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Pattern of Otalgia in Ekiti, Nigeria

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Abstract **Background:** Otalgia is a discomforting otological symptom. The cause may be within or outside the ear. This study aimed at determining the clinico-epidemiological patterns, quality of life, type and aetiology of otalgia. **Materials and Methods**: It is a prospective hospital based study of patients with complaints of earache. The study was carried out in the ear, nose and throat department of Ekiti state university teaching hospital, Ado Ekiti over a period of one year, from May 2016 to April 2017. Data were obtained by using pretested interview assisted questionnaires from subjects that gave consent. Data obtained were collated, documented and analyzed by using SPSS version 16.0. Ethical clearance was sought for this study from the ethical committee of the institution. **Results:** Out of a total of 2,616 patients seen, 947 patients presented with complaints of earache. The prevalence of otalgia was 36.2%. There were 31.3% children (1-18 years) and 68.7% adults. The peaked age of otalgia occured at third decade (21-30 years), with a prevalence of 27.7%. There were 621(65.6%) males and 326 (34.4%) females with a male to female ratio of 2:1. Majority (89.1%) of the studied patients were Christian. About 26.6% of our patients were students/apprentice. Majority of the patients were referred to the department by general practitioners in 40.8% of the patients. In this study, main accompanied symptoms were otorrhea, hearing impairment, itching, ear fullness and feeling of movement in ear and these were 29.7%, 23.7%, 23.0%, 20.9% and 18.7% respectively. Other symptoms were toothache, sore throat, cough and hoarseness and these were 6.7%, 6.1%, 4.3% and 3.1% respectively. In this study, majority of the otalgia were secondary to 25.4% otitis externa, 13.6% impacted earwax, 11.9% otitis media and 7.7% tonsillitis. Otogenic otalgia accounted for 67.4% while referred otalgia accounted for 32.6%. Unilateral otalgia accounted for 80.6% while bilateral otalgia accounted for 19.4%. Right otalgia accounted for 47.4% and left otalgia accounted for 33.2% of the studied patients. Majority (65.7%) of the studied patients had noticed sleep disorder. Findings in this study revealed minority of the patients had 36.9% medical treatment while majority had 63.1% surgical treatment inform of ear lavage, aural toilet, aural dressing and foreign body removal. Prior to presentation in ENT department almost half (49.8%) of the patients had over the counter medication and 24.6% herbal treatment, 17.8% had prescribed medication while 7.7% had no treatment. **Conclusions:** Otalgia has high prevalence among complaints in otorhinolaryngological practice. The prevalence of otalgia was recorded in 36.2% of patients in this study. Majority of the patients presented to non specialist with otogenic and non otogenic aetiology effecting quality of life of sufferer.

Keywords: *otalgia, pattern, referred otalgia, ear diseases, ekiti*

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1. Introduction

Otalgia also called earache or ear pain is defined as an unpleasant experience in the ear causing patients of different ages to seek medical assistant. Otalgia is an otological symptom and not a disease. This symptom is very common in otorhinolaryngological clinical practice worldwide. In Neuroanatomy of the ear components, innervation is affected by several sensory nerves. The auricle is affected by cranial nerves V, VII, X, C2, and C3; the external auditory meatus by cranial nerves V, VII, and X; the tympanic membrane by cranial nerves VII, IX, and X; and the middle ear by cranial nerves V, VII, and IX [1,2,3,4]. All these 4 cranial nerves, with cervical nerves 2 and 3 also innervate other regions of the body outside the ears [5,6,7,8,9]. These regions include oral cavity, pharynx, larynx and oesophagus [7,8,9,10]. In otorhinolaryngological practice full physical examination of ear and adjacent structures should be performed to arrive at definitive diagnosis.

