



Volume 26, Number 2
April, 2019

ISSN 1117-4153



THE TROPICAL JOURNAL OF HEALTH SCIENCES

Published By

**COLLEGE OF HEALTH SCIENCES,
UNIVERSITY OF ILORIN**

(A WHO Collaborating Centre for Research and Manpower Development)

Available on African Journal Online (AJOL)

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THE TROPICAL JOURNAL OF HEALTH SCIENCES

Official Publication of the College of Health Sciences, University of Ilorin.

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The journal will be published quarterly with four issues making one volume with effect from January 2017. TJHS invites manuscripts from the Health Sciences and related disciplines.

Subscription per journal issue: Faculty Staff (=N= 1000); Students (=N=500.00); Private individuals (=N=1,500.00); Institutions/Libraries (=N=2000.00); Overseas subscribers (\$20.00 or equivalent).

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The Tropical Journal of Health Sciences
ISSN 1117 – 4153

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EDITORIAL COMMENTS

Welcome to Volume 26 Number 2, the April 2019 edition of Tropical Journal of Health Sciences. The articles in this edition cover various areas of medical specialties; ranging from obstetrics and gynaecology, neurosurgery, psychiatry, paediatrics to infectious diseases.

The first article reported study of pregnant women who presented with Ear Nose and Throat (ENT) symptoms at different trimesters of pregnancy. The authors concluded that snoring and epistaxis were the most common ENT symptoms in the third trimester, followed by gastro-oesophageal reflux disease which was also found to be predominant in the first and second trimester. All the symptoms were found to increase with advancement in age of pregnancy except for hearing loss, hoarseness and facial weakness which were not statistically significant in the study. The second article was on cord prolapse which is an obstetric emergency with life-threatening implication for the foetus. The authors investigated the current incidence of cord prolapse, predisposing factors and perinatal outcome of cases of cord prolapse managed over a period of five years at the University of Benin Teaching Hospital, Benin, Nigeria. Results of their study showed that the incidence of cord prolapse was 0.3%. Among the patients who suffered cord prolapse, 39.1% were booked while 60.9% were unbooked. The highest incidence occurred in multiparous women with age range between 21 – 30 years. Perinatal mortality from the study was 152 per 1000 deliveries. They therefore concluded that cord prolapse is still a major contributor to perinatal morbidity and mortality. A high index of suspicion and recognition of predisposing factors may allow for early detection and timely delivery, thereby minimising perinatal morbidity and mortality.

Uncontrolled hypertension is a common cause of intracerebral haemorrhage (ICH) which accounts for 10-15% of all cases of stroke and usually result in raised intracranial pressure from obstructive hydrocephalus. External Ventricular Drainage (EVD) is a surgical means of temporary CSF diversion resulting in reduction of raised intracranial pressure (ICP) and remarkable improvement in clinical condition of patients. Study from National Hospital Abuja, retrospectively evaluated the outcome of surgical placement of EVD in patients with spontaneous ICH and intraventricular extension over a period of 19 months.

EVD placement was associated with good blood pressure control. EVD is an emergency procedure commonly performed for spontaneous ICH at the National Hospital Abuja. The high mortality recorded in the patients managed according to them was related to the severity of brain damage.

Another study reported in this edition determined the practices of apparently healthy adults towards routine medical check-ups and screening for cardiovascular risk factors. Majority of the respondents have never had their blood pressure (56.0%), blood glucose (65.8%) and cholesterol (94.6%) checked, and the number was significantly higher among the rural dwellers when compared with urban dwellers. This observation is alarming in view of increase in the incidence of sudden deaths due to cardiovascular diseases world wide.

In conclusion, the results showed that routine medical check-ups and screening for cardiovascular risk factors were poor in this study. There is a need for increased public health promotion and education among Nigerians.

A disturbing observation reported in one of the articles was that level of education among men was shown to have no protective effect on violence against women as men with tertiary educations were reported to have more likelihood of perpetrating violence against women. Therefore, there is obvious need for us as a country to step up legislation against this menace.

According to the World Health Organization (WHO), lack of knowledge of good hand hygiene practices is associated with poor compliance. Another article in this edition evaluated the knowledge of Hand Hygiene as a basic infection control measure among Medical Students in their clinical years at the Barau Dikko Teaching Hospital, Kaduna state. They observed that hand hygiene knowledge was unsatisfactory amongst medical students. Sustained education, training and re-training should be included in their curricular throughout their pre-clinical and clinical years to improve knowledge and invariably, their compliance to hand hygiene performance.

Another study determined the seroprevalence of HSV-2, and evaluated the relationship between HSV-2 infection and sociodemographic factors of female sex workers (FSWs) in Federal Capital Territory (FCT), Nigeria. The result of the study reported that **HSV-2 seroprevalence increased with age**, duration in commercial sex work, number of clients and non-usage of condom.

With the influx of FSWs in the study area and increasing evidence that HSV-2 infection has a synergistic activity on acquiring HIV infection, targeted public health awareness campaigns and good health-seeking behavior on noticing genital rashes, urethral discharges, and vaginal discharges were recommended among the studied population.

AB Okesina
Editor in Chief

Otorhinolaryngological Manifestations of Pregnancy in a Nigerian Tertiary Health Center.

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Abstract

The objective of our study is to assess the frequency and distribution of ENT symptoms according to trimesters in pregnancy and the effect of these symptoms on the quality of life of pregnant women.

This was an observational prospective case control study performed in the department of Otorhinolaryngology, Family Medicine and Obstetrics and Gynaecology in a specialist health institution in Nigeria. A total of 220 women were recruited from the ENT, Family Medicine and Antenatal Clinic for the study, consisting of 110 subject and another 110 age matched controls following ethical approval. Assessment of ENT complaint and Examinations were carried out using a structured proforma for both subject and controls and compared the values and results presented in tables and figures

Age range for the subject was 17 - 43 years with a mean age of 28.4 ± 5.4 years and age range for the controls is 19 – 43 years with a mean age of 28.1 ± 5.3 years. Thirty seven of the subject were in the first trimester another 37 in the second trimester and 36 in the third trimester. The commonest aural manifestations were otalgia and ear fullness, the commonest nasal manifestations were snoring, epistaxis and facial hyperpigmentation while the commonest throat symptoms were Gastro-oesophageal reflux disease, sore-throat and dysphagia.

We conclude that snoring and epistaxis were the most common symptoms in the third trimester, followed by gastro-oesophageal reflux disease which was also found to be predominant in the first and second trimester. All the symptoms were found to increase with advancement in age of pregnancy except for hearing loss, hoarseness and facial weakness which are not statistically significant in our study.

Key words: Pregnancy; Trimester; Otorhinolaryngology; Manifestation; Snoring

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Introduction

Pregnancy is a state where a various changes are observed throughout the body of a woman including the ear, nose and throat (ENT). While some of these changes are said to be physiological, some can become pathological¹. These special changes may be made more stressful with the development of ENT related symptoms and the need for the otolaryngologists and the obstetrician to recognize the potential influences of ENT challenges on the quality of life in a pregnant state¹.

Some of these physiological changes are due to various protein and steroid structured hormones produced by feto-placental unit such as Human Chorionic Gonadotropin (hCG), Human Placental Lactogen (HPL), Human Somatomammotropin², Human chorionic Thyrotropin and Human Chorionic Corticotropin; steroidal ones are Progesterone and Oestrogen and increased activity of maternal pituitary, thyroid and adrenal glands². The hCG levels reaches its highest level between 10-12 weeks of pregnancy which is within the first trimester of pregnancy and remains high during pregnancy. Progesterone and oestrogen levels rise during first and second trimesters and remain constant during third trimester.

The physiological changes in pregnancy are strongly protective. Most of these changes are qualitative in the first trimester and only become mature later³. Vascular changes and physiological expansion of circulating blood volume along with hormonal changes may contribute to various otolaryngological manifestations. The role of hormones on physiological, immunological and inflammatory response is not completely understood².

During pregnancy there is increased prevalence of rhinorrhea or nasal discharge and rhinitis and these has been associated with nasal vascular congestion and progesterone induced vascular smooth muscle relaxation. Also previous studies have reported that sex hormones have effect on histamine (H_1) thus increase in these hormones lead to increase in H_1 receptor expression on nasal epithelium and its associated micro-endothelial cells with an effect on nasal symptoms via histamine receptors⁴. The severity of rhinitis has been shown to be parallel to oestrogen level during pregnancy. Nasal congestion in rhinitis has been found to increase in supine position and cause snore⁵ which on a long term may provoke sinusitis. Symptoms of pregnancy rhinitis are similar to allergic rhinitis (AR) such as daytime fatigue, thirst, decreased

concentration and headache all of which may affect the living quality of a pregnant woman⁵.

This increased vascular flow to the nasal mucosa due to hormonal changes has also been found to contribute to increased frequency of epistaxis in pregnancy and may occur in about 20% of pregnant women⁶. Other possible causes including granuloma gravidarum and nasal haemangioma are not uncommonly reported⁷.

Recent studies on cytokines propose the role of interleukins on nasal physiological changes related to pregnancy^{8,9}. Inspired air through the nasal cavity carries nitric oxide (NO) from sinonasal area to lung with subsequent vasodilatation¹⁰. Mouth breathing leads to mouth dryness and decreases salivary secretion causing tooth decay and poor orodental hygiene with halitosis. Oestrogen secreted during pregnancy increases vascularization on nasal mucosa which may cause ear blockage through its extension of the accompanying oedema into the eustachian tube opening in the nasopharynx which may cause dysfunction and blockage. This decreases the air passage to the middle ear with negative pressures leading to aural fullness, pressure, tinnitus and hearing loss¹¹. Heartburn is another common symptom observed and present as gastroesophageal reflux disease (GERD) is seen in 2/3 of pregnant women. Decreased lower oesophageal sphincter via increased progesterone and oestrogen hormones during pregnancy is the main reason of GERD. It was observed that there was frequent ENT consultations request from the antenatal clinic to review otolaryngological complaint among pregnant women. This stimulated the need to know if those complaint were related to pregnancy state or not was the basis for the study.

The objective of our study is to assess the frequency and distribution of ENT symptoms according to trimesters in pregnancy and the effect of these symptoms on the living quality of pregnant women in North-central Nigeria.

Material and Methods

This study was prospective observational case control study carried out at the antenatal and postnatal clinics and Otorhinolaryngology (ENT) while the control were from well adult clinic of the Family Medicine department in a state established specialist tertiary health institution in north-central Nigeria through January 2016- December 2016. Ethical approval was sought from the ethical review committee of the hospital and informed consent from each of the patients or subjects and control were obtained. The study population consisted of 230 women that were recruited from both O&G, ENT & Family Medicine departments. The study population which consisted of 120 pregnant women out of which 10 pregnant women

failed the inclusion criteria (four pregnant women were excluded from study because of incomplete data and not coming for follow-up, 4 were excluded due to hypertensive complications and 2 due to diabetes complications. Inclusion criteria were pregnant women attending antenatal clinics and ENT clinics during the period of the study. All age-matched consented well adult non-pregnant women with no ENT complaints attending well adult outpatient clinic, consented non pregnant healthy mothers or caregiver who accompanied their wards to ENT clinic without ENT complaint were recruited as controls. Exclusion criteria include smoking, use of snuff, trauma cases involving the ear nose and throat, pregnant women with systemic disease like thyroid disease, HIV and AIDs, hypertension and diabetes were excluded from the study and those with past history of nasal surgeries, ear surgeries and throat surgeries. Thus 110 pregnant as subject and 110 non-pregnant women as control consented to be included in the study. The pregnant women were grouped based on their stage of pregnancy. Group 1: 1-14 weeks (First trimester), Group 2: 15-28 weeks (Second trimester), Group 3: 29-42 weeks (Third trimester). These subjects were followed up to six weeks postpartum during the immunization period and re-assessed to find out if there was resolution of symptoms after delivery.

All women included in the study both subject and control were made to complete a semi structured proforma assisted by the research assistant to obtain the biodata and clinical details related to the study which included Ear, Nose and Throat symptoms some of which included sensation of blockage of ears, sudden hearing loss, facial paralysis, stuffiness, olfactory sensitivity, gum bleed, change in taste, hoarseness, dysphagia, regurgitation, facial pigmentation e.t.c. ENT examination of both the subject and the control was carried out by the same physician in each trimester and in sixth week postpartum period. The examination included anterior rhinoscopy, rigid nasal endoscopy using 18cm 0° and 30° 2.7mm rigid telescope and also endoscopic otoscopy using size 2.7mm 0° hopkins rod telescope with a battery powered light source. Nose was examined for any changes in nasal mucosa and nasal patency. Oral cavity, larynx and pharynx examination were also done. All the procedures were done without anaesthesia because of risk of toxicity to the foetus. All patient with Otolaryngological complaints were evaluated and treated based on the various diagnosis

All symptomatology, examination findings and treatment were noted on structured proforma filled by the subject and control. The medical treatment were given to patients based on the ENT diagnosis while elective surgery was advised after delivery only.

Statistical analysis: The data was tabulated as number of participants with a particular complaint. Chi-square

test was used to determine the relationship between the ear, nose and throat symptoms in pregnancy and non-pregnancy state. Multivariate analysis was done to test the associations of the significant variables.

Results

A total of 110 pregnant and 110 non-pregnant women were enrolled into the study thus serve as the study population. Age range for the subject was 17 - 43 years with a mean age of 28.4 ± 5.4 years and for the control age range was 19 – 43 years with a mean age of 28.1 ± 5.3 years. Thirty seven (37) of the subject were in the first trimester, Thirty seven (37) in the second trimester and thirty six (36) in the third trimester. The subjects were also followed up till six week postpartum period.

Using a pie chart representation the maximum number of complaints among the subjects were in third trimester with about 202 (45.8%) ENT complaints, followed by second trimester with 133 (30.2%) ENT complaints and the least were in first trimester with about 74 (16.8%) otolaryngologic complaints. However there was gross reduction of similar complaint among the control group with about 32 (7.2%) as seen in Figure I with a χ^2 of 198 and a P-Value < 0.0000001 which reveal a strong relationship.

Table 1 showed different ear, nose and throat complaint among the subject and control based on their trimester. Otolological symptoms such as reduced hearing, facial weakness from facial nerve palsy, ear discharge and sudden hearing loss were seen in 3rd trimester. However, tinnitus were found in all trimesters but worse among the subjects in the third trimester. Aural fullness due to eustachian tube dysfunctions was also seen in 3rd trimester though less frequent than other ear complaints. The difference between the severities of the symptom from one trimester to the other and when compared with the

Table 2 - Post-partum Assessment (n = 65)

OTOLOGICAL

Ear pain	5 (4.6)
Ear blockage	10 (9.1%)
Tinnitus	2 (1.8%)

NASAL MANIFESTATION

Nasal blockage /stuffiness	5 (4.6%)
Loss of odour perception	5 (4.6%)
Snoring	12 (10.9%)
Facial hyperpigmentation	10 (9.1%)
Epistaxis	2 (1.8%)

THROAT MANIFESTATION

Gum bleeding	2 (1.8%)
Altered taste	1 (0.9%)
Dysphagia	1 (0.9%)

Table 1 ORL Symptoms among Pregnant women in different stages of pregnancy and the Non-Pregnant women (Control) (n = 110)

ORL manifestations	Frequency Trimester of Pregnancy (%)			Control group	Chi Square	P-value
	1st	2nd	3rd			
Otological						
Ear pain	5 (4.5%)	13 (11.8%)	19 (17.3%)	4 (3.6%)	51.28	< 0.0000001
Ear blockage	8 (7.2%)	11 (10.0%)	12 (10.9%)	6 (5.5%)	22.19	0.00005951
Sudden hearing loss	-	-	2 (1.8%)	-	4.591	0.2043
Facial paralysis	-	-	2 (1.8%)	-	4.591	0.2043
Tinnitus	2 (1.8%)	4 (3.6%)	6 (5.5%)	2 (1.8%)	11.51	0.009254
Reduced hearing	-	4 (3.6%)	2 (1.8%)	-	10.78	0.01295
Nasal manifestation						
Nasal blockage /stuffiness/Discharge	5 (4.5%)	8 (7.3%)	15 (13.6%)	5 (4.5%)	30.84	0.000000917
Loss of odour perception	-	8 (7.3%)	8 (7.3%)	2 (1.8%)	26	0.000009538
Snoring	4 (3.6%)	13 (11.8%)	25 (22.7%)	9 (8.1%)	63.31	< 0.0000001
Facial hyperpigmentation	2 (1.8%)	3 (2.7%)	16 (14.5%)	-	61.01	< 0.0000001
Epistaxis	6 (5.5%)	12 (10.9%)	22 (20.0%)	2 (1.8%)	66.86	< 0.0000001
THROAT MANIFESTATION						
Gum bleeding	1 (0.9%)	5 (4.5%)	7 (6.4%)	2 (1.8%)	16.96	0.0007206
Gum Swelling	-	1 (0.9%)	2 (1.8%)	-	4.202	0.2405
Altered taste	19 (17.3%)	13 (11.8%)	5 (4.5%)	2 (1.8%)	55.82	< 0.0000001
Dysphagia	7 (6.4%)	12 (10.9%)	15 (13.6%)	2 (1.8%)	41	< 0.0000001
Hoarseness	2 (1.8%)	3 (2.7%)	5 (4.5%)	2 (1.8%)	8.292	0.04035
Regurgitation	10 (9.1%)	15 (13.6%)	22 (20.0%)	-	70.99	< 0.0000001
Sorethroat	3 (2.7%)	8 (7.3%)	17 (15.5%)	4 (3.6%)	44.18	< 0.0000001

Table 3 – Examination Findings among the Subjects and Controls

Examination findings	Frequency Trimester of Pregnancy (%)				Control
	1 st	2 nd	3 rd	Total	
Endoscopic Otoloscopy					
Clear External Auditory Canal (EAC)	29(26.4)	30(27.3)	22(20.0)	81(73.6)	97 (88.2%)
Wax	7 (6.4)	4(3.6)	7(6.4)	18(16.4)	9 (8.2%)
Fungal Debris	1(0.9)	2(1.8)	4(3.6)	7(6.4)	4 (3.6%)
Purulent Discharge	-	1(0.9)	3(2.7)	4(3.6)	-
Nasal Endoscopy					
Normal Nose with Engorged turbinates	37(33.6)	35(31.8)	32(29.1)	104(94.6)	110(100)
Nasal polyp	-	2(1.8)	4(3.6)	6(5.5)	-
Throat Examination					
Normal Throat Assessment	36(32.7)	32(29.1)	33(30.0)	102(92.7)	108(98.2)
Enlarged Tonsils	1(0.9)	4(3.6)	3(2.7)	8(7.3)	2(1.8)

control showed indicated a strong statistically significant.

A significantly higher number of patients complained of nasal obstruction and snoring as the pregnancy advances with values worse in the second and third trimester with a p-value of <0.00001, (Table 1). More cases of epistaxis were observed among those in 3rd trimester (20%) followed by 2nd trimester and then least number of patients with epistaxis were seen in 1st trimester (p<0.05). The commonest symptomatic throat manifestation in the first trimester among the subjects was altered taste in 17.3% which when compared to control (1.8%) and regurgitation in 9.1% among the subject and none among the control then followed by an ear blockage in 7.2% among the subject and 5.5% among the control were statistically significant with P-value of <0.00001 (Table 1). Among all the symptoms of presentation sudden hearing loss, reduced hearing, facial weakness, hoarseness and gum swelling with varying ² value and P-value >0.05 thus not statistically significant with no relationship between pregnancy and this otolaryngology symptoms

The otolaryngology symptoms among the subject was compare to post-partum period six weeks after delivery to find out if the symptoms persist. However only 65 (59%) of the subject presented during the post-partum follow up 6weeks post-delivery for the assessment of either improvement or worsening of the ENT symptoms and result are shown in Table 2 below with nasal manifestation still being the most common symptoms observed specifically snoring in 10.9%, followed by facial hyperpigmentation and ear blockage in 9.1% respectively, then nasal blockage and reduced odour perception in (4.6%) respectively. However there was significant drop in the symptoms postpartum with a ² of 63.31 and P value of <0.00001.

Examination of the subjects during each of the trimester and the control indicated that the commonest otological findings in the external auditory canal (EAC) were wax impaction in 16.4%, fungal debris in 6.4% and purulent ear discharge in 3.6% respectively compared to wax impaction of 8.2% and fungal debris

of 3.6% among the control with no case of ear discharge found. However few of the subject had nasal polyps which was an incidental finding among this patients (Table 3). All the patients with Otolaryngologic complaints were treated with decongestants and about 92.7% of the subject said that postural changes like sleeping on the sides is better.

Discussion

In pregnancy state various physiological changes are observed in the body of pregnant woman, ear, nose and throat changes are not excluded and this brings about some changes in the living quality in a pregnancy state. However few women go through this pregnancy and childbirth state without encountering real or potential challenges thus their quality of life is unaffected². These changes may present as complaints concerning the ear, nose throat, head and neck which are not naturally considered in the assessment of quality of life of a pregnant woman. The need for obstetrician to acquaint themselves with these symptoms when their patient present with it for optimal reassurance, better management, or care of the pregnant woman in a safe manner to further improve their quality of life. Some of these symptoms are mild and may present for a short period of time and sometimes are self-limiting. The mean age of the participant of study group was 28.4years which fall within the age when fertility rate in women is at its peak and tend to decline after age 30yrs¹² while the mean age found in our study is higher than the mean age found by Ahmed in 2012¹³ but similar to finding from Akocca et al².

Increased frequency of nasal congestion, nasal obstruction and snoring from the first to third trimester can be attributed to cholinergic effect of progressive increase in placental growth hormone and oestrogen as enumerated in previous study by Ellegard and Karlsson^{2,14,15} thus affecting their quality of sleep¹⁶. Some researchers have reported nasal congestion to be an outcome of neurotransmitters like substance P whose secretion changes via oestrogen and progesterone².

