

Original Article

Hearing Status and Etiology of Hearing Impairment Among the Patients Visiting Audiology OPD

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ABSTRACT

Introduction: Hearing disability can impair individual's quality of life. It can impede communication, disrupt an individual's psychological and social well-being, and cause them to become socially isolated. We aimed to study the hearing status and etiology of hearing impairment in the patients visiting ENT-Audiology OPD.

Materials and Methods: This cross-sectional study was conducted in the ENT-Audiology Department at the National Medical College and Teaching Hospital. Patients suspected of hearing impairment were audiotically evaluated with a MAICO 52 audiometer. A pure tone audiometry was done in each ear of every individual separately and a copy of it was kept along with demographic data and clinical history.

Results: Among 410 individuals, 51.9% were males and 48.1% were females; a maximum of individuals were 16-30 (36.6%) years and the mean age was 33.56. Among 410 (820 ears) individuals 16.34% had unilateral hearing impairment and 67.31 % had bilateral hearing impairment. In 686 pathological ears, 51.45% suffered from otitis media followed by presbycusis in 14.47%. The conductive type of hearing impairment in 36.21% of patients and a mild degree of hearing impairment in 36.34% of patients were the most common.

Conclusions: The prevalence of hearing impairment in this region was high. Otitis media was found to be the main cause of hearing disability and a mild degree of hearing loss was more evident. Preventive measures, early identification and treatment can reduce hearing-disabling conditions.

Keywords: Audiogram; Audiometry; Conductive; Hearing impairment; Sensorineural

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INTRODUCTION

One of the most common causes of disability in the world today is hearing impairment. Acquired and congenital causes can result in mild to severe or profound hearing impairment. Individuals who experience hearing loss consider themselves socially isolated and feel like having a lesser role in the community. Moreover, they are regarded as an isolated individual who is considered burden to the society.^{1,2} People with hearing impairments find it difficult

to enjoy a high quality of life (QOL) and feel ignored in important social events. 466 million people worldwide, or more than 5% of the total population, have a disabling hearing loss; of these, 34 million are children.³

Childhood hearing loss in 60% or more is due to preventable causes. Hearing impairment above 40dB in adults and 30dB in

children invites disabling condition.³ In Nepal, discharging ears and misuse of ototoxic drugs are the leading causes of hearing impairment. Lack of ear health education, poverty and ignorance are the major factors that lead to hearing damage. The prevalence of hearing impairment in Southeast Asia is 4.6% to 8.8%. Unfortunately, the Nepali population showed that 16.6% of the total population had hearing impairment.⁴

WHO classified hearing impairment according to pure tone average in the better hearing ear. According to the threshold level, hearing impairment ranges are categorized from “no impairment” to “profound impairment”.^{5,6} Hearing impairment may be of conductive, sensorineural or mixed type. Chronic Otitis Media (COM), Otitis Media with Effusion (OME), otosclerosis, trauma, wax etc. are a few among several causes of conductive hearing impairment. On the other hand, Age-Related hearing loss (ARHL), ototoxic drugs, noise-induced hearing loss (NIHL), etc. may cause cochlea and auditory pathway damage leading to sensorineural hearing impairment.⁷

The mid-terai region of Nepal and the bordering district of India have a subtropical climate characterised by sweltering summers, heavy rain during monsoons and freezing winters. Thus, there is a chance of a higher prevalence rate of ear infection throughout the year, especially during summer and rainy seasons. Another important factor causing hearing disability may be the patients visiting our OPD belong to a low socioeconomic background and low literacy rate. Moreover, they are unaware of their ear health and do not take any precautions while dewaxing, swimming, or working in noisy places.

We aimed to study the hearing status and etiology of hearing impairment in the patients visiting ENT-Audiology OPD.