Otalgia can be divided into two main type; primary and referred otalgia. Primary otalgia is ear pain which originates inside the ear [3,4]. This is also called otogenic or intrinsic otalgia. Primary otalgia may be due to inflammation, trauma and neoplasm main causes [11,12,13,14,15]. Infectious causes include furunculosis, infected sebaceous cysts, cellulitis, otitis externa, keratosis obturans, necrotizing otitis externa, acute otitis media, mastoiditis, eustachian tube dysfunction, petrous apicitis, bullous otitis externa, and bullous myringitis. The Inflammatory causes include chondrodermatitis and relapsing polychondritis while the

traumatic causes include traumatic laceration, impacted earwax, pinna hematoma, and tympanic membrane perforation. Neoplastic causes include squamous cell carcinoma and adenocarcinoma. Eustachian tube dysfunctions include otitis media with effusion and chronic otitis media.

Referred otalgia is ear pain that originates from organs pathology outside the ear [7,8,9]. This is also called non otogenic, secondary or extrinsic otalgia. Referred otalgia depends on the sensory nerve supply of the affected pathological organ other than the ear. Affectation of the cranial nerve V (auriculotemporal nerve) pain is due to the diseases of the temporomandibular joint dysfunction, dental diseases, trigeminal neuralgia, and mandibular osteomyelitis [16]. In the cranial nerve VII (posterior auricular nerve) pain is due to diseases such as acoustic neuroma and herpes zoster infection [8]. Cranial nerve IX (Jacobson's nerve) pain is due to diseases like tonsillitis/pharyngitis, sinusitis, pharyngeal tumor, and glossopharyngeal neuroma [5,8,9]. Cranial nerve X (Arnold's nerve) pain is affected by diseases like laryngopharyngeal reflux, cricopharyngeal spasm and vagal stimulations. The greater auricular (C2) nerve pain and lesser occipital (C3) nerves pain are affected by cervical spine degenerative disease, cervical root cysts, Arnold-Chiari type, whiplash, vascular diseases, fibromyalgia, and other psychogenic causes [8]. Clinical pattern of aetiology, distribution and presentation of otalgia varies in different regions in the world. There is paucity of literature on the subject otalgia in developing countries and otorhinolaryngological practice in Nigeria in particular. This study aimed at determining the clinicoepidemiological patterns, type and aetiology of otalgia in Ekiti state university teaching hospital, Ado Ekiti, Nigeria.

2. Materials and Methods

This is a prospective hospital based study of patients with complaints of earache. This study was carried out in ear, nose and throat department of Ekiti state university teaching hospital, Ado Ekiti over a period of one year, from May 2016 to April 2017. Verbal consent was obtained from the patients/parents/guardian. Data were obtained by using interview assisted questionnaires. The information collected includes their biodata such as age, sex, occupation, religion and marital status. Detailed history on earache on duration, onset, nature, aggravating and relieving factors, and associated symptoms were obtained and documented. Detailed otological history and other otorhinolaryngological, head and neck history on the various diseases were obtained. Past medical, surgical, family and social history on alcohol, smoking was obtained. Detailed clinical otorhinolaryngological, head and neck examination were done with emphasis on otological/otoscopy and findings were documented. Further detailed oral (dental), temporomandibular joint, posterior rhinoscopy, and indirect laryngoscopy were carried out to arrived at definitive diagnosis. Participants had audiometric investigation done to arrive at diagnosis. Minor ear nose and throat procedure were given where indicated.

All the otorhinolaryngological, head and neck data obtained were collated, documented and analyzed. This analysis was done by using SPSS version 16. The obtained information were processed by descriptive method and illustrated by using frequency tables, bar chart and pie charts.

Ethical clearance was sought for this study from the ethical committee of the institution. This was obtained before the commencement of this study.

3. Results

The total number of patients seen in the ear, nose and throat department during this study was 2,616. A total of 947 patients presented with complaints of earache. The prevalence of otalgia was 36.2%.

There were 296 (31.3%) children (1-18 years) and 651 (68.7%) adults in the study population. All age groups were involved with peaked age of otalgia at third decades (21-30 years) and prevalence of 262 (27.7%). Figure 1 demonstrated age group distribution of the studied patients.