Figure 1 Pie Chart of Frequency of Otolaryngological Complaints among the Subject based on Trimesters of Pregnancy and 6weeks Post delivery

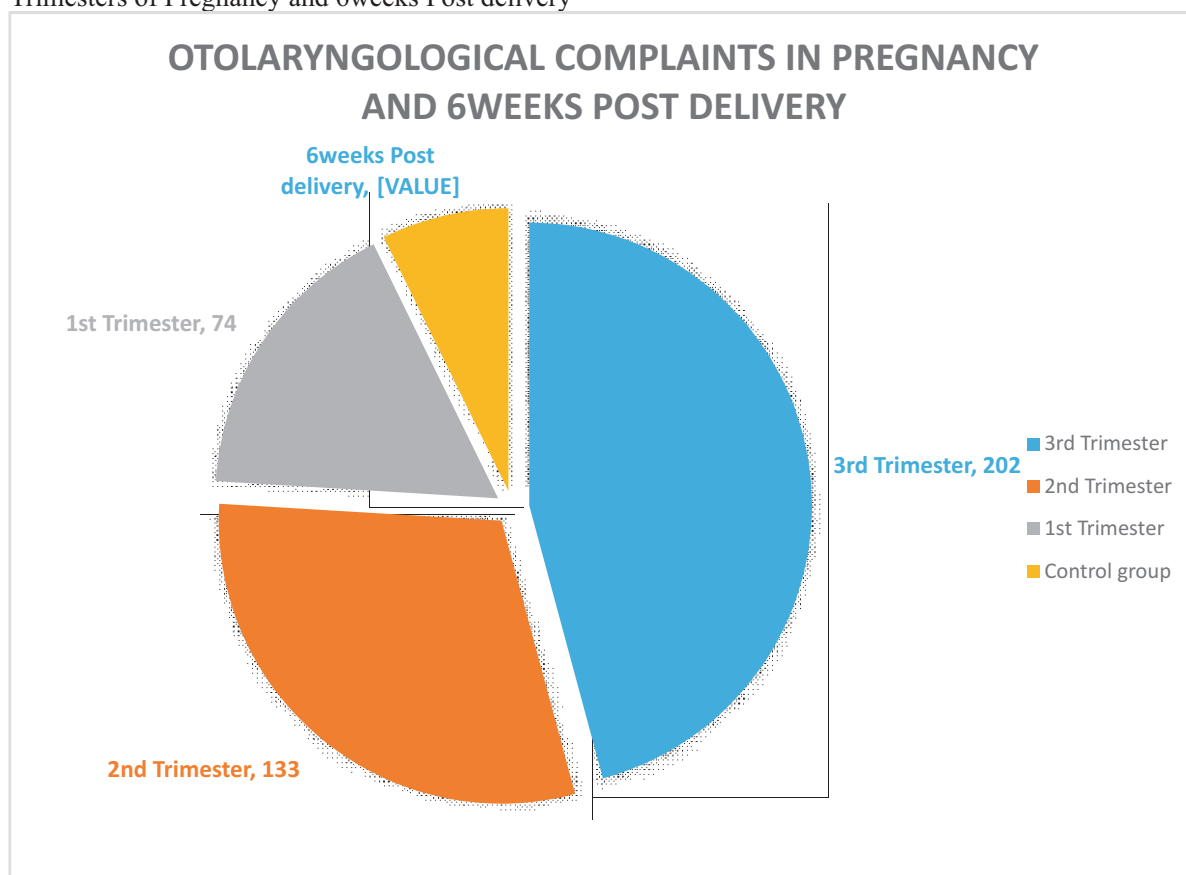
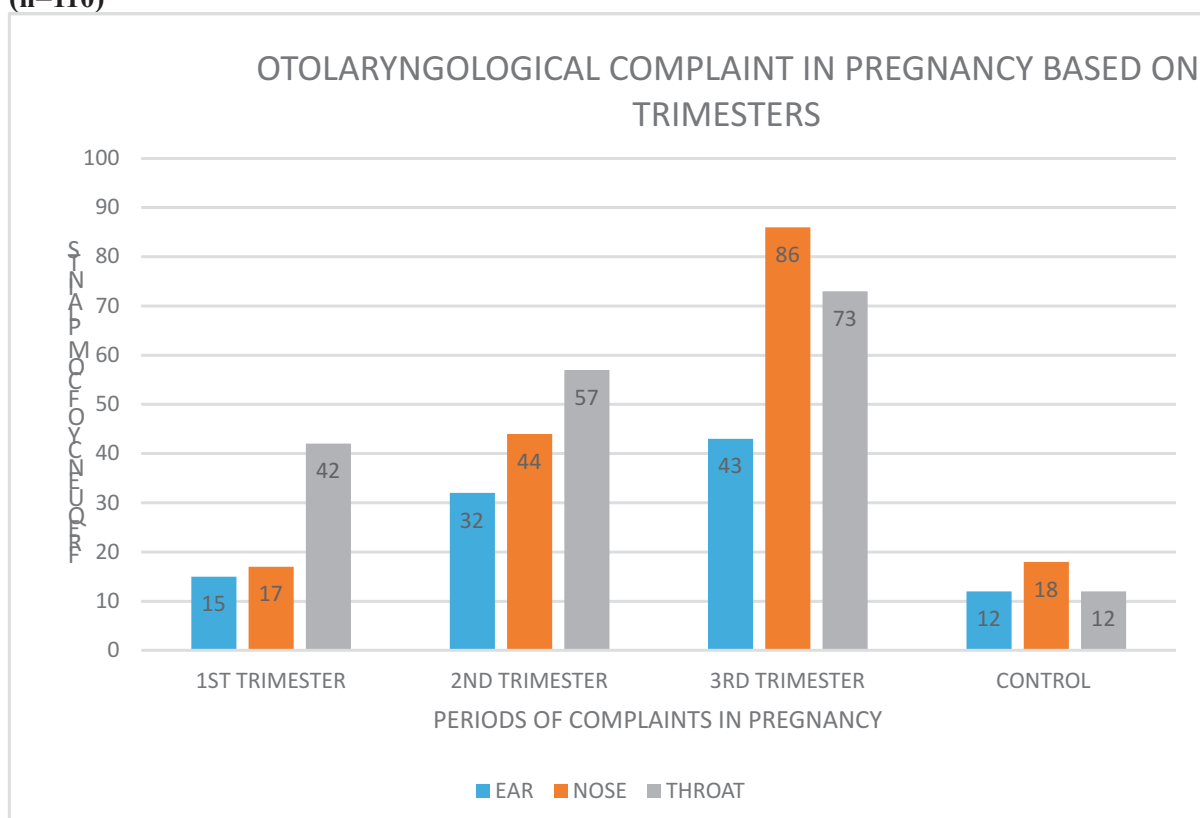


Figure 2 Bar Chart Showing the Otolaryngological Complaints based on Trimesters (n=110)



As seen in our study above complaint of nasal congestion increases with each of the trimester and reach its peak of 16.4% in third trimester compared to 4.5% among the control group this was also found to have dropped to about 4.6% in the post-partum period among the group that presented 6 weeks post-delivery. The value of nasal congestion/discharge found from our study is lower than value found by Akocca et al² but higher than the value found by Ahmed¹³. Most of our subject with nasal complaints such as nasal congestion and discharge were managed symptomatically with both local and systemic decongestant to reduce the snoring, improve the quality of sleep and subsequently the quality of life in pregnancy and further study need to be undertaken to compare if the body mass index above certain level in pregnancy with the nasal congestion

Nasal bleed as a complaint was found to be commoner among those in the 3rd trimester in about 20% which is similar to findings Dungan et al⁶ while about 1.8% was found among the control. Previous study have revealed increased vascular supply to the nasal mucosa due to hormonal changes leading to epistaxis, but other reports have also been published regarding gravida granulomas, nasal hemangiomas leading to severe epistaxis in pregnancy¹⁷ however most of our patient had spontaneous bleed following nasal congestion and some unknown cause. However there may be need to assess the clotting profile in this stage of pregnancy as well.

Snoring was observed in our study to get worse with increasing trimester to as high as among 22.7%. Snoring was not evaluated by Ahmed¹³ and Akocca et al² in their study, the snoring was found to be persistent even in post-partum period in 10.9% compared to 8.1% among the control group which is also high although previous study from our centre on the knowledge and attitude toward snoring showed poor knowledge and attitude towards it is still adaptation¹⁸. Some other studies have found snoring to be more among hypertensive pregnant women¹⁹ however evaluation of blood pressure was not part of our objectives. Sleeping on either sides was found to reduce snoring in our patients following interaction with the subjects. Other studies have found progressive hypoxia in pregnancy from snoring and apnoea to cause poor foetal growth, foetal arrhythmias, day-time somnolence and personality disorders²⁰.

Progressive increase in age of pregnancy is associated with increase in placental growth hormone, oestrogen and increased cholinergic effect as enumerated in previous study by Ellegard and Karlsson^{2,14,15} which indirectly affect the eustachian tube opening worse during the 3rd trimester with symptoms of intermittent autophony, and tinnitus with roaring sensation with effect on the quality of hearing and eventual quality of life of the subject. Tinnitus from previous study have been observed to get worse with

decongestants and upright position²⁰ however most of our subjects placed on decongestant were found to have improved symptoms and quality of life with reduced tinnitus frequency. Symptoms improve in supine position and increased humidity²⁰. Reduced hearing was also observed to increase with the trimesters with about 10% presenting with reduced hearing loss which is likely to be conductive in nature and in worst scenarios could lead to rupture of the tympanic membrane with ear discharge further worsening the hearing loss as observed in 3.6% of the subject who had endoscopic otoscopy however it was not statistically significant as the P-value was > 0.05. Only 1.8% of the subject were observed to develop sudden sensorineural hearing loss in third trimester, this is rare but may be associated with toxemia (Eclampsia)^{20,21} as previous literature have found oestrogen to increases hypercoagulability and vascular occlusion of the inner ear microcirculation²⁰. It may also be an early sign of pre-eclampsia (eclampsia) or pregnancy toxemia if observed earlier than the 3rd trimester. This may be an early warning of eclampsia which is an obstetric emergency and thus early treatment is advised. Nasal polyp found among the subjects on nasal examination may be an incidental findings however the value was not statistically significant with P value > 0.05.

Another otological symptom found in our study was one sided facial weakness which was volunteered in only 2 subjects in 3rd trimester of their pregnancy and was found to be facial nerve palsy on examination. Previous report found it to occur in 3rd trimester or postpartum period and the possible cause was thought to be due to perineural oedema and mechanical compression, viral (Herpes Simplex Virus, HSV) inflammatory reactivation with subsequent demyelination²¹.

Skin colour has an important effect on social and physiological life of human². In our study the facial pigmentation was found to increase with each trimester, however it was not found among the controls which indicated that it comes along with the pregnancy state and the value was statistically significant with P value < 0.05.

Previous studies have shown that gastroesophageal reflux in 50–75% of gravid women. Our study found a progressive increase from 9% to 13% in 1st and 2nd trimester to 20% in the 3rd trimester as the highest which is keeping with the trend in other studies^{2,20,22}. These symptoms became worse in the third trimester due to increased abdominal pressure, decreased gastric emptying and decreased lower oesophageal pressure. This symptoms may predispose to other symptoms of hoarseness where our study found 4.5% compared to the control of 1.8%²² however it was not statistically significant.

Conclusion

In conclusion the otolaryngologic complaints are major complaint among the pregnant women with a mean age of 28.4years, majority of the otolaryngologic were observed in the third trimester, while some may be an early warning of an obstetric emergency such as sudden hearing loss and tinnitus from anaedoctal evidence. All the symptoms were found to increase with increasing age of pregnancy in value except for dygeusia (Altered Taste) in our study and were statistically significant except for sudden hearing loss, reduced hearing, facial nerve weakness and hoarseness. Postural changes was observed to improve snoring and the quality of sleep of pregnant woman, use of decongestant have also been found to reduce the nasal congestion, nasal discharge and tinnitus.

Limitations

The limitation of the study included the inability to assess the pre-pregnant ear, nose and throat status and quality of life of the participants as well as objective assessment of hearing status, and future study will put into consideration the premorbid state compared to the pregnancy state.

Acknowledgement

I wish to acknowledge and appreciate all our patients for their co-operation during the course of the study. I also wish to acknowledge the medical officers, residents, the antenatal nurses and ENT nurses during the course of this study for their assistance.

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Determinants and Perinatal Outcome of Cord Prolapse at a Tertiary Hospital in Benin City.

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Abstract

Cord prolapse is an obstetric emergency with life-threatening implication for the foetus. Prompt intervention at detection especially with a live foetus is needed to reduce the associated high perinatal morbidity and mortality.

We investigated the current incidence of cord prolapse, predisposing factors and perinatal outcome of the cases of cord prolapse over a period of five years managed at the UBTH Benin, Nigeria from January 2010 to December 2014.

Results showed that there were 15,348 deliveries with 46 cases of cord prolapse in the study period. The incidence of cord prolapse was 0.3%. Among the patients, 18 (39.1%) were booked while 28 (60.9%) were unbooked. The highest incidence occurred in women aged 21 – 30 years and multiparous women. Spontaneous rupture of membranes with high presenting part had the most top contributing factor of 58.7%. About (4) 8.7% of the babies were dead, at presentation to the hospital. Two babies with severe birth asphyxia died in the early neonatal period. Perinatal mortality from the study was 152 per 1000 deliveries.

We therefore conclude that Cord prolapse is still a major contributor to perinatal morbidity and mortality. A high index of suspicion and recognition of predisposing factors may allow for early detection and timely delivery, thereby minimising perinatal morbidity and mortality.

Keywords: Cord prolapse, Perinatal outcome.

Introduction

Cord prolapse is a foetal life-threatening Obstetric emergency that required urgent intervention to forestall perinatal morbidity and mortality¹. It is said to occur following the descent of the umbilical cord through the cervix alongside (occult) or past (visible)

the foetal presenting part in the presence of ruptured membranes^{1,2}. However, when the membranes are intact, it is referred to as cord presentation.

The overall incidence of cord prolapse ranges from 0.1-0.6%^{1,3,4}. And this seems to have remained the same in the last decade³. Nnewi and Ibadan reported a prevalence of 0.37% and 0.47% respectively⁵, while a similar study done in this centre over a decade ago reported a prevalence of 0.21%⁶. In case of breech presentation, the incidence is higher at 1%⁷. The incidence is influenced by population characteristics and is higher when there is a higher proportion of multiple gestation⁸.

The predisposing factors to cord prolapse are related to any condition which prevents engagement of the presenting part of the foetus with rupture of the membranes⁷. Such circumstances may make the cord to prolapse below the presenting foetal part. These include prematurity, malpresentation, polyhydramnios and multiparity^{2,3,9}. Other aetiological factors are artificial rupture of membranes, pre-labour rupture of membranes, congenitally extra-long umbilical cord and multiple gestations^{8,9}. Some obstetric interventions such as foetal scalp electrode and intrauterine catheter insertions have been shown to be associated with cord prolapse¹⁰.

Early diagnosis is essential, and to this extent, continuous electronic foetal monitoring is invaluable^{9,11}. Foetal demise is usually due to cord compression by the presenting part or spasm of the cord vessel because of the variation in temperature between intrauterine and vaginal environment or manipulations¹¹. There are concerns that manipulation of the cord or exposure to air may cause reactive vasoconstriction and foetal hypoxic acidosis^{6,8,12}. Hence once the diagnosis of cord prolapse is confirmed, an urgent need, therefore, arises to deliver the foetus as fast as possible to forestall foetal hypoxia, if the foetus is alive and of viable gestation¹³.

The immediate management is to release the pressure on the prolapsed cord until urgent delivery can be achieved¹⁴. This can be accomplished by pushing the presenting part upward with the examining finger above the pelvic inlet, the patient assuming the genu-pectoral (knee-chest) position, Trendelenburg's position, lateral Sim's position or by filling the maternal urinary bladder with 400-700mls of normal saline^{7,14,15}. The later has the advantage of inhibiting uterine contractions and thus could be useful should the patient

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need to be transported some distance before delivery can be achieved¹⁵.

Minimal handling of the cord and replacement of the cord within the warm, moist vagina if it protrudes through the introitus is equally important to prevent vasospasm which results from cold or local irritation¹⁶. When the cord pulsation is absent and the heart tones inaudible, ultrasound assessment becomes necessary to confirm foetal demise^{8,17}.

The route of delivery depends on the cervical dilatation and the station of the presenting part and whether the foetus is alive or dead at the time of diagnosis¹⁸. With a dead foetus, the prolapse is ignored, and vaginal delivery is allowed except where there is contra-indication to vaginal delivery^{8,18}. For expediency, assisted vaginal birth with forceps or vacuum¹⁹, can be attempted at full cervical dilation if anticipated that childbirth would be accomplished quickly and safely, using standard techniques as well as taking care to avoid compression of the cord where possible^{4,19}. However, if cervical dilation is less than full, most data suggest prompt delivery through Emergency Caesarean section offers the best chance for the favourable foetal outcome^{9,15,19}. The diagnosis-delivery (D-D) interval is critical with regards to perinatal morbidity and mortality. The consensus recommendation is 20-30 minutes^{18,20}.

Cord prolapse is associated with significant perinatal morbidity and mortality often due to the compressive impact of the presenting parts on the cord and subsequent asphyxia even after correcting for prematurity and congenital anomalies^{17,19}. The severity of the associated perinatal morbidity has been shown to mostly dependent on the diagnosis delivery interval (DDI)^{19,20}.

This study was aimed at determining the perinatal outcome and the risk factors associated with cord prolapse.

Materials And Methods

The study was a retrospective review of the cases of cord prolapse in the University of Benin Teaching hospital over a period of five years. The information was retrieved from case notes of patients at the medical record unit of the hospital. While the maternal parameters at admission with regards to booking status, age, parity. Gestational age, foetal presentation and lie, state of the membranes, mode of delivery, diagnosis delivery interval (DDI) and foetal outcome were presented as single frequency and percentages. While the test of significance was carried out with Chi-square test. A P-value of <0.05 was considered as significant. Cord prolapse was defined as the cord ahead of the foetal presenting parts with established ruptured membranes. Unbooked patients are pregnant women who did not receive antenatal care

by skilled personnel throughout the pregnancy. While booked patients are those pregnant women that received at least one antenatal care by trained personnel. At admission, the foetal state was assessed and those with features of life, as evidenced by cord pulsation, were taken for the emergency caesarean section. Before caesarean section, patients were placed in head down tilt, cord put back in the vagina and bladder filled with 500ml of Normal saline to reduce the pressure of the presenting part on the cord until the patient is on the theatre table for surgery. Foetal outcome was determined with the birth weight, APGAR scores and the need for SCBU admission.

Results

The total number of deliveries over the period reviewed was 15,348. Of the total number, 46 cases of cord prolapse were identified; giving the incidence of cord prolapse as 0.3%. Twenty-seven(58.7%) cases presented with spontaneous rupture of membrane, while Thirteen(28.3%) came in with intact membrane and had cord prolapse following artificial rupture of membrane. The prevalence was more amongst the multiparous women (52.2%) and the unbooked patients (60.9%). Other patient demographic and obstetric profile are shown in table 1.

Tables 2 and 3 demonstrate the risk factors associated with cord prolapse in this study. Malpresentation accounted for the commonest cause, and the incidence was 0.9%, 0.8%, and 0.6% for Breech, shoulder and compound presentation respectively. Other associated factors were prematurity fifteen(32.6%), and multiple gestations Seven(15.2%). Forty(97.6%) of the cases presented with pulsating cord had a caesarean section. Forty-one(89.1%) patients had live delivery. While one(2.4%) was a fresh still birth (IUFD) and two(4.9%) of the live birth ended as ENND. Of the five foetuses delivered by vagina route, only one(20%) instrumentally assisted(forceps) resulted in live birth. While the four(80%) who had assisted breech delivery resulted in IUFD giving the overall perinatal mortality rate of 15.2%.

The diagnosis-delivery interval (DDI) ranged between 15 minutes and 105 minutes with an average of 36 minutes for those that presented with live foetus. Of the 41 patients who had a caesarean section, 25(61.0%) had DDI of less than 30 minutes, while in 16(39.0%) cases the DDI was >30 minutes. The foetal outcome for patients with DDI < 30 minutes was better as evidence of good APGAR scores and SCBU admission when compared to those with DDI > 30 minutes (P<0.001). Table 5.

There was seven (15.2%) perinatal death in total, all unbooked in UBTH. In four of these, foetal hearts were inaudible at presentation while three had foetal distress at presentation. One of those that had foetal distress suffered intrauterine foetal demise

Table 1: Demographic and Obstetrics Profile of Study Population

	Frequency	%
Age (yrs)		
≤20	-	-
21-30	30	65.2
31-40	16	34.8
>40	-	-
Parity		
0	9	19.6
1	13	28.2
2-4	20	43.5
≥5	4	8.7
Booking status		
Booked	18	39.1
Unbooked	28	60.9
Gestational Age(weeks)		
24 – 28	-	-
29 – 36 ⁺⁶	18	39.1
37 – 42	26	56.5
>42	2	4.4

Table 2: Associated/Predisposing factors

Associated/Predisposing factor	Frequency	%
SROM + High Presenting part	27	58.7
Amniotomy	11	23.9
Multiparity	24	52.2
Malpresentations	11	23.9
Prematurity	15	32.6
Low Birthweight	13	28.3
Multiple gestations	7	15.2
Polyhydramnios	1	2.1

Table 3: Foetal presentation and risk of cord prolapse

Foetal presentation	Total No.	The frequency of cord prolapse	Percentage
Cephalic	14252	35	0.2
Breech	952	9	0.9
Shoulder (Transverse Lie)	126	1	0.8
Compound Presentation	18	1	5.6

Table 4: Mode of delivery VS Neonatal outcome

Mode of Delivery	(Live Birth) %	(IUFD) %	(ENND/Live birth) %
Vaginal + ABD	-	(4)100	-
Caesarean section	(10)97.6	(1)2.4	(2/41)4.9
Instrumental	(1)100	-	-

Table 5: Neonatal outcome vs Diagnosis to Delivery Interval (D-D)

Neonatal Outcome	<30mins (%)	>30mins (%)	P
IUFD	(4%)		
A/S 1-3		1(6.25%)	
A/S 4&5	7(8.0%)	4(25.0%)	
A/S 6	5(20.0%)	7(43.75%)	
A/S >7	17(68.0%)	4(25.0%)	<0.001
SCBU Admission	2(8.0%)	4(25.0%)	
ENND	2(7.2%)	2(7.2%)	

D-D – Diagnosis to Delivery Interval
 IUFD – Intrauterine foetal death.
 SCBU – Special care baby unit

ENND – Early neonatal death
 A/S – Apgar score

before delivery, while the other two suffered ENND.

