audiometry was used to determine the type and degree of hearing loss. Additional investigations such as impedance audiometry, otoacoustic emissions, and brainstem evoked response audiometry (BERA) were performed whenever indicated to support diagnosis. The final etiological diagnosis was assigned based on combined clinical findings and audiological results, and hearing loss was categorized by laterality, type, and severity.

RESULTS

Table 1: Demographic profile of study participants (n = 200)

The study included 200 participants aged 12–81 years, with a mean age of 41.52 ± 18.92 years, indicating a wide age spread and representation from adolescents to elderly individuals. The largest proportion of patients belonged to the 22–31 years age group (46; 23%), followed by the 32–41 years group (36; 18%) and the 12–21 years group (32; 16%). Middle-aged and older groups also contributed substantially, with 62–71 years accounting for 27 (13.5%), and 42–51 years accounting for 26 (13%). The smallest group was 72–81 years with 14 (7%), showing fewer very elderly patients attending the OPD compared to young and middle-aged adults. Gender distribution was almost equal, with 101 females (50.5%) and 99 males (49.5%), suggesting that hearing-related complaints were reported similarly by both sexes in this hospital-based sample.

Table 2: Distribution according to chief complaints (n = 200)

As expected from the inclusion criteria, all participants (200; 100%) presented with the primary complaint of hard of hearing. Alongside this, a significant proportion reported symptoms suggesting ear disease or associated otological conditions. Ear discharge was present in 58 patients (29%), indicating that a sizeable fraction likely had chronic ear infection such as CSOM. Tinnitus (ringing sensation) was reported by 26 patients (13%), which commonly accompanies sensorineural hearing loss, presbycusis, noise exposure, or ototoxicity. Earache was found in 17 patients (8.5%), supporting the presence of active inflammatory or infective ear pathology in some cases. Fullness of ear was less common (7; 3.5%) and may reflect Eustachian tube dysfunction, middle ear effusion, or wax impaction. Dizziness was rare (2; 1%), suggesting vestibular involvement was uncommon in this cohort. Only 1 patient (0.5%) had other complaints, showing that the clinical presentation was predominantly otological and aligned with the study focus.

Table 3: Type of hearing loss with laterality (n = 200)

The predominant type of hearing loss was conductive hearing loss (CHL), seen in 128 patients (64%), highlighting the major burden of external or middle ear pathology in this tertiary care OPD population. Sensorineural hearing loss (SNHL) was the second most frequent, identified in 65 patients (32.5%), while mixed hearing loss was relatively uncommon (7; 3.5%). Regarding laterality, hearing loss was largely bilateral, especially for conductive loss: 81 patients (40.5%) had bilateral CHL, compared with 25 (12.5%) right-sided and 22 (11%) left-sided CHL. Similarly, SNHL showed a strong bilateral distribution: 58 patients (29%) had bilateral SNHL, whereas only 3 (1.5%) and 4 (2%) had isolated right- and left-sided SNHL, respectively. Mixed loss was rare and mainly unilateral (right 2, left 2), with only 3 patients (1.5%) showing bilateral mixed loss.

Table 4: Degree of hearing loss by ear involvement

When severity was analyzed by ear involvement, the bilateral group contributed the majority of cases (136; 68%), while unilateral involvement was less common (36; 18% right ear and 35; 17.5% left ear, as recorded). In the bilateral category, mild hearing loss was the most frequent (59; 29.5%), followed by moderate loss (47; 23.5%). More advanced losses were present but comparatively lower: moderate-to-severe in 17 (8.5%) and severe in 13 (6.5%). Profound loss was extremely uncommon in the bilateral group (0 cases), suggesting that most patients presented before reaching end-stage hearing impairment or that profoundly deaf patients were fewer in OPD attendance. For unilateral cases, mild and moderate losses were also more common than severe categories. Notably, profundity was only recorded in one left ear case (0.5%), emphasizing that profound unilateral hearing loss was rare in this dataset.

Table 5: Audiometric pattern of hearing loss (n = 200)

Audiometric configuration showed that low-frequency pattern was more frequently observed than high-frequency pattern, particularly in bilateral involvement. In the bilateral ear category, low-frequency pattern was seen in 93 patients (46.5%), whereas high-frequency pattern was observed in 50 patients (25%). For unilateral cases, low-frequency pattern appeared in 27 right ears (13.5%) and 24 left ears (12%), while high-frequency pattern was rare unilaterally (2 right ears; 1% and 4 left ears; 2%). Clinically, the predominance of a low-frequency

ISSN (O): 2687-5365; ISSN (P): 2753-6556

pattern supports the higher proportion of conductive pathologies, as middle ear disease often affects lower frequencies more prominently.

