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Characterization of tinnitus in Nigeria

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ABSTRACT

Objective: This study aimed to characterize tinnitus in middle aged and elderly out-patients attending a specialized clinic in a developing country.
Methods: A cross sectional study of patients attending the ear, nose and throat (ENT) clinic of Olabisi Onabanjo University Teaching Hospital, OOUTH Sagamu, Nigeria. Data was collected with the use of a structured questionnaire. Data collected included socio demographics, medical history including experience of tinnitus, PTAs, BMI and BP. Data was analyzed using SPSS version 17.0.
Results: 79 patients had complaints of tinnitus thus making a crude prevalence of 14.5%, the prevalence increased steadily along the age groups. 51.9% of patients experienced tinnitus for a short period. 53.2% of the patients had symptoms referable to only one ear, while 54.4% had discrete as opposed to multiple types of tinnitus. Occurrence of intermittent symptoms was experienced by 75.9% of the patients and 70.9% were non-pulsatile in nature. Tinnitus was significantly associated with abnormal audiographic pattern, global increased hearing thresholds, high tone hearing loss, vertigo, hypertension and obesity.
Conclusion: Tinnitus character was majorly short term, unilateral, discrete, intermittent, and non-pulsatile in nature, and it is associated with otological, audiological, anthropometric and cardiovascular anomalies. The characteristics of tinnitus in Nigerian patients were similar to those described in developed countries, but the major risk factors for tinnitus except hearing impairment, may be different from the latter.

1. Introduction

Tinnitus – an auditory sensation without the presence of an external acoustic stimulus [1] is a common otologic and audiological symptom that family physicians, Otolaryngologists and Neurologists are often confronted with. Almost all adults have experienced some form of tinnitus, mostly transient in nature, at some moments during their life, and it tends to be more prevalent with advancing age [2]. The prevalence of chronic tinnitus has been estimated to be between 6 and 20% in general adult population [3], and increase up to 33% among the elderly [4].

This sensation often occurs as part of symptoms complex of certain diseases like Meniere's disease and Presbycusis, it can be associated with hypertension [5] and certain forms of metabolic derangement [6], and sometimes it occurs alone as idiopathic.

The consequences of unrelenting tinnitus are especially grave among the elderly population in whom it manifests with insomnia, inadequate and unrefreshing sleep, social isolation, depression, and generally reduced quality of life. Several treatment modalities including use of medications, tinnitus maskers, hearing aids [7] and other rehabilitation techniques had been deployed to control tinnitus. However the efficacy of most interventions for tinnitus remains to be demonstrated conclusively [8]. Preventive strategies of tinnitus have also not achieved much result because of its inadequate characterization, coupled with complex and multiple aetiopathogenesis. Hence isolated measures by psycho-acoustic methods are not satisfactory [9].

Characterization of tinnitus remains an important issue in otoneurological practice but more especially in resource poor countries with limited diagnostic and therapeutic facilities. This study therefore aimed to characterize tinnitus in middle aged and elderly out-patients attending a specialized clinic in a developing country. This will enable us to define the burden, the types, and associations which will assist in planning remedial health programme for this group of patients.

2. Patients and methods

This was a cross sectional study of patients attending the ear, nose and throat (ENT) clinic of Olabisi Onabanjo University Teaching Hospital, OOUTH Sagamu, Nigeria. Consecutive adult and elderly patients attending the clinics were approached for recruitment into the study after being informed about the general purpose, the aims and objectives of the study. Voluntary participation and maintenance of confidentiality were emphasized

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following which consenting patients were included in the study. Subjects who did not consent, patients with wax impaction, patients with active ear infections like otitis externa or media and those on hearing aids were excluded from the study. The study protocol was approved by the Health Research and Ethics committee (HREC) of OOUTH.

Data was collected with the use of a structured questionnaire. The information obtained included the socio demographic parameters of the patients, experience of tinnitus, its duration, laterality, form, frequency of occurrence, nature and other associated symptoms. The past medical, the social histories were taken and clinical diagnoses relating to the otological symptoms were also noted. Otoscopy was done on all the patients to check the status of the ear and especially the tympanic membranes. Pure tone audiometries were done for all the patients by the same audiologist using a calibrated diagnostic audiometer GSI 67, Kaplan. Patients were divided into two groups based on the symptom experience of tinnitus (absent or present). The weights and heights were measured by using the surgifriend medicals scale (Surgifriend Medicals, England) and the body mass index (BMI) calculated as weight in kg/height in m^2.