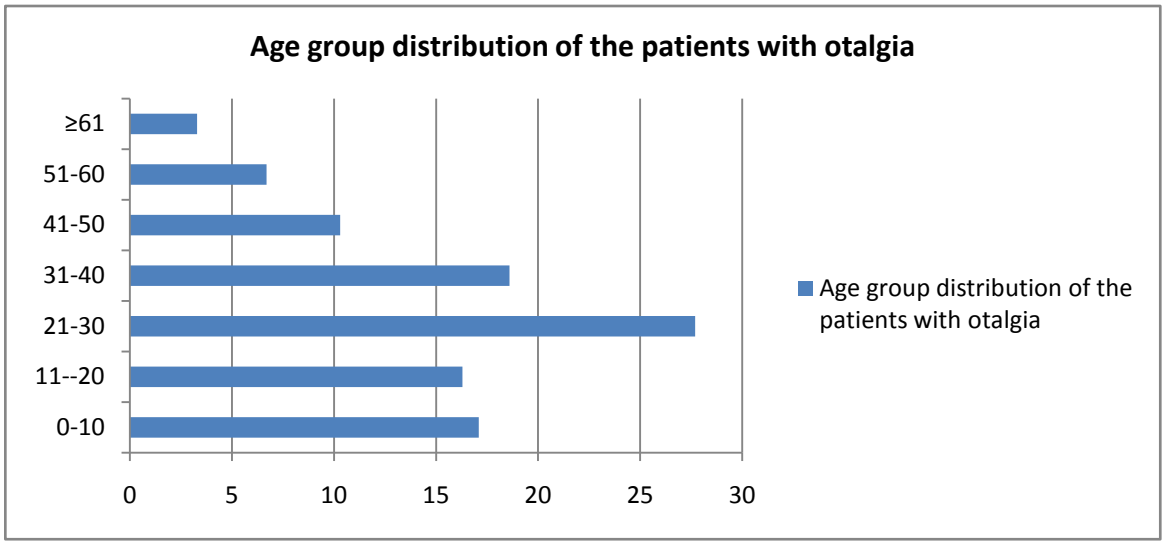

Figure 1. Age group (years) distribution of the patients with otalgia

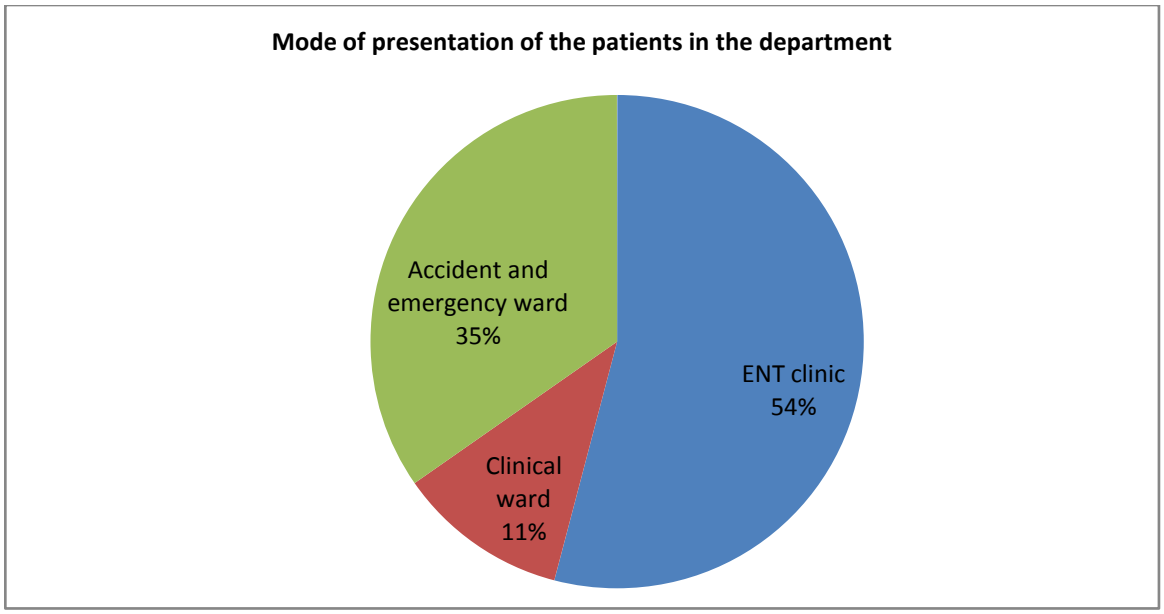

Figure 3. Mode of presentation of the patients in the department

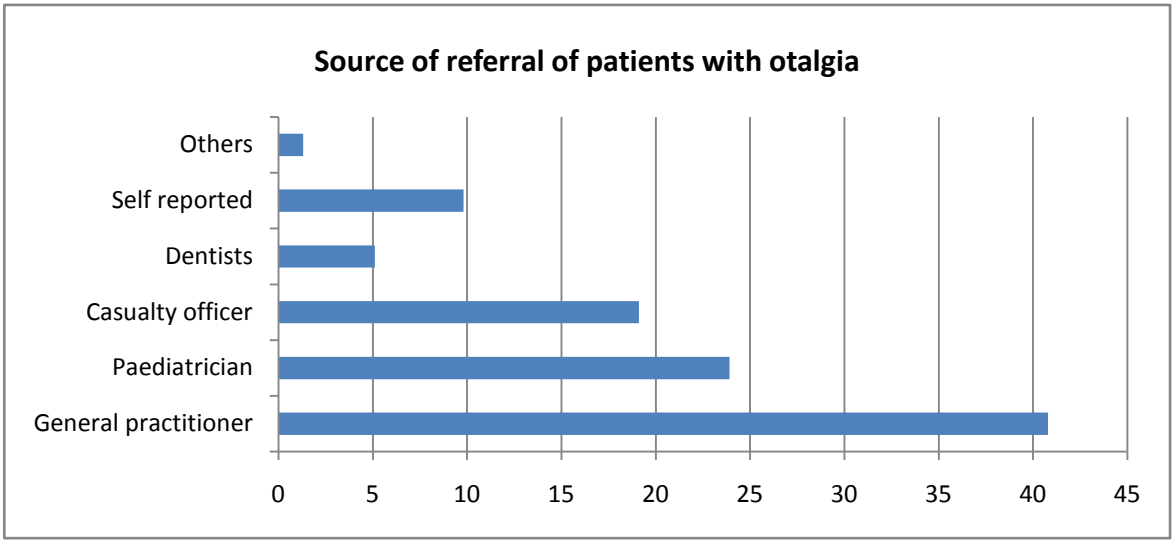

Figure 2. Source of referral of patients with otalgia

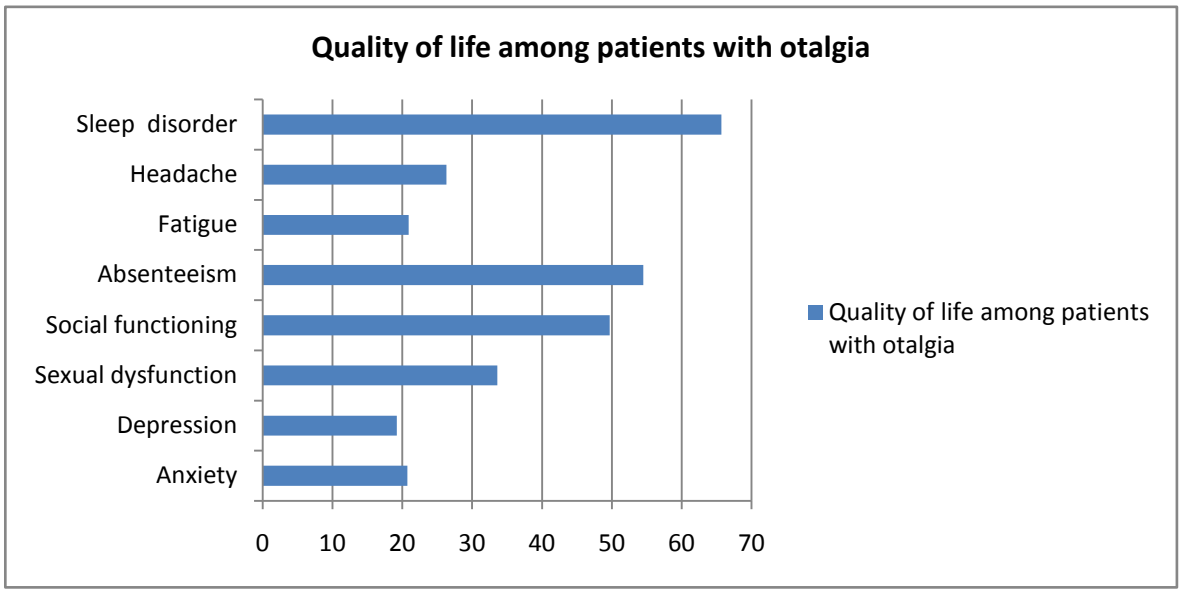

Figure 4. Quality of life among patients with otalgia

Table 1. Sociodemographic features of patients with otalgia

Sociodemographic features	Number	Percentage (%)
Gender		
Male	628	66.3
Female	319	33.7
Religion		
Christianity	844	89.1
Islamic	103	10.9
Education level		
None	37	3.9
Primary	202	21.3
Secondary	406	42.9
Tertiary	302	31.9
Marital status		
Single	581	61.4
Married	397	31.4
Divorce	68	7.2
Occupation		
Students/apprentice	252	26.6
Applicant	178	18.8
Civil servant	229	24.2
Farming	64	6.8
Trading	82	8.7
Others	141	14.9

Table 2. Pattern of accompanied symptoms of otalgia in patients

Symptoms	Number	Percentage (%)
Otorrhea	281	29.7
Hearing impairment	224	23.7
Itching	218	23.0
Vertigo	69	7.3