Time lag before presentation at the labour ward for these group of patient ranged between 2 and 48 hours, with a mean of 12.4 hours.

Three (42.9%) of the patients had preterm deliveries, while the other four(57.1%) were at term. Table 6

Discussion

Umbilical cord prolapse as an obstetric emergency often transforms a relatively low-risk pregnancy into a life-threatening emergency and associated with perinatal morbidity and mortality^{1,2,21}.

This study showed a cord prolapse incidence of 0.3% (3/1000 deliveries), higher than an earlier report of 0.21% in this centre, but similar to the reported incidence from other centres.^{7,8,22} This may be attributed to the large number of unbooked patients that accounted for 60.9% in this study compared to 26% in the previous study,⁶ as our centre now enjoys more referral from peripheral centres compared to the past.

Circumstances that militate against optimal engagement of the presenting part with background rupture of membrane predispose pregnant women to cord prolapse^{6,23}. This accounted for 27 (58.7%) of cases in this study. Other noted risk factors were multiparity in 24(52.2%) and prematurity in 15(32.6%). Prematurity was observed among 32.6% of patients with cord prolapse, which is within the range of 6 - 32.6% reported in previous studies.^{6-8,24} It predisposes to cord prolapse because of the small size of the foetus relative to the liquor volume and also due to the high incidence of associated malpresentation^{23,25}. The same applies to multiple gestations,¹⁴ and low birth weight babies (<2.5kg).^{14,26} It also contributed a significant role in the adverse foetal outcome, as 42.9% of the perinatal death were preterm.

Multiparity is notably associated with late engagement due to lax uterus following repeated pregnancies^{7,8}. Thus, creating a space for a possible slip

Table 6: Factor associated with perinatal death

Patient	Booking status	Gest Age. Week s	Place of membrane rupture	Time lag before arrived Labour ward	FHR on admission	Fetal presentation	Mode of delivery	D –D interval	Apgar score	Birth weight kg	Fetal outcome
A	UNB	39 ⁺⁴	Home	2 hours	100 bpm	CE	EMCS	25 mins	-	2.75	FSB
B	UNB	32	Home	4 hours	188bpm	BR	EMCS	30 mins	² / ₁ ⁵ / ₅	1.55	ENND
C	UNB	33	Home	3 hours	100bpm	SHO	EMCS	38 mins	³ / ₁ ⁵ / ₅	2.1	ENND
D	UNB	30	Home	48hours	-	BR	ABD	-	-	2.0	MSB
E	UNB	39 ⁺²	Home	12 hours	-	CE	SVD	-	-	2.7	FSB
F	UNB	37	Home	6 hours	-	CE	SVD	-	-	3.0	FSB
G	UNB	37 ⁺⁴	Home	9 hours	-	CE	SVD	-	-	2.8	FSB

UNB – unbooked

ENND – Early neonatal death

BR- Breech

SHO – Shoulder

CE – Cephalic

EMCS- Emergency Caesarean section

SVD- Spontaneous vaginal delivery

FSB - Fresh still birth

MSB – Macerated still birth

ABD – Assisted

of the cord^{6,27}. Other conditions noted in this study are polyhydramnios and multiple gestations in light of their interference with the smooth fitting of the foetal presenting part into the lower uterine segment^{10,23,28}. Malpresentation, as the commonest cause of cord prolapse in this study with breech presentation accounting for the highest prevalence, is corroborated by previous studies in the literature^{6,7,16}.

The Diagnosis- delivery interval (DDI) is an essential factor in determining the foetal outcome as the compressive impact of the foetal presenting part of the cord tend to compromise blood supply to the foetus^{20,22}. Urgent intervention, therefore, is aim to circumvent impending catastrophe²⁹. As shown in other studies^{5,6,18,20}, there was a linear relationship between the DDI and the perinatal outcome. Babies delivered with DDI < 30 minutes had significantly better neonatal outcome compared to those with DDI > 30 minutes (P<0.001).

Caesarean section was performed in 41 (89.1%) of patients which is similar to the 86% quoted in the previous study⁶. The prompt recourse to Caesarean section without attempting vaginal delivery, except when the cervix was fully dilated, may have accounted for the lower perinatal mortality rate of 7.3% in the Caesarean section group. The only patient that had forceps delivery in this series was delivered of a live baby giving credence to early presentation and short DDI.

The perinatal mortality in this study was 15.2% (152/1000 births) higher than the 91/1000 quoted in another study. The higher perinatal mortality in this

study could be ascribed to the late presentations of mothers to labour ward following rupture of membrane. All the cases of perinatal mortality presented between 2 and 48 hours after rupture of membrane. Corroborating the findings of Orhue *et al.*⁶ who found out that a time lag of beyond two hours from the event of cord prolapse was associated with foetal mortality of 65% as compared to 3.3% in cases presenting under two hours.

Considering the significant relationship of the DDI and perinatal morbidity and mortality associated with cord prolapse, it becomes imperative that lay down protocol be made available in every labour suite to forestall any form of delay that could jeopardise successful outcome.

Conclusion

Umbilical cord prolapse is a significant contributor to perinatal morbidity and mortality. A high index of suspicion and recognition of predisposing factors may allow for early detection and timely delivery, thereby minimising perinatal morbidity and mortality. A multidisciplinary approach to the organisation of an emergency Caesarean section is essential to shorten DDI and improve perinatal outcome

Acknowledgement

We express our appreciation to the management of the University of Benin Teaching Hospital and the patients that were studied during this period of research.

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External Ventricular Drainage For Spontaneous Intracranial Haemorrhage With Intraventricular Extension In National Hospital Abuja

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Abstract

Spontaneous intracerebral haemorrhage (ICH) accounts for 10 -15% of all cases of stroke and is associated with intraventricular extension in 40% of cases resulting in raised intracranial pressure from obstructive hydrocephalus. The most common cause is uncontrolled hypertension. The presentation and prognosis depend on the location and size of haemorrhages. External Ventricular Drainage (EVD) is a surgical means of temporary CSF diversion resulting in reduction of raised intracranial pressure (ICP) and remarkable improvement in clinical condition of patients. The aim of the study was to retrospectively evaluate the outcome of surgical placement of EVD in patients with spontaneous intracranial haemorrhage and intraventricular extension in our centre over 19 months.

Sixty five percent of the 35 patients studied were male, with peak age group of 51 – 60 years and 80% were hypertensive. Majority of the haematoma (63%) was in the deep nuclei and 78% had haematoma volume greater than 30cm³ with significant midline shift. EVD placement was associated with good blood pressure control. Twenty-one patients (60%) had their EVD inserted more than 24 hours after onset of symptoms mostly because of financial constraint to purchase EVD set as occurred in 7 (33.3%) cases. However, mortality was high (68.6%) while only 17.1% of the patients had good recovery. Mortality found to be highest among patients with haematoma volume greater than 60mls ($p = 0.008$) and low GCS at admission ($p = 0.012$).

EVD is an emergency procedure commonly performed for spontaneous ICH in our centre. It is associated with significant reduction in blood pressure. The high mortality recorded is related to the severity of brain damage.

KEY WORDS: intracerebral haemorrhage, external ventricular drainage, hydrocephalus

Introduction

Spontaneous intracerebral haemorrhage (ICH) or haemorrhagic stroke is an acute extravasation of blood into brain parenchyma from non-traumatic causes.¹ It accounts for 10 -15% of all cases of stroke². It is associated with intraventricular extension in 40% of cases resulting in obstructive hydrocephalus, raised intracranial pressure and rapid neurological deterioration with poor outcome³. Spontaneous ICH is most commonly caused by uncontrolled hypertension and results from rupture of penetrating arteries in the basal ganglia, thalamus, pons and the cerebellum. (Other causes of Spontaneous ICH include arterious - venous malformations, and tumours.) The presentation and prognosis depend on the location and size of haemorrhages and the presence of intraventricular extension resulting in obstructive hydrocephalus. Creation of an alternative pathway for CSF flow can results in reduction of raised intracranial pressure (ICP) and remarkable improvement in clinical condition of these patients.

External Ventricular Drainage (EVD) is a surgical means of temporary CSF diversion to drain Cerebrospinal fluid (CSF) and or blood from the ventricles aimed at clearing the ventricles of blood and reducing the intracranial pressure. EVD is also used in other neurosurgical conditions like subarachnoid haemorrhage and tumours causing obstructive hydrocephalus. EVD is also a valuable means of monitoring intracranial pressure in patients with traumatic brain injury. Various indications for EVD insertion in patients with spontaneous ICH have been recommended.

The aim of the study is to evaluate the outcome of surgical placement of EVD in patients with spontaneous intracranial haemorrhage and intraventricular extension with or without obstructive hydrocephalus in National Hospital Abuja between April 2015 and October 2016.

Materials and methods

This is a retrospective study of all patients with spontaneous ICH who had EVD placement in our Centre over a period of 19 months (April 2015 to October 2016). All patients had brain Computed Tomographic Scan findings of acute intracranial haemorrhage with intraventricular extension with or without hydrocephalus. EVD involves placement of ventricular catheter through a frontal burr hole sited at

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the Kocher's point. The catheter was tunnelled 5-10 cm underneath the scalp and brought out through a separate stab incision and connected to a closed drainage device. Patient's demographics, premorbid conditions, Glasgow Coma Scale (GCS) score at admission and during subsequent reviews, vital signs, complications and outcome were retrieved from the patients' medical records and operation notes. The required information was extracted using a designed proforma. Data so obtained was analysed using SPSS version 20 and results were presented using frequency tables and figures. Fishers exact test was used to test for statistical significance with p value ≤ 0.05 .

Results

A total of thirty-five patients were reviewed.

TABLE 1: Age and sex distribution

Age group	Sex		Total (percentage)
	Male	Female	
21-30	1	0	1 (2.9%)
31-40	3	3	6 (17.1%)
41-50	7	2	9 (25.7%)
51-60	9	4	13 (37.1%)
61-70	3	0	3 (8.6%)
71-80	0	3	3 (8.6%)
Total	23 (65.7%)	12 (34.3%)	35 100%

Table 3: Computed Tomographic Scan estimate of hematoma volume at presentation. Thirteen patients (46.4%) had hematoma volume of $>60\text{cm}^3$.

Hematoma volume	Frequency	Percentage
$<30\text{cm}^3$	6	21.4%
$30-60\text{cm}^3$	9	32.1%
$>60\text{cm}^3$	13	46.4%
Total	28	100%

The peak age group of the patients was 51-60 years. Majority were males 23 (65.7%) (TABLE 1). Twenty-eight (80%) patients had hypertension (TABLE 2), which was poorly controlled in 23 (82.1%) patients. Most of the haematoma, 22 (62.9%) was in the deep nuclei (basal ganglia and thalamus) (FIGURE 1). The haematoma volume was $\geq 30\text{cm}^3$ with significant midline shift of $\geq 5\text{mm}$ in 78.5% and presence of hydrocephalus in 23% (TABLE 3). There was delay in EVD insertion beyond 24 hours of symptoms in 21 (60%) of the patients. Main reasons for the delay were financial constraints in 7 (33.3%) patients, delay in neurosurgical consultation 23.8%, late presentation 19.1%, anaesthetics delay 14.3% and others 9.5%. The EVD was removed within five days of insertion in 5

TABLE 2: Risk factors identified among those studied

Risk factors	Frequency	Percentage
Hypertension	28	80%
Diabetes mellitus	4	11.4%
End stage renal disease	2	5.7%
Chronic liver disease	1	2.9%
Previous stroke	1	2.9%
Ischemic heart disease	1	2.9%
Alcohol ingestion	3	8.6%
Smoking cigarette	2	5.7%

TABLE 4: Duration of EVD in place

Duration (days)	Frequency	Percentage
<5	5	14.3%
5 -10	5	14.3%
11 -15	4	11.4%
16 -20	2	5.7%
Expired	19	54.3%
Total	35	100%

TABLE 5: Comparison of GCS and SBP at admission and 24 hours after EVD placement

	GCS			SBP			
	3-8	9-12	13-15	>200	170-200	140-169	100-139
At admission	15 (42.9%)	16 (45.7%)	4 (11.4%)	14 (40.0%)	11 (31.4%)	9 (25.7%)	1 (2.9%)
24-hour post EVD	13 (37.1%)	16 (45.7%)	6 (17.2%)	0 (0.0%)	5 (14.3%)	19 (54.3%)	11 (31.4%)

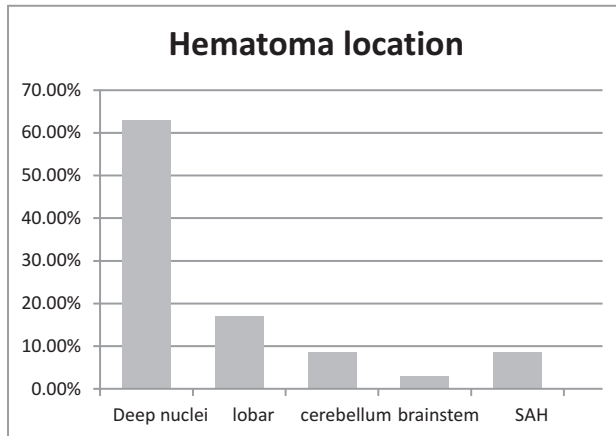


FIGURE 1: A bar chart showing proportion of hematoma location. Twenty-two (62.9%) were located within the basal ganglia

TABLE 6: Complications associated with stroke

Complications	Frequency	Percentages
1. EVD related		
Ventriculitis	4	11.4%
Premature dislodgement	2	5.7%
Malfunction	1	2.9%
2. EVD unrelated but common to unconscious patients		
Cardiac arrest	7	36.8%
Aspiration pneumonitis	3	15.8%
Hypotension	3	15.8%
Pressure ulcer	2	10.5%
Chest infection	2	10.5%
Sepsis	1	5.3%
Stress gastritis/UGIB	1	5.3%

(14.3%) patients. Majority of the patients had EVD in situ beyond 5 days, 5 (14.3%) for 5 – 10 days, 4 (11.4%) for 11-15 days, 2 (5.7%) for 16-20 days. Nineteen patients (53.3%) died with EVD in place (TABLE 4).

The GCS of the patients did not change significantly after EVD placement but blood pressure control was better (Table 5). Fourteen (40%) patients presented with systolic blood pressure greater than 200mmHg but none had systolic BP greater than 200mmHg after 24 hours of EVD insertion (Table 5). Twenty-four (68.6%) patients died, while 6(17.1%) had good recovery (FIGURE 2). Mortality was highest 10 (52.6%) in patients with haematoma volume greater than 60mls and found to be statistically significance (p value = 0.008). (FIGURE 3). GCS at admission was also significantly associated with mortality (p value = 0.012). Four (11.4%) patients developed ventriculitis, 2 (5.7%) had premature catheter dislodgement, 3 (15.8%) had aspiration pneumonitis, 2 patients had chest infection, 3 patients developed hypotension (TABLE 6).

Discussions

Younger age group (41-60 years) was observed

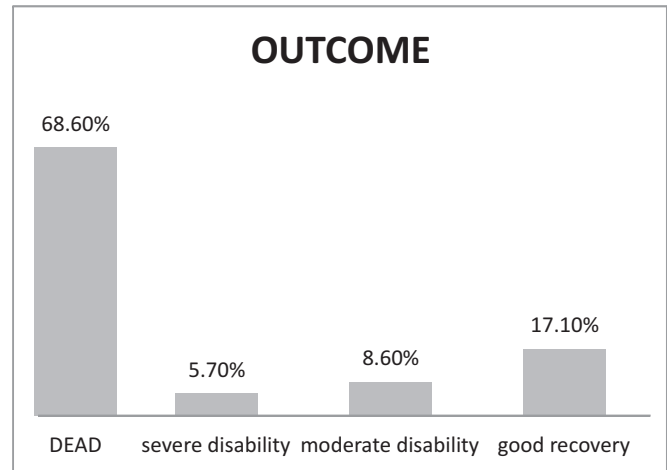


FIGURE 2: Outcome of patients with EVD

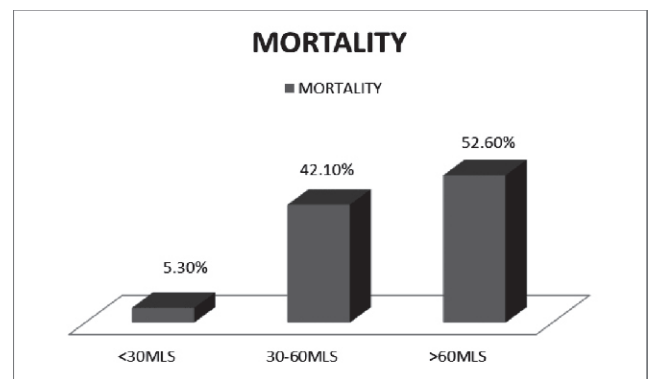


FIGURE 3: Relationship between hematoma volume and mortality. Hematoma volume was significantly associated with high mortality (p = 0.008).

in this study compared to another study which reported 75 -84 years⁴ and most patients were hypertensive. This may be attributed to increase in prevalence of hypertension among younger blacks' due to change in life style compounded by poor compliance with anti-hypertensive medications. This finding is similar to previous studies which showed higher prevalence of hypertension in both middle-aged and older African Americans compared with non-Hispanic whites with more complication rates.^{5,6,7,8} Hypertension causes a chronic small-vessel vasculopathy characterized by fragmentation and degeneration (lipohyalinosis) with eventual rupture of small penetrating vessels within the brain⁹.

Majority (88.6%) of the patients presented with GCS ≤ 12 and there was no significant change in GCS after EVD placement. However, there was significant reduction in systolic blood pressure likely from reduction in intracranial pressure. Adams et al found similar finding in a study of response to external ventricular drainage in spontaneous intracerebral haemorrhage with hydrocephalus where among 22 patients studied, ICP was controlled at < 20 mm Hg in 20. Only one patient had an improvement in both

hydrocephalus and GCS.¹⁰

The location of haematoma found in this study is similar to the previous documentations¹¹, most located in the deep nuclei likely as a result of high incidence of hypertension. Mortality was higher in deep nuclei haematoma compared to lobar haematoma. This is similar to previous studies⁵.

The volume of haematoma in this study is much higher than the previous study of < 60cm³ in most of the patients⁵. This may be due to poor blood pressure control with possible haematoma expansion or re-bleeding. None of the patient was on anticoagulants. Previous studies have reported haematoma volume as a strong predictor of 30 day mortality.^{12,5}

Mortality was 68.6% in patients with ICH and intraventricular extension post EVD insertion. This finding is almost similar to reported 30-day mortality rate of 43% to 68%.^{5,13,14,15} Studies reported low GCS at admission, large haematoma volume, advanced age, infra-tentorial and deeply located haematoma and ventricular extension are strong predictors of outcome.^{5,16,17} Three (11.4%) patients had ventriculitis which is less than 27.6% previously reported¹⁸.

Conclusion

EVD is a neurosurgical emergency procedure commonly performed for intracranial haemorrhage with intraventricular extension in our centre. It is associated with significant reduction in blood pressure because of reduction in the intracranial pressure. The high mortality recorded may be due to the severity of brain injury and delay in EVD placement.

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Facial Anthropometry And Sex Discriminatory Characteristics Among University Of Ilorin Students

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Abstract

Prediction of sex from different dimensions has considerable forensic value, not only for the identification of human remains but also in estimating sex from evidence at disaster sites and in corroborating reports from scientists. This study investigated the facial parameters and sexual dimorphism among University of Ilorin students.

A total of 376 students consisting of five major divisions in a university setting (sciences, social sciences, health sciences, technology and humanities) were used in the study. Standard anthropometric methods were used to measure facial height (LFH) and Bizygomatic Width (BZW) from a frontal repose photograph. Six different facial parameters were calculated. Data was analyzed using SPSS version 23 statistical software. Confidence level was set at 95%; as p-values ≤ 0.05 were considered significant.

Discriminant function analysis, mean standard deviation of mean and chi-square of the studied population were presented with $P < 0.05$. For LFH in both sexes, a significant value of 0.010 was recorded indicating a statistically significant difference. For BZW in both sexes, a significant value of 0.039 was recorded also indicating a statistically significant difference. For TFH in both sexes, 0.039 value was recorded also indicating a statistically significant difference in the measured facial parameters. UFH, MFH and F.I were found to be non-significant with recorded values of 0.077, 0.082 and 0.277 respectively. The p-value recorded for this non-significant values were greater than 0.05 ($P > 0.05$).

The findings from this study clearly showed sex-associated difference in facial parameters but argue that a single set of facial parameters may not be applicable in sex grouping. Therefore, facial parameters can serve as adjunct in sex differentiation.

Key Words: Sexual dimorphism, Discriminant Function Analysis (DFA), University of Ilorin students, Facial parameters.

Introduction

Sexual dimorphism is the expression of secondary sexual characteristics that are defined after puberty and during adolescent years which helps to distinguish between male and female individuals¹. The study of sexual dimorphism is important as a tool for diagnostic studies and criminal investigation in forensic anthropology and craniometry². Sex determination from skeletal remains is one of the most important aspects of the osteological analysis of a given population³. Sexual dimorphism has been of great interest for many years and such data have been used to analyze size differences between males and females as well as the social implications thereof⁴.

Variation is one of the most important phenomena occurring in human population on the globe. Variations are present not only between individuals but also within individuals from time to time. The importance of anthropometric measurements as a means of studying variation in human population⁴. Facial beauty arises from symmetric, balanced and harmonious proportions⁷.

Discriminant function analysis is an entirely objective statistical technique for sex determination⁸. This is the most widely applied statistical method for sex determination. The morphological traits are more subjective and sex determination depends on the skill of the researcher, as unskilled investigator may lead to the inaccurate findings due to lack in knowledge while taking the measurements. It is therefore important to make available novel, standard and simple techniques that can be used for accurate craniometrics. Despite the overwhelming literature of craniofacial metrics, there is brevity of data available of the sexual dimorphism of this anthropometric measure within Ilorin metropolis as well as University of Ilorin. This study aimed to characterize the dimorphic variation and craniofacial morphometric discrepancies between male and female student within the University of Ilorin campus.

