

## SOCIODEMOGRAPHIC PROFILE AND TYPE OF HEARING LOSS IN CSOM FROM A TERTIARY CARE HOSPITAL FROM A RURAL AREA

Mohammad Khalid Farooqui<sup>1</sup>, Ruby Naz<sup>2</sup>, Ashok Kumar<sup>3</sup>, Mayank Yadav<sup>4</sup>, Ashish Arora<sup>5</sup>, A. K. Malik<sup>6</sup>

<sup>1</sup>Senior Resident, Department of ENT, SHKM Government Medical College and Hospital, Nalhar, Mewat.

<sup>2</sup>Demonstrator, Department of Microbiology, SHKM Government Medical College and Hospital, Nalhar, Mewat.

<sup>3</sup>Associate Professor, Department of ENT, SHKM Government Medical College and Hospital, Nalhar, Mewat.

<sup>4</sup>Senior Resident, Department of ENT, SHKM Government Medical College and Hospital, Nalhar, Mewat.

<sup>5</sup>Audiologist and Speech Therapist, Department of ENT, SHKM Government Medical College and Hospital, Nalhar, Mewat.

<sup>6</sup>Professor and HOD, Department of Microbiology, SHKM Government Medical College and Hospital, Nalhar, Mewat.

---

### ABSTRACT

---

#### INTRODUCTION

CSOM is a prevalent infection in children. Commonly caused by micro-organisms like bacteria, fungi or virus. It can cause mild to moderate hearing loss.

#### AIMS AND OBJECTIVE

To find out the socio-demographic status of CSOM and common type and degree of hearing loss in CSOM in Mewat region.

#### METHODOLOGY

This study was conducted prospectively in the department of Otolaryngology-Head & Neck Surgery of SHKM GMC Nalhar, Mewat, Haryana, from January 2013 to December 2015. We studied 851 cases of CSOM, age range from 10 to 60 years and excluded intracranial complications if any.

#### RESULT

In our study, maximum patients from 10 to 18 years with lower socioeconomic group with dirty habits of ear picking and 67.5% patients suffered from bilateral hearing loss. In all age groups, males were predominantly affected with 41-55dB hearing loss.

#### CONCLUSION

CSOM is more common in people residing in poor living conditions, lower socioeconomic group and recurrent upper respiratory infection. Hearing loss was more commonly conductive type in CSOM with bilateral involvement and predominantly affected male than female. Mewat is a backward area which needs more health facilities to avoid this type of hearing impairment.

#### KEYWORDS

CSOM, Hearing Loss, Intracranial Complication.

---

**HOW TO CITE THIS ARTICLE:** Farooqui MK, Naz R, Kumar A, et al. Sociodemographic profile and type of hearing loss in CSOM from a tertiary care hospital from a rural area. *J Evid Based Med Healthc* 2016; 3(2), 56-60.

DOI: 10.18410/jebmh/2016/13

---

**INTRODUCTION:** Chronic Suppurative Otitis Media (CSOM) is defined by otorrhea of at least six weeks duration in the presence of a chronic tympanic perforation. And a perforation of the tympanic membrane is deemed to be chronic if present for three months.<sup>1</sup>

Common causative micro-organisms are bacteria, fungi and virus resulting in inflammation of the mucosal lining of the middle ear. If not treated, it leads to partial or total loss of the tympanic membrane and ossicles resulting in acquired hearing loss.<sup>2</sup>

---

*Submission 24-12-2015, Peer Review 26-12-2015,*

*Acceptance 31-12-2015, Published 06-01-2016.*

*Corresponding Author:*

*Dr. Mohammad Khalid Farooqui,*

*#49, RK Nagar, Police Line,*

*Baran Road, Kota-324001, Rajasthan.*

*E-mail: drmkfarooqui@gmail.com*

*DOI: 10.18410/jebmh/2016/13*

---

It is more common in children, as their Eustachian tube is shorter and more horizontal than adults and is made up of more flaccid cartilage, which can impair its opening. The risk of prevalence of the disease is higher in people with low socioeconomic status, poor living conditions, overcrowding, substandard hygiene and malnutrition and under resource health care. It is the commonest childhood infectious disease worldwide starting early in life. It can be easily managed at the primary health care level thereby preventing the development of deafness and even fatal complications.<sup>3</sup>