Feeling of movement in ear	177	18.7
Ear fullness	198	20.9
Swelling	85	9.0
Rhinorrhea	118	12.5
Nasal blockage	97	10.2
Postnasal discharge	89	9.4
Hawking	94	9.9
Sore throat	58	6.1
Cough	41	4.3
Hoarseness	29	3.1
Lump sensation in the throat	87	9.2
Toothache	63	6.7

Table 3. Aetiology of otalgia in the patients

Diagnosis	Number	Percentage (%)
Otogenic otalgia		
Otitis external	241	25.4
Impacted earwax	129	13.6
Foreign body	82	8.7
Trauma	59	6.2
Otitis media	113	11.9
Barotrauma	9	1.0
Eustachian tube dysfunction	5	0.5
Referred otalgia		
Temporomandibular joint disorder	59	6.2
Preauricular sinus infection	27	2.9
Nasopharyngeal tumour	14	1.5
Pharyngitis	34	3.6
Tonsillitis	73	7.7
Dental disorder	8	0.8
Laryngeal disorder	49	5.2
Neuralgia	22	2.3
Psychogenic	23	2.4

Table 4. Characteristic pattern of otalgia in the patients

Pattern of otalgia	Number	Percentage (%)
Recurrence		
Single episode	639	67.5
Recurrent	308	32.5
Duration		
Short duration	342	36.1
Long duration	605	63.9
Laterality		
Right	449	47.4
Left	314	33.2
Bilateral	184	19.4

Table 5. Pattern of management of otalgia patients

Management	Number	Percentage (%)
ENT Treatment		
Medical	349	36.9
Surgical	598	63.1
Improvement at first week	745	78.7
Improvement after first week	202	21.3
Patients satisfaction	922	97.4
Previous treatment		
No treatment	73	7.7
Prescribed medication	169	17.8
Over the counter	472	49.8
Herbs	233	24.6
Previous Rx satisfaction		
No treatment	Nil	0
Prescribed medication	59	6.2
Over the counter	198	20.9
Herbs	17	1.8

There were 621 (65.6%) males and 326 (34.4%) females. Male to female ratio was 2:1. A larger percentage 844 (89.1%) of the studied patients were Christian while 103 (10.9%) were Muslim. Based on education status majority 406 (42.9%) were secondary school leavers and 302 (31.9%) were graduate while minority 37 (3.9%) were without formal education and 202 (21.3%) had primary school leaving certificate. About 61.4% of the patients are married majority 252 (26.6%) were students/apprentice and 229 (24.2%) civil servants while 64 (6.8%) are farmers, and 82 (8.7%) traders. The sociodemographic features are demonstrated in Table 1.

