



Bringing Otorhinolaryngological Service to Workplaces: Impact of World Hearing Day

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Authors' contributions

This work was carried out in collaboration among all authors. Author IOA designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors IOA and OTO managed the data collection. Authors IOA and FOO managed the analyses of the study and the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Introduction: Individuals do not seek otorhinolaryngological service due to busy schedules at workplaces. Aim of this study was to identify common and asymptomatic otological conditions and proffer solutions; to determine the awareness of otorhinolaryngological services in workplaces.

Methods: A 2-year prospective study done in 2017 and 2018 from 3rd to 31st March of these years, in Edo and Ondo states respectively. Study centers were Independence Television, Nigerian Television Authority; God is Good Motors, De Modern Motors, First Bank, Hope and Echos Hospitals in Benin City; Trauma center and Main auditorium UNIMED in Ondo state. Study was to mark the World Hearing Day. It commenced after obtaining clearance, permissions and informed consents. Total sampling technique was used. Health education was given. Self-administered questionnaires were completed. Otoscopy was done, each ear regarded as a separate entity. Wax and foreign bodies found were removed. Those with ear pathologies were referred to centers with otorhinolaryngological facility for further management. Data analyzed with SPSS, 20. P<0.05 was considered statistically significant.

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Results: 192 participants, representing 384 ears were examined. Age ranged from 16 to 68 years. Commonest otological condition was Otitis media with effusion in 36.7% and 33.3% in Edo and Ondo states respectively. Commonest asymptomatic condition was Cerumen auris. Awareness of ORL services was 60% and 85.1% in Edo and Ondo states respectively. Association between demographics and awareness was statistically significant with age, education and occupation. **Conclusion:** Otological diseases abound in individuals at workplaces. Though there is high level of awareness, there is presence of asymptomatic otological conditions.

Keywords: Otorhinolaryngological service; workplaces; impact; world hearing day.

1. INTRODUCTION

Otological diseases abound in the society [1,2]. Yet, individuals do not seek otorhinolaryngological service due to busy schedules at workplaces. This justified the study. This study was conducted to mark the world hearing day. The world hearing day is an annual event designated by the World Health Organization, WHO, to raise awareness on ear and hearing care across the world [3,4]. This will in turn help to promote prevention and rehabilitation of hearing loss [4].

The world hearing day was formerly called the International Ear Care Day which was designated in April 2007 in Beijing China at the First international conference on prevention and rehabilitation of hearing impairment [5]. It was renamed WORLD HEARING DAY in 2016. The world hearing day is an annual advocacy celebrated on the 3rd of March (3.3) every year, representing the shape of the two ears which is like figure '3'. There is a Specific theme each year [6]. For the years under review, 2017 and 2018, their themes were "Action for hearing loss, make a sound investment" and "Hear the future...and prepare for it" respectively [7,8]. The 2017 theme, taking action for hearing loss draws attention to the economic impact of hearing loss. The 'Actions' included creating awareness, conducting and participating in hearing screening programmes to prevent hearing loss, early identifications of individuals with hearing loss for treatment and rehabilitations. Making a sound investment implies saving for your hearing check, making major savings to prevent and treat hearing loss. The theme for 2018, hear your future and prepare for it, looked at hearing loss which is on the rise. According to World Health Organization, hearing loss is on the rise. In 2018, statistics showed that 466 million people were living with disabling hearing loss. Unless action is taken, this number could rise to 630 million by 2030; it could cross 900 million by 2050 [7,8]. It is anticipated that nearly 1 out of 10 could have hearing loss in 2050. However, this possibility

can be averted through prevention, timely and appropriate interventions. Actions taken today can reverse it [7,8].

1.1 Aim

This study was to identify common and asymptomatic otological conditions and proffer solutions to them. It was also done to determine the awareness of otorhinolaryngological services in workplaces.

