

# Epidemiology of Chronic suppurative otitis media in Nigerian children

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## Abstract

Chronic suppurative otitis media is an important cause of morbidity and mortality in the tropics and is characterized by persistent or recurrent otorrhoea. This prospective study was carried out with the aim of determining the incidence and the associated epidemiological factors of the disease in this environment. The study was conducted at the general paediatric outpatient clinic over a one year period (2004-2005) amongst children aged 1 month to 14 years with persistent ear discharge of 6 weeks or more. Fifty-three subjects were included in this study giving a hospital prevalence of 0.51%. The disease was most prevalent in children whose ages were six years and below. Higher proportions of subject were associated with low socioeconomic status, poor housing, indoor pollution, unilateral ear disease and central perforation of the ear drum. Complication rate was 5.7% with one case of otogenic tetanus and two cases of subperiosteal mastoid abscess. Mortality rate was 0%.

In conclusion chronic suppurative otitis media is still an important cause of morbidity in children in the tropics. Further studies are required to confirm the various factors highlighted in this study as associated risk factors for the disease in this environment.

## INTRODUCTION

Otitis media is known to be one of the most common childhood infections <sup>1</sup> and a leading reason for antibiotic prescriptions in the developed world <sup>2</sup>. Chronic suppurative otitis media is a disease condition characterized by persistent perforation of tympanic membrane with recurrent or persistent muco-purulent otorrhea <sup>3</sup>. The duration of the otorrhoea has been a subject of controversy among otorlaryngologist with various definitions ranging from six weeks to three months from various studies <sup>4,5</sup>. In this present study 6 weeks duration has been used as the definition of CSOM in line with the definition in standard paediatric text <sup>6</sup>. In view of the fact that the disease is known to vary from one population to another and from one locality to the other coupled with the non-existence of data in this environment, this study was carried out with the aim of providing local data on the incidence of the disease with its associated epidemiological factors.

## SUBJECT AND METHODOLOGY

The prospective and hospital- based study was undertaken in the general paediatric outpatient clinic of the Wesley Guild hospital unit, Ilesa of the Obafemi Awolowo University Teaching Hospital Complex, Southwest, Nigeria. The Wesley Guild hospital unit is an 83-bedded hospital which

combines primary, secondary and tertiary care but lacks in-house otorlaryngologist. The study was done over a one year period between 2004 and 2005. Subjects included children aged 1 month to 14 years who presented with discharging ears at the outpatient clinic. Excluded were children whose ear discharges were limited to the external ears and auditory meatus (examples are children with carbuncle). Information on the bio-data of the subjects, history of the disease, general and otoscopic examination (done with battery-operated hand-held otoscope) was documented in a structured questionnaire. Ethical clearance was obtained from the research and ethical committee of the hospital while consent was giving by the parents of the subjects.

## RESULTS

Of the 10,303 children who visited the general paediatric outpatient clinic over the one year period, 53 subjects were included in the study giving a hospital prevalence of 0.51%. Thirty-four (64%) subjects were males while 19(36%) subjects were females giving a male to female ratio of 1.8:1.

Table I shows the age distribution of the subjects with a higher proportion of subjects within the age range of 6 years and below.

**Figure 1**

Table 1: Age distribution of subjects with CSOM

Age range(months)	Number of subjects	Percentage (%)
1-24	11	20.8
25-48	12	22.6
49-72	11	20.8
73-96	10	18.9
97-120	7	13.2
121-144	1	1.9
145-168	1	1.9
Total	53	100

**Figure 2**

Table 2: Social class distribution of parents of children with CSOM

Social class	Number of subjects	Percentage (%)
I	1	1.9
II	1	1.9
III	8	15.1
IV	41	77.4
V	2	3.8
Total	53	100

Type of housing: Six subjects (11%) lived in well ventilated and not overcrowded houses, generally referred to as flats in the locality while 47(88.7%)subjects lived in poorly ventilated and overcrowded houses known locally as ‘face-to-face’ houses.

Exposure to smoke: All the subjects in this study were exposed to indoor pollution from biomass smoke arising from wood and kerosene stove, which are the main fuel for cooking in this environment. Also, the entire subjects denied exposure to indoor smoke from cigarette.

Family history of ear discharge: Eleven (20.8%) subjects had a family history of ear discharge while 42(79.2%) subjects denied a family history of ear discharge. The mothers (45.5%) were most affected amongst the subjects with family history of ear discharge (see table III).

**Figure 3**

Table 3: Family history of ear discharge

Affected family members	Number of affected family members	Percentage (%)
Mother	5	45.5
Male sib	4	36.4
Female sib	2	18.2
Father	2	18.2
total	11	100

Ear pathology: Forty-five (84.9%) subjects had unilateral affection of the ears while 8(15.1%) subjects had bilateral involvement. Only 50(94%) subjects had visible tympanic membrane while it was not visible in 3(5.7%) subjects. Of the 50 subjects whose tympanic membranes were visible, 42(83.7%) had central perforation while 8(16.3%) subjects had marginal/attic perforation.

