



## DANGER OF UNSKILLED HAND TREATMENT OF EAR WAX IMPACTION IN CHILDREN IN DEVELOPING SUB SAHARAN AFRICA

### Community Medicine

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### ABSTRACT

**Objectives:** Paediatric ear wax impaction is common worldwide with scarce hospital based study.

This study aimed at determining the prevalence, sociodemographic features, clinical characteristics, clinical presentation, associated complications and management of ear wax impaction among children visiting our health facility.

**Materials and Methods:** This was a prospective hospital based study of children with clinical diagnosis of earwax impaction reviewed and managed in Ear, Nose and Throat department of the Ekiti State University Teaching Hospital, Ado Ekiti, Nigeria from March 2018 to February 2019.

Pretested interviewer assisted questionnaires were administered to obtain data.

Data analysis was done by using SPSS version 18.

**Results:** Prevalence of paediatric ear wax impaction was 14.9%.

Male is predominant in 56.6% with male to female ratio of 1.3:1. 62.2% were urban dwellers.

Recurrent and acute (<3 months) ear wax impaction accounted for 44.1% and 29.4% respectively. Bilateral ear wax impaction was 17.5% while right ear wax impaction was 42.7%. Commonest predisposing factors was parental/self ear hygiene in 37.1%.

Common clinical presentation were earache in 60.1%, ear blockage in 35.7% and hearing loss in 33.6%. Associated complications were foreign body impaction in 12.6% and otitis externa in 16.1%.

**Conclusion:** Paediatric ear wax impaction is not an uncommon otologic diseases. At presentation majority were associated with complications from unskilled hand removal.

### KEYWORDS

Paediatric, Ear wax, Impaction, Cerumen

### INTRODUCTION

Ear wax impaction is disease of the external ear which is also called cerumen auris. An impacted ear wax is a large, hard mass of cerumen that gets stuck into external auditory canal which cannot be pushed out by normal ear mechanism. Ear wax impaction may also be defined as accumulated cerumen, that is symptomatic or prevents needed examination of external auditory canal and tympanic membrane (1). Ear wax is a normal product of the outer third of external ear canal(2). Functionally, ear wax protect the ear by entraps dust, insects, foreign body, viral, bacteria, fungi and epithelial squames. Wax is expelled by epithelial migration from tympanic membrane which is aided by movements of temporomandibular joint which is referred to as the process of 'self cleaning' of the ear (3). Furthermore too little ear wax in the ear increases the risk of infection. Excessive wax production may be due to or causes increases in the incidence of outer ear infection and hearing loss (4). Excessive production, changes in composition and congenital anomalies of ear canal may leads to ear wax impaction (5),(6). The common clinical presentation are usually ear pain, itching, tinnitus, hearing loss(7). Hearing loss which is conductive hearing impairment caused by cerumen impaction may be up to 40 db which can be deleterious to linguistic, social, intellectual development and poor academic performance(8).

Ear wax impaction is common worldwide affecting all ages. High prevalence were recorded in children, elderly and mentally disability individuals (9). Some reported prevalence of cerumen impaction varies and has been estimated as affecting 10 -15% of children, 5% of healthy adults, 57% of elderly in nursing homes, and 36% of mentally disabilities (1). The act of ear hygiene with unwise use of various forms of objects such as finger, Biro, pencil, key, paper and cotton buds usually leads to ear wax impaction (10). Other pathology including otitis externa, temporomandibular diseases and dental pathology may cause ear wax impaction from reduced jaw mobility (11).

There is paucity of literature on ear wax impaction among children worldwide and developing countries in particular. This study aimed at determining the prevalence, sociodemographic features, clinical characteristics, clinical presentation, associated complications and

management of ear wax impaction among children visiting our health facility.

### MATERIALS AND METHODS

This was a prospective hospital based study of children with clinical diagnosis of earwax impaction reviewed and managed in Ear, Nose and Throat department of the Ekiti State University Teaching Hospital, Ado Ekiti, Nigeria. The study was carried out over a period of one year (from March 2018 to February 2019).

Ethical clearance was sought for and obtained from the ethical committee of the hospital.

Informed consent was obtained from patients/guardian/parents before patients were enrolled into the study.

Pretested interviewer assisted questionnaires were administered to obtain detailed history on sociodemographic features. Detailed otorhinolaryngological history was taken including possible aetiological and predisposing factor. Past medical, surgical, family and social history were taken. Thorough otological examination includes otoscopy was performed.

All data obtained were documented, collated and analysed. The data analysis was done by using SPSS version 18. The analyzed data were expressed by simple descriptive methods, frequency tables, percentage, bar chart and pie chart.

### RESULTS

A total of 962 children were reviewed during the study period out of which 143 (14.9%) had ear wax impaction. Age range was 1 to 18 years with peak prevalence of 48 (33.6%) at age group 16-18 years. As demonstrated in figure 1.