2. METHODS

This study was a 2-year prospective study done in 2017 and 2018. It commenced from 3rd March, 2017 to 31st March 2017 and continued from 3rd March, 2018 to 31st March, 2018. It was carried out in Edo and Ondo states respectively. This study was to mark the WORLD HEARING DAY celebrated on the 3rd of March of the years under review. There was an expanded programme on the world hearing day, during which the activities of this day were carried out throughout the remaining working days in the month of March of the study years. The Study centers were Independent Television and radio (ITV) Benin city, Nigerian Television Authority (NTA) Benin branch, God is Good Motors Benin depot, De Modern Motors Benin branch, First Bank PLC New Benin branch, Hope and Echos hospitals in Benin City; Trauma center in University of Medical Sciences Teaching Hospital (UNIMEDTH) and Main auditorium at Odosida campus in University of Medical Sciences UNIMED Ondo state.

There was pre-study awareness campaign programme through fliers, radio and TV adverts and public address system. Total sampling technique was used. Materials used included head light and hand held battery powered otoscope with appropriate sized re-usable speculum. Each speculum was thoroughly disinfected before re-use on another individual. Health education was given on the specific theme of world hearing day for each of the years,

about the ear and ear hygiene. Interviewer's self-administered questionnaires were completed by the researchers and trained research assistants. Otoscopy was done on participants who gave consent. Each ear was regarded as a separate entity. Diagnosis was made based on Otoscopic findings.

Wax and foreign bodies found were removed. Those who had ear pathologies were referred to centers with otorhinolaryngological facility for further evaluations and management.

Data realized were analyzed with SPSS, version 20. P value less than 0.05 ($P < 0.05$) was considered statistically significant. Results were represented in tables and figures.

3. RESULTS

There were 192 participants, representing 384 ears that were examined. Age ranged from 16 years to 68 years. Age range 31- 40 years

predominated in 33.3% in Edo state while age less than 20 years was highest in 49.4% in Ondo state. There was male preponderance in 66.7% of the participants in Edo state while females were higher in 54.0% of the study population in Ondo state. Majority of the participants had tertiary education in 49.5% and 90.8% in Edo and Ondo states respectively. Most of them (37.1%) in Edo state were Journalists while students predominated in 63.2% in Ondo state. Commonest otological condition was Otitis media with effusion in 36.7% of the participants in Edo state and 33.3% in Ondo state. Most prevalent asymptomatic condition was Cerumen auris. Awareness of Otorhinolaryngological services was 60% in Edo state and 85.1% in Ondo state. Source of knowledge of awareness of otorhinolaryngological services was mostly friends in Edo state and school in Ondo state. Association between demographics and awareness was statistically significant with education and occupation in Edo state and with age and education in Ondo state.

Table 1. Sociodemographics (Age and Sex Distribution)

Age (years)	N = 105 (%) EDO	N = 87 (%) ONDO
< 20	3 (2.9)	43 (49.4)
20-30	32 (30.5)	19 (21.8)
31-40	35 (33.3)	8 (9.2)
41-50	22 (21.0)	10 (11.5)
51-60	9 (8.6)	6 (6.9)
>60	4 (3.8)	2 (2.3)
Sex		
Male	70 (66.7)	40 (46.0)
Female	35 (33.3)	47 (54.0)

Table 2. Sociodemographics (Education)

Education	N = 105 (%) EDO	N = 87 (%) ONDO
None	8 (7.6)	-
Primary	17 (16.2)	-
Secondary	34 (32.4)	8 (9.2)
Tertiary	52 (49.5)	79 (90.8)

Table 3. Sociodemographics on occupation

Occupation	N = 105 (%) EDO	N = 87 (%) ONDO
Drivers	26 (24.8)	-
Banking	22 (21.0)	-
Journalism	39 (37.1)	-
Business	6 (5.7)	-
Civil Servant	5 (4.8)	-
Security	3 (2.9)	-
Health Practitioner	4 (3.8)	-
UNIMED Staff	-	32 (36.8)
UNIMED students	-	55 (63.2)

Table 4. Prevalence of ear diseases (Otoscopy)

Condition	N = 210* (%)	N = 174* (%)
Normal	88 (41.9)	114 (65.5)
OME	77 (36.7)	29 (16.7)
Otitis Media	20 (9.5)	-
Cerumen Auris	18 (8.6)	27 (15.5)
Eustachian Tube Dysfunction	8 (3.8)	-
CSOM	4 (1.9)	1 (0.6)
TM perforation	1 (0.5)	2 (1.1)
Otomycosis	1 (0.5)	-
Keratosis Obturans	1 (0.5)	-
Foreign body	-	1 (0.6)
Seborrhic dermatitis	-	1 (0.6)