Majority 386 (40.8%) of the patients were referred to the department by general practitioners (family physician), 226(23.9%) by a paediatrician and 182 (19.1%) casualty officer. Minority of the patients with otalgia were 93 (9.8%) self reported and 48 (5.1%) referred by dentists. The source of referral of the patients to the department was illustrated in Figure 2.

More than half (54.1%) of the patients were either reviewed in ear, nose and throat clinic and (34.7%) in the accident and emergency department of the center. Figure 3 demonstrated the mode of presentation of the patients in the department.

In this study, main accompanied symptoms were otorrhea, hearing impairment, itching, ear fullness and feeling of movement in ear and were 281 (29.7%), 224 (23.7%), 218 (23.0%), 198 (20.9%) and 177 (18.7%)

respectively. Table 2 shown pattern of accompanied symptoms of otalgia in the patients.

In this study, about 25.4% of the otalgia were secondary to otitis externa, 129 (13.6%) are due to impacted earwax, 113 (11.9%) due to otitis media while 73 (7.7%) are due to tonsillitis. Other causes of otalgia in the studied patients were demonstrated in Table 3.

Otogenic otalgia accounted for 638 (67.4%) while referred otalgia accounted for 309 (32.6%). Otogenic otalgia were founded in 253 (26.7%) of children while otogenic otalgia were founded in 329 (34.7%) of adults. Referred otalgia were founded in of children 43 (4.5%) while referred otalgia were founded in 322 (34.0%) of adults.

The findings in this study revealed higher proportion of patients 67.5% had a single attack of otalgia. Unilateral otalgia accounted for 763 (80.6%) while bilateral otalgia accounted for 184 (19.4%). Right otalgia accounted for 449 (47.4%) and left otalgia accounted for 314 (33.2%) of the studied patients. In Table 4, characteristic pattern of otalgia in the patients were illustrated.

Pattern of effect of otalgia on the quality of life of the patients were noted in this study. More than half (65.7%) of the studied patients noticed sleep disorder, 516 (54.5%) absenteeism and 471 (49.7%) social functioning. Figure 4 shows the quality of life among patients with otalgia.

Findings in this study revealed that 349 (36.9%) of the patients had medical treatment only while 598 (63.1%) had surgical treatment inform of ear lavage, aural toilet and aural dressing and foreign body removal Prior to presentation in ENT department majority 472 (49.8%) of the patients had over the counter medication, 233 (24.6%) herbal treatment, 169 (17.8%) prescribed medication and 73 (7.7%) had no treatment intervention. Patients had some degree of satisfaction to prior treatment and are as follows: 59 (6.2%) prescribed medication, 198 (20.9%) over the counter and 17 (1.8%) herbs. Table 5 demonstrated pattern of management of otalgia among the patients.

4. Discussion

Otalgia is a very common otological complaint in otorhinolaryngological, head and neck practice. In this study it accounted for 36.2% of clinical complaint in the studied patients over the study period. This high prevalence of clinical presentation may be due to the effect of pains on patient's daily activities. This high prevalence rate of otalgia may also be due to extensive ear wax formation, high humidity in the study area and high level of recurrent otitis externa. In addition, practice of self ear cleaning was the most common predisposing factors. Excessive ear cleaning may cause injury to external ear canal and removal of protective ear wax layer with resultant infection of external auditory canal [7]. There is also high prevalence rhinosinusitis with subsequent tonsillitis, pharyngitis, laryngitis and otitis media leading to otalgia in the studied patients. The prevalence of otalgia is high in the third decades of life in this study. This may be due to high activities of self hygiene and increase in self-conscious at this age group which is responsible for this findings. This may also be due to higher outdoor activities in these age groups. This also exposes them to excessive heat, humidity, dust and so on. These findings were replicated in other studies [14,15,16,17].

