TRENDS IN PREVALENCE OF HIV INFECTION: A 4-YEAR REVIEW OF THE GENERAL POPULATION IN PLATEAU STATE, NIGERIA

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ABSTRACT

Background: Plateau state is among the HIV hot zones with HIV prevalence above national average and the 6th state with the highest HIV burden in Nigeria. The study sought to determined the trend of HIV prevalence in the general population and the pattern by age and sex in Plateau state.

Methodology: The study was a 4–year descriptive analysis of the trend in Prevalence of HIV in the general population of Plateau state, Nigeria based on the data generated between January 2012 and December 2015. The data on HIV services were managed through the electronic Nigerian National HIV/AIDS Response Information Management System (eNNRIMS) which was a web–based software. The data analyses were done using excel to obtain the proportions and trend of HIV prevalence in the general population and by year, age and sex.

Results: Out of a total of 495,718 tested for HIV, 30,450 people tested positive, with the highest (13.1%) HIV prevalence recorded in 2012 and the lowest (3.2%) HIV prevalence recorded in 2015. The age groups 25 – 49 years and 50 years and above accounted for higher HIV prevalence, and the female population had higher HIV prevalence for most of the age groups.

Conclusion: The HIV prevalence is on a downward trend with relatively less decline among the older female population in Plateau state.

Key Words: HIV, Prevalence, Infection, Trends, Plateau State

INTRODUCTION

In the past three decades, HIV has continued to spread and till date remained a major public health challenge impacting negatively on global agenda for development with more than 25 million lives claimed. [1] By the end of 2014, 36.9 million people were living with HIV and sub–Saharan Africa was the worst affected region with 25.8 million people living with HIV put at 66%. [2] Nigeria has a generalized HIV epidemic contributing 9% of the global HIV burden with 3.4 million people living with HIV and second to South Africa with the highest HIV burden worldwide. [3,4]

Globally, women living with HIV accounted for half of all HIV infected people and in many countries, HIV infected women outnumbered HIV infected men. In Nigeria, Studies on trend of Paediatric HIV showed that the total number of HIV positive children increased from 360,000 in 2009 to 430,000 in 2012. Besides, with an estimated 51,000 new child infections in 2013, Nigeria was therefore reportedly having the highest number of Paediatric HIV in the world. [5–7] In 2012 NARHS report, the national HIV prevalence rate was 3.4%, less than 3.6% reported in 2007. The HIV prevalence was higher among females (3.5%) than males (3.3%) and also highest among the 35–39 years' age for both sexes with 4.4% and lowest among the age 15–19 years with 2.9%. [8]

Most high HIV prevalence countries have generalized HIV epidemic and age–specific prevalence data showed a clear sex disparity in HIV prevalence by the age of 15 years. In Swaziland, where the adult prevalence is estimated to be the highest in the world at over 26% in 2012, a 2006–2007 data found that HIV prevalence in adolescents ages 10–14 years was low and similar to that of young children, but started to increased in adolescent girls age 15–19 years where it was 5 times as high as in boys of the same age. Nearly 40% of young women were HIV positive by the age of 20–24 years, rising to nearly 50% by the age of 25–29 years. [9,10]

In relatively high HIV burden African countries including Botswana, South Africa, and Uganda, a similar and worrying trend was shown with low HIV prevalence in early childhood for both sexes, which shifted with entry into adolescence accompanied by increased prevalence among females compared with males. [11,12] The gap continued to widen between the sexes during adolescence into young adulthood. HIV prevalence in Uganda was nearly double in adolescent girls aged 15–19 years (3.0%) compared with boys of the same age (1.7%). [13]

South Africa bears the worst HIV burden globally with a population of 52 million and approximately 5.7 million people living with HIV. [14] Because the high HIV burden was driven by heterosexual transmission, in the age group 15–49 years, an estimated 16.6% of people were infected with HIV; when compared with USA having a population of over 320 million people, its HIV prevalence was 1.2 million (about 3.7%) in all age groups and Incidence less than 50,000 persons per year. [14,15]