MATERIALS AND METHODS

This Audiology OPD-based cross-sectional study was done in the ENT department of the National Medical College and Teaching Hospital (NMCTH), Birgunj-15, Parsa. A six-month study was carried out from 15th September 2015 to 14th February 2016. Prior to the study, permission was obtained from the Institutional Review Committee of the National Medical College and Teaching Hospital (NMCTH) Ethical Review Board. The manuscript adheres to the ethical standards for carrying out the study. Patients suspected of hearing impairment were assessed in the ENT-OPD and referred to the Speech and Hearing OPD for a hearing evaluation. Data was collected by short interview and questionnaire, including a brief history following the proforma. After obtaining informed consent, the patients were subjected to audiometric evaluation using a MAICO 52 audiometer. Pure tone averages of 5 frequencies (0.25KHz, 0.5KHz, 1 KHz, 2 KHz, 3 KHz & 4 KHz) were recorded to find out the threshold of Air Conduction (AC) and Bone Conduction (BC). All the collected records were first entered in Microsoft Excel and then analyzed further with SPSS version 20. The minimum age of the patient in this study was 3 years while the maximum age was 90 years. Children below 3 years could not perform audiometry tests as it is a subjective test and requires patient response. Other conditions like psychogenic disorders, pseudohypacusis, and mentally challenged cases were excluded from the study.

RESULTS

A total of 453 (906 ears) individuals who were suspected to have hearing loss were enrolled in this study of which 43 individuals were found to have bilateral normal hearing and were excluded from the study. Among 410 individuals, 51.9% were males and 48.1% were females.

The most affected age group was 16-30 years followed by 31-45 years and 0-15 years (fig.). The mean age was found to be 33.56. This shows a large number of the younger adult population was suffering from some degree of hearing disability and this is certainly a matter of worry. A total of 410 (820 ears) individuals were studied of which 16.34 % (134 ears) had unilateral hearing impairment and 67.32% (552 ears) had bilateral hearing impairment. In unilateral cases, 10% had pathology in the left ear and 6.34% in the right ear (fig.2).

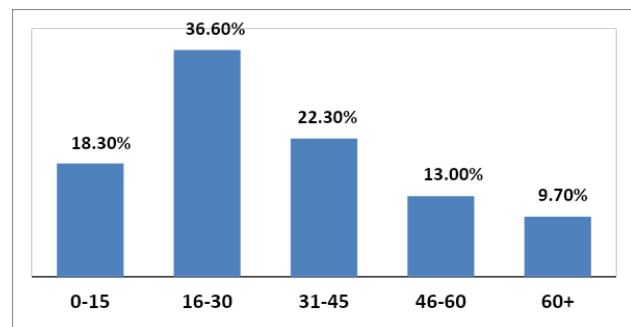


Figure 1: Age group distribution (n=410)

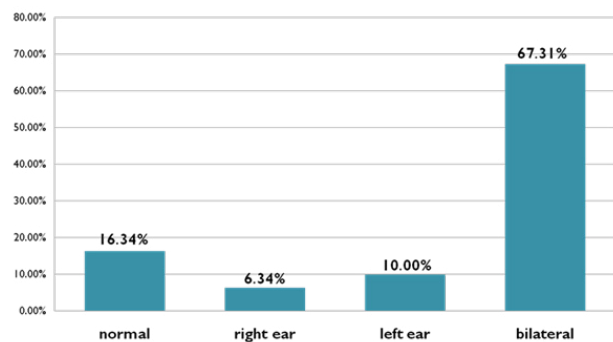


Figure 2: Distribution of affected ears (n=410)

Conductive impairment was found to be the common type of impairment causing hearing disability in 36.21% followed by sensorineural hearing impairment in 32.07% and mixed type of impairment in 15.36% (fig.3). The main reason behind conductive and mixed hearing impairment may be due to a lack of ear health education. low socioeconomic status and a hot humid climate may be the other reason for such hearing impairment.

Comparing both ears, hearing impairment in the left ear was found in a greater number than in the right ear. Conductive impairment in the left ear was found to be 34.40% and 31.10% in the right ear and sensorineural impairment in the left ear was found to be 32.20% and 26.50% in the right ear. The mixed type of impairment was slightly greater in the right ears compared to the left ears (fig.4).

