

## Pattern of presentation of ear, nose, throat, head and neck injury in a developing country

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### Abstract

**Objective:** Ear, nose, throat, head and neck injuries are a common otorhinolaryngology disorder worldwide. This study aimed at determining the prevalence, sociodemographic features, aetiology, clinical presentation management and outcome of injuries to the ear, nose, throat, head and neck region.

**Methods:** This was a prospective study of patients with otorhinolaryngology, head and neck injuries that presented at our tertiary health institution. Consented patients were studied between October 2015 and September 2017. Analysis of obtained data was done with SPSS version 16.0.

**Results:** The prevalence of ear, nose, throat, head and neck injury was 9.4%. There were 63.5% males 36.5% females with male to female ratio of 1.5:1. Foreign bodies' impaction was the commonest cause of injury in 32.3% followed by road traffic accidents in 19.8%. Commonest anatomical region were ear and nose in 49.7% and 28.5% respectively. Common clinical features among the patients were pain in 46.5%, bleeding in 37.8% and foreign bodies' impaction in 32.3%. Presentations for otorhinolaryngology care among the patients were common in 95.1% acute injury than 4.9% chronic injury ( < 13 weeks). Commonest associated complications of the injuries were otitis media in 18.8% others were 14.9% otitis externa, 9.4% perforated tympanic membrane and 6.3% epistaxis. Pre-hospital treatment in the patients was 67.4%. Major treatment offered to the patients was conservative/medical therapy in 28.8%.

**Conclusion:** Ear, nose, throat, head and neck injuries are common in the otorhinolaryngology practice. Commonest causes are self inflicting foreign bodies' impaction and road traffic accident. Pre-hospital treatment among the patients was very high.

**Keywords:** Ear, Nose, Otorhinolaryngology, Head, Neck, Injuries, Trauma, Developing country

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## Schéma de présentation des lésions de l'oreille, du nez, de la gorge, de la tête et du cou dans les pays en voie de développement

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### Resume

**Objectif:** Les lésions de l'oreille, du nez, de la gorge et de la tête et du cou sont des troubles de l'otorhinolaryngologie courants dans le monde entier. Cette étude visait à déterminer la prévalence, les caractéristiques sociodémographiques, l'étiologie, la gestion de la présentation clinique et l'issue des lésions de la région de l'oreille, du nez, de la gorge, de la tête et du cou.

**Méthodes:** Il s'agissait d'une étude prospective de patients atteints d'otorhinolaryngologie, les blessures à la tête et au cou qui ont présenté à notre établissement de santé tertiaire. Les patients consentis ont été étudiés entre octobre 2015 et septembre 2017. L'analyse des données obtenues a été réalisée avec SPSS version 16.0.

**Résultats:** La prévalence des blessures aux oreilles, au nez, à la gorge, à la tête et au cou était de 9,4%. Il y avait 63,5% d'hommes et 36,5% de femmes avec un ratio hommes-femmes de 1,5: 1. L'impaction des corps étrangers était la cause la plus fréquente de blessures dans 32,3% des accidents de la route suivis par les accidents de la route dans 19,8%. La région anatomique la plus commune était l'oreille et le nez dans 49,7% et 28,5% respectivement. Les caractéristiques cliniques communes chez les patients étaient la douleur dans 46,5% des cas, l'hémorragie dans 37,8% des cas et l'impaction des corps étrangers dans 32,3% des cas. Les présentations pour les soins en oto-rhino-laryngologie chez les patients étaient courantes dans 95,1% des cas de blessure aiguë que dans 4,9% des cas de blessure chronique ( $\geq 13$  semaines). Les complications les plus fréquentes associées aux traumatismes étaient l'otite moyenne dans 18,8% des autres cas, 14,9% d'otites externes, 9,4% de membrane tympanique perforée et 6,3% d'épistaxis. Le traitement pré-hospitalier chez les patients était de 67,4%. Le traitement majeur offert aux patients était un traitement conservateur / médical dans 28,8% des cas.

**Conclusion:** Les blessures à l'oreille, au nez, à la gorge, à la tête et au cou sont courantes dans la pratique de l'oto-rhino-laryngologie. Les causes les plus fréquentes sont l'impaction des corps étrangers et l'accident de la route. Le traitement pré-hospitalier chez les patients était très élevé.