In Plateau state, a population based HIV seroprevalence survey was conducted in 2008 involving 5,021 study participants aged 15 years and above. A total of 245 (4.88%) were HIV positive with the female participants accounted for 180 (6.85%) HIV positive compared with 65 (2.27%) HIV positive in the male population. The age group 25–49 years had a total of 177 (3.53%) HIV positive with female population contributing 128 (4.87%) which was more than twice the proportion of male population put at 49 (2.1%). Similarly, the female participants in the age group 20–24 years and 15–19 years had 36 (1.37%) and 15 (57%) HIV positivity respectively and again doubling their male

participants for the same age group put at 8 (0.33%) and 3 (0.13%) respectively. [16]

Although ANC surveys are traditionally used in Nigeria to estimate HIV burden and are extrapolated for male population; groups outside the reproductive age are not represented as obtained in population based surveys; studies on trends in HIV prevalence in the population for both females and males and for all age groups would be strategic in informing HIV prevention policies and implementation of HIV/AIDS program in the state. The study aimed to determine the trend of HIV infection prevalence by age and sex between 2012 and 2015 in the general population in Plateau state.

Materials and Methods

The study was conducted in Plateau State, North–Central zone of Nigeria located between latitude 80 ^{0}24' N and longitude 80 ^{0} 32' and 100 ^{0} 38' East. The state is bounded in the North–East by Bauchi state, North–West by Kaduna state, South–East by Taraba state and to the South–West by Nasarawa state. It has an Area of 26,899 square kilometers and administratively divided into 17 Local Government Areas (LGAs). The population of the state from 2006 census was 1,598, 998 males and 1,607,533 females, and a total of 3,206,531. With an annual growth rate of about 2.7%, the projected population in the state was approximated to be 4,075,391 people in the year 2015. [17]

As of 2015, the HIV prevalence in the state was 5.9% indicating a reduction from 7.7% in 2010 which made Plateau state the 6th in the 12 states plus FCT with the highest burden (70%) of HIV/AIDS in Nigeria. Plateau state had 147,221 PLHIV as of 2011 with Implementing Partners (IP) including AIDS Prevention Initiative in Nigeria (APIN), Institute of Human Virology in Nigeria (IHVN), AIDS RELIEF and Family Health International (FHI 360) among others who supported the state Government in the HIV/AIDS response. Following rationalization of US Government supported IPs in 2012, APIN became the Lead IP in Plateau state and other IPs were assigned to lead other states. APIN supported Plateau state to scale up HIV/AIDS services in over 48 health centers which included Faith–Based health facilities, some key private health facilities and Local NGOs the worked in hard–to–reach communities.

The study was a 4–year descriptive analysis of the HIV prevalence in Plateau state, Nigeria based on the data generated between January 2012 to December 2015. Ethical approval was obtained from JUTH ethical review committee and authorization to use state data was obtained from State Ministry of Health. The data were collected on a continues bases from all health service delivery points and mobile or out–reaches in all the 17 Local Government Areas of Plateau state and with the target population being females and males of all ages (excluding pregnant women). The review was based on the diagnosis of HIV infections delivered by physicians and or laboratories which was entered in to the newly instituted monitoring and evaluation system in the state. In addition, the harmonization of the monitoring and evaluation system for data collection and reporting tools and template had been strengthened in the state.

The data on HIV services were managed through the electronic Nigerian National HIV/AIDS Response Information Management System (eNNRIMS) which was a web–based software. The data were captured into the HCT Tools (Registers) or source documents which included; HCT Register, Client intake form, Request and Result form, HCT worksheet and HCT monthly summary form with all the tools in hardcopies and domiciled at the service delivery point (SDP). The eNNRIMS was centrally

coordinated with hierarchy of privileges from the SDP, through the Local Government level, the state and the national levels. The infrastructure and capacity of Operators of the eNNRIMS were strengthened and with internet access to allow data entry and validation.