Male in 81 (56.6%) were more prevalent than female in 62 (43.4%) with male to female ratio of 1.3:1. Christian faith in 129 (90.2%) were commoner than Muslim faith in 14 (9.8%). 89 (62.2%) urban dwellers were commoner than 54 (37.8%) rural dwellers. Commonest parental

education was secondary school 38 (26.6%) followed by nil former education and post secondary in 37 (25.9%) and 35 (24.5%) respectively. Commonest parental occupation was civil servants in 54 (37.8%) followed by business in 36 (25.2%) and driving in 21 (14.7%). Sociodemographic features among the parents was shown in table 1.

Recurrent, acute (<3 months) and chronic (>3 months) cases of ear wax impaction accounted for 63 (44.1%), 42 (29.4%) and 38 (26.6%) respectively. Bilateral ear wax impaction accounted for 25 (17.5%). Right ear wax impaction was noted in 61 (42.7%) while left ear wax impaction was noted in 57 (39.9%). Commonest predisposing factors was parental/self ear hygiene in 53 (37.1%). Others were 44 (30.8%) habitual ear picking, 27 (18.9%) itchy (allergy) ear and 19 (13.3%) imitation of others. Clinical characteristic among the patients was presented in table 2.

Commonest clinical presentation of paediatric of ear wax impaction was earache in 86 (60.1%). Other presentations were 51 (35.7%) ear blockage, 48 (33.6%) hearing loss, 47 (32.9%) dirty in the ear and 44 (30.9%) request repeat speech/Loud speech showed in table 3.

Associated complications were external ear injuries in 4 (2.8%), foreign body impaction in 18 (12.6%) and otitis externa in 23 (16.1%) as demonstrated in figure 2.

Commonest form of unskilled ear wax removal was cotton buds in 102 (71.3%). Others were 89 (62.2%) ear drop (pharmacy,chemist), 57 (39.9%) finger and 41 (28.7%) other objects. Cotton buds usage occurred in self cleaning in 58 (40.6%) and parental cleaning in 44 (30.8%). Ear drops were prescribed in pharmacy, chemist shop, over the counter and self medication in 33 (23.1%), 29 (20.3%), 16 (11.2%) and 11 (7.7%) respectively. Other objects used in ear cleaning were 26 (18.2%) writing materials (Biro cover, pencil and paper), 12 (8.4%) key and 3 (2.1%) feather. All patients/parents had health education on danger of unskilled ear wax removal. Impacted ear wax were removed by 59 (41.3%) ear syringing, 54 (37.8%) instrumentation and 12 (8.4%) suction clearance. Management of associated complications in 45 (31.5%). Management of external ear injuries in 4 (2.8%), foreign body removal in 18 (12.6%) and otitis externa in 23 (16.1%) as presented in table 4.

Patients satisfaction with hospital management illustrated in figure 3. 141 (98.6%) satisfied with the health education, 108 (75.5%) satisfied with hospital treatment and 79 (55.2%) satisfied with hospital process (registration, payment and waiting period).

**DISCUSSION**

Ear wax impaction is one of the major health problem in children unfortunately it has been under investigated in most health research institutions (12). Impacted ear wax is a non toxic and innocent ear disorder for which patients may not be willing to seek medical or specialist interventions. Ear wax is one of the major otologic cause of primary health care and specialist otorhinolaryngology, head and neck consultation (13). It is one of the commonly mismanaged ear disorder in otorhinolaryngology practice by unskilled hand.

Ear wax impaction is a common paediatric otologic disorder which is poorly reported in whole world. Prevalence in this hospital based study on paediatric ear wax impaction was 14.9%. Previous community based study revealed higher prevalence (14-16). This lower prevalence may be due to review of symptomatic and reported patients only. Prevalence in general population was up to 6% (17). In another study in the elderly population, impacted ear wax is the commonest ear disease, occurring in 34.4% of the population (18).

In this study, there were relationship between ear wax impaction and sociodemographic features. It is common and increase with paediatric age group in the higher ages as reported in other study (15). Ear wax impaction was predominately in male than female. This is most likely due to male hyperactivity as reported in other study (15). Ear wax impaction was commoner in urban dwellers compare to rural dwellers and this may be due to closeness to the hospital facilities (19).

Recurrent and acute cases of ear wax impaction were commoner than chronic cases. These may be due to parental/self ear hygiene, itchy (allergy) ear, habitual ear picking and imitation of others as reported among the studied patients. In this study unilateral ear wax impaction was commoner than bilateral ear wax impaction. Contrary findings

was reported in other study (15). Due to common right handedness and children exploration of head and neck orifices right ear wax impaction was commoner than left ear wax impaction.

Sequential to ear wax impaction the reported clinical presentation among paediatric in this study were symptoms, signs and associated complications. Common clinical features were otalgia, hearing impairment, blockage and irritable ear. Associated complications includes foreign body impaction, otitis externa and external ear injuries which were secondary to self and unskilled hand removal of impacted ear wax. Common objects used by self or parents (mother) in ear wax removal in this study were cotton buds, finger and ear drops (procured over the counter or pharmacy). This findings concurred with reports from previous studies (20-23).

