



Pattern of Ear Diseases in the Patients Attending Ear Outpatient Department of a Tertiary Center in Eastern Nepal

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Authors' contributions

This work was carried out in collaboration between all authors. Author SKT designed the study, wrote the protocol, and wrote the first draft of the manuscript. Authors SKT, SKS, BM and AKS managed the literature searches, collection of data and analysis of the study. All authors read and approved the final manuscript.

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ABSTRACT

Introduction: The prevalence of disabling hearing loss for adults and children is greatest in South Asia followed by Asia Pacific and Sub-Saharan Africa. Nepal is one of the least developed nation where hearing loss and ear diseases is very common.

Objective: To find out the pattern of ear diseases in the patients attending Ear outpatient department (OPD) of Biratnagar Eye Hospital.

Materials and Methods: A retrospective, descriptive review of data retrieved from the medical record section of the Hospital between January 1, 2014 to December 31, 2014 was done. The data were tabulated and analysed. The results are expressed in number and percentage.

Results: Chronic suppurative otitis media, mucosal (42.64%) and ear wax/otomycosis (24.39%) were the commonest ear diseases found. Eustachian tube dysfunction (12.89%), acute otitis

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media (0.74%), acute suppurative otitis media (2.9%), otitis media with effusion (0.54%) were other common diseases. Presbycusis (10.09%) was found to be a common problem in adults. Various other external auditory canal problems and those of inner ear were also detected.

Conclusions: Ear diseases are one of the major health problems in Nepal. This study has found chronic otitis media and ear wax/otomycosis to be commonest problems in children and adults attending the Ear OPD of Biratnagar eye hospital.

Keywords: Ear diseases; otitis media; hearing loss; developing countries.

1. INTRODUCTION

There are 360 million persons in the world with disabling hearing loss (5.3% of the world's population) out of which 328 million (91%) of these are adults (183 million males, 145 million females) and 32 (9%) million of these are children. The prevalence of disabling hearing loss for adults and children is greatest in South Asia followed by Asia Pacific and Sub-Saharan Africa [1]. Nepal is a landlocked developing country in South East Asia and has been listed as one of the least developed nations by United Nations [2]. It is ridden with illiteracy, poverty and sociopolitical problem. It has very poor medical system with lack of manpower, medicine, instruments and facilities [3]. 2011 (2068) census shows the hearing disability to be 15.45% out of 1.94% total disability in the Nepalese population. 1.48% suffers with a combined hearing loss and vision impairment. Speech problem was seen in 11.5% [4]. In 1991, BRINOS/TUTH reported 16.6% hearing loss in general Nepalese population. 32% of hearing impairment was associated with otitis media, which was more common in children [5]. A study carried out by BP Koirala institute of health sciences in Sunsari district of Eastern part of Nepal showed a prevalence of otitis media in 10.3% among those surveyed in health examination camp [6].

Most of the Ear, Nose & Throat (ENT) surgeons (nearly 75%) of Nepal are in the capital. In the eastern part of Nepal, the availability of ENT surgeon with surgical facility in government institution is very less. Private set up is not easy to afford for most of the people. In addition most of the people live in rural areas and are not aware of the consequences of ear disease. So the available facility is also not utilized to its maximum.

In 2001, in rural areas of western Nepal, community ear assistants and volunteers were found to be very effective for ear care delivery [7]. Also in New Delhi, India in 2010, Dr. Shroff's charity eye hospital evaluated integration of eye

and ear care at primary level and found it to be very effective [8].

In view of above background, in January 2012, as a pilot project, Biratnagar Eye Hospital (combined eye and ear program) took an initiative for setting up of community oriented primary ear and hearing care services in conjunction with existing eye setup to address the ear care needs of underprivileged and marginalized section of the eastern Nepalese society to achieve the mission as outlined in SOUND HEARING 2030 [9].

Biratnagar Eye Hospital, a tertiary level centre, has a dedicated Ear outpatient Department (OPD) where eye and ear assistants screen the patient under supervision of an Otolaryngologist. It has a large coverage area in eastern Nepal that caters its population. The number of people attending the Ear OPD is increasing where variety of ear cases, some of them chronic and impending complications report here.

1.1 Objective

To find out the pattern of ear diseases in the patients attending ear-outpatient department of Biratnagar Eye Hospital

2. METHODS

This is a retrospective, descriptive review of data retrieved from the medical record section of the Hospital between January 1, 2014 to December 31, 2014. All of those patients who presented to Ear OPD were enrolled in the study. Those presenting with ear problems were included in the study, while, those with other problems were excluded. All those of age up to 19 years were considered in children and adolescent group and above 19 years were considered in adult group [10]. The patients were examined clinically, and the findings and diagnosis were noted. Otoscopy, Tuning fork test and appropriate audiological tests (pure tone audiometry, tympanometry, Brain Stem evoked response audiometry) were

done to confirm the diagnosis. The data were tabulated and analysed. The results were expressed in number and percentage. To see the association of frequency of chronic suppurative otitis media with gender and life period (children & adolescents and adults), p-value was obtained by applying Chi-square test. P-value was considered significant if it was <0.05.