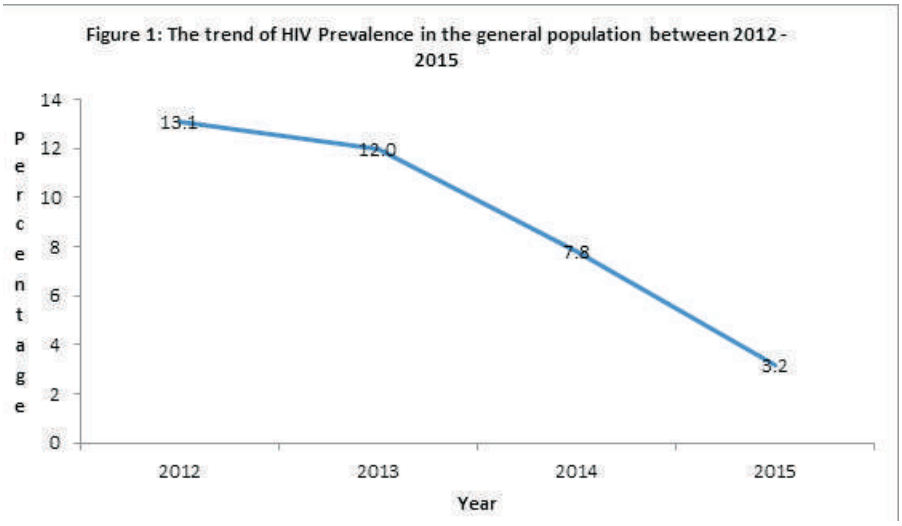
The data from the source registers were entered into the eNNRIMS at the facility level with first verification at the LGA, the second and third verifications done done at the state and national levels respectively. At the state level, monthly M & E meetings were held with participation of key M & E stakeholders from IPs, State Ministry of Health, Plateau State Agency for the Control of AIDS (PLACA), the Academia and Local Government officers. The monthly meetings were aimed at ensuring completeness of the data. Validation meetings were held quarterly to review source documents for HCT across SDPs against the electronic data platform for correctness and appropriateness. The same validations were held on semester bases at the national level with M & E officers from IPs, NASCP, NACA and state officers to finalized and confirmed the correctness of the data across states including Plateau state. Data was retrieved from the data base manually for analysis. The extracted data were analyzed using excel calculator. Results were presented by cross–tabulations for year, Age, and Sex. Also, the result was presented in line graphs for years to represent HIV prevalence in Plateau state.

Results

Out of a total of 495,718 people tested for HIV between 2012 and 2015, 30,450 people were positive for HIV infection thereby representing an average prevalence of 6.1% HIV infection in Plateau state. There was a steady decline in the HIV prevalence in the general population from 13.1% in 2012 to 3.2% in 2015, with the rapid decline recorded between 2013 and 2015 (Table 1, Figure 1).

Table 1: The Prevalence of HIV Infection of the general population between 2012 - 2015

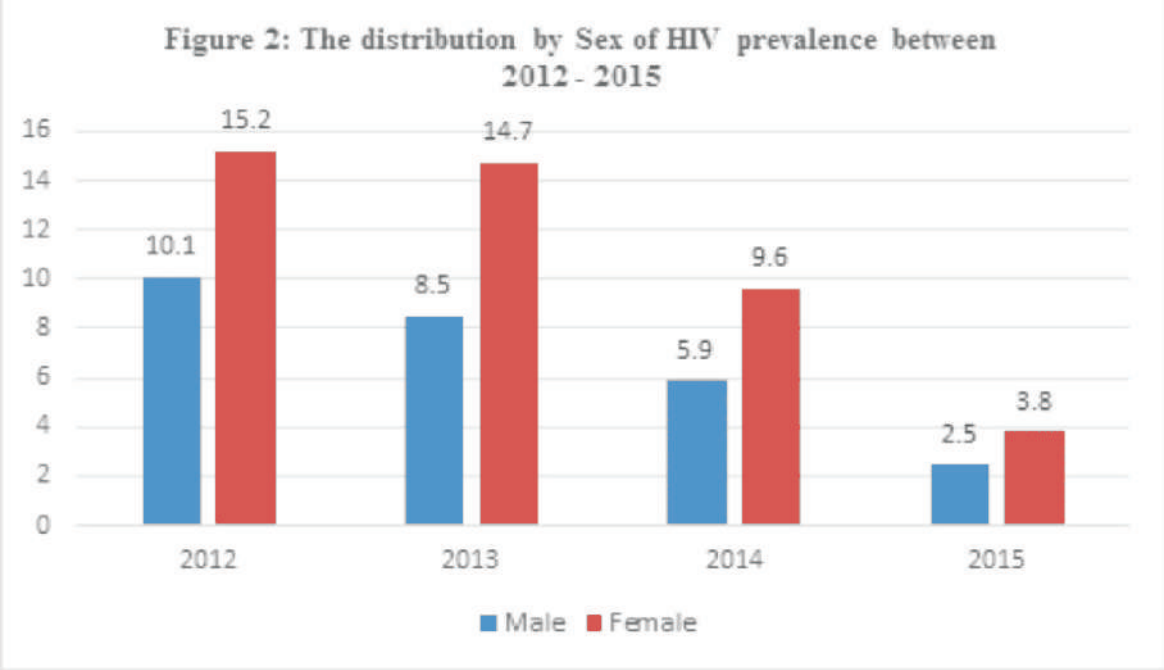
HCT	Years 2012 n (%)	2013 n (%)	2014 n (%)	2015 n (%)	Total n
Positive	5943 (13.1)	6498 (12.0)	9053 (7.8)	8956 (3.2)	30450
Negative	39423 (86.9)	47816 (88.0)	106735 (92.0)	271284 (96.8)	465258
Total	45366 (100.0)	54314 (100.0)	115798 (100.0)	280240 (100.0)	495718