Materials and Methods

A total of 376 subjects (final year students) consisting of 187 males and 189 females from the selected Faculties in the University of Ilorin were used for the study. The sample size was determined using the

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fischer's formula for large population⁹ (> 10,000) or infinite population, $S = \frac{\sum Z^2 \times P \times Q}{D^2}$

Subjects were classified using stratified sampling techniques. An informed consent letter was filled by each participant. All subjects were healthy individuals without craniofacial abnormalities and previous craniofacial surgery.

Frontal repose photographs of all participants were taken by positioning them in natural head position and orbitomeatal plane. The pictures were taken using a Nikon D-5300 camera with lenstamron 18-200mm, focal length 3.5-5.6 and umbrella flash lights. The camera was mounted on a tripod stand at a fixed distance of 10 inches from the participant. The Total Facial Height (TFH) and Bizygomatic width (BZW) was obtained with Adobe Photoshop Ruler Software. The Facial Index was mathematically calculated as the ratio of the Total Facial Height with the Bizygomatic Width (TFH/BZW).

The following facial measurements were taken, UFH (Upper Facial Height), MFH (Middle Facial Height), LFH (Lower Facial Height) and BZW (Bizygomatic Width). The Upper facial height was defined as the distance from the trichion to the glabella (tr-gl), the Middle facial height was defined as the distance from the glabella to the subnasale (gl-sn), the Lower facial height was defined as the distance from the subnasale to the menton (sn-me) and the Bizygomatic width was defined as the distance between two zygia (zy-zy) [Figure 1]. Measurements were taken twice and the average tabulated as the value

for the measured height and width as well as the facial index.

Statistical Analysis

Statistical Package for Social Sciences version 23 (IBM® Armonk, New York, USA) was the statistical packages used in analyzing the obtained data for assessing the sex differences in the measured parameters, and DFA was used to ascertain the possibility of classifying the parameters into group membership. Only statistically significant variables or close to significant variables were selected for DFA. The confidence level was set at 95%, hence, $P \leq 0.05$ was considered to be statistically significant.

Results

Data Analysis

The results were presented based on the facial anthropometric measurements. The values observed from the anthropometric measurements were tabulated and the mean (SD) was determined for both sexes (male and female) as well as the descriptive characteristics of the measured parameters and Wilki-Lambda unidimensional test of equality of the means of the groups [Table 1]. The DFA was presented in tables using facial parameters. The models are described in [Table 2], [Table 3], [Table 4], [Table 5] and [Table 6] with it summary membership classification in [Table 7].

The study comprised of 376 subjects consisting of 187 males and 189 females with mean values of the studied and the test of equality in mean

Table 1: Descriptive Characteristics of the Measured Parameters and Wilki-Lambda Unidimensional Test of Equality of the Means of the Groups

PARAMETERS	Mean±S.D			Wilks' Lambda Test of group mean			
	Male	Female	Total	Wilks' Lambda	F	Sig.	Inf.
TOTAL FACIAL HEIGHT	21.14±3.56	21.93±3.62	21.53±2.61	0.988	4.594	0.033	S
BIZYGOMATIC WIDTH	11.21±1.76	11.61±2.06	11.41±1.92	0.989	4.272	0.039	S
FACIAL INDEX	0.53±0.04	0.54±0.13	0.54±0.09	0.997	1.183	0.277	NS
UPPER FACIAL HEIGHT	6.56±1.23	6.77±1.12	6.66±1.18	0.992	3.139	0.077	NS
MIDDLE FACIAL HEIGHT	6.56±1.23	6.77±1.12	6.67±1.18	0.992	3.048	0.082	NS
LOWER FACIAL HEIGHT	8.04±1.29	8.42±1.54	8.23±1.43	0.983	6.687	0.010	S

Note: * Box's M within-class covariant matrices ($P < 0.001$)

Table 2: Wilks Lambda test of equality in mean vector between the predicting groups

Lambda	0.863
Chi-square	55.662
DF	6
p-value	< 0.001

Table 4: Variable prediction and discriminant function coefficients

Variables	F1	F2	F3
LFH	0.333	0.764	0.538
TFH	0.276	4.634	1.291
BZW	0.266	-5.559	-2.904
UFH	0.228	2.538	-2.904
MFH	0.225	-1.984	-1.686
F.I	0.140	5.815	63.201
Intercept/constant	-	-	-36.218

Note: F1 Factors correlations

F2 Standardized canonical discriminant function coefficients

F3 Canonical discriminant function coefficients

Table 3: Model canonical correlation and accuracy in prediction

Function	Eigenvalue ^a	r_c	R_c^2
F1	0.158	0.37	13.69%

Note: ^a. First 1 canonical discriminant functions were used in the analysis.

r_c Canonical correlation

R_c^2 Prediction model accuracy

Table 5: Class prediction using centroids

Groups	Functions at the centroids
Male	-0.393
Female	0.401

Table 6: Classification function coefficients in the model

Variables	Male	Female
LFH	3.527	3.954
TFH	59.900	60.925
BZW	-116.658	-118.962
UFH	-3.878	-2.166
MFH	11.974	10.636
F.I	2497.111	2547.259
Constant	-685.904	-714.665

Table 7: Initial classification and classification after cross-validation

Classification	Predicted Group Membership ^{a,c}			% Correct classification
	Sex	Male	Female	
Original	Male (%)	164 (84.5)	30 (15.5)	71.4% ^a
	Female (%)	81 (42.6)	109 (57.4)	
Cross-validated^b	Male (%)	165 (85.1)	29 (14.9)	70.8% ^c
	Female (%)	83 (43.7)	107(56.5)	

Note: ^a. 71.4% of original grouped cases correctly classified.

^b. Cross validation is done only for those cases in the analysis. In cross validation, each case is classified by the functions derived from all cases other than that case.

^c. 70.8% of cross-validated grouped cases correctly classified.

values of groups presented with $P < 0.05$. For LFH in both sexes, a significant value of 0.010 was recorded indicating a statistically significant difference. For BZW in both sexes, a significant value of 0.039 was recorded also indicating a statistically significant difference. For TFH in both sexes, 0.039 value was recorded also indicating a statistically significant difference in the measured facial parameters. UFH, MFH and F.I were found to be non-significant with recorded values of 0.077, 0.082 and 0.277 respectively. The p-value recorded for this non-significant values were greater than 0.05 ($P > 0.05$) [Table 1].

The Box's M covariance matrix showed that

the group variances were not equal, thus suggesting that there could be lots of noise introduced into model, thus creating discrepancies in the predictor variables [Table 1].

The group of predictor variables entered in the model (LFH, TFH, BZW, UFH, MFH and F.I) will make predictions that are statistically significant in their outcomes (Wilki's Lambda = 0.863, $P < 0.001$) [Table 2].

The magnitude of the actual effect of the predictors (canonical coefficient) and the outcome is the square of the coefficient (0.372^2); this indicates the relationship between the predictor variable and the

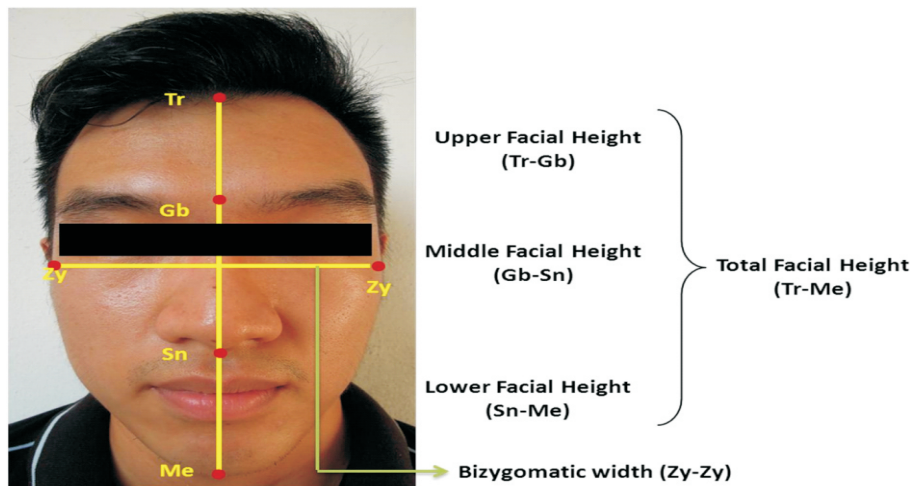


Figure 1: Diagram showing soft tissue point's measurements¹⁰

prediction outcome is about 13.7% [Table 3].

The predictions of the variables (F1) were very low as they displayed maximum prediction capability of 33.3% (LFH) and lowest prediction of 14.0% for F1 (Table 4). All the variables seem to have predictions lower than 50%. The unstandardized coefficient (F3) creates the discriminant function (equation), which operates like a regression equation. In this case we have: $DF = (0.538 \times LFH) + 1.291 \times TFH + (-2.904 \times BZW) + (-2.904 \times UFH) + (-1.686 \times MFH) + (63.201 \times F.I) + (-36.218)$.

The discriminant function coefficients or standardized form beta both indicate the partial contribution of each variable to the discriminate function controlling for all other variables in the equation [Table 4].

Note: An added way of interpreting discriminant analysis results is to describe each group in terms of its profile, using the group means of the predictor variables. These group means are called centroids. These are displayed in the Group Centroids table [Table 5]. In this study, males have a mean of -0.393 while females produce a mean of 0.401.

The Coefficients of Linear Discriminant Function table interprets the Fisher's theory, so it is only available when linear mode is selected for Discriminant Function. The linear discriminant functions, also called "**classification functions**", for each observation, have following form

$$C_k = C_{k0} + C_{k1} X_1 + C_{k2} X_2 + \dots + C_{km} X_m$$

Where;

C_k is the classification score for group k

C 's are the coefficients in Table 6

For one observation, we can compute its score for each group by the coefficients according to equation (above). The observation should be assign to the group with highest score.

In addition, the coefficients are helpful in deciding

which variable affects more in classification. Comparing the values between groups, the higher coefficient means the variable attributes more for that group.

Note: The classification results [Table 7] reveal that 71.4% of the population were classified correctly into 'male' or 'female' groups using the various measured parameters and after cross-validation (expunging of close outliers), the model produce a classification accuracy of 70.8%. This overall predictive accuracy of the discriminant function is called the '*hit ratio*'.

Discussion

The craniofacial anthropometric studies are valuable for anthropometrics, medicine, dentistry and forensic facial reconstruction experts.¹⁰ Numerous metrical traits have been investigated on craniofacial region of different population, in an effort to make the sex determination easier, reliable and consistent¹⁶⁻¹⁸. The face and cranium are vital physiognomic features in humans. The craniofacial dimensions are amongst the most significant cephalometric factors that define anthropoid morphology. The disparities in the form of the face are greater than those found in the cranium and much greater than the body variation as a whole¹⁷. Sex is considered as one of the easiest determinations from the skeletal remains and one of the most reliable if essential parts of the skeleton are available in good condition¹¹.

The Statistical analysis indicated how the mean deviation in both sex changes with the facial parameters, a good example is the bizygomatic width indicating sex discrimination. In forensic anthropometry, the use of DFA is to evaluate the accurateness and predictability of the model using the observed significant measured variables¹⁷. The strength of such model is the ability to classify above 80% of the measured parameters into groups (sex) although a 95% accuracy bench mark have been placed^{12,13,14}.

In this study, males and females were classified with an accuracy of 70.8% which seems quite low. However, Abledu *et al.* reports for the Ghanaian population which stated that DFA model accuracy varied from 69.8% to 80.3% for Africans which indicates that the ability to classify above 80% may not be reached by Africans^{15,18}.

Conclusion and Recommendation

Evidence from this study clearly shows sex-associated difference in facial parameters. DFA successfully predicted 70.8% of the data into groups (sex) and the prediction statistically significant; thus suggestive forensic attributes.

However, such predictive value seems quite low but not low according to Abledu *et al.*¹⁵ hence, the use of facial dimensions may or may not be effective for sex differentiation. The findings argue that a single set of facial parameters may not be applicable in sex grouping. Therefore, facial parameters can serve as adjunct in sex differentiation. Extensive study using larger population should be carried out on the establishment of sex discriminatory characteristics from facial parameters.

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Practice of Routine Medical Check-ups and Screening for Cardiovascular Risk Factors in Delta State, South-South Nigeria: A population-based study

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Abstract

Disease prevention is an effective strategy to decrease morbidity and mortality across a wide range of diseases and routine medical screening is a cost-effective method of improving population health and life expectancy. The aim of this study was to determine the practices of apparently healthy adults towards routine medical check-ups and screening for cardiovascular risk factors. This was done using a cross-sectional questionnaire-based study design. The study population was drawn from among adult residents of a rural (Jesse) and an urban (Warri) community in Delta State, South-South Nigeria.

A total of 866 respondents were studied, 44% were rural dwellers. Their mean age was 42.5(±16.05) years. Two-thirds (242/358) of the respondents who had completed secondary education were urban dwellers. A third of the respondents practiced routine medical screening and this was significantly higher among the urban dwellers (40.0% vs. 22.2% $p < 0.001$). Among respondents who do not practice routine medical screening, 48.5% had no apparent reason and 70.1% were urban dwellers.

Majority of the respondents had no health care provider. The typical healthcare providers were doctors (25.7 %), pharmacist/dispenser (9.2%) and nurses (4.3%). Among respondents who had doctors as the typical healthcare provider, 26.9% have had education on cardiovascular risk factor prevention. This was significantly higher among urban dwellers.

Majority of the respondents have never had their blood pressure (56.0%), blood glucose (65.8%) and cholesterol (94.6%) checked, significantly higher among rural dwellers.

In conclusion, routine medical check-ups and screening for cardiovascular risk factors were poor in this study. There is a need for increased public health promotion and education among Nigerians.

Keywords: Cardiovascular risk factors, medical check-up, adult,

Routine medical check-up also known as periodic health evaluation or general health check is a form of preventive medicine by apparently healthy adults. It is a practice in which persons, who are often asymptomatic, are screened by physicians on a regular basis. The frequency of medical check-ups varies depending on several factors which include age, personal and family medical history as well as psychosocial/behavioural factors. This clinical exercise involves obtaining a comprehensive clinical history, physical examination and baseline laboratory investigations.¹ This allows for early detection of disease and their risk factors, and a consequent timely intervention which includes feedback on health status to client/patient, provision of information to guide lifestyle changes, and medical and surgical care. Indeed, disease prevention is an effective strategy to decrease morbidity and mortality across a wide range of diseases.

Non-communicable diseases are chronic and are a leading contributor to morbidity and mortality worldwide.²⁻⁴ Chronic diseases have a heavy socioeconomic burden on individuals and account for about 70% of the overall global deaths.³ Cardiovascular disease (CVD) contribute significantly to the burden of non-communicable diseases and by extension global morbidity and mortality.⁵ The skewed high burden of CVD in low and middle-income countries is attributed to the increasing prevalence of atherosclerotic diseases, which is in part driven by urbanization and the increased risk factor levels which may be modifiable.^{2,6}

The key to controlling the rising prevalence of cardiovascular diseases is by primary prevention through comprehensive population-based programs. To do this, identification of cardiovascular risk factors to plan their prevention and control is important.^{2, 8} Periodic medical evaluation is a cost-effective means to prevent the onset of chronic disease as well as reducing morbidity and mortality, thereby improving overall population health and life expectancy.⁹⁻¹¹ Adults with significant cardiovascular risk factors can be easily identified and adequately counselled during such medical check-ups.

There is a paucity of data on routine medical check-ups in Nigeria. The aim of this study was to describe the attitude and practices of routine medical check-up and cardiovascular risk factor assessment among apparently healthy adult members of two communities in Delta State, Nigeria. This study also highlights the client- and physician-related factors that

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influence the practice of preventive healthcare.

Materials and Method

This was a descriptive cross-sectional questionnaire-based survey. The study location was Delta State, Nigeria. Delta State is one of the oil-rich States in the Niger-Delta region, South-South Nigeria. Two communities were purposively chosen as study sites, Jesse and Warri. Jesse is a rural agrarian community while Warri is a developing metropolis.

The study population was drawn from among consenting adults aged 18 years and above. To be eligible for recruitment, the study participant must have been domiciled in the study site for at least one year. Visitors and residents who have lived in the study site for less than one (1) year were excluded from the study. The cluster sampling technique was used to select respondents from the study sites. Ethical approval was obtained from the Health Research Ethics Committee of Delta State University Teaching Hospital (DELSUTH) before the commencement of the study.

The respondents were asked to complete a semi-structured interviewer-administered questionnaire. The questionnaire was used to obtain information on the socio-demographic data and

practice of routine medical check-ups. Concerning routine medical check-up, the respondents were asked if they see a health care provider for regular check-ups. They were also asked to provide information on the type of healthcare provider they typically see, and whether their health care provider has ever discussed heart disease and ways to prevent the development of cardiovascular risk factors.

A medical check-up is defined as a clinical evaluation of an otherwise asymptomatic patient by trained medical personnel and it is inclusive of obtaining a history, physical examination and laboratory investigations.¹

Obtained data were checked for completeness, cleaned and analyzed using the Statistical Package for Social Sciences (SPSS Inc, Chicago, IL) version 22 software. Results were expressed as frequency tables and charts. Comparison of categorical variables for statistical significance was by chi-square. The level of significance level was set at $p < 0.05$.

Results:

A total of 866 adults participated in the study. The respondents were aged between 18 and 94 years, with a mean age of 42.6 (± 16.1) years. More than half

Table 1. Sociodemographic characteristics of study participants

Variable	Category	Total (%) (N=866)	Rural (%) (n=381)	Urban (%) (n=485)	p-Value
Sex	Male	381 (44.0)	190 (49.9)	191 (50.1)	0.002
	Female	485 (56.0)	191 (39.4)	294 (60.4)	
Age group (years)	<35	304 (35.1)	124 (40.8)	180 (59.2)	<0.001
	35 – 44	214 (24.7)	56 (26.2)	158 (73.8)	
	45 – 54	152 (17.6)	68 (44.7)	84 (55.3)	
	55 – 64	91 (10.5)	43 (47.3)	48 (52.7)	
	=65	105 (12.1)	90 (85.7)	15 (14.3)	
Marital status	Single	171 (19.7)	53 (31.0)	118 (69.0)	<0.001
	Married	485 (56.0)	183 (37.7)	302 (62.3)	
	Widowed	39 (4.5)	27 (69.2)	12 (30.8)	
	Separated/Divorced	45 (5.1)	39 (86.7)	6 (13.3)	
	Co-habiting	89 (10.3)	61 (68.5)	28 (31.5)	
	N/A	37 (4.3)	18 (48.6)	19 (51.4)	
Educational status	No Formal/less than Primary	123 (14.7)	108 (87.8)	15 (12.2)	<0.001
	Completed Primary	195 (23.3)	145 (74.4)	50 (25.6)	
	Completed Secondary	358 (42.7)	116 (32.4)	242 (67.6)	
	Completed Tertiary	122 (14.6)	2 (1.6)	120 (98.4)	
	Postgraduate	40 (4.8)	0 (0.0)	40 (100.0)	
	N/A	28 (3.2)	10 (35.7)	18 (64.3)	
Employment Status	Students	93 (10.7)	53 (57.0)	40 (43.0)	<0.001
	Unemployed	65 (7.5)	6 (9.2)	59 (90.8)	
	Government employee	87 (10.0)	0 (0.0)	87 (100.0)	
	Non-government employee	32 (3.7)	2 (6.3)	30 (93.8)	
	Self-employed	565 (65.2)	316 (55.9)	249 (44.1)	
	Retired	4 (0.5)	0 (0.0)	4 (100.0)	
Religion	N/A	20 (2.3)	4 (20.0)	16 (80.0)	<0.001
	Christianity	727 (83.9)	280 (38.5)	447 (61.5)	
	Islam	8 (0.9)	6 (75.0)	2 (25.0)	
	ATR	84 (9.7)	74 (88.1)	10 (11.9)	
	Others*	8 (0.9)	3 (37.5)	5 (62.5)	
	N/A	39 (4.5)	18 (46.2)	21 (53.8)	

Table 2. Association between sociodemographic characteristics and practice of routine medical screening

Variable	Category	Routine Medical Check-up	
		Yes n=280 (32.3%)	No n=586 (67.7%)
Place of Residence	Urban	194 (69.3)	291 (49.7)
	Rural	86 (30.7)	295 (50.3)
		$\chi^2 = 29.622$, df = 1, p < 0.001	
Sex	Male	134 (47.9)	247 (42.2)
	Female	146 (52.1)	339 (57.8)
		$\chi^2 = 2.504$, df = 1, p = 0.114	
Age Group (years)	<35	77 (27.5)	227 (38.7)
	35 – 44	73 (26.1)	141 (24.1)
	45 – 54	62 (22.1)	90 (15.4)
	55 – 64	28 (10.0)	63 (10.8)
	≥65	40 (14.3)	65 (11.1)
		$\chi^2 = 13.789$, df = 4, p = 0.008	
Marital status	Single	51 (19.0)	120 (21.4)
	Married	166 (61.9)	319 (56.9)
	Others	51 (19.0)	122 (21.7)
	N/A	12	25
		$\chi^2 = 1.931$, df = 2, p = 0.381	
Educational status	No Formal/ less than Primary	28 (10.4)	95 (16.7)
	Completed Primary	61 (22.7)	134 (23.6)
	Completed Secondary	113 (42.0)	245 (43.1)
	Completed Tertiary	46 (17.1)	76 (13.4)
	Postgraduate	21 (7.8)	19 (3.3)
	N/A	11	17
		$\chi^2 = 14.421$, df = 4, p = 0.006	
Employment Status	Students	26 (9.5)	67 (11.7)
	Unemployed	23 (8.4)	42 (7.3)
	Government employee	33 (12.1)	54 (9.4)
	Non-government employee	14 (5.1)	18 (3.1)
	Self employed	174 (63.7)	391 (68.2)
	Retired	3 (1.1)	1 (0.2)
	N/A	7	13
		$\chi^2 = 8.188$, df = 5, p = 0.146	
Religion	Christianity	246 (91.4)	481 (86.2)
	Islam	1 (0.4)	7 (1.3)
	ATR	18 (6.7)	66 (11.8)
	Others **	4 (1.5)	4 (0.7)
	N/A	11	28
		$\chi^2 = 7.858$, df = 3, p = 0.049	