Hospital management among the patients were determined by nature/state of the ear wax impaction and associated complications. Impacted ear wax were removed by syringing after softening, instrumentation and suction clearance in infected ear and patients with contraindicated ear syringing. Management of associated complications such as external ear injuries, foreign body removal and otitis externa were done with aural toilets, antibiotics and analgesic.

In this study majority of the patients were satisfied with various hospital management. Patients were satisfied with the health education given during the management of impacted ear wax, satisfied with hospital treatment offered for ear wax removal but dissatisfied with hospital process on protocol of registration, payment patterns and long waiting period from presentation in the to treatment.

**CONCLUSION**

Impacted ear wax is a common otologic disorder with presentation in primary health care and to the specialist. Clinical presentation is usually accompanied with complications from unskilled hand removal. Health education is essential to prevent avoidable complications from untrained hands. Hospital protocol in patients management should be made patients friendly.

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**Competing interests**

All the authors declare that there was no competing interests..

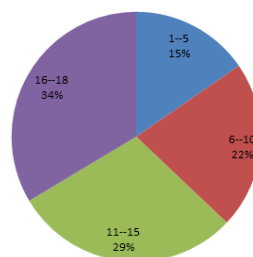
**Ethical Declaration**

Ethical clearance was sought for and obtained from the ethical committee of the hospital.

Informed consent was obtained from patients/guardian/parents before patients were enrolled into the study.

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**Figure 1** Age distribution of patients

**Table 1** Sociodemographic features of patients

Sociodemographic features	Number	Percentage (%)
<b>Sex</b>		
Male	81	56.6
Female	62	43.4
<b>Religion</b>		
Christian	129	90.2
Muslim	14	9.8

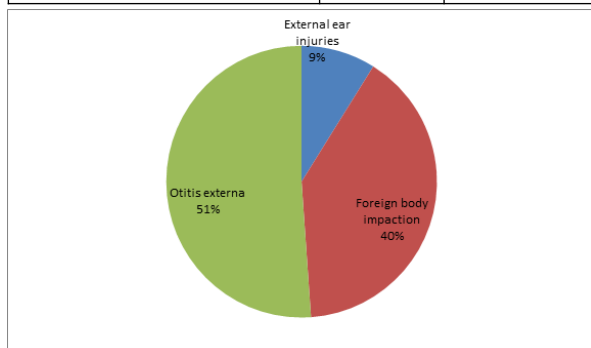
Sociodemographic features	Number	Percentage (%)
<b>Residential</b>		
Urban	89	62.2
Rural	54	37.8
<b>Parent education level</b>		
Nil	37	25.9
Primary	33	23.1
Secondary	38	26.6
Post secondary	35	24.5
<b>Parents occupation</b>		
Applicant	18	12.6
Business	36	25.2
Driver	21	14.7
Civil servant	54	37.8
Farming	14	9.8

**Table 2 Clinical characteristic among the patients**

Clinical characteristic	Number	Percentage (%)
<b>Types based duration</b>		
Acute (<3 months)	42	29.4
Chronic (>3 months)	38	26.6
Recurrent	63	44.1
<b>Lateralization</b>		
Right	61	42.7
Left	57	39.9
Bilateral	25	17.5
<b>Predisposing factors</b>		
Parental/self ear hygiene	53	37.1
Itchy (allergy) ear	27	18.9
Habitual ear picking	44	30.8
Imitation of others	19	13.3

**Table 3 Clinical presentation of the earwax impaction among patients**

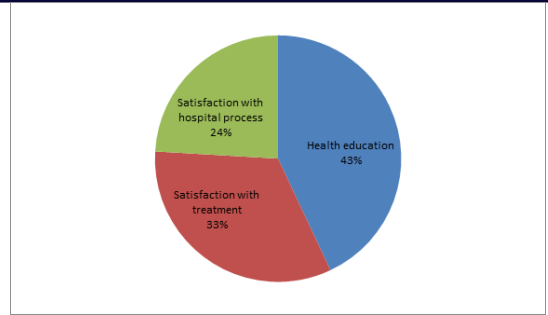
Clinical features	Number	Percentage (%)
Dirty ear	47	32.9
Blockage	51	35.7
Hearing loss	48	33.6
Irritable ear	34	23.8
Earache	86	60.1
Foreign bodies	18	12.6
Request repeat speech/Loud speech	44	30.8



**Figure 2 Associated complications among the patients**

**Table 4 Management among the patients**

Management	Number	Percentage (%)
<b>Prehospital management</b>		
Cotton buds	102	71.3
Other objects	41	28.7
Finger	57	39.9
Ear drops (pharmacy,chemist)	89	62.2
<b>Hospital management</b>		
Ear syringing	59	41.3
Instrumentation	54	37.8
Suction clearance	12	8.4
Health education	143	100
Complications management	45	31.5



**Figure 3 Patients satisfaction with hospital management**

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