

## Pattern and Causes of Hearing Loss Among the Patients Attending in an ENT OPD

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### ABSTRACT

This cross sectional prospective study was carried out in the Department of Otolaryngology-Head & Neck Surgery, Tairunnessa Memorial Medical College Hospital (TMMCH), Boardbazar, Gazipur, Bangladesh in a period of 12 months from 01.01.2012 to 31.12.2012 among those complaining hearing loss attending in ENT OPD. The aim of the study was to find out pattern and causes of hearing loss. Two hundred cases of hearing impaired people were taken and the data were collected by interviewing the cases as per questionnaire from history, examinations & investigation reports. The commonest type of hearing loss was conductive type. In the right ear 114 cases (63.33%) of conductive type of deafness, 36 cases (20%) of mixed type of deafness and 30 cases (16.67%) of sensorineural type of deafness. In the left ear 106 cases (61.62%) of conductive type of deafness, 40 cases (23.25%) of mixed type of deafness and 26 cases (15.13%) of sensorineural type of deafness. This study showed that females (58%) were mostly affected than males (42%) and garments workers (45%) were commonest group of people. From this study we got both ears were involved by disease process in 76% of the patients and only right ear was 14% and only left ear was 10%. The commonest cause of hearing loss is chronic suppurative otitis media. The ear diseases are common in our country but its diagnosis is usually delayed, till then certain amount of hearing loss has occurred. So awareness, early diagnosis and proper treatment are needed to improve the situation.

**Key words:** Deafness, otitis media

### Introduction

In Bangladesh a lot of people have different type and degree of hearing impairment. It is one of the important causes that makes a person different form of handicap and detached him

from the society<sup>1,2</sup>. Even a hearing impaired person become burden of the society. Hearing impairment is such an important issue that a deaf child cannot talk. It is congenital or

acquired and according to degree of deafness it is mild, moderate, severe or profound. According to type of deafness it is conductive, sensorineural, mixed and even psychological. We had assessed hearing impaired 200 patients. All the patients were underwent details history through ear, nose, throat and other systemic examination and relevant available investigations. Pure tone audiometry is one of the simple diagnostic tool and easy to perform but give valuable information regarding degree, type, configuration of hearing loss and further management planning. 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<sup>3-5</sup>. 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.

**Materials and Methods**

It is a cross sectional prospective study. This study will be carried out in the department of Otolaryngology- Head & Neck Surgery, Tairunnessa Memorial Medical College & Hospital, Boardbazar, Gazipur, Bangladesh from 01.01.2012 to 31.12.2012 for 12 months. Clinically & by investigation proved cases of hearing loss were included in the study. Psychogenic causes of hearing loss were excluded. 200 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.

- The symbols used on most audiograms are □ and abbreviation used in this study:

dB- decibel

TM- Tympanic membrane

PTA- Pure Tone Audiometry

HZ- Hertz

**Operational definitions**

**i. Pure tone:** A single frequency sound is called a pure tone, e.g. a sound of 500, 1000, 2000 Hz.

**ii. Frequency:** It is the number of cycles per second. The unit of frequency is Hertz (Hz) named after the German scientist Heinrich Rudolf Hertz.

**iii. Pure tone average:** It is average thresholds of hearing in the speech frequencies.

**iv. 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 perceptible difference in sound detectable by human ear in frequencies concern with speech. In the clinical work the threshold of normal hearing is 0 dB.

**ix. Degree of hearing loss measurement**

Mild: 20-40 dB

Moderate: 41-60 dB

Severe: 61-80 dB

Profound: > 81 dB

**Results**

In this series most sufferers are in age group of 3rd decade (60%). Female are more in this study 58%. Garment workers are 90 (45%) in our series.

**Table-I:** Involvement of ear in disease process (n=100)

Ear involved□	No. of patient□	Percentage (%)
Only right ear□	28□	14
Only left ear□	20□	10
Both ear□ □	152□	76

**Table-II:** Degree of hearing loss among the patients

Degree of hearing loss	Right ear (n=180)		Left ear (n=172)	
	No. of patients	Percentage (%)	No. of patients	Percentage (%)
Mild	98	54.44	106	61.62
Moderate	46	25.54	38	22.09
Sever	14	07.77	14	8.13
profound	22	12.22	14	8.13

**Table-III:** Type of hearing loss

Type of hearing loss	Right ear (n=180)		Left ear (n=172)	
	No. of pt.	Percentage (%)	No. of pt.	Percentage (%)
Conductive	114	63.33	106	61.62
Sensorineural	30	16.67	26	15.13
Mixed	36	20.00	40	23.25

**Table-IV:** Causes of hearing loss (n=100)

Causes of hearing loss	No. of patients	Percentage
1. Chronic Suppurative Otitis Media	82	41
2. Otitis Media with Effusion	60	30
3. Idiopathic Sudden Sensori-neural Hearing Loss	18	09
4. Idiopathic mixed deafness	10	05
5. Presbycusis	08	04
6. Otosclerosis	06	03
7. Idiopathic Sudden Severe Sensori-neural Hearing Loss	06	03
8. Microtia and External Auditory Canal atresia	04	02
9. Meniere's disease	02	01
10. Traumatic rupture of Tympanic Membrane	02	01
11. Ootomycosis	02	01