Multiple findings

**Each ear was regarded as a separate entity.*

OME = Otitis Media with Effusion,

CSOM = Chronic Suppurative Otitis Media,

TM = Tympanic Membrane

Table 5. Otoscopic findings and diagnosis in Edo State World Hearing Day 2017

Otosopic findings	Right Ear	Left Ear	Diagnosis
De Modern Transport Company (n = 12)			
Shiny	1	10	Apparently Normal
Dull	5	5	Otitis Media with Effusion
Retracted	0	0	Eustachian Tube Dysfunction
Hyperemic	0	1	Left Otitis Media
Perforation	1	1	Bilateral CSOM
Hope Hospital (n =13)			
Intact/Shiny	4	4	Apparently Normal
Intact/dull	6	5	Otitis Media with Effusion
Intact/hyperemic	2	0	Otitis Media
Wax	2	2	Cerumen Auris
Desquamated epithelium of canal with ulceration on posterior canal and granuloma formation	1	0	Right Keratosis obturans
God is Good (n = 18)			
Shiny	7	3	Apparently Normal
Dull	6	7	Otitis Media with Effusion
Retracted	1	2	Eustachian Tube Dysfunction
Hyperemic	3	5	Otitis Media
Wax	1	0	Cerumen Auris
Bubbles behind TM	1	0	Right Otitis Media with Effusion
Healed Scar	0	1	Healed TM perforation
Otomycotic Hyphae	1	0	Otomycosis
NTA Media House (n =13)			
Shiny	4	6	Apparently Normal
Dull	3	2	Otitis Media with Effusion
Retracted	2	2	Eustachian Tube Dysfunction
Hyperemic	1	2	Otitis Media
Wax	3	1	Cerumen Auris
Echos Hospital (n = 2)			
Shiny	2	1	Apparently Normal
Wax	1		Cerumen Auris

Otoscope findings	Right Ear	Left Ear	Diagnosis
ITV Media House (n = 26)			
Shiny	16	15	Apparently Normal
Dull	6	7	Otitis Media with Effusion
Retracted	1	0	Eustachian Tube Dysfunction
Hyperemic	1	2	Otitis Media
Wax	3	2	Cerumen Auris
Neomembrane	0	1	Healed TM perforation, Resolved CSOM
First Bank (n = 21)			
Shiny	9	8	Normal
Dull	11	14	Otitis Media with Effusion
Perforated	1	1	Bilateral CSOM
Wax	1	2	Cerumen Auris