Table 6: Etiological spectrum among participants (n = 200)

The etiological analysis showed that CSOM was the leading cause, identified in 66 patients (33%), making it the most important contributor to hearing loss in this cohort. This finding is consistent with the high burden of conductive hearing loss and the high frequency of ear discharge reported in Table 2. The second common cause was presbycusis, seen in 41 patients (20.5%), reflecting age-related cochlear degeneration and supporting the presence of a substantial SNHL component in the population. Impacted wax accounted for 39 patients (19.5%), indicating that a notable proportion had potentially reversible hearing impairment with simple intervention. Otosclerosis was recorded in 22 cases (11%), which typically presents with progressive conductive loss and contributes further to the CHL predominance. Among less frequent causes, ototoxicity-related SNHL occurred in 12 patients (6%), while mechanical trauma was seen in 8 patients (4%). Relatively rare conditions included keratosis obturans (1.5%), SNHL secondary to diabetes mellitus (1.5%), and acoustic trauma (1.5%). Retrocochlear pathology was documented in 2 patients (1%), emphasizing that although uncommon, serious causes were present and require detailed evaluation. Malingering was rare (1; 0.5%).

Table 1: Demographic profile of study participants (n = 200)

Variable	Category	No.	%
Age group (years)	**12–21**	32	16.0
	22–31	46	23.0
	32–41	36	18.0
	42–51	26	13.0
	52–61	19	9.5
	62–71	27	13.5
	72–81	14	7.0
Gender	**Male**	99	49.5
	Female	101	50.5
Mean age (years)	**Mean ± SD (range)**	41.52 ± 18.92	(12–81)

Table 2: Distribution according to chief complaints (n = 200)

Chief complaint	No.	%
Hard of hearing	200	100
Ear discharge	58	29
Fullness	7	3.5
Earache	17	8.5
Dizziness	2	1
Ringing sensation (tinnitus)	26	13
Others	1	0.5

Table 3: Type of hearing loss with laterality (n = 200)

Type of hearing loss	Total No. (%)	Right n (%)	Left n (%)	Bilateral n (%)
Conductive hearing loss (CHL)	128 (64.0)	25 (12.5)	22 (11.0)	81 (40.5)
Sensorineural hearing loss (SNHL)	65 (32.5)	3 (1.5)	4 (2.0)	58 (29.0)
Mixed hearing loss	7 (3.5)	2 (1.0)	2 (1.0)	3 (1.5)
Total	**200 (100)**			

Table 4: Degree of hearing loss by ear involvement

Degree	Right n (%)	Left n (%)	Bilateral n (%)
Mild	18 (9.0)	23 (11.5)	59 (29.5)
Moderate	15 (7.5)	11 (5.5)	47 (23.5)
Moderate to severe	2 (1.0)	0 (0.0)	17 (8.5)
Severe	1 (0.5)	0 (0.0)	13 (6.5)
Profound	0 (0.0)	1 (0.5)	0 (0.0)
Total (as recorded)	**36 (18.0)**	**35 (17.5)**	**136 (68.0)**

Table 5: Audiometric pattern of hearing loss (n = 200)

Pattern	Right ear n (%)	Left ear n (%)	Bilateral n (%)
High frequency	2 (1.0)	4 (2.0)	50 (25.0)
Low frequency	27 (13.5)	24 (12.0)	93 (46.5)
Total			**200 (100)**

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Table 6: Etiological spectrum (types of disease) among participants (n = 200)

Etiology / Disease category	No.	%
CSOM	66	33.0
Presbycusis	41	20.5
Impacted wax	39	19.5
Otosclerosis	22	11.0
SNHL secondary to ototoxicity	12	6.0
Mechanical trauma	8	4.0
Keratosis obturans	3	1.5
SNHL secondary to DM	3	1.5
Acoustic trauma	3	1.5
Retrocochlear pathology	2	1.0
Malingering	1	0.5
Total	**200**	**100**

DISCUSSION

The present hospital-based series (n=200) showed a broad age representation (12–81 years; mean 41.52±18.92), with the largest share in young adults 22–31 years (23%), followed by 32–41 years (18%). This pattern likely reflects health-seeking behavior in economically active age groups, even though hearing impairment is a major public-health burden across all ages in India. Garg et al (2009) highlighted that approximately 63 million Indians (6.3%) have significant auditory loss, emphasizing that the OPD-based age distribution in our study represents service utilization rather than the true community burden.[7]

Gender distribution in our study was nearly equal (male 49.5% vs female 50.5%), suggesting comparable reporting and care access for hearing complaints in this setting. In contrast, Gupta et al (2021) reported a male preponderance (57% males) and also found that conductive hearing loss dominated their outpatient sample (62%), which is comparable to our predominance of conductive loss (64%). However, the peak age band differed: Gupta et al noted maximum conductive cases in 31–40 years (35%), while our highest patient concentration was 22–31 years (23%), indicating possible regional differences in exposure to middle-ear disease and timing of presentation.[8]