The HIV prevalence was highest in the age group 50 years and above and followed by the age group 25 years to 49 years. The younger age groups had lower HIV prevalence especially age groups 20 years to 24 years and those less than 14 years (Table 2). Similarly, females had higher HIV prevalence from 15.2% in 2012 to 3.8% in 2015 compared to males who had 10.1% in 2012 and 2.5% in 2015 (Figure 2).

Table 2: The disaggregation by Age and sex of HIV Prevalence between 2012 - 2015

	Female				Male			
	2012	2013	2014	2015	2012	2013	2014	2015
	%	%	%	%	%	%	%	%
Age (years)								
0 – 14	12.1	5.7	3.1	1.1	9.6	5.4	2.7	0.9
15 – 19	26.6	8.0	2.4	1.5	8.0	2.5	1.1	0.8
20 – 24	7.3	11.7	4.0	2.5	11.3	4.6	2.2	0.8
25 – 49	18.2	17.6	11.6	4.5	9.8	10.0	6.6	3.0
≥ 50	29.4	12.7	6.6	2.5	15.2	9.8	5.3	2.3
Total	15.2	14.7	9.6	3.8	10.1	8.5	5.9	2.5



Discussion

Our study showed an average prevalence of HIV infection to be 6.1% with a downward trend from 13.1% in 2012 to 3.2% in 2015. The peak HIV prevalence of 13.1% in the general population was reported in 2012 which was higher compared to the earlier report where Plateau state was ranked 6th state with the highest (7.7%) HIV burden in the country after Benue (12.7%), Akwa-Ibom (10.9%), Bayelsa (9.1%), Anambra (8.7%), and FCT (8.6%) reported from the antenatal HIV seroprevalence study in Nigeria. [18] Most national HIV epidemics especially countries worst hit with HIV have stabilized or begun to decline. This is reported in the Nigerian

National Sentinel Survey with decline in prevalence for three consecutive periods; from 5.8% in 2001 to 5.0% in 2003 to 4.4% in 2005 and 4.1% in 2010. [18]

In addition, the female population had higher HIV prevalence compared to the male population in most of the age groups. This was similar with the 2012 NARHS report which reported higher prevalence of HIV among older age groups of 35 to 39 years in both sexes. [8] Similar findings were reported in an earlier study in Plateau state where female participants accounted for 180 (6.85%) HIV positive compared with 65 (2.27%) HIV positive in the male population. The age group 25–49 years had the a total of 177 (3.53%) HIV positive and female population contributed 128 (4.87%) which was more than twice the proportion of male population put at 49 (2.1%). Similarly, the female participants in the age group 20–24 years and 15–19 years had 36 (1.37%) and 15 (.57%) HIV positivity respectively and again doubling their male participants for the same age group put at 8 (0.33%) and 3 (0.13%) respectively. [16]

Patterns observed in a previous population based survey (NARHS 2007) shows that gender inequality is an important driver for the HIV epidemic. Prevalence rates were generally higher among females (4.0%) than males (3.2%). Findings also showed higher early vulnerability and infections for girls and women relative to boys and men. [18]

The findings from our study of higher HIV prevalence among older females of the reproductive age group is of public health concern. If specific health intervention programs targeting the female population are not put in place, the female population most of whom are sexually active would continue to infect the male population thereby increasing our HIV burden in Plateau state. The female population in the reproductive age group have higher tendency to accessed health care services compared to her male counterpart in the same age group. HIV services are integrated with maternal new born child health services, family planning services and sexual and reproductive health services where most of the beneficiaries are females. Also, the health seeking behavior of the female population is better compared to those of the male population, such that women are more likely to know their HIV status earlier than men and likely to be commenced on antiretroviral drugs when confirmed HIV positive to reduce the viral load.