Otalgia was commoner in male than female counterpart in this study. Although this difference is not wide enough while some studies reported significant sex preponderance in their findings [17,18,19]. Students/apprentice including applicants constituted the younger age groups and accounted for highest prevalence of the population with otalgia. This is not a surprised because younger age groups are found of personal hygiene of the orifices in the head and neck. This findings is similar to findings in other research work [4,5]. Contributions of the marital status cannot be overemphasized in this study as majority of the patients with otalgia were single. These findings may be due to high prevalence of younger age groups in the studied population.

Right ear otalgia was more common than both left and bilateral otalgia. Majority of the studied patients were right handed. This is most likely due to high prevalence of right ear self cleaning than left ear. This is similar to findings in other studies [20,21,22].

Patients with complaint of otalgia were mainly referred to ear, nose and throat department by the general practitioners, paediatricians and casualty officer. This is because general outpatient department and both adult with children accident and emergency are the main entry point for patients to the hospital. In the ear, nose and throat department, most of the cases presented in the clinic and casualty. Emergency cases were common at night due to pain interference with patients sleep in the studied population. Clinic cases were mainly mild pain, recurrent or chronic earache. This findings is similar to findings in previous studies [17,23].

In this hospital based study on otalgia in a specialized otorhinolaryngological clinic otalgia features such as recurrence, duration, laterality and severity pattern are the commonest. These features help in determining the nature of patient pathology, assessment and subsequent management.

Otogenic otalgia originates from diseases in the external and middle component of the ear. Referred otalgia arises from pathologies of the pharynx, larynx, neck, teeth and so on. This is similar to previous findings [23,24,25,26]. Findings in this study revealed otogenic otalgia were more common than referred otalgia. This finding may be because this study was carried out in ear, nose and throat department.

Otogenic otalgia in this study was mainly caused by inflammation and mechanical pathology while it is less commonly caused by neoplasm. This findings is similar to findings in previous study [25,26]. Inflammatory causes in this study include otitis externa, otitis media, barotrauma and eustachian tube dysfunction. Mechanical pathology includes traumatic injuries, ear wax impaction and so on. Referred otalgia arises from affected organ such as temporomandibular joint, dental organ, trigeminal, mandible, tonsils, pharynx and sinuses, larynx and cervical spine. This study revealed common causes of referred otalgia to be tonsillitis, temporomandibular joint disorder and laryngeal diseases.

Accompany symptoms of otalgia are very helpful in the diagnosis and management of otalgia. Also, it is essential to confirm the pattern of accompanying symptoms. In this study, otorrhea, hearing impairment, itching, feeling of

movement in ear, ear fullness and rhinorrhea accompany both otogenic and referred otalgia. The findings in this study is consistent with outcomes of previous work [27,28].

In this study, impact of otalgia upon patient's quality of life was observed. It is important to note that otalgia has many negative repercussions on the sufferer. This effect on quality of life includes sleep disturbance, sexual dysfunction, social functioning, absenteeism, fatigue, headache and poor emotional balance can be often found in otalgia patients. Anxiety and depression should be noted and be rule out. Otalgia may be secondary to neuralgia or severe enough to warrant psychiatric consultation, referral and intervention [25,26].

Majority of the patients with otalgia were not on treatment or on wrong treatment during the review by the Otorhinolaryngologist, head and neck surgeon. Even majority of those patients on treatment were not satisfied with the treatment regime. This is due to poor understanding of aetiopathogenesis and management of otalgia by person that instituted the treatment.

5. Conclusion

Otalgia is a very commonly otological symptom affecting all age group. The prevalence of otalgia was recorded in 36.2% of patients in this study. Majority of the patients presented to non specialist with otogenic and non otogenic aetiology effecting quality of life of sufferer. Good neuroanatomy skill of ear and head and neck innervation is required for accurate diagnosis and treatment. Prompt referral to otorhinolaryngologist, head and neck surgeon is highly recommended in difficult cases.

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