3. RESULTS

Total number of patients screened in the year 2014 were 15752, out of which 7803 (49.54%) had definite ear pathology as shown in Table-1. Male (56.38%) outnumbered females (43.62%) in Ear OPD attendance in the group with definite ear diseases, as shown in Table-2. Various types of ear pathology, which ultimately affects hearing, were detected, as shown in the Table-3. Overall, the commonest disease found was chronic suppurative otitis media (safe type) in 42.64%, following which were ear wax and otomycosis (24.39%).

Table 1. Number of patients screened and those with ear diseases

Title	Number	Percentage
Total number of patients screened	15752	100%
Total number of patients with ear disease	7803	49.54%

(Source: Biratnagar Eye Hospital Navision software data)

On analyzing the adults with ear diseases, the commonest finding was chronic suppurative otitis media (CSOM) followed by ear wax and otomycosis. Both of these conditions were more common in males, which may be because of greater number of males attending the OPD. 10.09% of adults suffered of Presbycusis.

On analyzing the children with ear diseases, the commonest finding was chronic suppurative otitis media, followed by ear wax and

otomycosis. Otitis externa/furunculosis, acute suppurative otitis media and otitis media with effusion were other diseases common.

A total of 3365 patients suffered of CSOM and it was more common in males (52.77%). Out of 4399 males presenting to Ear OPD, 1776(40%) suffered of CSOM. Out of 3404 females presenting to Ear OPD, 1589(47%) suffered of CSOM, as shown in Table-4. However the association between gender and presence of CSOM was not significant statistically (P-value 0.79).

CSOM was more common in adults (76.13%), out of 3365 patients. Out of 6064 adults presenting to the Ear OPD, 2562 (42%) adults suffered of CSOM. Out of 1739 children and adolescents presenting to the Ear OPD, 803(46%) suffered of CSOM, as shown in the Table 5. However, the association between life period and CSOM was not significant statistically (p-value 0.97).

4. DISCUSSION

Ear disease is a common entity and a major public health problem in developing countries. This study attempted to determine the pattern of ear diseases of patients seen in a tertiary health institution in eastern Nepal and afforded the opportunity to have insight into the spectrum of ear diseases. The pattern of these diseases may vary from community to community or hospital to hospital based on the availability of specialist personnel or facilities for the management of such diseases. The knowledge of these ear diseases can help the administrators and policy makers in the community to make adequate strategic health planning, especially in the developing countries, where poverty, ignorance, insufficient personnel and lack of basic health facilities abound. In fact many cases of conductive hearing impairment can be prevented from becoming chronic through timely detection, followed by appropriate medical or surgical interventions.

Table 2. Male and female distribution

Gender	Adults	Children and adolescents	Total	Percentage
Male	3390	1009	4399	56.38%
Female	2670	734	3404	43.62%
Total	6060	1743	7803	100%
Percentage	77.66%	22.34%		

(Source: Biratnagar Eye Hospital Navision software data)

Table 3. Ear diseases pattern and its distribution

Clinical conditions	Total number	Total percentage	Adult male	Adult female	Children and adolescents male	Children and adolescents female
Ear Wax/Otomycosis	1903	24.39%	793	535	355	220
Foreign body in ear	3	0.04%	1	1	0	1
Otitis externa/Furunculosis	314	4.02%	98	113	61	42
Granulation/Abscess in external auditory canal	12	0.15%	7	4	0	1
External auditory canal stenosis – acquired	4	0.05%	2	0	2	0
Otitis media with effusion	42	0.54%	8	13	10	11
Acute otitis media	58	0.74%	29	6	12	11
Acute suppurative otitis media	226	2.90%	58	65	63	40
Eustachian tube Dysfunction	1006	12.89%	537	365	54	50
Traumatic perforation of tympanic membrane	13	0.17%	7	6	0	0
Chronic suppurative otitis media , safe type	3327	42.64%	1309	1226	440	352
Chronic suppurative otitis media , unsafe type	38	0.49%	20	7	7	4
Otosclerosis	2	0.03%	0	2	0	0
Benign Paroxysmal posititonal Vertigo, other vertigo	4	0.05%	1	3	0	0
Sensorineural Hearing loss	64	0.82%	39	22	2	1
Presbycusis	787	10.09%	484	303	0	0
Total	7803	100%	3393	2671	1006	733

(Source: Biratnagar Eye Hospital Navision software data)

Table 4. Association between gender & Chronic Suppurative Otitis Media (CSOM)

CSOM	Male	Female	Total
Present	1776 (40%)	1589 (47%)	3365 (43%)
Absent	2623 (60%)	1815 (53%)	4438 (57%)
Total	4399 (100%)	3404 (100%)	7803 (100%)

(Source: Biratnagar Eye Hospital Navision software data); p-value= 0.79

Table 5. Association between life period and Chronic Suppurative Otitis Media (CSOM)

CSOM	Adult	Adolescent and children	Total
Present	2562 (42%)	803 (46%)	3365 (43%)
Absent	3502 (58%)	936 (54%)	4438 (57%)
Total	6064 (100%)	1739 (100%)	7803 (100%)

(Source: Biratnagar Eye Hospital Navision software data); p-value= 0.97

Biratnagar Eye Hospital has a dedicated Ear OPD since 2012, April. A total of 15752 people attended the Ear OPD in 2014, out of which nearly half of them (49.54%) were suffering of definite ear diseases and resulting hearing loss. Various studies have shown that the ear disease is the commonest presentation in ENT outpatient department [11-16].