**Mots clés:** Oreille, nez, oto-rhino-laryngologie, Tête, Cou, Blessures, Traumatismes, Pays en développement

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## INTRODUCTION

Ear, nose and throat, head and neck trauma is a scientific study of injuries caused by external sources and its management in otorhinolaryngology practice. Otorhinolaryngology, head and neck injuries are common in clinical practice and constitute a significant cause of avoidable morbidity and mortality (1-4). It is highly important to note that otorhinolaryngology trauma has led to varying degrees of socioeconomic, physical, functional and cosmetic disability on the sufferers (5,6). The incidence of ear, nose and throat trauma had been reported to range between 5.0–15.0% in developing country (4,7). Otorhinolaryngology trauma occur in all age groups; however the causes differ between children and adults worldwide (3,8).

There are different types of pathological trauma in otorhinolaryngology patients. Ear, nose and throat (ENT), types of injuries in developing countries are different from those in well-developed and industrialized countries (9). The mechanism of ENT injuries has been reported to vary with age, sociodemographic status and geographic distribution (10). Ear, nose and throat trauma in otorhinolaryngology practice remain the commonest and tend to occur more frequently with serious complications among the presenting patients (11). Common pathological trauma includes foreign bodies impaction, road traffic accident, assaults, falls and sports injuries (3,4,7). Otorhinolaryngology injuries to the ear, nose and throat can occur as an isolated injury or may be comorbid with injuries to other anatomical region such as chest, abdominal, spinal cord and extremities (11,12).

Ear, nose and throat trauma may be blunt trauma, penetrating, lacerations, partial or total avulsion injury and fractures of facial or temporal bone. Blunt traumas such as slaps and blows from law enforcement agents or senior/boss or penetrating trauma due to gun shot, knife or broken bottle from violence/assault are very common in developing country (13).

Clinical presentation of otorhinolaryngology trauma may be frightening to patients, life threatening and present as emergency. This is when there is associated pain, bleeding, airway embarrassment and foreign bodies in children (14,15). Otorhinolaryngology, head and neck presentation includes history of trauma, foreign bodies' impaction, pain, bleeding, hearing impairment, tinnitus, nasal blockage, olfactory disorder, odynophagia,

hoarseness and difficulty in breathing.

Ear, nose, throat, head and neck injuries occur most frequently in children and most times first present to the untrained personnel at home, an unskilled health worker or family doctors. The injury poses a challenge to the Otorhinolaryngologist when tampered with leading to complications which may require hospitalization (16,17). Their efforts may lead to further trauma, bleeding, frightened patients and causing further damages.

Morbidity and mortality associated with otorhinolaryngology, head and neck trauma is significant and a neglected disorder in Sub Saharan Africa. Little literature has been reported on this subject in developing country with enormous increase in the number of patients with these disorders. There is need to increase the level of awareness on otorhinolaryngology, head and neck injuries to non specialist. This study aimed at determining the socio-demographic features, aetiology, clinical presentation, management and outcome of injuries to the ear, nose, throat, head and neck region.

## MATERIALS AND METHODS

This was a descriptive cross sectional, prospective study of all patients who were managed between October 2015 and September 2017 on account of otorhinolaryngology, head and neck trauma in the accident & emergency department, ENT wards and clinics of Ekiti State University Teaching Hospital, Ado Ekiti. The hospital is a tertiary referral center in the south west, Nigeria.

A design data form was used to collect information from consented patients and was subsequently entered into the database before analyses. Data obtained were age, sex, type and pattern of injuries sustained, clinical presentation, causes, regions that was affected, treatments and complications. All the patients had initial resuscitative measures. Stable patients were treated as out-patients while unstable ones were stabilized and admitted. Excluded from this study are patients that died before initial assessment and unconscious patient who had no relative to give consent on their behalf. Ear, nose, throat, head, and neck findings were documented. Analysis of obtained data was done with SPSS version 16.0 computer software. The data was expressed by frequency tables, percentage, pie charts and bar charts.

Ethical clearance to carry out this study was sought for and obtained from the institution.