Multiple findings

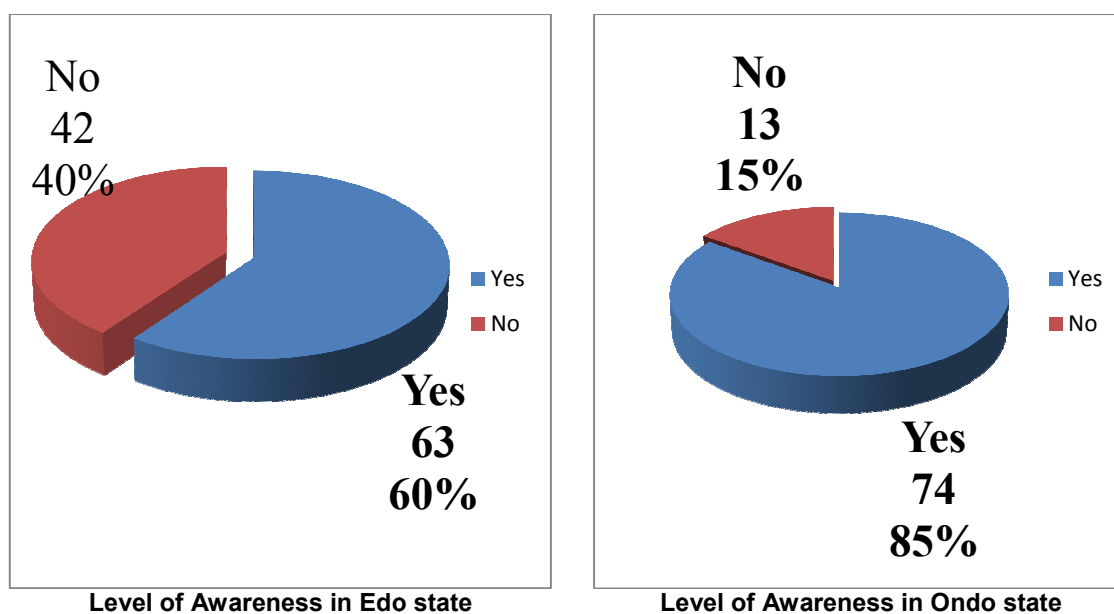


Fig. 1. Awareness of otorhinolaryngological services

Table 6. Otoscopic findings and diagnosis in Ondo State World Hearing Day 2018

Otoscope findings	Right Ear	Left Ear	Diagnosis
Odosida and UNIMED Campus (n = 87)			
Shiny	61	53	Normal
Dull	13	16	Otitis Media with Effusion
Wax	9	18	Cerumen Auris
Perforation	1	2	CSOM / TM Perforations (2 perforations with no discharge)
Foreign body	-	1	Foreign body in Left ear
Scaly	1	-	Seborrhic dermatitis

Table 7. Asymptomatic ear disease

Cases	N = 384 (%)
Cerumen auris	12 (3.1)
Tympanic membrane perforation	3 (0.8)
Foreign body	1 (0.3)
Keratosis Obturans	1 (0.3)

Table 8. Source of awareness of ENT services in Edo state

Variable	Frequency	Percentage
Yes	63	60.0
No	42	40.0
Source of Knowledge		
Friends	25	39.7
Immunization	1	1.6
Media	20	31.8
Others	17	27.0

Table 9. Source of awareness of ENT services in Ondo state

Variable	Frequency	Percentage
Yes	74	85.1
No	13	14.9
Source of Knowledge		
Friends	21	24.1
School	37	42.5
Media	14	16.1
Others	2	2.3

Table 10. Association between demographics and awareness of ENT services in Edo State

Variable	Awareness of ENT Services		χ^2 Sig.
	Yes (%)	No (%)	
Age (years)			$p > 0.05$
Children (<20)	0(0.0)	3(100.0)	
20-30	12(37.5)	20(62.5)	
31-40	25(71.4)	10(28.6)	
41-50	18(81.8)	4(18.2)	
51-60	6(66.7)	3(33.3)	
>60	2(50.0)	2(50.0)	
Sex			$p > 0.05$
Male	44(62.9)	26(37.1)	
Female	19(54.3)	16(45.7)	
Education			$p < 0.05^*$
None	0(0.0)	8(100.0)	
Primary	3(17.6)	14(82.3)	
Secondary	15(46.9)	17(53.1)	
Tertiary	46(90.2)	5(9.8)	
Occupation			$P < 0.05^*$
Drivers	10(38.5)	16(61.5)	
Banking	12(54.5)	10(45.5)	
Journalism	30(76.9)	9(23.0)	
Business	4(66.7)	2(33.3)	
Civil Servant	2(40.0)	3(60.0)	
Security	1(33.3)	2(66.7)	
Health Workers	4(100.0)	0(0.0)	

* indicates statistical significant with education and occupation

A multiple regression was run to predict the level of awareness based on the demographic variables (Age group, occupation, gender, and level of education). Results indicated that the level of awareness increased most significantly based on the level of education ($B = 0.122$). The

variables showed no significant prediction of awareness $F(4.97) = 1.787$, $p = 0.138$, $R^2 = 0.069$.

Only the level of education added significantly to the prediction, $p < 0.05$.