CSOM can cause a mild to moderately severe hearing loss, due to the fluid interfering with the transmission of sound through to the inner ear. It can often affect the tympanic membrane causing it to retract or become inflamed.<sup>4</sup>

It is a highly prevalent condition and an important cause of preventable hearing loss. According to WHO, India put into highest (>4%) prevalence group. Hearing impairment is a major public health problem in developing countries. An

estimated 2/3rd of the world's hearing impaired population is believed to be distributed among developing countries; another study (a o lasisi et al. 2007) stated that 13.8-36.2% people had been suffering from conductive hearing loss due to CSOM.<sup>5</sup>

Factors that influence the degree of conductive deafness are the size and position of the tympanic membrane defect, impairment of ossicular chain and the presence of middle ear pathology, such as edema and granulation tissue that influence the sound conducting mechanism.<sup>6</sup>

Hearing loss in chronic otitis media depends on the duration of the disease, socioeconomic condition and nutritional condition of patients and upper respiratory infection in children. Many studies showed prevalence of CSOM in low socioeconomic group was high as compared to high socioeconomic group. Similar studies carried out at home and abroad also have shown similar results. Population-based surveys in 2003 in India using the World Health Organization (WHO) protocol estimated the prevalence of hearing impairment to be 6.3% or approximately 63 million people suffering from significant auditory loss.<sup>7</sup>

As per NSSO the estimated prevalence of adult-onset deafness in India was found to be 7.6% and childhood onset deafness to be 2%. Currently, there are 291 persons per one lakh population who are suffering from severe to profound hearing loss. Of these, a large percentage is children between the ages of 0-14 years. With such a large number of hearing impaired young Indians, it amounts to a severe loss of productivity, both physical and economic. It has been noted by WHO that half the causes of deafness are preventable and about 30%, though not preventable, are treatable or can be managed with assistive devices. Thus, about 80% of all deafness can be said to be avoidable. CSOM is an important cause of hearing loss that can be treated before it causes deafness.<sup>8</sup>

**AIMS AND OBJECTIVES:** We studied the socio-demographic status of CSOM and common type and degree of hearing loss in CSOM in Mewat region.

**MATERIALS AND METHODS:** This study was conducted prospectively in department of Otolaryngology-Head and Neck Surgery of SHKM GMC Nalhar, Mewat, Haryana, from January 2013 to December 2015.

**Study of Population:** Patients of chronic suppurative otitis media attended OPD and IPD of ENT Department of SHKM GMC Nalhar, Mewat.

**Sample Size:** 851 cases.

**Selection of Patients:**

**Inclusion Criteria:**

1. All patients of CSOM (tubo-tympanic and attico-antral variety).
2. Age of patients from 10 to 60 years.

**Exclusion Criteria:**

1. CSOM with complication.
2. Otitis externa or inner ear diseases.

3. Traumatic perforation of tympanic membrane.
4. Postoperative CSOM in same ear.
5. Family history of deafness.

Patients were diagnosed as CSOM by detailed history, ear, nose and throat examination and general and systemic examination and bacteriological culture. Patients were selected between 10 to 60 years of age. Patients below 10 years could not interpret pure tone audiometry properly and above 60 years more chance of developing presbycusis, which interfere the actual results of hearing loss due to CSOM.

In ear examination condition of the pinna, pre-auricular region, post-auricular region and external auditory canal were noted. On otoscopy condition of the tympanic membrane perforation, condition of the middle ear mucosa and the ossicles were also noted. Test for facial nerve function, fistula test and tuning fork test were performed in every case to rule out other causes of deafness. General examination and examination of the chest and abdomen was also done. Hearing impairment was assessed by pure tone audiometry with or without masking. X-ray mastoid and X-ray paranasal sinuses were also done to exclude any local pathology.<sup>6</sup>

**Criteria for Hearing Assessment:** These patients were categorized as having conductive or mixed hearing impairment. The degree of hearing impairment was also assessed as by WHO guideline (1980) being mild (25-40dB), moderate (41-55dB), moderately severe (56-70dB), severe (71-90dB), profound (>90dB).<sup>7</sup>

**Clinical and Demographical Studies:** Various clinical and demographical parameters were evaluated in this study; these includes.

1. Age.
2. Sex.
3. H/O ear picking.
4. H/O living condition (katcha/pucca ghar).
5. Type of water supply.
6. Degree of hearing loss (Conductive/Mixed).
7. Degree of severity.