Consented patients were enrolled into the study. Stable patients were treated as outpatients while unstable patients were resuscitated, stabilized and admitted for pre and post procedures close monitoring.

Data obtained included age, sex, presenting complaints; duration of symptoms prior to presentation, diagnoses, treatments and complications. Ear, nose, throat, head and neck finding were documented. The obtained data was done by pretested questionnaire.

Analysis of obtained data was done with SPSS version 16.0 computer software. The data was expressed by frequency tables, percentage, pie charts and bar charts.

Ethical clearance to carry out this study was sought for and obtained from the institution.

## RESULTS

During this study period a total of 3049 patients were seen in ear, nose and throat department. Out of which a total of 288 patients had complaints of otorhinolaryngology, head and neck related injuries injury. The prevalence of otorhinolaryngological, head and neck ear injury was 9.4%.

Ear, nose, throat, head and neck injury occurred in all the studied age groups. Highest prevalence was 108 (37.5%) and peaked at first decade, (1-10) years. Table 1 illustrated the age group distribution of patients.

There were 183 (63.5%) males and 105 (36.5%) females with male to female ratio of 1.5:1. Urban resident patients accounted for 161 (55.9%) while rural resident accounted for 127 (44.1%). Commonest affected educational level were primary and secondary level in 97 (39.9%) and 79 (27.4%) respectively. Others were preschool in 68 (23.6%) and post secondary in 44 (15.3%). On patient's occupation, commonest were students in 102 (35.4%) these were followed by driver in 53 (18.4%). Table 2 demonstrated socio-demographic features of patients.

Foreign bodies were the commonest cause of injury in 93 (32.3%) followed by road traffic accidents in 57 (19.8%). Other causes were fall and syringing in 33 (11.5%) and 29 (10.1%) respectively. This is shown in Table 3. Distribution of foreign bodies in ear, nose and throat were 54(18.8%), 31(10.8%) and 8(2.8%) respectively. The anatomical regions involved in injury were shown in figure 1.

The most common clinical features among the patients were pain in 134 (46.5%),

bleeding in 109 (37.8%) and foreign bodies impaction in 93 (32.3%). There were 62 (21.5%) ear bleeding, 28 (9.7%) epistaxis, 11 (3.8%) haemoptysis/ haematemesis and 8 (2.8%) bleeding head and neck. Earache in 89 (30.9%), nasal pain 12 (4.2%), sore throat in 25 (8.7%) and head and neck pain in 8 (2.8%). Other clinical findings were hearing loss in 47 (16.3%) and tinnitus in 44 (15.3%). Acute injury presentation to otorhinolaryngologist in 274 (95.1%) was commoner than chronic ear injury ( 13 weeks) presentation in 14 (4.9%). Common acute presentation were (1-4) weeks in 232 (80.6%) and (5-8) weeks in 37 (12.8%).

Commonest associated complications of the injuries were otitis media in 54 (18.8%) others were 43 (14.9%) otitis externa, 27 (9.4%) perforated tympanic membrane and 18 (6.3%) epistaxis. This is demonstrated in table 4.

Prehospital treatment in the patients was 194 (67.4%). Major treatment offered to the patients was conservative/medical therapy in 83 (28.8%). Commonest surgical intervention were 93 (32.3%) foreign body removal and 47 (16.3%) wound debridement. The detailed is showed in table 5

## DISCUSSION

In this study of otorhinolaryngology, head and neck trauma the prevalence was 9.4%. This findings is higher than report from previous studies (4,18). The high prevalence may be due to the fact that the greater proportions of the studied patients were children, male, urban dwellers and students or apprentice. In these groups there is increased in bodily activities which may predispose them to both indoor and outdoor injuries from road traffic accident, assault and foreign bodies' insertion or aspiration (19).

This study revealed high prevalence of ear injury followed by nasal injury in the studied patients. Exploration of the head and neck orifice are very rampant among the studied patients. Adult exploration is for personal hygiene while children exploration is part of the childhood play. This could explain why head and neck trauma is less common in this study. Head and neck injury occur either by accidents, homicide or suicide.

Foreign body in the otorhinolaryngology, head and neck injuries constituted the commonest causes in this study. The presentation depends on the anatomical site and nature of lodgment of the foreign body. Otorological presentation was commoner than

rhinological foreign bodies' impaction. This findings is in accordance with report from other study (7,8).