Table 11. Association between demographics and awareness of ENT Services in Ondo State

Variable	Awareness of ENT Services		χ ² Sig.
	Yes (%)	No (%)	
Age (years)			p < 0.05
Less than 20	37(86.0)	6(14.0)	
20-30	17(89.5)	2(10.5)	
31-40	7(87.5)	1(12.5)	
41-50	10(90.9)	1(9.1)	
51-60	4(66.7)	2(33.3)	
>60	1(50.0)	1(50.0)	
Sex			p > 0.05
Male	35(87.5)	5(12.5)	
Female	39(83.0)	7(17.0)	
Education			P < 0.05*
Secondary	5(62.5)	3(37.5)	
Tertiary	69(87.3)	10(12.7)	
Occupation			P > 0.05*
Students	48(87.3)	7(12.7)	
Staff	26(81.3)	6(18.7)	

* indicates significant difference with age and education

Table 12. Regression analysis

Model	Coefficients ^a							
	Unstandardized coefficients		Standardized t	Sig.	95.0% Confidence Interval for B			
	B	Std. error			Beta	Lower bound	Upper bound	
1	(Constant)	1.236	.321		3.848	.000	.599	1.874
	Age group	.000	.043	-.001	-.008	.994	-.085	.084
	Occupation	-.009	.010	-.095	-.960	.339	-.029	.010
	Gender	-.056	.107	-.053	-.528	.599	-.268	.155
	Level of Education	.122	.052	.232	2.357	.020	.019	.226

a. Dependent Variable: Level of Awareness



Fig. 2. Tympanic membrane perforation by cotton bud

4. DISCUSSION

4.1 Demographics

In this study, otologic diseases were detected across all ages of the participants. Though it was more prevalent in age group 31 to 40 years, otological screening should not be restricted to any particular age alone.

4.2 Asymptomatic Otological Condition

Asymptomatic Otologic diseases are otological conditions that were incidentally found without any symptoms in the subject. Cerumen Auris was the most prevalent asymptomatic otologic disease. This agrees with previous studies by Eziyi et al. in 2011 and Akpalaba et al. in 2015 [1,2].

Keratitis Obturans, though it was one of the least asymptomatic conditions, was incidentally seen in a female 21 year old house help of a family. She had no hearing complain; however, her mistress was of the opinion that she does not respond quickly to calls even when called at a close range. Otoscopic examination on her, revealed impacted desquamated epithelium in her right ear canal which, upon removal, showed ulceration on her posterior canal wall, mixed with granulomas formation. Further evaluation showed moderately severe mixed hearing loss. She benefitted from hearing rehabilitation with body worn hearing aid. This finding reemphasizes the need for frequent awareness programs [9,10].

4.3 Challenges Encountered and the Way Forward

The greatest challenge encountered in this study was fieldwork violence. During the course of this research project, there was emergence of a gang from the Uselu market crowd who uttered verbal abuses and harassment to the research team, interrupting the study. Consequently, there were physical blows between the gang and the market leaders. The research team ended up separating fight. This violence necessitated relocation of the study centre to the adjacent hospital, Echos hospital at Technical College Road, Benin City. This experience further redirected the study centre in New Benin market to Hope hospital at Costain road, proximal to the market. This challenge buttresses the need for adequate security with the presence of security patrols and barrier protection [11].

4.4 High Level of Awareness of Otorhinolaryngological Services

Though there was high level of awareness of otorhinolaryngological services in this study, otological diseases still abound in individuals at workplaces with presence of asymptomatic otological conditions. Cerumen Auris and Tympanic membrane perforation were the most common asymptomatic otological conditions in this study. This reflects the harms of using cotton buds and other objects to clean the ears. These asymptomatic conditions found, can lead to life threatening complications including hearing loss and brain abscesses. These findings re-emphasize the need for individuals to stop inserting objects into their ears as the ears are naturally self-cleansing.

5. CONCLUSION

Otological diseases abound in individuals at workplaces with the presence of asymptomatic otological conditions though there is high level of awareness.

6. RECOMMENDATIONS

Government and Policy makers should make a policy to encourage pre - work hearing screening. This will help for early identification of otological diseases and their prompt treatment before the staff engages in active work.

Government and administrators of workplaces should support policies on regular ear checkups as most of the otological conditions detected are preventable and treatable.

Lastly, Otorhinolaryngologists and their Allied are therefore encouraged to embark on frequent awareness programs. All these recommendations will help to improve hearing and hearing rehabilitations.

ETHICAL APPROVAL AND CONSENT

This study commenced after obtaining ethical clearance from Ethical committee of Hope hospital Costain road Benin City, permissions from all the study centres and informed consents from the participants.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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