**Clinical Examination:**

- A. Otoscopic examination is necessary to differentiate CSOM from other types (e.g. acute otitis media, otitis media with effusion, otitis externa).
- B. Audiological investigation by using, pure tone audiometry. Patients were divided in 3 age group category.
  - A. 10-18 year.
  - B. 19-45 year.
  - C. 45-60 year.

Conductive and mixed both type of hearing loss were calculated differently and put in different category mild, moderate and moderately severe.

**OBSERVATION:** Data collected from 851 patients of CSOM. Of which 53.3 % were Males and 46.7 % were Females. (Male female ratios was 1:0.8). Maximum patients were from age group 10 to 18 years (39%) followed by group 19 to 45

(32%). Many patients had history of recurrent upper respiratory infection in 60% and 29% patient were regularly using unhygienic water for cleaning and bathing and 11% patient had history of either ear canal trauma or head and neck trauma.

Maximum patients were from low socioeconomic strata 82% patients had monthly income less than 5000 Rs per capita. 85.8% patients lived in katcha house resided in rural area and with poor hygienic conditions.

Many patients had dirty habits of ear picking; 41% had habit of putting oil drop and then cleaning ear with cloth wrapped on wooden stick and 13% patients used cotton bud. Others were found to clean their ear canal with many unhygienic things like match stick, chicken feathers.

In Mewat region people do not have clean water supply. 48% patients used pond water and 31% were using tube well for their cleaning, bathing and cooking. Only 6% people had clean tap water for their minimal needs.

Duration of disease was ranging from 2 years to 20 years. Mean was 6.11 year (SD 6.393).

A 78.7% patients had conductive type hearing loss and 21.3% had mixed type. Ratio of conductive deafness decrease with age, in lesser age (Group A), it was 86% followed by 82% in group B and in old age (group C) only 58% conductive type deafness and 42% was mixed type deafness.

A 67.5% patients suffered from bilateral hearing loss and 32.5% had unilateral. Male were affected more in both unilateral and bilateral deafness and in all age groups except early age (Group A).

There was only mild, moderate and moderately severe category deafness in all groups. There was not severe and profound type deafness in those patients. In group A conductive deafness mild hearing loss 42.7%, in moderate 45.2% and in severe only 11.9% in which male were 48.2% and female were 51.7% and unilateral deafness was 26%.

In group B conductive deafness was 44.7%, 39% and 16% in mild, moderate and severe category respectively. Males were 54.6% and females were 45.3%. Unilateral hearing loss was 36.5%.

In group C conductive hearing loss was 41.4%, 44.6% and 13.8% in mild, moderate and severe category respectively. Males were 62.7% and females were 37.2%. Unilateral hearing loss was 30.8%.

In all age group moderate hearing loss was maximum and male were predominantly affected.

In mixed type all patients had severe hearing loss in all age group. In A group male female ratio was equal, in group B female were more affected and in group C predominantly male was affected. Unilateral hearing loss was 60.5, 40 and 13.2% respectively in group A, B and C.

**DISCUSSION:** CSOM is one of the common diseases in lower socioeconomic strata. Incidence is more in developing countries like India because of poverty, ignorance, illiteracy and limited access to medical care. These factors worsen the course and complications of CSOM.<sup>9</sup>

Maximum patients of CSOM were from low socioeconomic class. Overcrowding, poor living conditions, poor access to medical care, poor sanitation, inadequate medical treatment, recurrent upper respiratory tract infections and nasal diseases have been recognized as risk factors for CSOM in developing countries.<sup>10</sup>

Mewat is a rural underdeveloped district of Haryana, which comprises of uneducated families especially with low female literacy rate, low economic status and having many children. Ignorance, negligence and prevalence of sociocultural taboos are very high among in Mewat population, which besides causing harm and disease among the people also contribute to poor statistics of health indicators of Haryana and country. CSOM tends to occur more in early decades of life and leads to permanent defect in tympanic membrane with hearing loss. This can be avoided by regular aural toileting, antibiotic treatment, middle ear reconstruction and the use of hearing aids for rehabilitation. In Mewat this will seem an arduous task due to poverty and the task of prioritizing health care needs in the face of limited and diminishing resources.<sup>11,12</sup>

In our study many patients had history of recurrent upper respiratory infection same as found in other studies. Maximum patients were from low socioeconomic strata and 85.8% patients lived in "katcha" house resided in rural area and with poor hygienic condition. Similarly other studies found in India and also in abroad. All these conditions favourable for infections because of overcrowding poor hygiene and recurrent upper respiratory infections which further lead to CSOM.<sup>8,10,13,14</sup>