Duration of presentation from the time of occurrence to when a patient presented to specialist depends on the anatomical site, nature of object and associated symptoms. Majority of the studied patients presented as an acute case while minority presented after three months. This may be due to associated head and neck trauma bleeding and pain as driven factors. This finding is similar to report from previous studies (7,8). It is important to note that late presentation may be attributed to self-treatment at home, consultation with traditional healers, and delay in referral from private or public clinics, dispensaries with health centers, and transport costs (20). Complications from delayed presentation may increases the likelihood of further complications, prolonged hospital stay, as well as death (21).

Presenting complaint depends on the region of the head and neck involved and type of injury. Commonest complaint was pain with otalgia as the commonest. Earache may be primary or referred depending on the pathology as in previous studies (22, 23). Second most common features were bleeding from the orifice which may arises from the pathology, pre-hospital or unskilled intervention. The pre-hospital care of trauma patient in other studies has been reported to be the most important factor in determining the ultimate outcome of specialist care of the injury (24, 25).

In this study, presence of complications has an impact on the duration of presentation, presented features and final outcome of specialist treatment. The pattern of complications in this study includes otitis media and otitis externa from ear while traumatic epistaxis and nasal septal abscess from nose while hoarseness of voice and laryngeal stenosis were from throat injury. This pattern of complications are similar to what was reported by others (7,11).

Majority of the patients with traumatic otorhinolaryngology, head and neck injuries had pre-hospital treatment from unskilled sympathizers which includes mother, father, friends and neighbours. These interventions rather worsen patient's conditions. In this study all the unstable patients were resuscitated, stabilized and subsequently treated conservatively/medically by wound dressing, antibiotics, nasal decongestant and analgesic. Temporal and facial bone fracture with CSF otorrhea/rhinorrhea was conservatively co-

managed with trauma and neurosurgical team. Foreign bodies were aseptic and atraumatically removed. Wound debridement was done on infected dirty wound. Pinnaplasty, rhinoplasty and further surgical intervention were performed where indicated with satisfactory outcomes. Otorhinolaryngological, head and neck injuries management outcome is similar to other study (26,27).

## CONCLUSION

Ear, nose, throat, head and neck injuries are common in otorhinolaryngology practice. Commonest causes are self inflicting foreign bodies' impaction and road traffic accident. Health education on danger of self ear cleaning, safe drive with construction of good road and pre-hospital intervention are advised. Safe otorhinolaryngology care and early referral of difficult cases to otorhinolaryngologist for experts care to prevent avoidable morbidity and mortality is advised.

**Conflict of interest:** All the authors declare that there was no competing interests..

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Table 1. Age group distribution of the patients

Age group (year)	Number	Percentage (%)
1-10	108	37.5
11-20	47	16.3
21-30	71	24.7
31-40	21	7.3
41-50	22	7.6
51-60	17	5.9
≥61	2	0.7
Total	288	100.0

Table 2. Sociodemographic features of patients with otorhinolaryngological, head and neck injury. (n= 288)

Sociodemographic features	Number	Percentage (%)
<b>Sex</b>		
Male	183	63.5
Female	105	36.5
<b>Residential</b>		
Urban	161	55.9
Rural	127	44.1
<b>Education level</b>		
Preschool	68	23.6
Primary	97	33.9
Secondary	79	27.4
Post secondary	44	15.3
<b>Patients occupation</b>		
Student	102	35.4
Applicant	32	11.1
Business	9	3.1
Driver	53	18.4
Industrial worker	27	9.4
Farming	24	8.3
Artisans	41	14.2

Table 3. Aetiology of otorhinolaryngological , head and neck injury among the patients

Aetiology	Number	Percentage (%)
Foreign bodies	93	32.3
Road traffic accidents	57	19.8
Falls	33	11.5
Assault	27	9.4
Burns	11	3.8
Human bite	4	1.4
Iatrogenic	9	3.1
Penetrating injury	18	6.3
Syringing	29	10.1
Slap	7	2.4
Total	288	100.0

