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Pattern of Hearing Loss among Patients Visiting ENT OPD in Abdul Malek Ukil Medical College Hospital, Noakhali, Bangladesh

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Abstract **Original Research Article**

Background and Objectives: Hearing skills is one of the most important and pleasurable gifts bestowed by almighty which affects the development of an individual. Hearing impairment is a major public health problem in developing countries. According to the World Health Organization, approximately 15% of the world's adult population has some degree of hearing loss. About one-third of those who are affected have disabling hearing loss and two-third of them live in developing countries. This survey who done to study the pattern of hearing loss among patients visiting ENT OPD in Abdul Malek Ukil Medical College Hospital, Noakhali, Bangladesh. ***Material and Methods:*** The study was conducted in Dept. of ENT, Abdul Malek Ukil Medical College Hospital, Noakhali, Bangladesh from January to December-2021. All the clinically diagnosed cases with hearing impairment were enrolled in the study and hearing assessment done. Demographic data and PTA assessment were taken. ***Results:*** Out of 121 patients were enrolled. Among them, male were 59 (48.76%) and female 62(51.24%). In age distribution, commonly affected age group was 21-30 years followed by 31-40 years group. On comparing hearing level between both the ears, right ear was having mean hearing threshold of 45.45 dB and left ear having 47.33 dB with standard deviation 16.55, 15.98 respectively. The difference between both the values is statistically not significant (p value- 0.165). On evaluating type of hearing loss between both the ears, there were almost similar frequencies of hearing loss pattern (p value- 0.190).Out of 121 patients, 20(16.5%) were having unilateral hearing loss. So total of 222(91.7%) ears were affected out of 242 ears. Among them 120 (49.58%) ears had conductive hearing loss, 30(22.31%) ears had sensorineural hearing loss and 48(19.83%) ears had mixed hearing loss. On evaluating degree of hearing loss, patients were mostly having mild hearing loss (42.14%) followed by severe hearing loss (24.79%), moderate hearing loss (23.96%). There was almost similar degree of hearing loss in both the ears with statistically insignificant (p value- 0.379). ***Conclusion:*** Hearing impairment commonly involved female with younger population involvement. Hearing impairment was mostly conductive type. Hearing loss was mostly mild degree and bilateralism is common.

Keywords: Hearing Impairment, PTA, Conductive, Sensorineural, Mixed.

INTRODUCTION

Hearing impairment is a major public health problem in developing countries. According to the World Health Organization, approximately 15% of the world's adult population has some degree of hearing loss. About one-third of those who are affected have disabling hearing loss and two-third of them live in developing countries. Hearing loss is one of the commonest morbidity affecting all age groups which can be congenital or acquired. It is the third leading chronic disability following arthritis and hypertension [1]. The WHO estimated in 2005 that there were 278 million people worldwide with bilateral moderate to profound hearing loss, of whom 62 million had deafness that began in childhood [2-4]. Two-thirds of people with moderate to severe hearing loss live in the developing countries. South East Asia has the largest of hearing impairment in world and houses one-thirds of the hearing impaired population. So it should be

routinely done in those patients complaining hearing impairment. In Bangladesh a lot of people have different type and degree of hearing impairment. It is one of the important causes. Hearing loss can be conductive, sensorineural or mixed. Conductive hearing loss can be caused by tympanic membrane perforation, middle ear atelectasis, tympanosclerosis, ossicles destruction, and cholesteatoma. Infection and inflammation components transmit to the middle ear through round window cause cochlear destruction and sensorineural hearing loss [5]. Sensorineural hearing loss is caused by diseases of cochlea or central auditory pathways.

MATERIALS AND METHODS

It is a cross sectional prospective study. This study was carried out in the Dept. of ENT, Abdul Malek Ukil Medical College Hospital, Noakhali, Bangladesh from January to December-2021. Clinically & by investigation proved cases of hearing loss were included in the study. Psychogenic causes of hearing loss were excluded. 121 cases of hearing impaired people attending in the department of Otolaryngology Head and Neck Surgery was the study population. Data collected by interviewing the cases as per questionnaire from history, examinations & investigation reports of the patients. Demographic findings noted, examination done and advised for hearing assessment with pure tone audiometry. Hearing threshold was calculated from pure tone average of 4 frequencies 0.5, 1, 2 and 4 KHz for air conduction and bone conduction. SPSS 21 version used to evaluate the statistics. P value less than 0.05 was taken as level of significance.