ATR: African Traditional Religion, N/A: Not Available, Others*: Widowed, divorced, separated, co-habiting, Others**: Any other religion

Table 3. Reasons for routine medical check up and its association with place of residence and sex

	Frequency n=280 (%)	Place of Residence		Sex	
		Urban n=194 (%)	Rural n=86 (%)	Male n = 134 (%)	Female n = 146 (%)
Antenatal visits	8 (2.9)	1 (0.5)	7 (8.1)	0 (0.0)	8 (5.5)
Personal routine	5 (1.8)	5 (2.6)	0 (0.0)	5 (3.7)	0 (0.0)
Medical Outreaches	204 (72.9)	142 (73.2)	62 (72.1)	97 (72.4)	107 (73.3)
Medical conditions	60 (21.4)	43 (22.2)	17 (19.8)	29 (21.6)	31 (21.2)
Work-related	3 (1.1)	3 (1.5)	0 (0.0)	3 (2.2)	0 (0.0)
		$\chi^2 = 43.301$, p < 0.001		$\chi^2 = 18.782$, p = 0.002	

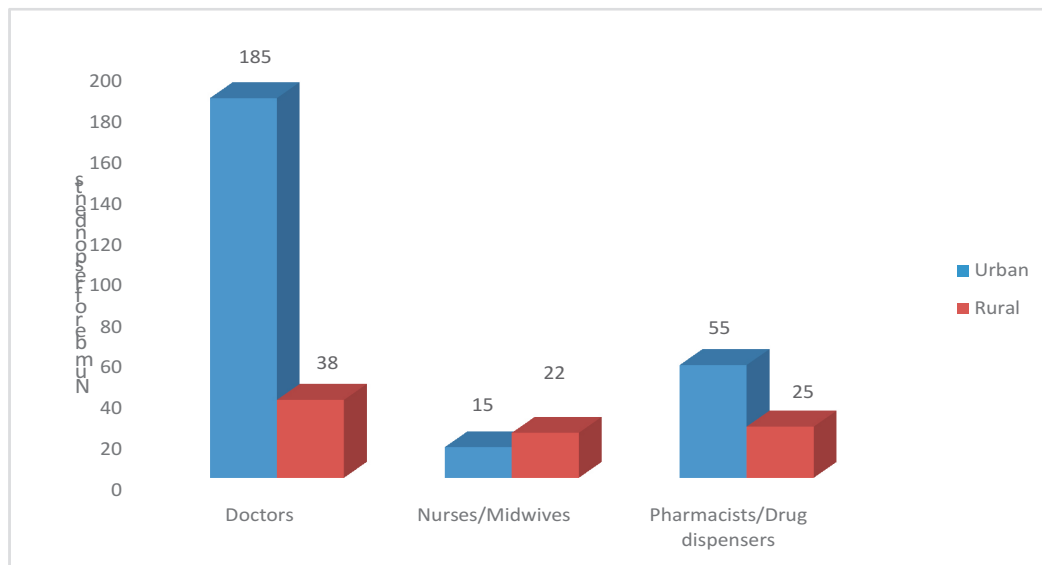


Figure 1. Urban-Rural distribution of typical healthcare provider sought by respondents

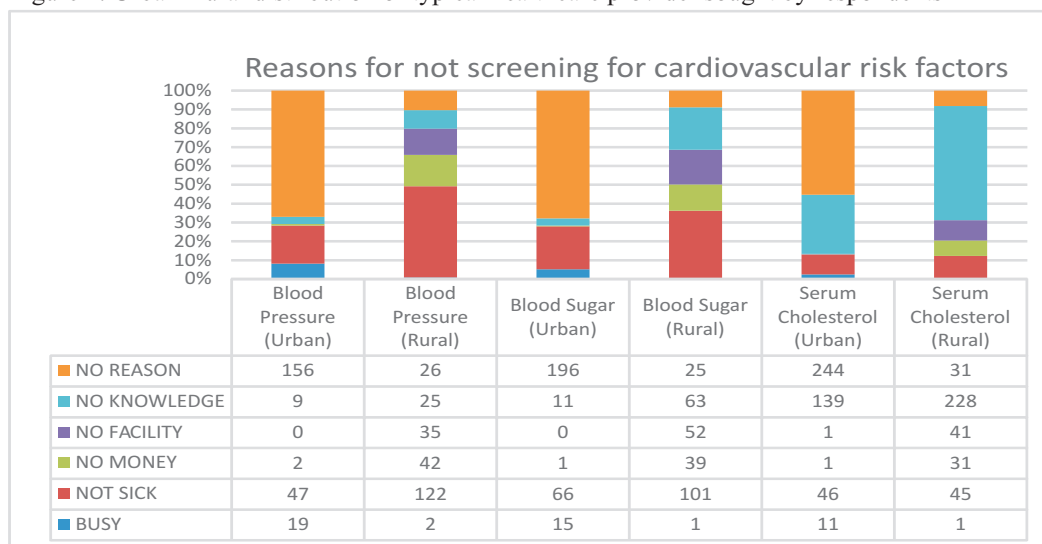


Figure 2. Reasons for not screening for cardiovascular risk factors

of the respondents were males (56.0%), urban dwellers (56.0%), married (56.0%) and self-employed (65.0%). Majority of the respondents have had formal education. Of the respondents who had completed secondary education two-thirds (242/358) were urban dwellers. Table 1 shows the sociodemographic characteristics of the study participants.

A total of 280 (32.3%) respondents reported that they had undergone a routine medical check-up. Of these respondents more than two-thirds were urban dwellers and had completed at least secondary education while about half of them were females and were aged less than 45 years. (Table 2)

There was a statistically significant association between the practice of routine medical check-up and place of residence ($p < 0.001$), age group ($p = 0.008$), the highest level of education ($p = 0.006$) and religion ($p = 0.049$). (Table 2)

The practice of routine medical check-up did

not differ significantly based on the sex, marital status and employment status of the respondents. (Table 2) Opportunistic medical check-up during medical outreaches was the most common reason for a medical check-up in this study. Less than 1.0% of the total study population engaged in routine medical check-up as part of their personal or work-related routine. The reasons for attending medical check-ups differed significantly by place of residence and sex. (Table 3)

About half of the respondents who have never had a medical check-up had no apparent reason for not doing so. The reasons for not engaging in routine medical check-ups differed significantly by place of residence ($p < 0.001$) but not by sex ($p = 0.196$) (Table 4) Three-fifth (524/866) of the respondents have never seen a healthcare provider either for a curative or preventive purpose. The typical healthcare providers sought by the respondents based on place of residence is as shown in figure 1.

Among respondents who reported having doctors as their typical health-care provider, 52 (23.3%) have had discussions on heart disease while 60 (26.9%) have had education on cardiovascular risk factor prevention. All the respondents who had had a discussion on heart disease and 59 of those who had had education on cardiovascular risk prevention were urban dwellers.

Among the respondents, 44.0% (381) have had their blood pressure (BP) measured. The proportion of urban dwellers who had ever checked their BP was significantly higher than their rural counterparts (52.0% vs 33.9%, $p < 0.001$). Almost 70% (265) of the respondents who had ever checked their BP did so within the past 12 months. This observation did not differ based on the place of residence ($p = 0.406$).

Among the respondents, 34.2% (296) have ever had their blood sugar measured. A significantly higher proportion of urban than rural dwellers had ever checked their blood sugar level (40.2% vs 26.5%, $p < 0.001$). The majority (73.0%) of the who had ever checked their blood sugar did so within the past 12 months. A significantly higher proportion of urban than rural dwellers had checked their blood sugar level in the past 12 months (28.5% vs 20.5%, $p = 0.007$).

Among the respondents, 5.4% (47) have ever checked their serum cholesterol level. The proportion of urban dwellers who had ever checked their serum cholesterol levels was significantly higher than the rural dwellers (8.9% vs 1.0%, $p < 0.001$). A majority (48.9%) of the those who had ever checked their serum cholesterol had done so within the past 12 months. A significantly higher proportion of urban than rural dwellers had checked their serum cholesterol levels in the past 12 months (4.5% vs 0.3%, $p < 0.001$).

The reasons for lack of screening for hypertension, type 2 diabetes and dyslipidaemia among the respondents is as shown in figure 2. The rural-urban differences in the reasons for not screening for cardiovascular risk factors were statistically significant: hypertension ($\chi^2 = 218.387$, $p < 0.001$), type 2 diabetes mellitus ($\chi^2 = 273.735$, $p < 0.001$), and dyslipidaemia ($\chi^2 = 257.590$, $p < 0.001$).

Discussion

This study revealed that the practice of routine medical check-up among adults in Delta State was low. About two-thirds of the respondents in this study have never been evaluated by trained medical personnel to ascertain the true state of their general health. Studies from other regions of Nigeria also show a low-level practice of routine medical check-ups.¹¹⁻¹⁴ In the index study, age, place of residence and educational status were significantly associated with the practice of routine medical check-up. Ilesanmi et al¹¹ in a study of adults in Owo, South West Nigeria have previously shown that age was significantly associated with the

practice of routine medical check-ups. In their study, they had a lower proportion of young participants (aged less than 40 years) who engaged in periodic medical check-ups compared with respondents aged 60 years and above.¹¹ Older age has also been shown to be a determinant of uptake of medical-check-ups in Germany.¹⁵ Also, attainment of higher educational status has been associated with a high-level practice of routine medical check-ups in Hong-Kong.¹⁶ However, this contrasts with the study by Eke et al¹² among traders in Nnewi South-East Nigeria in which age and educational status were not significantly associated with the practice of routine medical check-up.

Only 5% of the respondents who have never had a medical check-up attributed it to lack of knowledge or awareness of periodic medical check-up and all these respondents were rural dwellers. It may, therefore, be inferred that the level of awareness of periodic medical check-up in this study was not low, further supporting the previously reported Nigerian studies¹¹⁻¹⁴ with a mismatch in high-level knowledge/awareness of periodic medical check-up and the low-level actual practice of it. As with other previous reports,¹¹ lack of awareness/knowledge was not the sole reason for not engaging in routine medical check-ups. Other reasons include social, economic, infrastructural, religious beliefs and lack of symptoms of ill-health.

Lack of funds hindered a little more than one-tenth of the respondents from practicing routine medical check-up in this study. Lack of funds was also one of the reasons for lack of uptake of medical check-ups in the study by Ilesanmi et al.¹¹ In Nigeria, healthcare financing is poor and out-of-pocket spending is one of the major sources of paying for healthcare expenditures.^{17, 18} The National Health Insurance Scheme in Nigeria is yet to attain universal coverage as it is yet to finance persons from the informal sector,¹⁷ and more importantly, it is skewed towards the provision of curative than preventive healthcare. It is therefore not surprising that almost three-quarters of the respondents who have had medical check-ups did so during opportunistic free medical outreaches. Ilesanmi et al also reported that most of the participants in their study who had ever engaged in medical check-ups did so during a free medical outreach.¹¹ In Delta State, several organizations including the State Government, organized private sector and faith-based organizations engage in medical outreaches on a regular basis. As in this study, health care financing alone does not account for the low-level uptake of medical check-ups. In climes where the burden of preventive health care spending is largely taken up by health insurance, the uptake was well below expected.^{19, 20}

About one-fifth of the respondents in this study

who have never had a medical check-up reported that they had 'Divine health' and/or were not sick. This reason calls for concern as routine medical screening play an important role in disease prevention and control.⁷ The lack of overt clinical manifestations presents a misperception that may be borne out of the lack of knowledge on the symptomatology and natural progression of chronic diseases as well as spiritual/religious beliefs that assumes a healthy status is implied in the absence of symptoms. Non-communicable diseases like cardiovascular diseases are often chronic and as such have long latency periods between exposure to risk factors and overt clinical manifestations of the disease which may span several years. Waiting for symptoms may mean catching the disease late when complications may have set in and loss of the potential benefit of routine medical screening which includes prevention of complications/disability and improved survival. This defeats the purpose of routine medical check-up.^{1,21-23}

Surprisingly, almost half of the respondents who have never had a medical check-up done had no apparent reason for their inaction. This underscores the need for health education and re-education of the populace on the importance of preventive healthcare especially as it pertains to chronic diseases.

The practice of screening for traditional modifiable cardiovascular risk factors as part of preventive or curative healthcare was also poor in this study. Majority of the respondents in the index study have never had their blood pressure (56.0%), blood glucose (65.8%) or serum cholesterol (94.6%) checked. This falls short of the recommendations by the US preventive services task force (USPSTF) to screen for hypertension,^{24, 25} type 2 diabetes mellitus^{26, 27} and dyslipidaemia.^{28, 29}

Multiple reasons were also given for the lack of screening for cardiovascular risk factors in the index study. Of note is that a majority of the respondents reported that serum cholesterol check had not been previously recommended and was unaware of the need for one. This presupposes physicians' inertia in recommending for serum cholesterol check despite existing guidelines supporting routine screening in adults aged 20 years and above.²⁹ Indeed, routine medical check-ups provide an opportunity not only to assess an individual's health status but also to advice on preventive health and to improve the doctor-patient relationship.³⁰ In this study, about three-quarters of the respondents who had doctors as their typical healthcare provider have never had discussions on heart disease nor education prevention of cardiovascular risk factors, many of which are behavioural and modifiable. This finding supports the impression of physicians' inertia towards health education. Further research to ascertain the reasons for the reported inertia will be needful in

assessing healthcare provider-related barriers to preventive cardiovascular health services.

Conclusion: Routine medical check-ups and screening for cardiovascular risk factors were poor in this study. There is a need for increased public health promotion and education among Nigerians. This is also a wakeup call to physicians to overcome challenges/barriers to communicate more effectively with patients and the general population on cardiovascular risk assessment and prevention.

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Prevalence of and Perception to Domestic Violence against Women in a North Western City of Nigeria

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Abstract

Domestic violence against women is a manifestation of historically unequal power relations between men and women, which have led to domination over and discrimination against women by men. This has prevented the full advancement of women. The objective of this study was to determine the prevalence and perception of residents of a cosmopolitan city in Nigeria on intimate partner abuse experienced by women.

It is a descriptive cross sectional study which involved 576 married females and males in Kano metropolis using multistage sampling technique. Data was collected with interviewer administered questionnaire and analysis was done using EPI-INFO 2007 software package. Level of significance was pre-determined at $p\text{-value} < 0.05$.

More than two thirds of the male respondents (71.8%) had beaten their wives at one time or the other. Reasons for abuse include food not sweet enough, refusal of sex and leaving home without the consent of the husband. About a third (30.6%) respondents justified that one of the reasons for the husband to beat wife was unfaithfulness. Unfortunately, more males (76.5%) with tertiary education beat their wives as compared with men of lower educational status. There was a statistically significant difference in the educational status of respondents and prevalence of wife beaten $p\text{-value} < 0.05$.

Level of education among men was shown in this study to have no protective effect on violence against women as men with tertiary educations are shown to have more likelihood of perpetrating violence against women.

Key words: Prevalence, Perception, Domestic, Violence, Women

Introduction

Worldwide, one of the most common forms of violence against women is abuse by the husbands or other intimate male partners; often referred to as wife-beating, battering or domestic violence.¹ Violence against women is generally part of a pattern of abusive behaviour rather than an isolated act of physical aggression.² Partner abuse can take a variety of forms including physical assault such as hits, slaps, kicks, and beating, intimidation, humiliation and other forms of attack. Types of domestic violence abuse are physical, sexual, emotional abuse and intimidation, verbal abuse, using male privilege, and economic abuse. Globally, at least one woman in every three had been beaten, coerced into sex, or otherwise abused in her life-time.³ Most often the abuser is a member of her own family.² Although violence by intimate partner is widespread, there is a great deal of variation from country to country, and from setting to setting within the same country.⁴ Findings from the World Health Organization (WHO) multi-country study on women's health and domestic violence revealed that the global prevalence of physical partner violence ranged from 13% to 61%, and sexual abuse was between 6% and 59%.⁵ In South East Asia about 50% of women reported physical violence by their husbands or partners, while the prevalence was higher in Nepal where 82% reported beating by intimate partners.⁶ It has been reported that violence-related injuries were the fifth most common cause of maternal deaths in rural Bangladesh.⁶

Domestic violence is widespread in Sub-Saharan Africa. Surveys conducted in sub-Saharan Africa revealed that 46% of Ugandan women, 60% of Tanzanian women, 42% of Kenyan women and 40% of Zambian women reported regular physical abuse.² In Nigeria 81% of married women reported being verbally or physically abused by their husbands, and 46% reported being abused in the presence of their children.⁷ In Southwestern Nigeria, 87% of women had ever experienced intimate partner violence and surprisingly 79.5% believed that wife beating was justified.³

The effect of violence can be devastating to a woman's reproductive health as well as to other aspects of her physical and mental well-being. In addition to causing injury, violence increases women's long-term risk of a number of other health problems, including chronic pain, physical disability, drug and alcohol abuse, and depression.^{4, 8} Physical abuse in intimate relationship is almost always accompanied by several

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psychological and verbal abuses.⁶ The social institutions put in place to protect citizens too often blame or ignore battered women.⁸ The objective of this study was to assess the prevalence and perception of violence against women in Kano metropolis of Nigeria.

Methodology

It was a descriptive cross-sectional study conducted among residents of Kano State metropolis, Northwest Nigeria. Kano the capital city of Kano State is one of the seven states in the North West geopolitical zone of Nigeria. The city is cosmopolitan in nature with population of 9.3 million people and has 8 Local Government Areas (LGAs).⁹

The sample size was determined using the formula Z^2pq/d^2 .¹⁰

Multistage sampling technique with four stages was used to select respondents. The first stage involved selection of 2 out of the 8 LGAs in Kano metropolis using simple random sampling technique (balloting method). Stage two involved selection of wards: each of these LGAs has urban and rural parts, which was taken into consideration. Two urban and one rural ward were selected from each LGAs using simple random sampling technique. A total of 6 wards selected for the study. Stage three involved selection of settlements; two settlements were randomly selected using balloting method from each of the wards selected. A total of twelve settlements were involved in the study.

In stage four, houses were picked using cluster sampling method; all the houses in a cluster were used. A total of 20 clusters across the selected settlements were used for the study. All eligible adults were interviewed in each cluster until the desired sample size was attained.

Data was collected from 576 respondents comprising of married females and males in Kano metropolis. A quantitative method of Data collection was employed using a pretested interviewer administered, semi-structured questionnaire. Pre-testing of questionnaire and validation for errors and reliability checks were done in Kaduna State, Nigeria. Correctly completed questionnaires were sorted out. Information was coded and data was analyzed using EPI-INFO 2007. Data collected was presented in prose, frequency tables, charts and graphs. Frequency distribution and other relevant summary statistics were generated. Chi Square test was used to test for association between the categorical variables. Level of significance was pre-determined at $p\text{-value} < 0.05$ at a confidence level of 95%.

Results

The age of the respondents ranged from 18 to 53 years, the mean age was $32.5 \pm SD 3.2$ years and modal age was 31 years. More than a third of the

respondents were females, 406 (70.5%), while the males were 170 (29.5%). Among the respondents, 355 (61.6%) were married and 162 (28.1%) were single (Table 1). There were 16 (2.8%) widowed and 43 (7.5%) divorced. The major ethnic group among the respondents were Hausa, 420 (72.9%); Fulani and Yoruba were 56 (9.7%) and 30 (5.3%) respectively. Others were Ebira, Jukun, Kanuri, Nupe, Igala and Igbo. The Moslems among the respondents were 503 (87.3%), while 73 (12.7%) were Christians. Most of the respondents 521 (90.4%) had tertiary education. Ten (1.7%) had Quranic form of education. Only 9 (1.6%) respondents had primary education alone. About 228 (39.6%) of the respondents were civil servants. Health workers among the respondents were nurses 128 (22.2%) and community health practitioners 80 (13.9%). Other occupations of the respondents were trading 16 (2.8%) and artisans 24 (4.2%). One hundred (17.3%) students were involved in the study.

Eighty five (21.0%) women have been abused by their spouse at one time or the other. More than two thirds of the male respondents 122 (71.8%) were perpetrators of violence against their intimate partner and had beaten their wives at one time or the other for various reasons like food not sweet enough, refusal of sex, leaving home without the consent of the husband among others. Unfortunately, more males (76.5%) with tertiary education were involved in intimate partner abuse as compared with men of lower educational status (Table 2). There was a statistically significant difference in the educational status and prevalence of intimate partner abuse $p\text{-value} < 0.05$.

Various reasons were given by the respondents for wife beating in this study. One hundred and thirty two respondents (22.9%) mentioned that it is justified to beat wife if she refuses sex. More than one third of the respondents 208 (36.1%) said wife can be beaten when she argues with husband. One hundred and twenty eight (22.2%) respondents believed that it is justified to beat wife for food related issues like food not ready on time or food not delicious. More than one third 210 (36.5) of the respondents mentioned that wife should be beaten if she did not take proper care of the children. One hundred and seventy six (30.6%) respondents justified that one of the reasons for the husband to beat wife was unfaithfulness (table 3).