Regarding symptom profile, every participant reported hearing difficulty (100%), but nearly one-third had ear discharge (29%), supporting a major burden of chronic middle-ear pathology in our cohort. Tinnitus was present in 13%, which is clinically important because it often accompanies cochlear or neural dysfunction. Stephen et al (2023), in a retrospective audiometry review of 255 tinnitus patients, reported that 83% had some degree of hearing loss, with high-frequency loss documented in 30%—a considerably stronger association than in our OPD cohort where tinnitus was less frequent because tinnitus was not the selection criterion.[9]

Type distribution in our results showed CHL 64%, SNHL 32.5%, and mixed loss 3.5%, with a strong bilateral tendency (bilateral CHL 40.5% and bilateral SNHL 29%). This contrasts with patterns reported in broader epidemiological hospital datasets where SNHL can predominate, particularly because of age-related cochlear decline and noise exposure. In the large peripheral tertiary-care epidemiological dataset described by Maiti et al (2023), SNHL was emphasized as the most common type overall, illustrating how the relative mix of etiologies (infective vs degenerative/noise-related) can shift the CHL:SNHL balance between hospital settings and populations.[10]

The bilateral predominance in our study (overall bilateral involvement recorded in 68%) is consistent with the chronicity and diffuseness of common ENT causes such as CSOM, presbycusis, and systemic contributors (e.g., ototoxicity and metabolic disease). Importantly, chronic ear infection can produce not only conductive loss but also a sensorineural component over time. Kaur et al (2003) demonstrated a 24% incidence of SNHL in unilateral CSOM cases, particularly at higher frequencies, supporting the concept that long-standing suppurative disease may progressively compromise inner-ear function and contribute to bilateral disability when both ears are affected.[11]

In severity analysis, most bilateral cases in our study were mild (29.5%) or moderate (23.5%), while severe (6.5%) and profound categories were uncommon (profound bilateral 0%). This distribution indicates that many patients present before advanced disability, or that profoundly affected individuals may be under-represented in routine OPD attendance. The mild-to-moderate dominance also aligns with the recognized trend that chronic inflammatory middle-ear conditions and early degenerative loss often produce functional impairment without reaching profound thresholds in many help-seeking cohorts; additionally, Papp et al (2003) showed that bone-conduction thresholds in CSOM increase gradually with disease duration, with a more accentuated shift at 4 kHz, supporting a “slow progression” model rather than abrupt profound loss in most patients.[12]

Audiometric configuration in our study showed low-frequency pattern predominance, especially bilaterally (46.5%), which is compatible with middle-ear transmission pathology and explains the high CHL burden. High-frequency patterns were less common overall (25% bilaterally), but their presence is clinically meaningful because they may point toward cochlear injury (aging, noise, ototoxicity, or infection-related cochlear insult). This biological plausibility is reinforced by otosclerosis literature as

ISSN (O): 2687-5365; ISSN (P): 2753-6556

well, where conductive components dominate but mixed loss can appear in older patients; for example, Reddy Gangyada et al (2023) found otosclerosis in 9.2% of deafness patients with intact tympanic membrane, with most having conductive loss and a minority mixed—comparable to our finding of otosclerosis in 11% of all hearing-loss etiologies.[13] Etiologically, CSOM was the leading diagnosis in our cohort (33%), followed by presbycusis (20.5%) and impacted wax (19.5%), indicating that a substantial fraction of cases were preventable or treatable (infection control, early rehabilitation for aging ear, and simple wax removal). Our wax proportion (19.5%) was higher than the community prevalence figures reported in school-based screening settings; for example, in an urban district survey, Abraham et al (2024) reported cerumen impaction prevalence of 10.7%, illustrating how hospital cohorts can show enriched proportions of symptomatic, care-seeking cerumen disease compared with general populations.[14]

Less frequent but clinically significant etiologies in our study included ototoxicity-related SNHL (6%), mechanical trauma (4%), diabetes-associated SNHL (1.5%), acoustic trauma (1.5%), and retrocochlear pathology (1%). Even though retrocochlear causes were uncommon, their identification is important because management and prognosis differ markedly from routine middle-ear disease. Tyagi et al (2020) emphasized that among 130 adult unilateral SNHL patients, rare causes were still detected (7 rare cases) and highlighted the diagnostic value of MRI and ABR to exclude retrocochlear pathology—supporting our approach of comprehensive audiological evaluation when clinical suspicion persists despite the low proportion in routine OPD datasets.[15]

CONCLUSION

This tertiary care hospital–based study (n=200) showed that hearing loss most commonly affected young and middle-aged adults, with an almost equal male–female distribution. Conductive hearing loss predominated (64%), and bilateral involvement was frequent, with most patients having mild to moderate degrees of impairment. Low-frequency audiometric patterns were more common, supporting the high burden of middle-ear pathology. CSOM was the leading etiology (33%), followed by presbycusis and impacted wax, indicating that a substantial proportion of cases were preventable or treatable with early diagnosis and appropriate ENT and audiological management.