Morbidity and mortality: Complication rate was 5.7%. One

subject had Otogenic tetanus while 2 subjects had mastoid abscess. There was no mortality in this study.

**DISCUSSION**

The prevalence of CSOM in this study was 0.51%. This is comparable to the study by Okeowo <sup>7</sup> who had reported a prevalence of 0.6% among urban school children but less than other urban community studies reported by Oduntan <sup>8</sup>, Okeowo <sup>7</sup> and Ogisi <sup>9</sup>. The lower prevalence in this study appears to be at variance with the view that hospital prevalence is higher than community prevalence. This may be due to smaller denominator in hospital studies compared to community studies though the absolute number of affected children may be greater in the community.

A higher proportion of subjects in this study were below 6 years. This agrees with the report of Mahoney in Zaire who reported a higher prevalence of otitis media in the first 6 years of life <sup>10</sup>. It also supports the known fact that otitis media is a childhood disease with high incidence in the first 3 years of life <sup>3</sup>. Otitis media is believed to be common in childhood because of their relative susceptibility to infection, increased mass of lymphoid tissues and Eustachian dysfunction <sup>1,11</sup>.

The majority of subjects in this study fell into the low socio economic group (class IV) which agrees with the report of Okafor <sup>1</sup>. The socio economic classification was based on the model developed by Oyedeji <sup>12</sup> which uses educational qualification and occupation of both parents to assign them to a social class. Poverty and poor medical seeking behavior may have contributed to the dominance of this socioeconomic group in the epidemiology of CSOM in this locality. Paradoxically, fewer subjects (two subjects only) fell into the social class V which is the lowest class. The reason may be due to extreme poverty and lack of education which characterizes this group thereby hindering them from seeking and utilizing orthodox care in hospitals.

About 88.7% of the subjects in this study lived in overcrowded and poorly ventilated houses usually referred to as ‘face-to-face’ in the community while 11.3% lived in not overcrowded and well ventilated houses referred to as flats. The ‘face-to-face’ types of houses consist of many rooms housing many families with a central passage way in which they share same toilet, bathroom and kitchen while flats are houses containing two or more rooms with a kitchen, toilet and bathroom housing a single family. The ‘face-to-face’ housing which is usually overcrowded may

have contributed to the higher proportion of children with CSOM allowing for an intense transmission and chronicity of the disease. In addition to this, all the parent of the subjects do their cooking with kerosene and wood indoor which exposes the subjects to noxious agents from the biomass smoke. This is known to affect the respiratory epithelium thereby predisposing them to respiratory tract infection and increasing the risk of otitis media<sup>13</sup>. Another interesting finding is that the entire subject denied exposure to indoor cigarette smoke. The reason for this may not be clear, but it may not be unconnected with the aggressive campaign of the government on the dangers of smoking to the health of the individual in the community.

Unilateral disease with central perforation was more common compared to bilateral diseases and marginal perforation in this study. The reason for this difference is not clear. This agrees with other existing literature which had reported similar findings<sup>3,9</sup>. The prevalence of unilateral disease is believe to be good as it proffers a better prognosis in limiting the risk of disability from accompany hearing loss than for bilateral disease. On the contrary, it is interesting to note that the incidence of bilateral disease among subjects in this study was lower compared to 20.5% and 42% reported by Ologe at Ilorin<sup>3</sup> and Ogisi<sup>9</sup> in Benin. The reason for this difference is not clear. The higher proportion of central perforation also agrees with other existing literature which reported similar findings<sup>1,14,15</sup>. The central perforation is believed to be safer because of the lower risk of complications<sup>16</sup>.

Though a lower proportion of subjects had a positive family history of ear discharge, it was interesting to find that mothers were most affected. In view of the limitation of this study, it would be premature to conclude that there exists a true association. Therefore further studies are advocated to establish a causal relationship with CSOM.

Complication rate in this study was 5.7% which was lower than 8% and 10% reported by Okafor<sup>1</sup> and Ibekwe<sup>14</sup> respectively. The lower rate of complication in this study may be due in part to unrestricted access to antibiotics usage by subjects in this environment and also the high prevalence of central perforation which is believed to have low risk of complications. The complications in this study were otogenic tetanus and mastoid abscess. The most frequent complication was subperiosteal abscess which agrees with the report of Okafor<sup>1</sup>. The mortality in this study was 0% which is in contrast to mortality of 1.65% reported by

Ibekwe<sup>14</sup>.

In conclusion CSOM is still an important cause of morbidity in this environment. The various epidemiological factors which have been identified in these studies will require further analytical studies in other to establish a causal relationship with the disease.

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