Half of the respondents 5 (50.0%) with Quranic education believed that the husband is justified to beat wife for refusal of sexual activities. Among the respondents with primary education 4 (44.4%) agreed that beating wife for refusal of sexual activities is necessary. However, few respondents 7 (19.4%) with secondary education agreed with beating wife for refusal of sexual activities and 29 (80.6%) disagreed. Less than one third of the respondents 121 (23.0%) with tertiary education supported wife beating for refusal of sex while 400 (77.0%) did not support beating wife for

Table 1: Socio-demographic characteristics of the respondents N= 576

Variable	Frequency (%)
Age group (years)	
18-22	92 (16.0)
23-27	98 (17.0)
28-32	144 (25.0)
33-37	114 (19.8)
38-42	82 (14.2)
43-47	30 (5.2)
>47	16 (2.8)
Gender	
Females	406 (70.5)
Males	170 (29.5)
Marital Status	
Married	355 (61.6)
Single	162 (28.1)
Widowed	16 (2.8)
Divorced	43 (7.5)
Religions	
Muslims	503 (87.3)
Christians	73 (12.7)
Literacy level	
Quranic	10 (1.7)
Primary	9 (1.6)
Secondary	36 (6.3)
Tertiary	521 (90.4)
Occupation	
Artisan	24 (4.2)
Trading	16 (2.8)
Community health practitioners	80 (13.9)
Civil servant	228 (39.6)
Nursing	128 (22.2)
Students	100 (17.3)

Table 2: Male perpetrators of intimate partner abuse by educational status

Education Level	Beat Wife (%)		Total
	Yes	No	
Quranic	1 (33.3)	2 (66.7)	3
Primary	2 (40.0)	3 (60.0)	5
Secondary	5 (38.5)	8 (61.5)	13
Tertiary	114 (76.5)	35 (23.5)	149
Total	122 (71.8)	48 (28.2)	170

$X^2 = 13.45$, $df = 3$, $p = 0.00376163$

Table 3: Reasons for intimate partner abuse by respondents N = 576

Reasons	Frequency (%)	
	Yes	No
Refusal of sex	132 (32.5)	444 (77.1)
Argument with husband	208 (36.1)	368 (63.9)
Food not ready on time	128 (22.2)	448 (77.8)
Food not sweet	124 (21.5)	452 (78.5)
Lack of proper child care	210 (36.5)	366 (63.5)
Unfaithfulness	176 (30.6)	400 (69.4)

Table 4: Respondents' perception on wife beating for refusal of sex N = 576

Perception by literacy level			
	Positive (%)	Negative (%)	Total
Quranic	5 (50.0)	5 (50.0)	10
Primary	4 (44.4)	5 (55.6)	9
Secondary	7 (19.4)	29 (80.6)	36
Tertiary	121 (23.0)	400 (77.0)	521
Total	137 (23.8)	439 (76.2)	576

$X^2 = 6.37$, $df = 3$, $p = 0.09474470$

Perception by gender

Female	82 (20.2)	324 (79.8)	406
Male	55 (32.3)	115 (67.7)	170
Total	137 (23.8)	439 (76.2)	576

$X^2 = 3.16$, $df = 1$, $p = 0.0755144$

refusal of sex (Table 4). There was no statistically significant difference between the levels of education of the respondents and perception to wife beating for refusal of sexual activities p -value=0.09. About a quarter of the female respondents 82 (20.2%) agreed that it is justified to beat wife for refusal of sexual activities. Similarly, one third of the male respondents 55 (32.3%) supported wife beating for refusal of sex (table 4). There was no significant difference in gender perception to wife beating for refusal of sex p -value=0.07.

Discussion

The mean age of the respondents was 32.5 years while the modal age group was 31 years. This is in consonance with productive age group expected of a metropolitan city like Kano where a lot of industrial, commerce and civil service activities are taken place. Expectedly of a Northern State of Nigeria, Hausa tribe predominates with 72.9%, followed by Fulani with

9.7% and Yoruba with 5.3%.⁷ Since traditionally Hausas are Muslims, Islamic religion make up of 87.3% while the rest are Christians.⁷ This buttresses the fact that domestic violence against women transcends occupation, religion or ethnic origin.⁷

One hundred and twenty two (21.2%) of the female respondents had suffered intimate partner abuse by their spouse at one time or the other, similar observations were reported in studies conducted in United Kingdom and Enugu, Nigeria where 25% and 37.2% of women had experienced various forms of violence like been punched, beaten or slapped by a partner or ex-partner in their life time.^{7, 8} However, a higher prevalence of 48.2% was observed in a study done among pregnant women in Northeastern Nigeria.¹¹ The slightly lower prevalence observed in this study is probably due to heterogeneous sex group in this study as compared with the other studies where only female respondents were involved. Although a survey done in Zaria¹² revealed 11.8%, which is quite

lower than the observed prevalence in Kano. This demonstrates the variability in the prevalence of intimate partner abuse in various settings. In a multi-national studies carried out by WHO in Namibia, Tanzania, Thailand and Ethiopia prevalence of 31%, 33%, 45% and 49% were observed respectively,¹¹⁻¹⁴ showing similar trends with the prevalence observed in Kano. This has revealed that domestic violence against women takes place all over the world and women are often in great danger in the place where they should be safest. For many women, home is where they face a regime of terror and violence at the hands of somebody close to them or somebody they should be able to trust.¹⁵

There was no statistically significant difference between the levels of education of the respondents and perception to intimate partner abuse for refusal of sexual activities p -value > 0.05 . The acceptability of violence as a means to resolve conflict is widely practiced and education which should guide individuals towards positive attitudes and behaviour in marital relationship has being of limited value in this study. Therefore, legislation and other necessary interventions should focus on all educational status towards addressing the domestic violence. Similarly, there was no statistically significant difference in gender perception to intimate partner abuse for refusal of sex p -value > 0.05 as both male and female supported it. The notion of the family as a private affair and under male control and the belief in the inherent superiority of males was generally accepted by the respondents in this study as both males and females had same perception to wife beating.

Various reasons were given by the respondents for intimate partner abuse in this study; 22.9% mentioned that it is justified to beat wife if she refuses sex, others mentioned argument with husband, food not ready on time, food not sweet, lack of proper care of the children and unfaithfulness. This showed that women are not believed to have independent opinion or freedom in any way. However, in the report of National Demographic and Health Survey in Nigeria, 66.4% of women agreed that a man is justified in beating or hitting his wife.⁹ This confirmed that women themselves did not know they have rights and this will make reporting of domestic violence difficult. Domestic violence against women is not just a health and developmental problem but also a human right issue and women should be equipped with necessary skills and information to make change.^{16,17}

This study has shown that domestic violence against women is still high among residents of Kano metropolis and men are proven to be the perpetrators of violence against women. Both male and female respondents have wrong perception to intimate partner abuse. Level of education among men was shown in this study to have no protective effect on violence against women as men with tertiary educations are

shown to have more likelihood of perpetrating violence against women. Community awareness, education and advocacy are necessary towards addressing the problem of gender based violence.

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Knowledge of Hand Hygiene among Medical Students in a Teaching Hospital, Kaduna State, Nigeria.

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Abstract

Hand hygiene is an important health issue globally. It is the single most cost-effective and practical measure to reduce the incidence of Health-care associated infections. One of the main reasons for the spread of infection in the healthcare environment is inadequate performance of hand hygiene. According to the World Health Organization (WHO), lack of knowledge of good hand hygiene practices is associated with poor compliance. This evaluated the knowledge of Hand Hygiene as a basic infection control measure among Medical Students in their clinical years at the Barau Dikko Teaching Hospital, Kaduna state.

This is a descriptive, cross-sectional study conducted on 123 Medical students in their fourth and fifth year. Self-administered structured questionnaires based on the questionnaire for hand hygiene knowledge assessment in health care workers from 2009 Global patient safety strategy initiative WHO guidelines were answered by the study participants after obtaining their informed consent. Data was analyzed using SPSS version 22. Level of significance was set at 95%.

A total of one hundred and twenty-three students (123) were recruited for the studies, of which 70(56.9%) were in 4th year medical school while 53(43.1%) were in 5th year. Male: Female ratio was 2:1. Majority (96.7%) of them had formal training in hand hygiene but only 34.1% routinely use alcohol hand rub. Medical student in 4th year were found to have a better knowledge in hand hygiene compared to their counterpart in 5th year ($P=0.003$). Prior formal training in hand hygiene was found to significantly influence the knowledge of medical students ($P=0.004$).

Hand hygiene knowledge is unsatisfactory amongst medical students. Sustained education, training and re-training should be included in their curricular throughout their pre-clinical and clinical years to improve knowledge and invariably, compliance to Hand hygiene performance.

Keywords: Hand hygiene, Knowledge, Medical Students, Kaduna State

Introduction

Hand hygiene (HH) is the primary measure to reduce infections. Though this is a simple action, lack of compliance among Health-care providers is problematic all over the world. Health-care associated infections (HCAIs) is a major problem for patient's safety and its prevention must be a first priority for settings and institutions committed to make health care safer.¹

The transmission of health-care associated pathogens through the contaminated health-care workers'(HCW) hands is the most common pattern in most settings. Failure to perform appropriate hand hygiene, is considered to be the leading cause of HCAI, the spread of multi-resistant organisms and has been recognized as a significant contributor to outbreaks.²

Risk factors for non-adherence have been extensively studied and physicians have been repeatedly observed as being poor compliers.³ Medical students, in their clinical training phase within Health-care facilities (HCF) rotate through Laboratory medicine, Surgery, Internal Medicine, Paediatrics, Intensive Care Units and Labor and Delivery suites and can potentially transmit infections through their hands too.⁴ Strategies, should therefore be established with regards to ensuring proper education and adequate training with the expectation that this will positively impact on their knowledge and practice of basic infection control measures.

In this study we aim at assessing the knowledge and attitude of Medical Students to HH as a basic infection control measure, with the intent of fishing out need-gaps in their training and providing feedback to all stake-holders including students, medical educators and public health policy makers.

Material And Methods

Study design

A descriptive, cross- sectional study was conducted in June -August 2018 among clinical, medical students of the Kaduna State University (KASU), at the Barau Dikko Teaching Hospital, (BDTH).

Study Location and Population

BDTH is a tertiary health care facility. This hospital is a major referral centre for Kaduna and its environs however it caters not only for Kaduna citizens

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but for people from other parts of the North and the South of the country. It is the teaching hospital affiliated to KASU.

KASU is sited in Kaduna city, which is the capital of Kaduna State, located in northwestern Nigeria. The medical school of the university was established in 2007 with an initial intake of 46 students in 2009. By 2018, the number of students had grown to 162, distributed across four levels of study. The study population were the undergraduate medical clinical students of the university.

Sampling Method

The total population of medical clinical students of the university who were duly registered at the time of the study and gave informed consent were included in the study. Thus, the clinical students' entire population of 123 respondents was used in the study.

Categorization of knowledge scores

Correct answers were given one point whereas incorrect answers scored zero. The maximum score achievable for knowledge was 27 points. The level of hand hygiene knowledge was calculated by dividing the responses into three groups based on a score of more than 75% considered as good, 50-74% moderate, and less than 50% considered as low.

Data collection

A self-administered structured questionnaire was used to collect information about respondents' socio-demographic characteristics including age, gender, year of study in the clinical section of the medical school; history previous training on HH; knowledge about HH and practice of use alcohol-based hand rub. The questionnaire was based on the questionnaire for hand hygiene knowledge assessment in health care workers from 2009 Global patient safety strategy initiative WHO guidelines⁶. Before starting data collection, the research team received training on the methods of data collection and the principal investigator supervised the overall data collection activities.

Data Analysis

The questionnaires were checked for completeness and consistency. Data were entered into data entry templates and analyzed using SPSS version 22. Descriptive statistics such as mean and standard deviation were generated for variables including frequencies and percentages for categorical variables. the Independent t-test was applied to compare the mean knowledge scores with socio-demographic characteristics of respondents and also their status on training on HH. A p-value of less than 0.05 was used as the cut off level for statistical significance.

Ethical Considerations

The Ethics Research Committee of the Barau Dikko Teaching Hospital approved the research protocol. Also, informed, written consent was obtained from the study participants and confidentiality assured for all the

information provided.

Result

Sociodemographics

This study included 123 medical students of which 71.5% were males and 28.5% were females. Their age ranged from 20 to 45 years with an average of 25.7 ± 4.2 years and a median age of 25 years. Fifty-six-point nine percent were in their first year in the clinical section of the medical school, while 43.1% of them were in their second year in the clinical section.

Hand hygiene knowledge

One hundred and nineteen respondents (96.7%) reported that they had a previous training in HH but, only 34.1% reported the routine use of alcohol hand rub (ABHR). Overall, 86(69.9%) respondents knew that unhygienic hands of healthcare workers were the main route of transmission of potential harmful germs and 50(40.7%) were aware that the main source of germs responsible for HCAI was from patients. Only, 50(40.7%) respondents knew that 20 seconds is the minimum time required for effective alcohol-based hand rub according to the WHO guideline. Some of the respondents' responses to hand hygiene knowledge questionnaire has been summarized in Table 1.

Level of hand hygiene knowledge

The knowledge on hand hygiene was moderate (69.9%, 86 of 123) among the majority of respondents. Only 3.3% of respondents (4 of 123) had good knowledge regarding hand hygiene [Table 2].

Comparison of hand hygiene knowledge scores

Medical students' hand hygiene knowledge score was significantly higher in the first-year clinical students ($P \leq 0.004$) than those in the second year, in respondents that were less than or equal to 25 years of age ($P = 0.024$) as compare to those greater than 25 years of age and in those with/without history of previous training on Hand hygiene ($P=0.004$). There was no statistically significant association found between knowledge of Hand hygiene and gender ($p=0.369$) Table 3.

Discussion

Hand hygiene is the corner stone of infection prevention and enhanced compliance is associated with decreased cross-transmission of pathogens and reduced infection rates in Health care facilities.⁵ In this study, the knowledge on Hand hygiene was moderate (69.9%, 86 of 123), but only a few (3.3%, 4 of 123) of respondents have good knowledge with regards to Hand hygiene.

Majority of the students 96.7% acknowledge formal training. There is need to mention that the formal training the students acknowledged refers to a two-hour lecture during which the basic components of Infection

Table 1: A sample of respondents' responses to the WHO hand hygiene knowledge questionnaire

S/no	Question	Correctly answered (%)	Incorrectly answered (%)
1.	Receive formal training in hand hygiene in the Medical school	119(96.7)	4(3.3)
2.	Routinely use an alcohol-based hand rub for hand hygiene?	42 (34.1)	81(65.9)
3.	Main route of cross-transmission of potentially harmful germs between patients in a health-care facility	86(69.9)	37(30.1)
4.	The most frequent source of germs responsible for health care-associated infections	50(40.7)	73(59.3)
5.	Hand hygiene actions which prevents transmission of germs to the patient		
5a	Before touching the patient	114(92.7)	9(7.3)
5b	Immediately after a risk of body fluid exposure	30(24.4)	93(75.6)
5c	After exposure to the immediate surroundings of a patient	34(27.6)	89(72.4)
5d	Immediately before a clean/aseptic procedure	94(76.4)	29(23.6)
6.	Which of the following hand hygiene actions prevents transmission of germs to the health - care worker?		
6a	After touching a patient	123(100)	0(0)
6b	Immediately after risk of body fluid exposure	110(89.4)	13(10.6)
6c	Immediately before a clean/aseptic procedure	49(39.8)	74(60.2)

Table 2: Respondents' level of hand hygiene knowledge

Hand hygiene knowledge	Frequency	Percent
Good >75%	4	3.3
Moderate 50-74%	86	69.9
Poor<50%	33	26.8
Total	123	100.0

prevention and control, including Hand hygiene, are taught the students followed by a practical demonstration of the performance of Hand washing. Students are made to individually perform this until they become quite adept at it.

This is usually done in their Medical Microbiology posting at 400 level. Students are required and encouraged to perform HH before and after every practical session, at the clinic and when in the wards. After their laboratory medicine posting

other clinical postings follow in which they interact and have frequent contact with patients. Students are told to practice basic infection and control measures to protect themselves but not much emphasis is laid on the importance of adequate HH performance, as a very effective means of preventing the cross- transmission of infection.

It therefore was not surprising to observe that in 400L students, hand hygiene knowledge score was significant compared with their counterparts in 500L (p

Table 3: Relationship between Socio -demographic characteristics of respondents and mean Hand Hygiene knowledge scores

Characteristics	Knowledge score	P value (t-test)	C I
Age			
≤25 years	15.9±3.3	0.024	0.16-1.97 df 121
>25 years	14.6±3.0		
Level			
400 Level	17.6± 2.6	0.003	0.54-2.50 df 121
500 Level	16.0± 2.9		
Gender			
Females	15.8±3.9	0.369	0.63-1.40 df 121
Males	15.2±2.7		
Training			
Yes	17.0±2.7	0.004	-6.82-1.33 df 121
No	13.0± 3.2		

C I Confidence interval, df Degree of freedom

≤ 0.004). Hand hygiene knowledge score was also significant in respondents 25 years old or younger as compared with those greater than 25 years old. ($p \leq 0.024$).

A study suggests that in the community, HH performance patterns are likely to be firmly established before the age of 9 or 10 years probably beginning at the time of toilet training.⁶ This implies that from the perspective of behavior, humans are capable of deeply engraving patterns of ritualized behavior perceived to be self-protective from infection. That is the younger one is, the more readily he/she is able to understand, institute or effect a behavior change.

In this study, only 34.1% of the students routinely use alcohol-based hand rub for hand hygiene. This is in contrast to findings in the study done by Modi et al⁷ in which 71.9% of medical students routinely use alcohol-based hand rub. This may be because in that center, adequate training and work place reminder with educational and motivational programs for HCWs on hand hygiene may play prominent roles.

Studies also show that, the attitude of most students to hand hygiene performance is strongly influenced and molded by their mentor/trainer (Registrars, Senior Registrars and Consultants) at the bed side and clinics^{8,9}. If any of these teach/demonstrate faulty hand hygiene, or do not practice it at all, it is very likely that their trainees will follow suit.

In conclusion, students are bound to develop faulty hand hygiene practice if the curriculum is not enforced with hand hygiene concepts and skills. It is strongly recommended that the medical school curriculum should be modified to include this very important concept in order to improve hand hygiene knowledge and practice. Hospitals should also put in place adequate educational and motivational training programs and incentives to improve compliance.

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Seroprevalence of Herpes Simplex Virus Type 2 among Female Sex Workers in Federal Capital Territory, Nigeria

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Abstract

Herpes Simplex Virus type 2 (HSV-2) has public health importance as a leading cause of genital ulcers, which also facilitate human immunodeficiency virus (HIV) acquisition and transmission by over two-fold or more. This study sought to determine the seroprevalence of HSV-2, and to evaluate the relationship between HSV-2 infection and sociodemographic factors of female sex workers (FSWs) in Federal Capital Territory (FCT), Nigeria.

This cross-sectional study involved 200 FSWs and was carried out with structured questionnaires for sociodemographic and behavioral information and laboratory tests for HSV-2 IgG antibodies using HerpeSelect ELISA.

Overall HSV-2 seroprevalence was 37.5%, with higher prevalence of 42.4% and 40.3 % among FSWs in Garki II and Wuse II while those residing in Brothel/Hotel also had the highest seroprevalence of 40.0%. There was no significance difference ($P>0.05$) in the prevalence of HSV-2 with respect to location and place of residence. With regards to the level of education and marital status, FSWs who cannot read and write, and those that are Single/cohabit had the highest prevalence of 76.5% and 39.6% respectively. HSV-2 seroprevalence increased with age, duration in commercial sex work, number of clients and non-usage of condom.

With the influx of FSWs in the study area and increasing evidence that HSV-2 infection has a synergistic activity on acquiring HIV infection, targeted public health awareness campaigns and good health-seeking behavior on noticing genital rashes, urethral discharges, and vaginal discharges are recommended among the studied population.

Keywords: Herpes Simplex Virus type 2, Female Sex Worker, seroprevalence, condom, Nigeria

Introduction

Herpes Simplex Virus Type-2 (HSV-2) infections is almost always sexually transmitted and is the common cause of genital ulcer disease (GUD) worldwide.^[1] It is also a good marker of sexual behavior in the population.^[2] HSV-2 is gaining special attention as a significant risk factor for acquisition of human immunodeficiency virus type-1 (HIV-1). HSV-2 increases the risk of HIV-1 transmission by more than two-fold and HIV transmission on a per-sexual act basis by up to fivefold and may account for 40 - 60% of new HIV infections in high HSV-2 prevalent populations.^[3,4,5,6] It is assumed that infection with HSV-2 disrupts the genital mucosa and provides a portal of entry for HIV, leading to increased susceptibility of HIV in HIV-negative persons. Also, HSV-2 is thought to enhance HIV acquisition due to dense inflammatory infiltrates of CD4/CD8/dendritic cells in the genital tract associated with HSV-2 shedding.^[7]

The prevalence of HSV-2 in the adult general population in sub-Saharan Africa ranges from 30% to 80% in women and from 10% to 50% in men.^[8] The first documented isolation of HSV-2 in Nigeria was done in Ibadan.^[9] The HSV-2 seroprevalence rate among female sex workers in Lagos, Nigeria, was 59%.^[10] Higher HSV-2 seroprevalence was reported in a multi-centre study of sex workers in four sub-Saharan African cities.^[11]

Female sex workers (FSW) have been reported as population group with an average number of sexual partners higher than the general population. Because of this, and because their partners are from different groups in the population, FSW are key for Sexually Transmitted Infections (STIs) transmission dynamics. FSW are still at the center of the epidemic in many countries, especially where heterosexual transmission of HIV is the main mode of transmission.^[12] FSW vulnerability to STI/HIV results from diverse factors including a high rate of sexual partners, unprotected sex or inconsistent condom use and lack of access to health services.^[12]

A tour of Abuja nightlife zones shows just how lucrative commercial sex can be in a nation's capital, and how crooked pimps make a fortune trafficking mostly poor girls from far-flung states to sell sex in Abuja. Announced efforts to check sex trade in Abuja have changed little, if any. In 2011, the Federal Capital Territory Administration, FCTA, said it had launched a

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“total war” on prostitution and would cleanse the city of sex business. Working with the Abuja Environmental protection Board and nongovernmental organizations such as Society Against Prostitution and Child Labour in Nigeria, law enforcement personnel identified, arrested sex workers and worked on rehabilitating them. Soon, allegations of mismanagement of funds damaged the initiative and the girls promptly returned to the streets. Despite its tinge of trafficking, the Abuja sex industry knows no regulation. While most girls operate from the streets, others are ferried in from other states and are handed rooms to operate from.^[13]

HIV infection rates are high in FCT.^[39] Sexual transmission of HIV now plays an increasingly greater role and thus, research about HSV-2, is particularly important because of its role in facilitating the transmission of HIV. However, little data are available about the prevalence of HSV-2 among female sex workers (FSWs) in FCT. Therefore, the present study aimed to determine the prevalence of HSV-2 antibodies among FSW in FCT, Nigeria.