REFERENCES

1. World Health Organization. Deafness and hearing loss [Internet]. Geneva: World Health Organization; 2025 Feb 26. Available from: https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss
2. World Health Organization. Hearing loss and the role of health care providers: fact sheet [Internet]. Geneva: World Health Organization; 2024 Feb 15. Available from: https://www.who.int/publications/m/item/hearing-loss-and-role-of-health-care-providers-fact-sheet
3. Verma RR, Konkimalla A, Thakar A, Sikka K, Singh AC, Khanna T. Prevalence of hearing loss in India. Natl Med J India. 2021;34:216–222. Published online 2022 Jan 29. Available from: https://nmji.in/prevalence-of-hearing-loss-in-india/
4. Shukla A, Harper M, Pedersen E, Goman A, Suen JJ, Price C, et al. Hearing loss, loneliness, and social isolation: a systematic review. Otolaryngol Head Neck Surg. 2020;162(5):622–633. doi:10.1177/0194599820910377. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC8292986/
5. Puthukudy PA, Feshan M, Karuthedath S. A 3 years retrospective observational study of pure tone audiometry in a tertiary railway hospital. Int J Otorhinolaryngol Head Neck Surg. 2022;8(4):348–355. doi:10.18203/issn.2454-5929.ijohns20220802. Available from: https://www.ijorl.com/index.php/ijorl/article/view/3452
6. Jha S, Singh RK. The evaluation of the incidence of sensorineural component of hearing loss in chronic suppurative otitis media. Int J Res Med Sci. 2022;10(12):2898–2903. doi:10.18203/2320-6012.ijrms20223095. Available from: https://www.msjonline.org/index.php/ijrms/article/view/11306
7. Garg S, Chadha S, Malhotra S, Agarwal AK. Deafness: burden, prevention and control in India. Natl Med J India. 2009;22(2):79–81. Available from: https://pubmed.ncbi.nlm.nih.gov/19852345/
8. Gupta S, Pandey A, Rahul. A clinico-epidemiological profile of hearing loss in patients attending a tertiary level hospital in India. Ann Int Med Dent Res. 2016;2(6):EN10–EN12. Available from: https://www.aimdrjournal.com/wp-content/uploads/2021/11/EN3_OA_Meddoctor_2_6_25.pdf
9. Stephen MCS, Bhanuprakash PN, Venugopalan A, Thimmasettiah NB. Isolated tinnitus – premonitory symptom of an evolving auditory dysfunction: a retrospective analysis. Int J Otorhinolaryngol Head Neck Surg. 2023;9(7):570–576. doi:10.18203/issn.2454-5929.ijohns20231816. Available from: https://www.ijorl.com/index.php/ijorl/article/view/3976
10. Maiti S, Mukherjee S, Maity S, Haldar D, Chakraborty U, De R. An epidemiological study of hearing loss in a peripheral tertiary care hospital. Indian J Otolaryngol Head Neck Surg. 2022;74(Suppl 3):4264–4269. Published online 2021 Oct 23. doi:10.1007/s12070-021-02934-w. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC9895737/
11. Kaur K, Sonkhya N, Bapna AS. Chronic suppurative otitis media and sensorineural hearing loss: is there a correlation? Indian J Otolaryngol Head Neck Surg. 2003;55(1):21–24. Available from: https://pubmed.ncbi.nlm.nih.gov/23119929/
12. Papp Z, Rezes S, Jókay I, Sziklai I. Sensorineural hearing loss in chronic otitis media. Otol Neurotol. 2003;24(2):141–144. Available from: https://pubmed.ncbi.nlm.nih.gov/12621323/
13. Gangyada PKR, Kishve S. Prevalence of otosclerosis among patients having deafness with intact tympanic membrane: a hospital based cross-sectional study. Int J Res Med Sci. 2023;11(11):4160–4164. doi:10.18203/2320-6012.ijrms20233392. Available from: https://www.msjonline.org/index.php/ijrms/article/view/12776
14. Abraham ZS, Dismas DS. Prevalence of cerumen impaction and associated factors among primary school pupils at an urban district in Northern Tanzania. BMC Pediatr. 2024;24:Article number 149. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC10982150/
15. Tyagi AK, Gupta K, Kumar A, Varshney S, Sood R. Rare causes of unilateral sensorineural hearing loss in adults: our experience. Indian J Otolaryngol Head Neck Surg. 2020;72(Suppl 1):S44–S49. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC7544780/.

ISSN (O): 2687-5365; ISSN (P): 2753-6556