Many patients had dirty habits of ear picking, which may cause trauma in ear canal and invasion of micro-organism. Many patients had habit to put oil in ear canal and then try to clean it with wooden stick or other things which are not hygienic. There was lack of proper water supply in Mewat region; people are dependent on pond water for cleaning and bathing. So that had more chance to get infections, many studies support these evidence.<sup>3,6</sup>

In our study 78.7% patients had conductive type hearing loss and 21.3% had mixed type hearing loss similar to other studies.<sup>4,8</sup>

Patients with Conductive deafness are more common in early age and mixed type deafness was more common in early age. Bilateral deafness was more common than unilateral deafness in all age groups. However, CSOM patients were more commonly presented with complain of unilateral ear discharge and tympanic perforation either they had history of CSOM or they would get infection in future in another side of ear. Male were affected more in both unilateral and bilateral deafness and in all age group except early age (Group A). Our findings were similar to other studies.<sup>5,6</sup>

In conductive type of deafness when we talk about early age group and old age group, most common type of deafness was moderate type. While in group B mild category was most common and moderately severe was least common. Bilateral deafness was universally most common in all age group and male were predominantly affected.

In mixed type deafness all patients suffered from moderately severe hearing loss in all age group and there were no patients of mild-to-moderate deafness. In early age group male-female ratio was equal, while in group B female were more affected than male and in group C male were more affected. Unilateral hearing loss was more common in early age group, while in rest of patients bilateral deafness was more common.

**CONCLUSION:** CSOM is more common in people resides in poor living condition, lower socioeconomic group and recurrent upper respiratory infection. Hearing loss was more commonly conductive type in CSOM with bilateral involvement and predominantly affected male than female. Mewat is a backward area, which needs more health facility to avoid this type of hearing impairment.

Age Group	Male	%	Female	%	Total	%
Group A	132	48.5	140	51.5	272	39
Group B	222	53.3	195	46.7	417	32
Group C	100	61.7	62	38.3	162	12
<b>Total</b>	<b>454</b>	<b>53.3</b>	<b>397</b>	<b>46.7</b>	<b>851</b>	

**Table 1: Distribution of Patients by Ages**

Monthly Income	No. of Patients	%
Up to 5000	697	82
5000-10000	102	12
More than 10,000	52	6
	<b>851</b>	

**Table 2: Distribution of Patients according to Monthly Income**

	Age of Patient	Conductive	%	Mixed	%	Total	%
Group A	10-18	234	86	38	24	272	31.9
Group B	19-45	342	82	75	28	417	49
Group C	46-60	94	58	68	42	162	19
	<b>Total</b>	<b>670</b>	<b>78.7</b>	<b>181</b>	<b>21.3</b>	<b>851</b>	

**Table 3: Distribution of Patients according to Hearing Loss**

Age Group	Unilateral			Bilateral		
	Male	Female	Total	Male	Female	Total
Group A	40	44	84	92	96	188
Group B	79	76	155	143	119	262
Group C	23	15	38	77	47	124
<b>Total</b>	<b>142(51.3%)</b>	<b>135(48.7%)</b>	<b>277</b>	<b>312(54.3%)</b>	<b>262(45.7%)</b>	<b>574</b>

**Table 4**

#### Conductive Hearing Loss:

##### Group A:

		Mild	Mod	Severe	Total
Male	Uni	22	5	3	30
	Bilateral	31	38	14	83
Female	Uni	17	12	2	31
	Bi	30	51	9	90
		<b>100</b>	<b>42.7%</b>	<b>106</b>	<b>45.2</b>
				<b>28</b>	<b>11.9</b>
					<b>234</b>

**Table 5**

Unilateral 61/234=26%

##### Group B:

		Mild	Mod	Severe	Total
Male	Uni	37	25	8	70
	Bilateral	45	54	18	117
Female	Uni	31	19	5	55
	BI	40	36	24	100
		<b>153</b>	<b>44.7</b>	<b>134</b>	<b>39</b>
				<b>55</b>	<b>16</b>
					<b>342</b>

**Table 6**

Unilateral 55+70=125(36.5%)