## Discussion

Suspected hearing loss in all age group people should be promptly investigated. 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<sup>6-9</sup>. WHO also estimates that every year about 38,000 deaf children are born in this region<sup>10,11</sup>. G. G. Browning et al showed that prevalence of hearing impairment is 3.5% in the age group of 18-40 years, 17.4% in the age group of 41-60 years and 45.3% in the age group of 61-80 years<sup>4,12-14</sup>. In this study patient of 21-30 years age group are most commonly affected and it is 30%. Next common age group is 31-40 years and

16% of the total patient in this age group, followed by 51-60 years of age group is 14%, 11-20 years of age group is 12%, 41-50 years of age group is 12%, more than 60 years of age group is 10%, lastly 0-10 years of age group in which only 06% patient. 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, 58% female is affected by deafness in respect to 42% male.

In the occupation pattern the manual worker are 1.3 times more affected in conductive hearing impairment than the non-manual worker according to the result of a British study<sup>4,15</sup>. Our study reveals that garments workers (45%) are commonest group of people that are affected by deafness then housewives (23%), students (17%) and followed by service holders (7%), businessman (4%) and cultivators (4%). In our study total manual worker is 67% and rest of them is non-manual worker. So our study is similar to that study. The result is similar with the WHO<sup>16-18</sup>.

From this study we got both ears were involved in disease process in 76% of the patients and only right ear was 14%, only left ear was 10%. So both ear involvements were more than unilateral. The prevalence of adult middle ear disease in the British population was obtained from the UK National Study of Hearing, a randomly selected prospective clinical study. An otoscopic diagnosis was made from the sample of 2708 British adults<sup>4</sup>. The prevalence of healed, inactive and active COM (Chronic otitis media) was 12, 2.6, and 1.5 percent, respectively and collectively 16.1%. From this study we find CSOM is the commonest cause of hearing loss and it is 41%. The difference of UK study from us is due to the fact is that they include all the people in their study but we take only the hearing impaired people<sup>14,19</sup>.

Zielhuis et al. reviewed a total of 23 studies shows age-specific prevalence rates of OME up to ten years of age. The prevalence is bimodal with the first and largest peak of approximately 20% at two years of age. There after the prevalence declines,

but there is a second peak of approximately 16% at around five years of age when majority of children start attending a primary school<sup>5</sup>. In this study second common cause of hearing impairment is OME and it accounts 30% of all causes. Our study is almost similar with the study above mentioned.

ISSNHL (idiopathic sudden severe sensorineural hearing loss) is not an uncommon cause of hearing loss in Bangladesh. A number of Authors have proposed the definitions of ISSNHL. One of the most adopted definitions is that of Wilson et al. that is at least 30 dB of hearing loss at three contiguous frequencies in less than three days<sup>18</sup>. More recently, a retrospective cross-sectional study from Taiwan estimated the incidence at approximately eight in 100,000 per year<sup>7</sup>. From this study we found 3 cases of ISSNHL (idiopathic sudden severe sensorineural hearing loss), all are unilateral and left side is twice common than right ear involvement. The difference of Taiwan's study and us is due to the fact that they include all the people in their study but we take only the hearing impaired person.

The next common cause of hearing loss is Otosclerosis. The British National Study of Hearing says overall prevalence of Otosclerosis is 2% (CI 1.5, 2.7) with equal distribution between male and female<sup>14</sup>. Otosclerosis is found from this study 03% (06) which is statistically significant with that study. Presbycusis or age related sensorineural hearing loss is almost invariably inevitable. In an individual over age of sixty, with normal examination findings asymmetrical (often predominantly high-tone) hearing loss, a diagnosis of presbycusis or age related sensorineural hearing loss is fairly secure. Another study shows that 25 to 40% of population aged 60 or older has hearing impairment<sup>19</sup>. We found eight cases (04%) of presbycusis or age related sensorineural hearing loss. 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).

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<sup>4</sup>. G. G. Browning et al also found that mild hearing loss is the commonest degree of hearing loss<sup>4</sup> which is similar with our study. Another finding is type of hearing loss; commonest type is conductive type. In the right ear 114 cases (63.33%) of conductive type of deafness, 36 cases (20%) of mixed type of deafness and 30 cases (16.67%) of sensorineural type of deafness and in the left ear 106 cases (61.62%) of conductive type of deafness, 40 cases (23.25%) of mixed type of deafness and 26 cases (15.13%) of sensorineural type of deafness is found. So it is noteworthy that commonest type of deafness is conductive as 63.33% of right ear and 61.62% of left ear shows this type of deafness. Our study is similar with British study.

## Conclusion

From this study it is concluded that the commonest type of hearing loss is conductive type, commonest degree of hearing loss is mild degree (21-40 dB) and common causes of hearing loss are CSOM and OME. As ear diseases are common in our country and most of the causes are preventable. We should take appropriate steps to manage the preventable hearing impairment to improve the situation. Conflict of Interest: We have no conflict of interest.

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