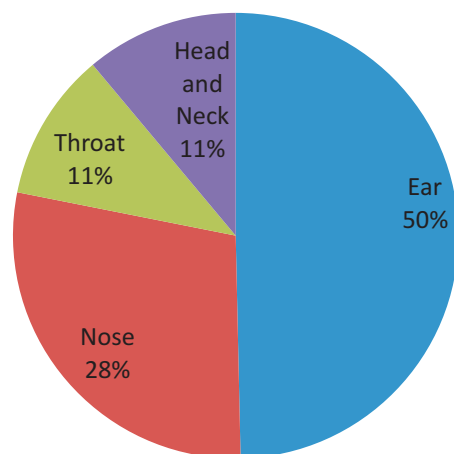


Figure 1. Anatomical distribution of otorhinolaryngological, head and neck injury among the patients



Table 4. Clinical features of otorhinolaryngological, head and neck injury among the patients

Symptoms	Number	Percentage (%)
Foreign body impaction	93	32.3
Hearing loss	47	16.3
Vertigo	15	5.2
Pain	134	46.5
Discharge	32	11.1
Tinnitus	16	5.6
Lacerations	44	15.3
Bleeding	109	37.8
Burns	11	3.8
Nasal blockage	16	5.6
Anosmia	7	2.4
Hoarseness	6	2.1
Odynophagia	12	4.2
Total	288	100.0

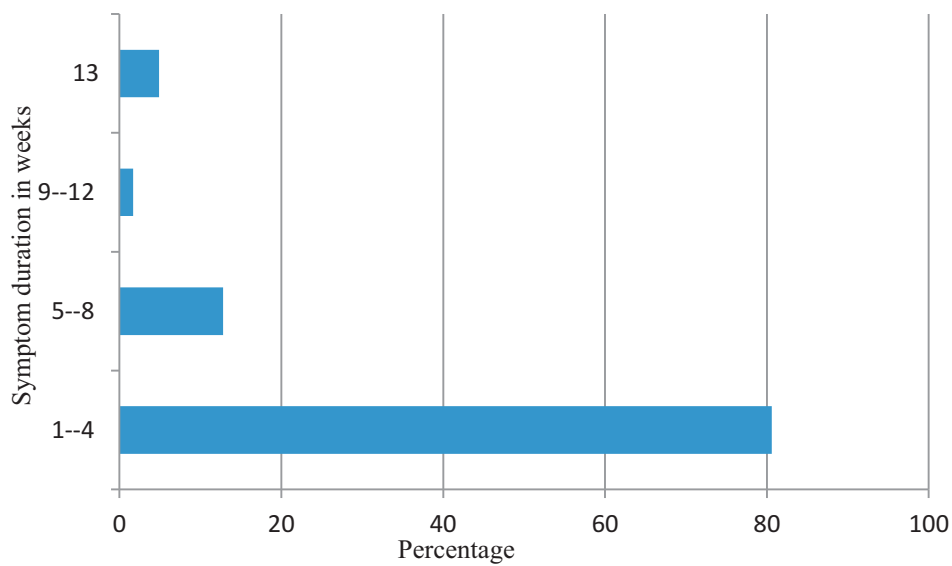


Figure 2. Symptoms duration of otorhinolaryngology injury among the patients

Table 4. Associated complications of otorhinolaryngological , head and neck injury among the patients

Associated complications	Number	Percentage (%)
Otitis media	54	18.8
Otitis externa	43	14.9
Loss pinna	3	1.0
Hearing loss	26	9.0
Perforated tympanic membrane	27	9.4
Facial palsy	8	2.8
Epistaxis	18	6.3
Nasal septal abscess	9	3.1
Adhesion	3	1.0
Nasal deformity	2	0.7
Hoarseness	4	1.4
Laryngeal stenosis	2	0.7
Total	288	100.0

Table 5. Treatment of otorhinolaryngological , head and neck injury among the patients

Treatment	Number	Percentage (%)
Prehospital treatment	194	67.4
Conservative treatment	83	28.8
Foreign body removal	93	32.3
Pinnaplasty	6	2.1
Surgical wound debridement	47	16.3
Epistaxis control	6	2.1
Airway management	5	1.7
Rhinoplasty	3	1.0
Fracture management	2	0.7
Total	288	100.0