The application of findings from the study would be limited considering the secondary nature of the data, and because the data is not segregated into individual subjects, no socio–demographics data was obtained for multivariate logistic regression analysis of determinants for HIV prevalence in the general population. However, these findings could be use at the policy level to strengthen strategies towards achieving global HIV targets in Plateau state.

Conclusion

The burden of HIV is decreasing in the general population in Plateau state but without major and targeted interventions, the female population would continue to serve as a major reservoir for HIV transmission in the state.

Conflict of Interest

The authors declare no financial conflict of interest.

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Use of Fibroscan in assessment of Hepatic Fibrosis in patients with Chronic Hepatitis B infection

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ABSTRACT

Introduction: Assessment of the stage of liver fibrosis plays a prominent role in the decision process of treatment in chronic viral hepatitis.

Objective: To determine the stage of fibrosis in patients with chronic HBV infection using fibroscan.

Method: This is a cross sectional descriptive study involving patients with CHB with a valid transient elastography (TE) measurement. Liver function test and platelet count was determined. APRI and FIB-4 were calculated and Spermans rank coefficient was applied for correlation of transient elastography (TE) with either serum biomarkers.

Results: 190 patients were enrolled, mean age 36.3years, 64.2% males and 89.9% were asymptomatic. Most of the patients 131(68.9%) had no significant fibrosis(F0,F1) while those with significant fibrosis and cirrhosis were 59(31.1%) and 23(12.1%) respectively. TE correlated significantly with APRI and FIB-4 ($r = 0.58$; $P < 0.001$ and $r = 0.42$; $P < 0.001$, respectively).

Conclusion: The prevalence of significant fibrosis and cirrhosis is high in this population

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Key Words: Fibroscan, Hepatic fibrosis, APRI, FIB-4.

1.0 INTRODUCTION

The Hepatitis B virus is a DNA virus that causes infection of the liver that can either be acute or chronic infection. Chronic Hepatitis B (CHB) infection can progress to liver fibrosis, cirrhosis and hepatocellular cancer. Majority of people affected are unaware of their hepatitis B virus (HBV) infection and therefore often present with severe fibrosis and cirrhosis. The population of people with CHB worldwide is about 250 million. Early diagnosis of liver cirrhosis in CHB patients is important because cirrhosis is an independent predictor of mortality. HBV infection is endemic in Nigeria with a prevalence of about 12.2%, but the prevalence varies among the geo-political zones. The sero-prevalence of HBV varies between regions in Nigeria. A prevalence rate of 5.7% from Ilorin,11.6% from Maiduguri, and 8.3% from Zaria.

Chronic viral hepatitis leads to fibrogenesis through increased synthesis of extracellular matrix component such as collagen and glycoprotein. Assessment of the stage of fibrosis or the presence of cirrhosis will often dictate treatment options as well as provide an overall prognosis for patients with chronic liver disease.

Liver biopsy has been the primary means of identifying fibrosis and monitoring for disease progression. However due the risk of potential complication and invasiveness of the procedure, noninvasive and reliable means of evaluating for the presence of fibrosis has been developed. Noninvasive methods apart from assessing liver fibrosis, can be used in monitoring patients response to treatment and progression of disease and determining prognosis.

Transient elastography(TE) utilizing fibroscan now allows for a rapid measurement of liver stiffness. Using an ultrasound transducer probe, vibration of mild amplitude and low frequency (50Hz) are transmitted through the liver tissue and this result in an elastic shear wave that propagates through the underlying liver tissue. The probe then utilizes pulse – echo ultrasound to measure its velocity. The velocity of the wave is directly related to tissue stiffness which correlates with fibrosis. Fibroscan is a very simple and safe technique that takes about 5 minutes and can be done in an out-patient setting.

OBJECTIVES: Aim of the work was to To determine the stage of fibrosis in patients with chronic hepatitis B virus infection using fibroscan.

METHODOLOGY

This is a cross sectional study conducted in Jos University Teaching Hospital. One hundred and eighty patients with CHB was recruited.