##### Group C

		Mild	Mod	Severe	Total
Male	Uni	8	5	5	18
	Bilateral	14	19	8	41
Female	Uni	8	3	-	11
	BI	9	15	-	24
		<b>39</b>	<b>41.4</b>	<b>42</b>	<b>44.6</b>
				<b>13</b>	<b>13.8</b>
					<b>94</b>

**Table 7**

Unilateral 11+18=29(30.8%)

**Mixed Hearing Loss:****Group A:**

		Mild	Mod	Severe	Total	
Male	Uni	-	-	10	26.3	19
	Bilateral	-	-	9	23.68	50%
Female	Uni	-	-	13	34.2	19
	BI	-	-	6	15.7	50%
				<b>38</b>		

**Table 8**

Unilateral 10+13=23(60.5%)

**Group B:**

		Mild	Mod	Severe	Total	
Male	Uni	-	-	9	12	35
	Bilateral	-	-	26	34.6	46.6
Female	Uni	-	-	21	28	40
	BI	-	-	19	25.3	53.4
				<b>75</b>		

**Table 9**

Unilateral 9+21=30(40%)

**Group C:**

		Mild	Mod	Severe	Total	
Male	Uni	-	-	5	7.3	41
	Bilateral	-	-	36	52.6	60.2
Female	Uni	-	-	4	5.88	27
	BI	-	-	23	33.8	39.8
				<b>68</b>		

**Table 10**

Unilateral 5+4=9; 13.2%

**BIBLIOGRAPHY:**

1. Scott Brown's Otorhinolaryngology, Head and neck Surgery 2008;1.
2. Rakesh Kumar, Srivastava P, Sharma M, et al. Isolation and antimicrobial sensitivity profile of bacterial agent in csom at NIMS hospital. International Journal of Pharmacy and Biological Sciences 2013;3(4):265-269.
3. Bijan Basak, Ganesh Chandra Gayen, Munmun Das, et al. Demographic profile of CSOM in a rural tertiary care hospital. Journal Of Pharmacy June 2014;4(6):43-46.
4. Ahmed M Alabbasi, Ihsan E Alsaimary, Jassim M Najim. Prevalence and patterns of chronic suppurative otitis media and hearing impairment in Basrah city. Journal of Medicine and Medical Sciences May 2010;1(4):129-133.
5. Mariam, Khalil Ahmed, Ahsanullah Mir, et al. Prevalence of bacteria in chronic suppurative otitis media patients and their sensitivity patterns against various antibiotics in human population of gilgit Pakistan. J. Zool. 2013; 45(6):1647-1653.
6. Mohammed Shafiqul Islam, Md. Rafiqul Islam, Mohammad Ashequr ahman Bhuiyan. Pattern and degree of hearing loss in chronic suppurative otitis media Bangladesh. J Otorhinolaryngol 2010;16(2):96-105.
7. World Health Organization. State of hearing and ear care in the South East Asia Region. WHO Regional Office for South East Asia. WHO SEARO SEA/Deaf/9. Publications\_Hearing\_&\_Ear\_Care.
8. Ramachandra Rao Vengala, Visweswara Rao Suraneni, Sadhana Osuri, et al. Prevalence and etiological factors causing hearing loss in school going children of vizianagaram. District International Journal of Scientific Study December 2014;2(9):41-43.
9. Lasisi OA, Olanian FA, Muibi SA, et al. Clinical and demographic risk factors associated with chronic suppurative otitis media. International journal of Pediatric Otorhinolaryngology 2007;71:1549-54.
10. Adeyi Adoga, Tonga Nimkur, Olugbenga Silas. Chronic suppurative otitis media: Socio-economic implications in a tertiary hospital in Northern Nigeria Pan African Medical Journal 2010;4:3.
11. Available from: [www.census2011.co.in/census/district/226-mewat.html](http://www.census2011.co.in/census/district/226-mewat.html). Accessed on 28 april 2015.
12. Available from: [www.census2011.co.in/census/state/Haryana.html](http://www.census2011.co.in/census/state/Haryana.html). Accessed on 28 april 2015.
13. Sengupta Arunbha, Anwar Tarique, Ghosh Debasish, et al. A study of surgical management of chronic suppurative otitis media with cholesteatoma and its outcome. Indian J Otolaryngol Head Neck Surg 2010;62(2):171-76.
14. Tanmoy Deb Debabrata. Ray A Study of the Bacteriological Profile of Chronic Suppurative Otitis Media in Agartala. Indian J Otolaryngol Head Neck Surg October-December 2012;64(4):326-329.