Materials and Methods

Study Design, Area and Population

This is a cross sectional study which was conducted in Central Business area, Garki II and Wuse II of FCT, Nigeria between January to July, 2016. The inclusion criteria for the study were women ≥ 15 years old and self-reported to have sold sex for money for three months. After providing voluntary informed consent, a structured questionnaire was used to obtain demographic and behavioral information from each participant.

Sample Collection and Laboratory Procedure

Blood samples from 200 FSWs were collected each in 5 ml plain vacutainer tubes and allowed to clot and sera separated by centrifugation at room temperature. Storage was in cryovials at -20°C . HSV-2 IgG assay utilized Enzyme Linked Immunosorbent Assay (ELISA) kit by Dia. Pro. Diagnostic Bioprobes, Milano, Italy. This is a glycoprotein G-based enzyme-linked immunosorbent assay (ELISA) technique. All specimens and kit reagents were brought to room temperature and gently mixed before the assay. Procedures were performed in accordance with the manufactures' instructions. Each batch of tests ran with both positive and negative controls and results were qualitative.

Data Analysis

Data collected was analyzed using the SPSS version 16 computer software. Fisher's exact and Chi square tests were used to test associations. Statistical significance was ascribed based on p-values < 0.05 .

Results

Table 1 shows the relationship between

sociodemographic profiles and the seroprevalence of HSV-2 among FSWs studied in the FCT. FSWs with highest seroprevalence (39.2%) of HSV-2 fall within the age group of 23-26 years while those within 15-18 had the least seroprevalence (25.0%). Subjects that cannot read and write had the seroprevalence of 76.5%, as those with tertiary education had 20.0%. With regards to location FSWs from Central Area, Garki II and Wuse II had the seroprevalence of 22.0%, 42.4% and 40.3% while FSWs residing in Hotel/Brothel had 40.0% respectively. Most of the FSWs (149) examined were singles, and were mostly infected (39.6%) with HSV-2. Although Christians were the majority (117) of the FSWs screened, atheist had the highest (58.1%) rate of HSV-2 infection.

Illegal drug users had 6.9 chances of been infected with HSV-2. A total of 29 (40.8%) of the FSWs who were tested positive were users of illegal drugs. The mostly reported starting age and the duration in commercial sex were ≥ 21 and ≥ 5 years as FSWs in these categories reported had the highest seroprevalence of 43.2% and 44.4% respectively. FSWs that reportedly had sex with the highest number of clients (≥ 5) the previous week were highly (40.0%) stricken with HSV-2 while those who use condoms were minimally (23.5%) infected. FSWs who practiced vaginal douching after sex showed the least (35.8%) seropositivity to HSV-2 (Table 2).

Discussion

The 37.5% HSV-2 seroprevalence found among FSWs in the study area is high. The seropositivity of HSV-2 among FSWs recorded in this study is in consonance with the sero-presence of HSV-2 reported elsewhere among FSWs. Seroprevalence of 5% was reported in Taiwan, 35% in Bangladesh, 68.1% in China, 71% in Korea, 80% in Japan and 59% in Lagos, Nigeria.^[10,14-18] With the high HIV/AIDS prevalence (7.5%) in Abuja,^[39] one will expect a higher seroprevalence of HSV-2 among FSWs. But to the contrary the seroprevalence of HSV-2 obtained from this study may be the result of the widespread public awareness in the FCT in last two decades on practice of safe sex to fight HIV epidemic. The conceptual importance of this study was largely based on the increasing evidence that HSV-2 infection has a synergistic activity on acquiring HIV infection and this has been well documented.^[3-6,19-22] Since there were virtually no data on the prevalence of HSV-2 in the FCT among FSWs, there was a need to know the prevalence of this infection to plan an intervention strategy especially in the high HIV prevalent states and the FCT. Furthermore, there is continued need for the design and implementation of HSV-2 prevention programs as it remains the most common cause of genital ulcer disease and an important risk factor for HIV

Table 1: Sociodemographic factors associated with herpes simplex virus type-2 (HSV-2) seropositivity among 200 female sex workers (FSWs) in FCT, Nigeria

Factor	No. of FSWs	HSV-2 positive (%)
Age group		
15-18	08	02 (25.0)
19-22	40	14 (35.0)
23-26	74	29 (39.2)
27-30	46	18 (39.1)
31-34	32	12 (37.5)
Level of Education		
Cannot read and write	17	13 (76.5)
Primary school	31	21 (67.7)
Secondary school	82	27 (32.9)
Tertiary education	70	14 (20.0)
Location		
Central Area	41	09 (22.0)
Garki II	92	39 (42.4)
Wuse II	67	27 (40.3)
Resident Type		
Apartment	71	25 (35.2)
Family home	24	08 (33.3)
Brothel/Hotel	105	42 (40.0)
Marital status		
Single/cohabitation	149	59 (39.6)
Married	18	07 (38.9)
Divorced	28	08 (28.6)
Widow	05	01 (20.0)
Religion		
Christian	117	41 (35.0)
Muslim	52	16 (30.8)
Atheist	31	18 (58.1)
Total	200	75 (37.5)

*P>0.05

Table 2: Behavioural characteristics associated with HSV-2 seropositivity among 200 FSWs in FCT, Nigeria

Factor	No. of FSWs	HSV-2 positive (%)
Illegal drug user		
No	129	46 (35.7)
Yes	71	29 (40.8)
Blood transfusion		
No	191	68 (35.6)
Yes	09	7 (77.8)
Starting age in commercial sex		
=18	33	8 (24.2)
19-20	49	16 (32.7)
=21	118	51 (43.2)
Duration in commercial sex work (years)		
? 1	53	18 (34.0)
1-2	67	25 (37.3)
3-4	53	20 (37.7)
=5	27	12 (44.4)
Number of clients previous week		
=2	39	14 (35.9)
3-4	91	33 (36.3)
=5	70	28 (40.0)
Always used condoms with clients		
No	102	52 (51.0)
Yes	98	23 (23.5)
Vaginal douching		
No	133	51 (38.3)
Yes	67	24 (35.8)

*P>0.05

acquisition.

There was an increasing trend in the prevalence of HSV-2 infection with increasing age in this population. Similar findings have been made in several previous studies,^[1,10,23] which suggests that increasing age is a possible risk factor for HSV-2 infection and that HSV-2 infection is a lifelong infection with a high rate of transmission.^[8,24,25]

Findings from this study revealed a decreasing prevalence of HSV-2 infection with increase in level of education. These findings corroborate previous reports from Nigeria, China, Brazil, Croatia and Mexico.^[16,26,27] The level of education could be attributable to the well-known effect of ignorance in determining the distribution of disease. There will also be lower knowledge of STD and STD prevention, and may be associated with less frequent or less-proficient condom use. With respect to marital status, single FSWs could

be more promiscuous and involved in more indiscreet sexual behaviours that often characterize unmarried statuses, as recorded in previous research.^[1,28]

FSWs residing in Garki II and Wuse II had higher prevalence of HSV-2 than those living in Central business area. This can be due to the fact that Wuse II and Garki II are more congregated with residential buildings than Central business area. In the last few years, Abuja has seen a surge in the number of street walkers. From the highbrow areas like Maitama and Wuse 2 to the suburbs of Lugbe, Kubwa, Jabi and Utako, women on streets kerbs make passes at men as darkness covers. The more daring ones flag down vehicles.^[13] Furthermore, accommodations are generally more expensive in the later than the former. FSWs are able to cohabit or accommodate each other easily. With regards to the type of resident, FSWs living in Brothel/Hotel had higher prevalence of HSV-2. This

is true as they can easily be patronized by diverse groups of people, since Brothel/Hotel are known to be characterized by FSWs. Sometimes guests lodging can also access FSWs easily. Because FSWs participate in nocturnal social activities including parties and clubbing, they are easily attracted to reside in Brothel/Hotel.

Findings from our study further revealed higher prevalence of HSV-2 among FSWs in the study area with longer duration of employment (commercial sex work) and increased numbers of clients, which are significant risks for HSV-2 infection. This suggests that the numbers of partners per week and the numbers of years in sex work are the key sexual predictors of HSV-2 infection, and that older women are more likely to be positive for this incurable infection because of their greater exposure to sexual situations where the virus can be transmitted.^[16,29]

Although condom use was not a significant risk factor for HSV-2 infection among FSWs in the study area, consistent condom usage has been associated with decreased rates of HSV-2 infection. This is in consonance with other findings.^[16,30] The reasons for the lack of association may be related to inaccurate self-reporting, poor quality of the condoms leading to breakage, incorrect condom usage leading to condoms slipping off or overall condom usage that was not consistent enough to prevent transmission.^[16]

Vaginal douching was practiced by 33.5% of the FSWs in contrast with a report,^[16] where they reported the practice among 84% of the FSWs studied. It has been reported that those who douch were at two-fold greater risk of HSV-2 infection after adjusting for other key risk factors. Douching may remove normal vaginal flora, permitting the overgrowth of pathogens. It may also provide a pressurized fluid vehicle for pathogen transport, helping lower genital tract infections, ascend above the cervix into the uterus, fallopian tubes or abdominal cavity.^[16,31]

The high proportion of unrecognized HSV-2 infections suggests that clinical diagnosis and reported history of genital herpes will not identify the majority of the individuals with HSV-2 infection. HSV-2 serological screening programs should be considered in specific population groups at especially high risk of infecting others.

The high seroprevalence of HSV-2 infection found in the FSWs surveyed has public health implications FCT and possibly in Nigeria and other areas because FSWs could be a significant source of infection for the heterosexual population. Since most HSV-2 infections are asymptomatic, serological screening is necessary to identify those infected. The relatively high seroprevalence of HSV-2 in FSWs as recorded in this study is of particular concern because genital ulcers caused by HSV-2 facilitate HIV

transmission. Furthermore, HSV infections have also been linked with coronary heart disease whereby HSV-heat shock protein 60 IgG antibodies seem to have played an important role and Herpes Simplex has also been implicated in atherosclerosis through endothelial dysfunction.^[32-36] Some studies have shown HSV infected monocytes are related to the incidence of human coronary atherosclerosis.^[37,38]

Conclusion

The prevalence of HSV-2 infection among FSWs in FCT is high. This provides a useful epidemiologic signal for a possible impending spike in HIV incidence among FSWs and the general population. Targeted public health awareness campaigns and good health-seeking behavior on noticing genital rashes, urethral discharges, and vaginal discharges are recommended among the studied population.

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Utilization Of Health Posters And Referral System For Mental Health In Primary Health Centres In Northern Nigeria

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Abstract

Posters are recognized effective small media materials used in passing health education to clients in the health care settings. Disseminating mental health information through such a medium should be an indispensable component of Primary Healthcare (PHC) services, just as the two-way referral also forms an important part of it. This study explored the extent to which mental health posters are provided at the PHC centres as a means of mental health education to clients, with a view to calling for attention its design and display. The study also examines the referral services for mental health clients at PHC centres. This study is part of larger study. Qualitative research method was adopted for this study. Data were collected from a purposive sample of 28 participants between December 2014 and June 2015 in 47 PHC centres in three selected States in northern Nigeria. Data were collected through In-depth interviews and physical observations of all health education posters displayed at the PHC centres. Results show that PHC centres had various kinds of health information posters but none on mental health. However, only two PHC centres had mental health-related posters providers by NGOs. PHC service provider were equally ignorant of the need for mental health posters while authorities concerned seem not interested in mental health issues. Referral services for mental health were virtually non-existent in all the States covered by the study. The consequences of these are misconceptions, stigmatization, increasing prevalence of avoidance mental health disorders and poor inter-level service delivery. PHC coordinators, other stakeholders and relevant Agencies need to provide these services at the community level for the promotion of mental health and treatment of mental health challenges.

Keywords: *mental health posters, mental health education, northern Nigeria, Primary Health Care.*

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Introduction

Health information dissemination strategies include the use of posters, handbills, and stickers as well as the other print and electronic media to sensitize the community on health matters. Various researchers have documented laudable benefits of posters in promoting health awareness. In hospital settings, patients attested to reading and remembering the contents on waiting room posters, with notable increase in their awareness of health issues and reporting the waiting room as an ideal place to transmit health information and education through posters.^{1,2} Posters are also reported to make patients “forget their diseases” and reduce any anxiety that may be involved.² In their report, the displayed information was reported to enhance physician-patient relationship, encourage screening and easily address delicate health issues. In fact, Olugbile and Oluwatayo³ advocate that awareness campaigns via posters and fliers should be part of all health care programmes.

In mental health education, the place of posters to increase community awareness about mental health, muster support for those living with mental disorders and help to minimize stigma associated with mental illness and treatments has also been documented severally. For instance, Sanchez and Moges⁴ reported the high need of community awareness and stigma prevention using promotional materials like posters. The pivotal role posters, videos and fliers play in promoting and preventing mental illnesses has also been reported.⁵ Similarly, Eaton *et al*;⁶ emphasized that posters serve as intervention strategy to enhance the use of mental health services alongside speaking to community leaders and gatherings.

However, despite the widespread reported benefits of posters and advocacies in promoting mental health awareness via mental health posters, available evidence strongly shows that majority of the posters in the clinic waiting rooms and PHC settings are predominantly on maternal and child health (MCH)-related messages with only very few on substance use and violence.² Gureje *et al*;⁷ specifically recommend the display of mental health posters in various public places including clinics as an enlightenment strategy. The extent to which this has been done remains empirically unsubstantiated in many parts of Nigeria. This study explored the extent to which mental health posters are provided at the Primary Health Care (PHC) centres in three selected States in northern Nigeria. We

also explored the level of documentation of cases of mental health problems seen at the centres.

The results of this study should prompt the relevant authorities to sensitise PHC workers on the need for mental health posters and make same available for appropriate display at PHC centres. The results should also call for attention to guide the design, acquisition and display of these posters at relevant clinical areas and suggest the inclusion of mental health problems in their monthly reports.

Methods And Materials

Design: A cross-sectional study using qualitative approaches (In-depth Interviews and Observation) to broadly explore the phenomenon of mental health services at PHC settings. This study is part of a larger study on mental health services in three selected States in northern Nigeria.

Setting and Study Community/Site Selection: From three purposively selected States in Northern Nigeria (Gombe, Kaduna and Benue), 47 PHCs in nine Local Government Areas (LGAs) in the three Northern States were used for the study. A quota sampling approach was used to select the study sites. In the first stage, from northern Nigeria, three States (namely Gombe, Benue, and Kaduna States) were purposively selected to represent Northeast, North-central, and North-West geo-political zones respectively. This purposive selection of these States was premised on the type of mental health services available, the safety of the study area in view of the security situation in northern Nigeria at the time of data collection (November 2014 to May 2015), and the researcher's familiarity with the selected States.

The second stage involved dividing each State into three zones, based on the geo-political division in each state (using the Senatorial Districts); grouped into rural and urban Local Government Areas. All Municipal Councils (LGAs in State capitals) and local government headquarters were considered the urban LGAs while all others were rural. Each senatorial district has LGAs from which three were randomly selected.

In the third stage, three LGAs from each State were selected; that is, one LGA from each of the three senatorial districts in each of the three States. Apart from the municipal Councils and LGA headquarters purposively selected from the State Capitals and other LGAs randomly selected. This process generated a total of nine LGAs from the three states.

In Gombe State, Nafada LGA was so selected, but during the ethical review process, the Executive Secretary of the Gombe State Primary Health Care Development Agency (GSPHCDA) substituted Nafada LGA with Yamaltu-Deba LGA for security reasons. Kaltungo LGA was also purposively selected based on the presence of the College of Health Technology there.

Gombe Yamaltu-Deba and Kaltungo LGAs were thus selected in Gombe state for administrative and security reasons respectively.

In each of the selected LGAs, a list of functional PHC centres was obtained from the PHC coordinators. The actual sample for this study (i.e. the accessible population) was obtained from three LGAs in each of the three States (n=9 LGAs) selected from all the 23 LGAs in Kaduna, the 23 LGAs in Benue and the 11 LGAs from Gombe States (N=57 LGAs) which form the sample pool. The selected LGAs are shown in Table 1 below.

In the fourth stage, five (5) Primary Health Care centres purposively selected from each LGA [nine LGAs in all, three from each State i.e. 45 centres (15 from each state), from the list of functional PHC centres in the nine LGAs. Two other PHC centres (ABUTH Yakawa Comprehensive centre in Giwa LGA in Kaduna State, and Adoka PHC in Otukpo LGA in Benue State) were added. The Yakawa centre was added as a tertiary hospital PHC while Adoka was an NGO-based centre) to see the influence of these organisations on the community mental health services. From these 47 PHC centres, between two and five primary health care professionals (PHC care providers) (average per centre is 3) were selected from the functional PHC centres in the nine (9) LGAs (i.e. three LGAs from each State).

Study population/ Purposive Selection of IDI participants:

A total of 28 study participants was purposively selected. Participants were three directors/Executive Secretaries of PHC/ State Primary Health Care Development Agency (SPHCDA) or their representatives in each of the three State Ministries of Health, and nine (9) PHC Managers/Administrators at each LGA Headquarters (three each of the nine LGAs in the three States) and 16 PHC Coordinators were purposively selected from some of the PHC centres for IDIs (see Table 2) to provide key information on PHC mental health posters.

Research instruments and data collection:

Researcher-constructed Guides (proformas) for In-depth Interviews (IDIs) and Physical Observation Checklist were used to explore and observe mental health education posters displayed at all the 47 PHC centres. Data collection involved the principal author, and 15 trained research assistants. The IDIs were audio-taped and transcribed. Thematic clustering was done, supported with quoting some views of the study participants verbatim.

Data analysis: The data from the interviews were transcribed. Those conducted in local language (Hausa) were first translated into English and transcribed. The physical observations of posters displayed at the PHC centres were noted. All the data were analysed thematically. Some verbatim quotations from informants and pictures of the posters taken were

presented, under the following headings: 1) status of mental health posters. 2) Referral services for mental health cases and Database at PHC Level.

Ethical clearance: This for this study was obtained from the Health Research Ethics Committee (HREC) of Ahmadu Bello University, Zaria ((Ethical Clearance Certificate No: **ABUTH/HREC/K028/2014**) (Appendix 1). With this Ethical Clearance, permission was sought from coordinators of PHC at the State Ministries of Health, and Heads of the PHC centres at the respective LGA Headquarters and PHC centres. In Gombe State, the State Primary Health Care Development Agency in a Letter gave approval for the study (Appendices 2 and 3). Further, permission was also obtained from respective LGA PHC coordinators-in-charge of PHC facilities to collect data through a permission letters and ethical clearance. Individual key informants

Results

The informants included nine PHC coordinators and 19 Heads of PHC centres.

Status of Mental Health Education and Information services

Posters and clinic health education are the commonest means used at PHCs to give health information. Data from physical observations of all the PHC centres visited revealed that only two PHC centres had some posters related to mental health displayed at their centres. Observations of all the PHCs visited during this study revealed that there were no mental health posters in virtually all the PHC centres as later confirmed by all the key informants. However, only two centres (one in Otukpo and one in Vandeikya) in Benue State had three posters related to mental health displayed on their wall at the entrance of the centre (see figure 1). The posters were on appeals to assist patients suffering from psychosis, epilepsy and depression with the themes: “people with psychosis need your support”; “people with epilepsy need your support”; and “people with depression... need your support”.

Several IDIs and FGDs conducted confirmed the

scarcity of mental health posters in virtually all the other centres in the three States. PHC workers lamented the absence of such posters at the centres. The Head of a PHC stated that:

We don't have mental health posters. They are supposed to give us from the Ministry or Local Government but they have never mentioned it before”.

At another centre, when asked about the posters, said:

None, none at all! Even if for instance, if we request from LGA (i.e. the local health authority) and they don't have, they should request from State Government. And if they don't have them, they should request from Federal Government...that's how it should be (Gombe PHC coordinator).

Showing the researcher round the clinic, in all the centres in the three States, posters other than those for mental health were displayed in the clinics, some on even sterilisers (see Fig. 2). As shown in Figure 2, posters and stickers of other services at PHC centres, maternal and child health (MCH) services and some emerging and re-emerging diseases are lavishly displayed at every available space in the clinics, including on fridges and cupboards in offices.

Almost all the PHC coordinators and Unit Heads complained about the absence of the posters. A Head of PHC Clinic complained, pointing to other posters:

...we have posters on flaccid paralysis (polio), malaria, measles, yellow fever, cholera, meningitis, tetanus, even Ebola, but none on mental health. None! No one has ever been brought any mental health here.

Another confirmed this lavish display of other types of posters in the clinics, saying:

See posters on immunization, ANC (antenatal clinic) and so on but you are the first person to tell us about mental health posters since I have been in this job (sic).

On further probe on what efforts being made by the PHC workers to get the posters, many of them admitted

Table 1: The Sample of States, LGAs and their Populations

State	LGA	LGA Hqrts
Benue	Vandeikya	Vandeikya
	Makurdi	Makurdi
	Otukpo	Otukpo
Gombe	Gombe	Gombe (city)
	Yamaltu/Deba	Deba Habe
	Kaltungo	Kaltungo
Kaduna	Kachia	Kachia
	Kaduna South	Kakuri
	Giwa	Giwa

Source: Researchers' Sampling Procedure

Table 2: The Selected Key Informants per State

Key Informants	Gombe	Benue	Kaduna	Total
PHC Director/SPHCDA	1	1	1	3
PHC Managers at LGA Headquarters	3	3	3	9
LGA PHC Coördinators at Centre	5	6	5	15
Total	9	10	9	28



Figure 1: The only MH Posters sighted

lack of concern on the issue of mental health posters, as captured by a PHC coordinator who said:

Truly, truly, we have not made attempt to get any poster on mental health yet. But we will try and approach the Local Government, and hear what they (LGA administrators) will say – that is the only solution for now. We will request and we see whether they will look for some (posters) for us, maybe it is because the programme on mental health is not properly established.

A PHC coordinator even alleged that health administrators are not interested in mental health because it is not “lucrative.” This he explained to mean that NGOs are not sponsoring mental health programmes, so there is no money in it.

Other PHC workers, in some centres visited, even expressed surprise to hear about posters on mental health. At a PHC centre in Kaduna State, the Head of the Unit said:

That there should be posters for mental health; I have never heard it! Even the LGA has never mentioned it. You are the first person to come here to talk about it.

According to this informant, the issue of posters on mental health is completely a new and surprising PHC service.