INCLUSION CRITERIA

1. Patients with chronic hepatitis B
2. Adults of both sexes aged 18years and above
3. Patient who give consent.

EXCLUSION CRITERIA

1. Patients with ascites.
2. Patients with BMI > 28kg/m^2.
3. Pregnant women.
4. Patients with significant alcohol ingestion i.e. $\geq$50g/day.
5. Patients with cholestasis.
6. Patients with ultrasound features of hepatic mass.

Consecutive patients seen at the medical out-patient of department (MOPD) or admitted into the wards of the hospital who meet the inclusion criteria but none of the exclusion criteria were recruited into the study. The data collection took place over a 6 month period from April to September 2015.

Medical history with special emphasis on: symptoms associated with CHB infection such as jaundice, easy tiredness (fatigue), unexplained loss of appetite, right upper abdominal pain, abdominal swelling, itching of the body and weight loss. Data on quantity and duration of alcohol ingestion and also use of HBV anti-viral medication and other medication for liver disease were obtained. Written informed consent was obtained from each study participant. The institutional ethical committee approved the study.

The serum samples was used to determine alanine aminotransferase(ALT), aspartate aminotransferase(AST), total and direct bilirubin, alkaline phoshatase, total protein, albumin and platelet count. AST, ALT bilirubin, alkaline phosphatase, total serum protein and albumin were tested with the auto-analyzer Hitachi 7600, Japan. The reference value was 0-40/L for ALT and AST. Platelet count was obtained using Sysmex routine blood test pipeline, Japan.

Liver stiffness measurement was performed using the fibroscan equipped with an M probe. Ten valid measurements was performed to examine a patient (the mean of the measurement's was displayed on the screen), examination with a success rates higher that 60% and an inter-quartile range >30% was considered.Patients were assigned to different fibrosis stages according to their TE results in conformity with previously published cut-off values.

- F0/F1: 0 – 7.49 Kpa
- F2: 7.5 –9.49 Kpa
- F3: 9.5 – 11.99 Kp
- F4: 12 –75 Kpa

Liver stiffness measurement of 7.5 and 12.0kPa will be used as cutoff for significant fibrosis and cirrhosis respectively.

APRI(aspartate transaminase platelet ratio index), was calculated using the following formula

$$\frac{\frac{ALT}{ULN}}{Platelet\ Count} \times 100$$

Upper limit of normal for AST is 40U/L
FIB-4 was calculated using the following formula
FIB-4 Age x $AST \div Platelet\ Count \times \sqrt{ALT}$

Statistical Analysis
Data obtained was analyzed using the Statistical Package for Social Sciences (SPSS) software version 20. Data will be represented using descriptive statistics such as tables and graphs. Spearman correlation coefficient (r) test was used to rank different variables against each other either positive or inverse. Student t-test was used for comparison of quantitative variable among more than two independent groups.

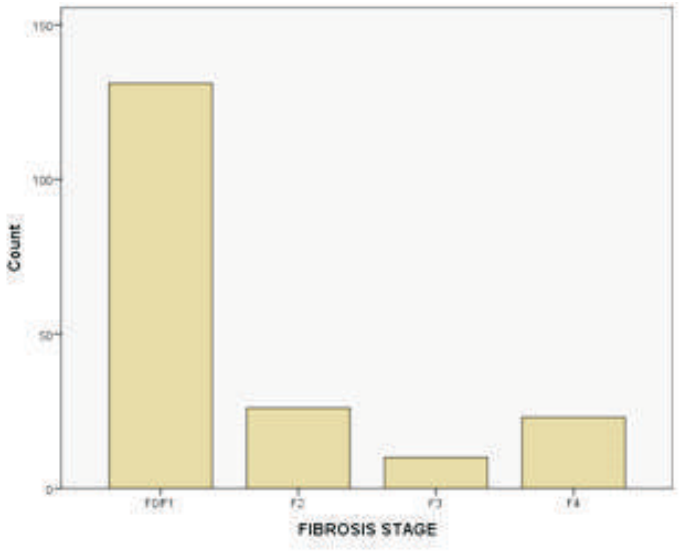
RESULTS
The age of the patients ranged from 18 years – 75years (median age 36.27year). The mean age was 36.3 years (SD = 11.4 years). The study population was made up of 122 (64.2%) males and 68 (35.8%) females. The male to female ratio was 1.8:1. Most of the patients in the study were asymptomatic accounting for 89.9% 0f the patients. Majority of the patients were HBeAg negative with 3.2% HBeAg positive.