The information was entered into a spread sheet and analyzed using SPSS version 17.0. The data is presented in descriptive forms as tables. Discrete variables were compared using the Chi square test while continuous variables were compared using the student *t*-test. Statistical significance was set at $p < 0.05$.

Data of patients who were not sure whether they had tinnitus or not and of those with incomplete information (especially PTA) were excluded from the analysis.

3. Results

A total of five hundred and forty three (543) middle aged and elderly patients were seen in the ENT clinic at the period of study (July 2007–June 2011) out of which one hundred and twenty seven (127) patients participated fully (had complete data for analysis) in the study, 59.8% of which were males. Over three quarter (78.7%) of the subjects were in the age group between 61 and 80 years (mean ± SD, 69.6 ± 8.9 years), while 70.9% were married. Slightly over half (52.8%) of the subjects had secondary school education with 40.9% being semi-skilled and 40.2% were Professionals. Seventy-nine patients had complaints of tinnitus thus making a crude prevalence of 14.5%. A detail of the sociodemographic characteristics of the patients is shown in Table 1.

Among the patients that had complaints of tinnitus, the prevalence increased steadily along the age groups until above 80 years, while median duration of symptoms was 13 months which was used as the dividing line into short and long duration. Thus patients with symptoms ≤13 months were regarded as short duration while those over 13 months were treated as long duration. About half (51.9%) of patients experienced tinnitus for a short period, 53.2% of the patients had symptoms referable to only one ear, while 54.4% had discrete as opposed to multiple types of tinnitus. Occurrence of intermittent symptoms was experienced by three quarters (75.9%) of the patients and most (70.9%) were non-pulsatile in nature. Although there were no associated clinical etiologies found in 21.5% of the patients, 43.0% were associated with presbycusis and 15.2% were associated with hypertension; see Table 2.

Table 3 is a comparison of the clinical characteristics of patients with and without tinnitus. Tinnitus was significantly associated with symptoms of vertigo, history of hypertension (defined as use of hypertensive or BP > 140/90 mmHg in at least two consecutive clinic attendance), obesity (BMI > 30.0), reported hearing loss by patients and observed hearing loss (obtained from the pure tone average of air conduction thresholds, of the better ear).

Table 1
Socio demographic characteristics of the patients.

Variable	*n*	%
Age group		
41–50	3	2.4
51–60	13	10.2
61–70	48	37.8
71–80	52	40.9
≥81	11	8.7
Mean ± SD	69.6 ± 8.9	
Sex		
Male	76	59.8
Female	51	40.2
Marital status		
Married	90	70.9
Others	37	29.1
Level of education		
No formal education	3	2.4
Primary school	29	22.8
Secondary school	67	52.8
Post secondary	28	22.0
Occupational group		
Unskilled	24	18.9
Semi-skilled	52	40.9
Skilled/professional	51	40.2
Status of patient		
Tinnitus absent	48	37.8
Tinnitus present	79	62.2

Further exploration of the relationship between tinnitus and other parameters of the audiograms in Table 4 revealed tinnitus was significantly associated with abnormal audiographic pattern (i.e. any deviation from symmetrical audiograms with pure tone average PTAv < 25 dB at both air and bone conduction thresholds, which should be at par with less than 5 dB gap between them). Tinnitus was also significantly associated with global increased hearing thresholds (obtained from PTAv over frequencies 0.5–8.0 kHz, and high tone preponderant hearing loss at frequencies of 4.0–8.0 kHz).

Table 2
Characteristics of tinnitus in 79 patients.

Variable	Frequency	%
Age group		
41–50	3	3.8
51–60	10	12.7
61–70	26	32.9
71–80	35	44.3
≥81	5	6.3
Duration		
Short	41	51.9
Long	38	48.1
Laterality		
Unilateral	42	53.2
Bilateral	37	46.8
Form		
Discrete	43	54.4
Multiple	36	45.6
Occurrence		
Intermittent	60	75.9
Continuous	19	24.1
Nature		
Non pulsatile	56	70.9
Pulsatile	23	29.1
Associated clinical etiology		
Presbycusis	34	43.0
Hypertension	12	15.2
Noise exposure	8	10.1
Meniere's disease	2	2.5
Ototoxic medication	5	6.3
Sickle cell disease	1	1.7
Unknown	17	21.5