Operational Definitions

- Pure tone: A single frequency sound is called a pure tone, e.g. a sound of 500, 1000, 2000 Hz.
- Frequency: It is the number of cycles per second. The unit of frequency is Hertz (Hz) named after the German scientist Heinrich Rudolf Hertz.
- Pure tone average: It is average thresholds of hearing in the speech frequencies.
- Decibel (dB): It is 1/10th of a bel and is named after Alexander Graham Bell. It is a logarithmic unit and indicates ratio between two different intensities. One dB is equal to the least perceptive difference in sound detectable by human ear in frequencies concern with speech. In the clinical work the threshold of normal hearing is 0 dB.
- Degree of hearing loss measurement

I. Mild: 20-40 dB
II. Moderate: 41-60 dB
III. Severe: 61-80 dB
IV. Profound: > 81 dB

RESULTS

Out of 121 patients were included in the study. Among them, 58 (48.74%) were male and 61 (51.26%) were females. In age distribution, commonly affected age group was 21-30 years followed by 31-40 years group (Fig-1).

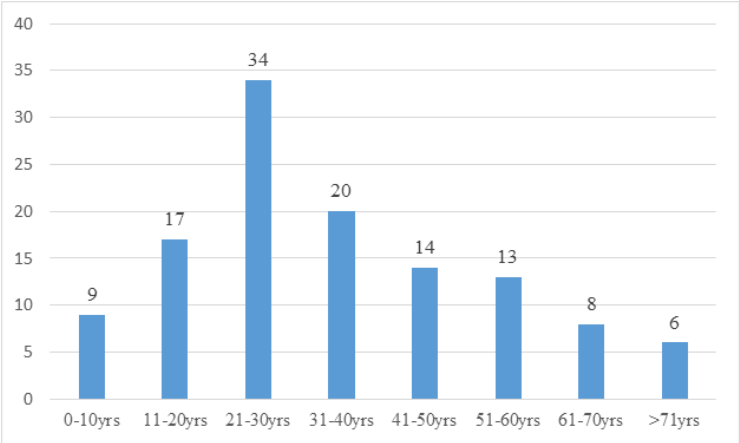

Fig-1: Age group distribution (n=121)

On comparing hearing level between both the ears, right ear was having mean hearing threshold of 45.45 dB and left ear having 47.33 dB with standard deviation 16.55, 15.98 respectively. The difference between both the values is statistically not significant (p value- 0.165). On evaluating type of hearing loss between both the ears, there were almost similar frequencies of hearing loss pattern (p value-0.190) (Table-1).

Table 1: Hearing threshold level (n=121)

Hearing	Mean + SD	p-value
Right Ear Hearing	45.45 + 16.55	0.165
Left Ear Hearing	47.33 + 15.98	

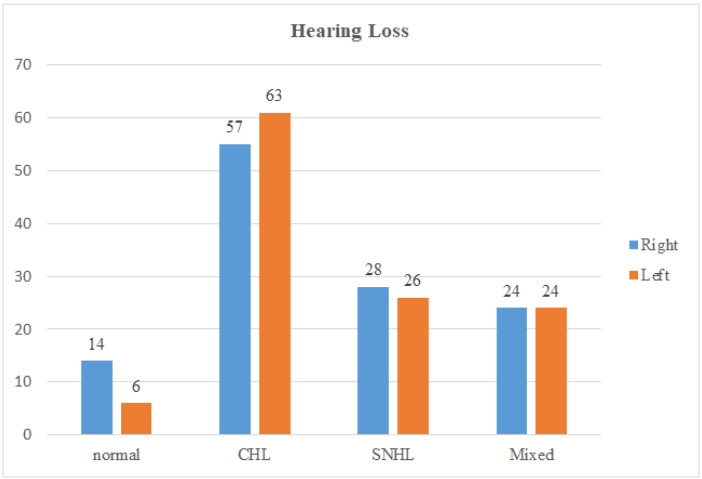

Fig-2: Types of hearing loss in both the ears (n=121)

Out of 121 patients, 20 (16.5%) were having unilateral hearing loss. So total of 222 (91.7%) ears were affected out of 242 ears. Among them 120 (49.58%) ears had conductive hearing loss, 30 (22.31%) ears had sensorineural hearing loss and 48 (19.83%) ears had mixed hearing loss. On evaluating degree of hearing loss, patients were mostly having mild hearing loss (42.14%) followed by severe hearing loss (24.79%), moderate hearing loss (23.96%). There was almost similar degree of hearing loss in both the ears with statistically insignificant level (p value- 0.379) (Fig-2, 3).