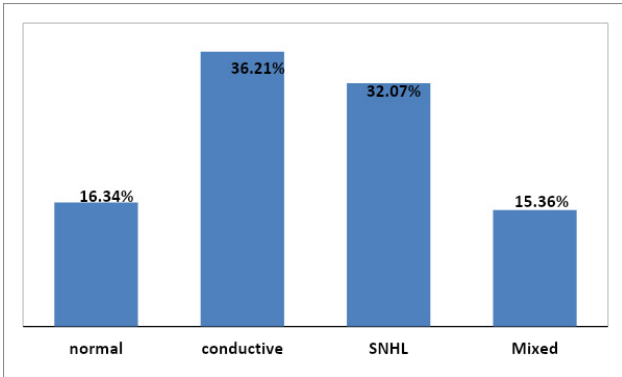


Figure 3: Types of hearing impairment (n=410)

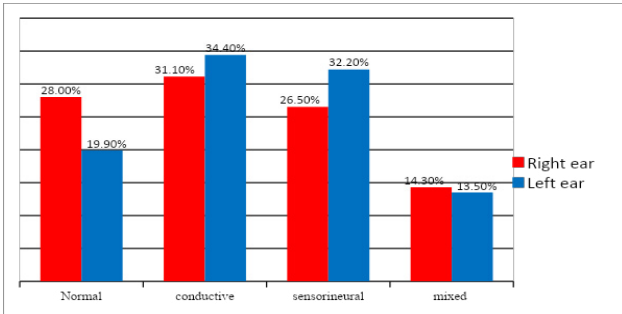


Figure 4: Distribution of hearing impairment in both ears (n=410)

Among 820 ears, 134 (16.34%) were normal while 686 (83.66%) had some kind of pathology. On evaluating the degree and severity of hearing loss, it was found that 36.34% had mild impairment followed by 25.85% moderate and 12.43% severe impairment. Surprisingly, 9.02% of ears were found to have profound hearing impairment which is a huge number for any community (fig.5). Moreover, most of them live their life untreated with a permanent hearing disability are considered a non-functioning member of society and are forced to spend the rest of their life in isolation.

In 686 affected ears, Otitis Media (CSOM, AOM, cholesteatoma) was found in 51.45% (353 ears) followed by presbycusis in 14.57% (100 ears), otosclerosis in 8.30% (57 ears), sudden sensorineural hearing loss (SSNHL) in 6.85% (47 ears), otitis media with effusion(OME) in 6.55% (45ears), noise-induced hearing loss (NIHL) in 4.37% (30 ears), otomycosis in 1.74 % (12 ears), congenital hearing loss in 1.74% (12 ears) and other causes of hearing impairment like ototoxicity, trauma, etc. in 2.18% (15 ears) respectively.

Patients with otosclerosis, otitis media with effusion (OME) and sudden hearing loss (SSNHL) were found to be in greater numbers in this region. Noise-induced hearing impairment was also seen in a greater number of patients since this region has a large number of factories and the workers do not get their hearing evaluation done on a regular basis. Other etiologies of hearing impairment were ototoxicity, Meniere’s disease, impacted wax, trauma, illness etc. (fig.6)

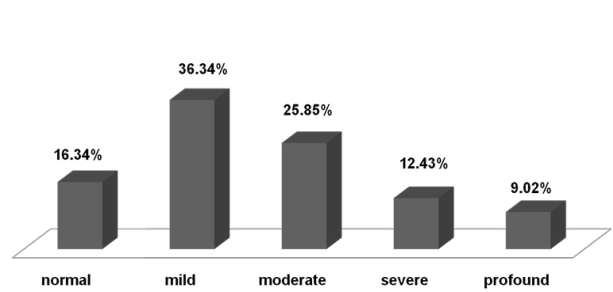


Figure 5: Degree of hearing impairment (n=410)