TABLE 1: Clinical characteristics of the patients

Variable	Frequency	Percentage
SYMPTOMS		
FATIQUE	9	4.74
ABDOMINAL PAIN	7	3.68
ANOREXIA	3	1.58
WEIGHT LOSS	1	0.53
ASYMPTOMATIC	170	89.4

Most of the patients in the study were asymptomatic accounting for 89.9% 0f the patients.

Fig 1: Categorization of subjects into different levels of fibrosis stage



Categorization of subjects into levels of fibrosis stage.
Most of the patients 131(68.9%) had no significant fibrosis (F0/F1), while 26(13.7%), 10(5.3%) and 23(12.1%) had F2, F3 and F4 respectively. 59(31.1%) patients had significant fibrosis while 23(12.1%) had cirrhosis.

Table 2: Correlation of non-invasive serum marker with transient elastography

Variable	Correlation coefficient(Spearman)	P value
APRI	0.58	0.001
FIB-4	0.46	0.001

Both, APRI and FIB-4 were correlated with TE results in the overall cohort ($r = 0.58$; $P < 0.001$ and $r = 0.42$; $P < 0.001$, respectively). APRI is seen to have more correlation to TE compared to FIB-4 index.

APRI(aspartate transaminase platelet ratio index), FIB-4(fibrosis-4 index)

Table 3: Correlation of age and some blood parameters with results from transient elastography

Variable	Correlation coefficient(spearmans)	P value
AGE	0.03	0.94
SEX	0.12	0.09
TOTAL BILIRUBIN	0.151	0.038
ALT	0.347	0.0001
AST	0.511	0.0001
ALP	-0.09	0.906
INR	0.96	0.187
ALBUMIN	-0.181	0.013
PLATELET COUNT	-0.410	0.0001

In the overall cohort, liver stiffness results were correlated with AST ($r = 0.51$; $P < 0.001$) and ALT ($r = 0.34$; $P < 0.001$) levels. TE results were negatively correlated with albumin levels ($r = -0.18$; $P = 0.013$) and platelet count ($r = -0.41$; $P = 0.001$).). TE did not correlate with age, ALP and INR.

ALT(alanine transaminase), AST(aspartate transaminase), INR(international normalize ratio), PT(prothrombin time), ALP(alkaline phoshatase).

DISCUSSION

The use of non invasive methods for evaluating the stage of liver fibrosis in patients with CHB infection is now considered essential in the clinical evaluation and follow up of patients with CHB.

In this study we found that the prevalence of significant fibrosis and cirrhosis to be 31.1% and 12.1% respectively. The prevalence of significant fibrosis in this study is seen to be lower compared to other studies[7]. In contrast to a previous study done in Jos in which about half of the patients had HAI >7, this study has a lower prevalence of significant fibrosis. This difference might be as a result of some of the studies excluding patients without any histological grade of fibrosis (F0). It might also be as a result of the high number of asymptomatic patients (89.9%) in this study because patients with symptoms of chronic liver disease are more likely to have greater degree of fibrosis compared to asymptomatic patients. Our result is consistent with and complements those of previous studies that identified the prevalence of cirrhosis[7]. In a study by Ndububa et al 20.8% of the patients had cirrhosis, and all the cirrhotic patients were all symptomatic, but in this study not all the cirrhotic patients were symptomatic. A prevalence of 4.6% for cirrhosis was obtained in a study by Okeke et a which is much lower compared to the value in this study and this might be as a result of that study including only asymptomatic patients and also it may be due to the small sample size of that study.

In the present study, it has been shown that there is a significant correlation of fibroscan to APRI and FIB-4. The correlation in some studies showed a higher correlation but this study only showed a moderate correlation[7]. This finding may be partly due to the fact that this study included some CHB patients that were already on medication (livolin, silymarin, lamivudine, and tenofovir) that can affect the levels of serum AST and ALT thus affecting APRI FIB-4 values. Another reason could be due to the different population of patients in the studies, in those studies the patients had HCV or HIV/HCV co-infection while this study only included patients with CHB. But the correlation obtained in this study showed a result similar to that obtained by Aurora et al even though the study population was CHC patients. However, the Spearman's correlation coefficients suggest that APRI correlates more to fibroscan compared to FIB-4 (r = 0.57 and 0.47 for APRI and FIB-4 respectively which is the case most other studies[7]. But this is in contrast to a similar study by Ma et al, were FIB-4 was seen to be more significantly correlated with fibrosis stage compared to APRI. The exclusion of patients with no fibrosis(F0) in that study may account for this difference.