Males were more common than females in Ear OPD attendance in our study, which is in accordance with other audit reports [11,12,14,16]. Adults (those with age more than 19 years) were more common than children & adolescents (those with age up to 19 years). Hearing loss is more common in males than females, according to WHO statistics. The prevalence of hearing loss increases with age, i.e. prevalence in children is 1.7%, in adults aged 15 years or more, it is around 7%, rapidly increasing to almost one in three in adults older than 65 years. In children, prevalence decreases exponentially as GNI (gross national income per capita) increases. In adults of 65 years and older prevalence of hearing loss decreases exponentially as income increases. In most regions, prevalence in children decreases linearly as parent's literacy rate increases [1].

Middle ear infection is a common cause of ear problems resulting in hearing loss, both in children and adults. It is a major health problem in developing countries, more common in South Asia. Poverty, illiteracy, lack of awareness and lack of medical facility are important causes for high prevalence of resulting hearing loss [1,17,18].

Our study reveals chronic suppurative otitis media, followed by earwax/otomycosis to be the commonest problem both in patients of age below and above 16 years. Eustachian tube dysfunction, acute otitis media and Otitis media with effusion are other common problems in our study group. Various studies in their ENT OPD audits have shown chronic otitis media to be the commonest problem [11,13,15,16].

42.64% of OPD patients, children and adults, suffered with chronic suppurative otitis media – mucosal/safe type in this study. 0.49% of OPD patients had chronic suppurative otitis media – squamous/unsafe type. The prevalence of chronic otitis media has been reported by various authors ranging from 6% to 33.9% [18-21].

Sixty five to 95% of children would have suffered one or more attacks of acute suppurative otitis media or acute otitis media before the age of 7 years [22]. Our study revealed 2.9% patients suffered of acute suppurative otitis media and 0.74% suffered of acute otitis media. In a study done in Nepal, a 13% of study group suffered of acute suppurative otitis media [12].

Otitis media with effusion is one of the most common causes of hearing impairment. Our study reveals 0.5% of the patients suffered otitis media with effusion. However, a study by Adhikari [23] in Nepal has found 4.7% of their study population had OME.

Wax in the ears is simple to treat, removal of which can alleviate a silent condition responsible for hearing loss both in adults and children. Though majority of children would not volunteer to complain of hearing loss, various studies have

suggested it to affect scholastic performance. But, due to the lack of awareness about its long term effects and lack of medical facility, it is still a common ear disease, as shown in various studies. 24.39% of our study population had ear wax and otomycosis. It is said that humidity, temperature and racial differences play an important role in wax production and impaction [23-29].

Presbycusis is an important cause of hearing loss in adults. Adults with hearing loss and aged people are neglected group in the family. Though fitting of hearing aid will be helpful in rehabilitation and help these hard of hearing people to function normally in the society, neglect and lack of awareness about hearingaids, might cause this group of people to suffer lifelong. 10.09% of our adults study population suffered of Presbycusis. A further, 0.82% had sensorineural hearing loss in adults and children. The prevalence of hearing impairment in adult population in southern Taiwan in a study was 21.4% [30]. However, in a Korean study where subjects aged 65 years and above was screened, the incidence of Presbycusis was 37.8% and 8.3% for > or = 27 dB HL criterion and > or = 41 dB HL criterion, respectively [31].

Various other diseases of external auditory canal, traumatic perforation of tympanic membrane, otosclerosis and vertigo were also detected.

As this is a hospital based study, and it may not reflect the exact magnitude and pattern of ear diseases prevalent in the community. A community oriented, detailed study should be done for proper planning and implementation of programs to tackle this public health problem.

5. CONCLUSION

Ear diseases are one of the major health problems in Nepal. This study has found chronic otitis media and ear wax/otomycosis to be commonest problems in children and adults attending the Ear OPD of Biratnagar eye hospital. Eustachian tube dysfunction, Acutesuppurative otitis media, Otitis media with effusion, Presbycusis, Sensorineural hearing loss and other problems of external auditory canal were also detected. Improvement of ear health care and increasing the awareness about the disease and its management in health care providers and people should be one of the prime goal to reduce the prevalence of preventable ear disease and related morbidity.

CONSENT

It is not applicable.

ETHICAL APPROVAL

All authors hereby declare that the study was approved by the ethics committee of the institute and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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