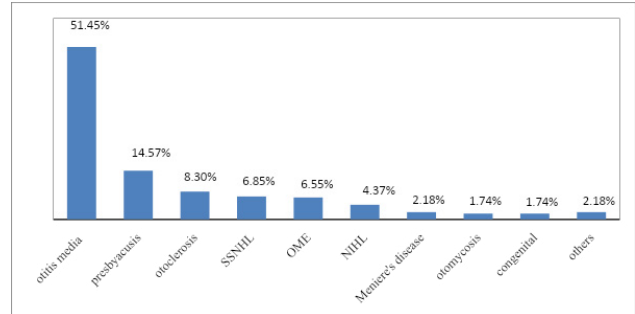


Figure 6: Distribution of causes of hearing impairment among affected ears(n=686 ears)

DISCUSSION

Hearing loss makes it difficult for a person to engage in many social activities. It affects their quality of life (QOL), which has become a major public burden in developing countries. Among all the disability conditions, hearing handicap is alarming and is one of the most common morbidity-causing disability around the globe. According to estimates, 466 million people worldwide suffer from hearing impairments; by 2030, that figure is expected to rise to 630 million, and by 2050, it will surpass 900 million.³ People in South Asian countries like Nepal, India, Bangladesh and Pakistan are affected more when compared to other countries. Much of the hearing impairment is due to a lack of awareness of ear health, ignorance of medical treatment in the early stage of infection/trauma and also due to poverty and low literacy. Above 50% of hearing disability are preventable in these countries. If these cases are treated in an earlier stage of infection, the burden of hearing impairment can be reduced significantly.⁸

We studied 410 (820 ears) patients, of whom 67.31% (276) had a bilateral hearing impairment. Commonly affected age groups were 15-30 years followed by 31-45 years. Similar findings were reported in the previous studies.⁹⁻¹¹ Among 820 ears, 16.34% ears had normal hearing. On the other hand, Conductive hearing impairment (36.21%) was the most common type followed by Sensorineural (32.07%) and mixed (15.36%) types of hearing impairment and this result of the current study is similar to several other studies.^{9,10,12} Results also revealed that male patients were more affected than females which is also found in one of the studies that males were more affected than females.¹³ Mild hearing impairment was seen in 36.34% of patients followed by moderate in 25.85% of patients and severe impairment in 12.43%. Little et al., and Lageju, also found mild impairment and

conductive hearing loss were the most prevalent in their studies.⁴⁹ Comparing both ears, only the left ears were affected by 10% and the right ears were affected by 6.34%.

Most surprisingly, in our study, we found that 9.02% (74 ears) had profound hearing impairment causing complete deafness and this is an alarming condition that needs great attention. Roosevelt et al. reported that 15.3% (66 ears out of 432) ears had profound hearing impairment, which is comparable to what we found in our study.¹⁴

A study in Himachal Pradesh and Uttarakhand, India found females (age group above 60 years) were more affected by hearing disability than male counterparts. Mild Sensorineural hearing impairment was more prevalent among them.^{10,15} However, our study results were quite different from the above study, showing that younger adults were more affected and otitis media (51.45%) was the most common cause of hearing impairment and another common cause of hearing impairment was presbycusis (14.57%) in an elderly population.

Our study showed most of the hearing impairment conditions were preventable and treatable if necessary action was taken on time. Younger adults and mid-aged adults age group with

a hearing disability will certainly affect the progress of any society. This is only a hospital-based study, if a hearing screening program is run throughout the community and in schools in this region, a huge number of hidden hearing disability cases can be apparent. The few important actions that can be taken to prevent hearing loss are assessing the hearing of factory workers on a regular basis, running school ear health and screening programs, early treatment of discharging ears, monitoring the patients hearing when ototoxic drugs are induced, encouraging people with hearing impairment to use amplification devices and most importantly, concerned authority must run awareness and health education program at the community level and in schools.

CONCLUSIONS

From this study, we concluded that the conductive type with a mild degree of hearing impairment was the most common hearing disability. The major causes of hearing impairment like Otitis media, otitis media with effusion, and noise-induced hearing loss are preventable and curable. If early identification and intervention are implemented it can reduce a large number of chronic hearing disability in this region. Awareness and screening programs can also play a vital role in preventing hearing disability.

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