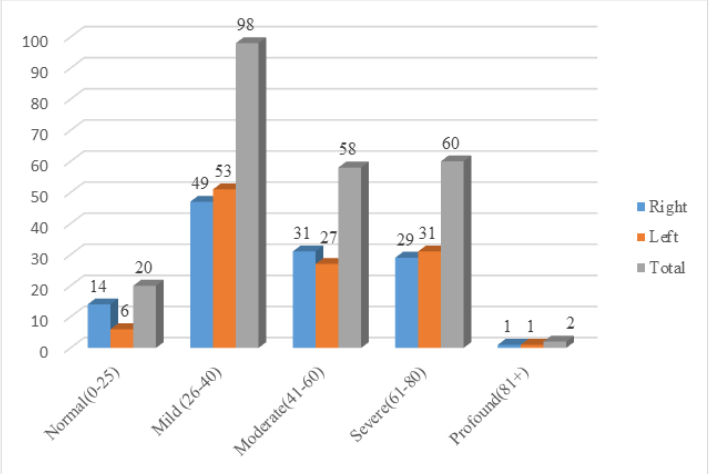

Fig-3: Distribution of degree of hearing loss (n=121)

DISCUSSION

Hearing impairment is one of commonest morbidity affecting daily activities. It can be congenital or acquired. Accurate assessment of hearing is fundamental to diagnosis, investigation, treatment and rehabilitation. Through examination and skilled testing by trained personnel in a suitable test environment is the key to diagnosis the type, degree and other aspect of hearing impairment 6-9. WHO also estimates that every year about 38,000 deaf children are born in this region [6, 7]. It is the public health problem in developing countries and even in developed countries. In our study we studied 121 patients visiting with hearing impairment. Among them 101 patients were having bilateral hearing loss. Commonly affected age groups were 21-30 yrs age group followed by 31-40 yrs group. This result in accordance with study by Islam *et al*., [8]. Among patients with hearing impairment conductive hearing loss (48.8%) was most common followed by mixed (20.2%) and sensorineural hearing loss (12.6%) respectively. The dissimilarity is due to unawareness of our people about hearing impairment and as well as most of the patient of age related loss remain undiagnosed. Usually there is no sex difference in

prevalence of ear disease. This study shows female sex is predominant, 51.24% female is affected by deafness in respect to 48.76% male. In our study on comparing hearing level between both the ears, right ear was having mean hearing threshold of 45.445dB and left ear having 47.33 dB with standard deviation 16.55, 15.98 respectively. The difference between both the values is statistically not significant (p value- 0.165). On evaluating type of hearing loss between both the ears, there were almost similar frequencies of hearing loss pattern (p value-0.190). G. G. Browning *et al*., showed that 16% of adults have mild (21-40 dB), 4% a moderate (41-60 dB) and 1% severe (61-80 dB) impairment in both ears. If only the poorer hearing ear is considered, 26% have a mild, 9% have a moderate and 4% have a severe hearing impairment in that ear [4]. Study done in Tanzania showed more incidence of sensorineural hearing loss than conductive and mixed hearing loss [9]. When studying incidence among male and female patients, female (51.24%) were more affected than male (48.76%).This result is in accordance with Olusesi *et al*., study [10]. Other studies showed male more affected than female [11]. There was clustering of cases with conductive hearing loss in younger age groups in 11-20, 21-30, 31-40 yrs age groups. But cases with sensorineural and mixed hearing loss evenly involved patients above 20-30 yrs age group. Patients were mostly having mild hearing loss followed by severe and moderate hearing loss. Study by Paul [12] showed most patients (68.3%) had mild and moderate hearing loss. Less sample size was limitation of study and large sample size is required for better result. The dissimilarity between two studies because in perspective of Bangladesh the most of the cases of hearing loss remain undiagnosed as because of unawareness and unavailability of simple hearing test pure tone audiometry (PTA).

CONCLUSION

From our study it can be concluded than hearing impairment commonly involved female with younger aged involvement. So, preventive measures should be targeted to younger population to curb chronic disability. Hearing impairment was mostly conductive followed by mixed and sensorineural hearing loss. Hearing loss was mostly mild degree and bilaterality is common.

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