In all other centres in Gombe and Kaduna, and most other parts of Benue State, similar complaints about the absence of these mental health information materials pervade the entire study areas apart from two centres in Otukpo and Vandeikya in Benue State. Similarly, it was also observed that mental health education is usually not part of the routine health education given to PHC clients in general and antenatal clients in particular (personal conversation with PHC Coordinators and ANC attendees).

Referral Services and Database for mental health problems at PHC Level

The referral system for mental health care from the Primary Care level to secondary/tertiary levels is

virtually absent in the study areas. PHC workers claimed that they refer clients suspected to be mentally ill to the next level of care but there is usually no feedback. The PHC coordinators and Unit Heads (those in charge of the day to day running of the Clinics) in the three states lamented the lack of this two-way referral system in PHC system. In Benue State, one PHC Unit Head complained:

In fact we have that problem. Anytime we refer up (i.e. to Secondary or tertiary level), they finish with the treatment and there is no feedback. They will not refer them (the patients) back (to PHC) again. That is not normal; at least, there should be a feedback to show us all they have done. But No, they don't.

A PHC coordinator in Gombe State said:

We take psychiatric cases to Gombe specialist psychiatry unit, but after treatment, we don't hear from the hospital again.

At another centre in Kaduna State, a health worker claimed:

We referred mental patients to Shika (i.e. the Teaching Hospital), but thereafter no feedback.

Although, health workers claim that they usually refer patients to General and Teaching Hospital/Specialist Hospital, those patients whom they claim to have referred were neither properly referred (i.e. no referral letter but being verbally told to go to the Teaching Hospital) nor documented in any record book in their clinics. In fact, in all the PHCs, there was no single record of mental health disorders documented, because the government was said not to have made any provision for reporting cases of mental disorders. A PHC coordinator claimed that this was because “*the Monthly Report Format from the Federal Ministry of Health has no provision for documenting mental illness.*” On viewing a copy of the said document from the Federal Ministry of Health, There was no column requiring the documentation of mental health-related problems. There is therefore a weak or no data base for mental health disorders at PHC level in virtually all the centres studied. Meanwhile the PHC providers were not willing to improvise other recording format for this purpose, but expected to be directed to do so either verbally or by including a section in the existing format for monthly report.

Discussions

Posters and clinic health education are the commonest means used at PHC centres to provide health information. Findings of this study indicated that mental health posters for public enlightenment are virtually non-existent. However, posters and stickers of other services (especially MCH) were lavishly displayed at every available space in the clinics, even on fridges and cupboards in offices (similar to findings by Ward and Hawlhorne¹). The non-availability of

mental health posters implies that promotive and preventive mental health services in almost all the 47 PHCs visited in the study area are virtually absent, despite reports on the dramatic efficacy of posters in the dissemination of information in many health situations even in stigmatized diseases like HIV/AIDS.^{1,8,5} Mimeo⁹ while discussing the effectiveness in passing information to lay people, emphasised that “*Posters can increase knowledge, change attitudes and alter behaviors.*” *With the absence of mental health posters at PHC level in the study areas, it appears that the knowledge, attitudes and behaviours towards mental health issues, mental illness and people living with mental health problems among community members would remain unchanged in these areas.*¹⁰ *This may partly explain the reported numerous mental health challenges in this same study community.*¹¹ The few posters found focused solely on appeals for curative and rehabilitative supports for patients suffering with mental disorders. None paid any attention to the primary mental health care i.e. the promotive and preventive measures.

This study also found lack of link between the PHC and other levels of health care (secondary and tertiary), as shown by the virtually absent referral services for suspected cases of mental health problems at the PHC centres. PHC workers claim to refer patients with mental health issues from their centres to the next levels of care (both secondary and tertiary), but never received any feedback on the referred cases. This negates PHC principle of two-way referrals mechanism.^{12,13}

Similarly, no record of the alleged referred cases was found in the all the centres. The claim that there is no existing format for entering such cases in the study areas, and hence no documentation, leaves so much to be desired. Findings of this study are contrary to the fundamental ideals of the PHC, which include providing mental health education (MHE) and referral services including for mental health.^{12,13}

Conclusion

The use of posters as a form of mental health education is not a common practice in the study areas. PHC service providers appear surprised to learn that there are posters on the promotion of mental health. The State Ministries of Health are said to have withheld directive on dissemination of mental health posters. Only glimpses of such informational materials from an NGO were spotted in just two centres in one of the three States. Many PHC workers lament the lack of mental health posters and the two-way referral services at PHC centres.

There is the need to liaise with relevant stakeholders to make mental health posters available as part of the day to day mental health education and awareness creation.

Relevant mental health professionals including mental health nurses, health educators, psychiatrists, health administrators, and experts in mass communication should form the team to guide the design, production, and display of these posters. PHC providers need to be sensitized on mental health posters. The two-way referral system as enshrined in PHC principles needs to be strengthened and carried out as outlined by both the referring PHC and receiving centres. There is also need to make the documentation of cases of mental health problems seen at PHC mandatory in all centres.

Acknowledgements

We thank the following for their various individual and collective contributions to the accomplishment of this study: John Solomon in Gombe, Mrs Cecilia Oduh in Otukpo Benue State, Idris Yahaya and Adamu Kassem in Zaria, Kaduna State. We also thank Ahmadu Bello University Teaching Hospital Health Research Ethics Committee and the Gombe State Primary Healthcare Development Agency for ethical approvals

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Paediatric Procedural Pain Management: A Review Of Theories And Research

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Abstract

Invasive procedures are major sources of pain and distress for children. Hence, it is imperative that it is properly managed to prevent short- and long-term effects of unmanaged acute pain. Despite the wealth of evidence on paediatric procedural pain management, it still remains sub-optimal in Nigeria and other developing countries.

This paper is a narrative review which seeks to analyse existing theories and research studies to provide an in-depth understanding about procedural pain and its management. Five databases were searched to identify relevant theories and studies.

While there is no model/theory that entirely explains the biopsychological aspects of procedural pain, existing models have emphasized that the parents/caregivers play a significant role in the effectiveness of procedural pain interventions. Also, there is a wide-range of pharmacological and non-pharmacological interventions that can be used to improve procedural pain management in Nigeria. A major barrier to the implementation of procedural pain interventions is cost. Hence, nurses and other health professionals should be educated on the use of cheap interventions such as music and toys. There is a need for more research on the effectiveness of non-pharmacological interventions, such as distraction.

Keywords: Paediatric pain, Procedural pain management, Theories of pain

Introduction

Painful procedures are common sources of anxiety and pain in children.^{1,2} These procedures range from needle pricks to bone marrow aspirations. Acute and chronic illnesses can require children to undergo numerous painful procedures for immunization, diagnosis and treatments.

A Canadian study demonstrated that 2987 children had undergone 18,929 pain procedures within 24 hours, that implies that averagely each child had approximately 6 painful procedures within 24 hours.³ Also, research studies have extensively demonstrated that invasive procedures are a major source of pain among children/adolescents in chronic conditions such as cancer.^{4,5} It is evident that children are subject to pain and anxiety from invasive procedures, hence it is imperative that procedural pain is properly managed.

Pain relief is closely associated with patient satisfaction; and it is considered as fundamental human rights.^{6,7} Nevertheless, it has been documented that in most parts of the world, pain is often poorly managed.^{8,9} Therefore, nurses and parents have to restrain a child during a painful procedure.¹⁰ Generally, in Nigeria, procedural pain management in children is poor. It is common to see nurses and parents restraining a child during a painful procedure. This can cause physical harm to the child. Hence, this current literature review seeks to provide in-depth understanding into procedural pain and its management by analysing existing theories and, primary and secondary research.

Methodology

Literature search was conducted in ScienceDirect, Google Scholar, PubMed and Web of Science. The following search terms were inputted into the databases: 'procedural pain', 'theories of procedural pain', 'procedural pain management' and 'paediatric pain management'. Relevant textbooks on paediatric pain management were also reviewed.

Definition of procedural pain

Prior to defining procedural pain, pain will be generally defined. According to McCaffery,¹¹ pain is defined as 'whatever the experiencing patient says it is, existing whenever he says it does' This definition rightly expresses the subjective nature of pain.¹² However, it limits the experience of pain to an individual's ability to communicate his/her experience verbally. Whereas it is evident that individuals, such as infants, can perceive pain despite their inability to communicate their experiences verbally.¹³ Also, the International Association for the Study of Pain (IASP)⁷ defined pain as 'the unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage'. This is a commonly used definition for pain.^{9,11,14,15} In the

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definition's additional comments, IASP recognize the subjectivity of pain, non-verbal ways of communicating pain such as facial expressions and the multidimensional aspects of pain including psychological causes.⁷ Nonetheless, Pasero, Paice and McCaffery¹⁶ challenge this definition and argue that pain is not determined alone by tissue damage, and exemplified that patients with non-malignant pain may experience pain without any tissue damage. Notwithstanding, both definitions present a physical explanation and the subjectivity of pain, which are important aspects of procedural pain. From this analysis, procedural pain can be defined as unpleasant sensory and emotional experience associated with actual tissue damage caused by an invasive procedure required for the prevention, diagnosis and treatment of any disease condition. Procedural pain is related to a wide range of medical and nursing procedures, including needle-related procedures, dressing of wounds and burns, and suturing of lacerations.¹⁷

Impact of procedural pain on children

Persistent and unrelieved procedural pain can be detrimental to children.¹⁸ Unfortunately, the management of many diseases requires a child to undergo various procedures for diagnosis, treatment and follow-up of the disease. As a result, children are at risk of physical, psychological and social effects of procedural pain.¹¹ Physically, persistent and unrelieved pain can lead to the plasticity of neurons which eventually results in the development of chronic pain syndromes.¹⁸ Psychologically, it can cause short-term effects (such as distress, night terrors and sleeplessness) and long-term effects (such as needle phobia, posttraumatic stress disorders and depression).^{6,18,19} Also, an increasing body of evidence has submitted that past memories of pain affect a child's reaction to subsequent painful interventions.¹⁹⁻²¹ Socially, it can alter the child's patient relationship with health-care providers and diminish compliance with medical advice.^{22,23}

The above-mentioned effects can result in prolonged hospitalization, increased rates of re-admission and out-patient visits, and increased health care costs.¹¹ Evidently, the consequences of unrelieved and persistent procedural pain negatively affect the child, his family, and even the healthcare services as whole. Moreover, pain relief is closely associated with patient satisfaction; and it is considered as fundamental human rights by pain researchers and specialists.⁶ Hence, it is imperative that procedural pain is effectively managed in order to improve their quality of life.

Theories and Models of Procedural Pain

As Cohen, Macleran and Lim²⁴ emphasize, it is

important to review and explore the biopsychological models of pain because they are important for the development of interventions and for guiding research. One of such models is the 'social-ecological framework for understanding procedure pain' which was developed by Kazak and Kunin-Batson.²⁵ Kazak and Kunin-Batson²⁵ propose that a child's procedural pain is influenced by three basic social systems in a bidirectional nature. The basic systems are: microsystem (child specific or intrapersonal factors; such as age, health, the pain experience itself and biology), mesosystem (child immediate social context; such as family, peers and hospital staff) and exosystem (social networks of parents, cultural beliefs, healthcare systems and public policy). They hypothesize the meso-and exosystems directly and indirectly influences the microsystem; however all three systems interact with one another.²⁶ This model presents a comprehensive description of the potential factors that can influence procedural pain. Notwithstanding, as Ridell et al²⁶ argue that it is impossible to scientifically test the dynamic interplay of the spheres illustrated in the model because of the large number of interactive possibilities that the different factors within the different spheres present.

Young developed a model, the Young's model of procedural pain, which seems to address the weakness of the previously discussed models of acute paediatric pain. This model acknowledges that procedural pain occurs in a distinct episode of time and it is influenced by pre-procedural factors such as individual factors, and cultural and familial factors; and that the cumulative impact of the procedure and pre-procedural factors continues to influence the child after the procedure (i.e. post-procedure). It clearly depicts the interrelationships between the potential variables within each of the phases of the procedural pain event. The factors that influence each of these stages were precisely indicated.

Furthermore, the gate control theory was explicitly incorporated into the model; thus, illustrating the influence of the pre-procedural factors on the central cortical control processes and the descending inhibitory mechanisms of the pain gate. Though this model provides clear avenues for empirical validation, Ridell et al²⁶ argue that the role of the child's caregiver seems to have been relegated to a peripheral role during the procedural phase. However, in a study²⁷, 73% of the children interviewed, verbalized that the presence of their parents lessened their pain.

In the social communication theory, Craig²⁸ expatiates on the role of the caregiver in a child's experience of pain. It postulates that there is a bi-directional relationship between a child's experience of pain and its expression; and the pain expression influences the caregiver's assessment of the pain which eventually influences the management of the pain.

Unlike the other models, it posits that specific biopsychosocial factors influences each stage of the pain sequence thereby, enhancing the possibility of empirically testing the relationships between the potential factor and that particular phase of the model. Notwithstanding, Ridell et al²⁶ argue that it has failed to provide a detailed information regarding the specific mechanisms influencing the interplay between the components of the model; whereas this is explicitly indicated in Young's model¹⁹.

Evidently, no model related to procedural pain entirely explains the influence of biopsychosocial factors on procedural pain. Also, the models seem to exhibit remarkable degree of agreement concerning the key biopsychosocial factors involved. A key distinction is the primacy of the caregiver, while most models place the influence of the caregiver in a social dimension; it is the social communication model that embeds them in a central role within a child's pain experience. Another key distinction is the direction of the influence of the potential biopsychosocial factors on the child's experience of painful procedures; this can be addressed by empirical testing of these models to identify the interplay of the various factors. A major criticism of these models is their failure to extensively elaborate or illustrate the influence of the developmental stage of a child on his/her pain experience. Furthermore, the magnitude of the influence that biopsychosocial factors have on children at different developmental stages of life could have been explored in these models; because little is known about the developmental transformation in the biological, psychological and social bases of the pain through infancy, childhood and adolescence, particularly through a longitudinal study. Notwithstanding, as Ridell et al.²⁶ assert, these models have posited potential variables which can be modified to improve the procedural pain experience of children.

Management of procedural pain

Procedural pain is often managed with pharmacological and non-pharmacological interventions or both and in some settings, no therapy is administered.^{29,30} Procedural pain management will be discussed under the following sub-heading: pharmacological pain management and non-pharmacological pain management.

Pharmacological pain management

Depending on the type of procedure, the use of pharmacological interventions can range from sedatives, local anaesthesia and even general anaesthesia.³¹ Numerous studies have strongly demonstrated their effectiveness.^{29,32-34} In a meta-analysis, amethocaine was deemed to be more effective than EMLA for needle-related pain.³⁵ Nevertheless,

these drugs can cause side-effects (ranging from minor to severe) which may be detrimental to the health of the child. Krauss and Green³⁶ further explained that the children undergoing mild-high levels of sedation and anesthesia are at risk of adverse effects such as respiratory distress. However, lately, adverse effects are not very common. Nevertheless, as suggested by some clinical guidelines, a particular drug for procedural pain management should be selected based on the level of invasiveness, frequency and intensity of the procedure and proper assessment of the condition of the child.^{22,37,38} More so, Krauss and Green³⁶ argue that not every procedure requires a pharmacological intervention; rather a non-pharmacological intervention which can also reduce adverse responses to procedures. Also, although these medications are effective; it has been reported that they do not entirely improve the painful experiences of children undergoing pain procedures.³⁹ Thus, clinical guidelines have recommended that both pharmacological and non-pharmacological interventions should be used to control procedural pain in children.^{22,37,38,40}

Non-pharmacological interventions

Non-pharmacological interventions fall under the large umbrella of complementary and alternative medicine, which includes therapies that are used as adjuncts or alternatives to conventional treatment. For procedural pain management, Krauss and Green³⁶ argues that, they can be used as an alternative in mildly painful procedures. In line with this, World Health Organization (WHO)²² convincingly recommends that needle procedures such as needle pricks should be managed with non-pharmacological interventions, however it should be used in addition to pharmacological interventions for more severe procedures such as lumbar punctures. There are numerous and different types of non-pharmacological interventions⁴¹. There is no universally-accepted classification; various classifications are present in literature.

A Cochrane review classify these interventions into psychological (for example; distraction and guided imagery) and non-psychological (for example; acupuncture). According to the Registered Nurses Association of Ontario⁴⁰, these interventions can be classified into physical (e.g.: massage) and psychological interventions (e.g.: distraction). Based on definitions, non-psychological interventions are the same as physical interventions. As Uman et al⁴¹ rightly submit, some interventions involve more than one process and, as a result they will fit into more than one category. For instance: blowing party blowers involves both physical and psychological processes thus can be categorized in both categories. Thus, Uman et al⁴¹ arguably state that the mutually exclusive classification

of non-pharmacological interventions will misrepresent the processes involved. Psychological interventions are the most commonly used therapies for procedural pain management.⁴¹

Psychological interventions, also known as cognitive-behavioural therapies, are aimed at aiding the child to develop and apply coping skills in order to adequately manage pain and distress and where appropriate (in terms of age), it helps him/her understand how thoughts and behaviours can influence their experiences of pain.^{31,41} They can be administered before (for example, education on the procedure), during (for example; distraction and hypnosis) and after (for example; positive reinforcement) a painful procedure.⁴² Whilst the efficacy of some interventions (such as suggestion and preprocedural education) remain elusive, others (such as distraction and hypnosis) have been proven and recommended by various guidelines and studies.^{38,40,43} Though distraction has been proven as an effective pain and distress management technique, Koller and Goldman³¹ suggested that the various types of distracters should be explored because they may not be equal in their ability to cause distraction. Therefore, a review on the various distracters was conducted.

Based on the review, it was evident that there are various distracters and the ever-increasing technology is making it difficult to have an exhaustive list of distraction techniques. Notwithstanding, research has been conducted on the following types: blowing of bubbles, video games, virtual reality, music, play, art therapy, interactive toys and parental distraction.⁴²⁻⁴⁷ The efficacies of some of these distracters have been strongly demonstrated whilst others remain inconclusive (for example: play). Nilsson et al.⁴⁷ demonstrated that virtual reality was an effective distracter for procedural pain. Other findings were consistent with this result.^{48,49} For music, Nguyen et al.⁴⁶ demonstrated it was effective in reducing pain and anxiety. For play, Windich-Biermeier et al.⁵⁰ demonstrated that play was effective in minimizing fear and distress however there was no significant difference in pain levels between the intervention and control group. Heden et al.⁴⁴ had the similar results. While Dahlquist et al.³⁹ demonstrated that play was effective in reducing pain. Evidently, some of these results are conflicting, however, these distracters are promising interventions for the management of procedure-related pain and distress.⁵¹ However, there are interventions that have been recommended by various guidelines for implementation in clinical practice.^{37,38,40} See Table 1 for the various pharmacological and non-pharmacological interventions and their appropriate age for implementation.

Factors Influencing the Implementation of Procedural Pain Management Cost

The cost of pharmacological interventions and some non-pharmacological interventions impede their usage in clinical practice. The cost of EMLA is \$56 in the USA. In developing countries like Nigeria, where 89 million people live on less than \$2 per day and parents struggle to buy antibiotics such as augmentin for \$5, it becomes impossible to buy EMLA for needle-related procedures. Hence, it is common to see children undergoing venepuncture without any form of pain relief. Also, non-pharmacological pain interventions such as virtual reality can be effective but it is expensive, thus it may not be financially feasible for hospitals in low-resource areas to implement.^{47,48} Though cost can be challenge, there is limited evidence to conclude that health professionals give parents the option to purchase these interventions for their children's procedural pain. This is important because, even in low-resource settings, there are parents who can afford these interventions. Hence, they should be informed. Also, healthcare professionals should employ the use of cost-effective interventions such as music, play and guided imagery.

Lack of knowledge of available procedures

Another salient factor is education. In a study⁵² at South-West Nigeria, it was reported that only 1 out of 232 healthcare professionals knew about the use of topical anaesthetics for paediatric procedural pain relief; and none of them had used it previously. Health professionals should be educated on the importance of procedural pain management through seminars and continuous development programmes. Pain management should be an integral part of undergraduate programmes for nurses and medical doctors. There are several on-line courses on paediatric procedural pain management which are recommended for nurses, doctors and other healthcare professionals.

Poor Staffing Levels

Another challenge arises with another influencing factor: staffing levels and workload of nurses. It is common for a nurse and two health assistants to be assigned to man a fully occupied 32-bedded ward on a shift. Nurses are often obligated to provide pharmacological and non-pharmacological therapy for pain relief. The huge workload can deter a nurse from providing optimal pain management using distraction. Hence, in addition to cost, nurses must explore the use of distracters that can be used by the patient without the presence of a nurse. Examples include: music, playing phone games and deep breathing exercises. Nurses should encourage patients to use these various distracters. More education is needed to train nurses and other health professionals on

how to administer these interventions.

Culture

Another factor worth considering is culture. There is evidence showing that culture influences pain expression and interpretation by caregivers, hence its management.^{53,54} In Nigeria, it is believed that a male's ability to endure pain without crying is a sign of strength. Also, there are beliefs that needle-related pain is normal and should be endured, hence less attention is given to procedural pain management. There is a need to raise awareness about the importance of procedural pain relief. It is imperative that parents understand that preventable pain should be prevented and not endured.

Conclusion

The aim of this review is to provide an in-depth analysis on procedural pain management. It is evident that it is necessary to improve procedural pain management in Nigeria and globally. Existing theories have emphasised the role of parents/caregivers in improving the pain experience of children undergoing painful procedures. Health professionals, particularly nurses, have a vital role to play in ensuring that children have access to cheap but effective pain management interventions. They should be educated periodically on various interventions for procedural pain management. Due to the low staffing levels, nurses should encourage the children/caregivers to use non-pharmacological interventions such as blowing bubbles and playing with toys. Also, there is a need to sensitize the parents/caregivers about the availability of procedural pain management interventions. They should be informed about all the available options so that they can choose an intervention that is suitable for the child, and within their financial means. There is a paucity of studies on procedural pain management in Nigeria. More studies should be conducted to evaluate interventions and pain practice in order to identify the barriers to effective implementation. Also, context-specific interventions should be developed to improve paediatric procedural pain management.

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