The study also demonstrates that fibroscan correlates significantly with some biochemical and haematological markers of chronic liver disease such as ALT,AST, total bilirubin, albumin and platelet count. Some study also showed a similar correlation with blood markers[7]. These correlations may be due to:

- Elevations in AST more than ALT have been associated with more advanced fibrosis and are in part related to delayed clearance of AST relative to ALT or to mitochondrial injury associated with more advanced fibrosis.
- Decrease in platelet count may be due to decrease *platelet mean lifetime, decrease thrombopoietin production and portal hypertention.*
- Serum albumin decreases with the increase of fibrosis and cirrhosis, the decrease in serum albumin correlates with the chronicity of liver disease.

Conclusion

The prevalence of significant fibrosis is high in this population (31%) measured with TE and the prevalence of cirrhosis is 12%. TE can be used as a non invasive alternative to liver biopsy to stage fibrosis in patients with chronic hepatitis B

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ANAEMIA AND ITS PREDISPOSING FACTORS IN PRE-DIALYSIS CHRONIC KIDNEY DISEASE PATIENTS IN JOS, NIGERIA

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ABSTRACT

Background: Chronic Kidney Disease (CKD) is a rising global health problem. The association of CKD with anaemia, which causes are multifactorial, portends a poorer prognosis. When diagnosed and treated, CKD patients with anaemia experience improved cognitive function and quality of life. We determined the prevalence of anaemia and associated factors among pre-dialysis CKD patients in Jos.

Methods: A cross-sectional study was carried out in the Jos University Teaching Hospital (JUTH) from September 2016 to May 2017 involving 55 CKD patients enrolled consecutively. History, physical examination and laboratory investigations (full blood count by automated haemato-analyser, reticulocyte count by manual supravital stain, serum creatinine by Jaffe reaction) were performed on all patients. The obtained data was analyzed using Epi Info verison 3.5.4 and p values <0.05 were considered statistically significant.

Results: The mean age of the CKD study population was 47±13years. The mean values for haemoglobin (Hb) concentration, mean cell volume (MCV) and mean cell haemoglobin (MCH) were 11.89±3.01g/dl, 86.6±51.2fl and 27.87±8.89pg respectively. The mean white blood cell (WBC) and platelet counts were 6.22±2.42 $X10^9$/L and 283±137 $X10^9$/L respectively. The mean reticulocyte production index was 1.2±1.5%. The prevalence of anaemia among CKD patients was 54.5%. Factors associated with anaemia were aging, female gender, history of diabetes mellitus and declining eGFR.

Conclusion: The prevalence of anaemia in pre-dialysis CKD patients in JUTH is high. It is recommended that CKD patients be evaluated routinely for the possible factors that may predispose or predict anaemia.

Conflict of interest: Nil

Key words: Chronic kidney disease, anaemia

Introduction

Chronic kidney disease (CKD) is a rising global health problem. Approximately 500 million individuals globally have CKD, a number that translates to about 1 in every 10 adults been affected.[1] The prevalence of CKD is reportedly 10.4% in Ilesha, South-Western Nigeria.[2] The rise in CKD prevalence can be linked to other non-communicable diseases such as chronic hypertension and diabetes mellitus which are also on the increase in recent times.[3] In Nigeria and other developing countries, this burden is even higher due to the high cost of care required by CKD patients. Majority of these patients cannot afford renal replacement therapy which is the present long term treatment for CKD.[4] They therefore come down with complications of the disease earlier than their counterparts in the developed world. These complications may be cardiovascular, haematological, gastro-intestinal or endocrine.[5] Various haematological complications have been associated with CKD, foremost being anaemia. The incidence of anaemia was found to increase with progression of the disease.[6] Other predisposing factors previously identified include increasing age, female gender and certain drugs. A prior history of diabetes mellitus also increases risk of developing anaemia in CKD patients. Anaemia is a contributing factor to many of the symptoms associated with reduced kidney function.[7] It also has direct adverse cardiovascular disease consequences.[7] Patients with anaemia due to CKD are at increased risk of hospitalization and lengthy hospital stay, reduced quality of life and increased mortality.[8] Treating anaemia in CKD patients reportedly has benefits such as improved physical performance, immune function, thermoregulation and cognitive function.[9, 10] These make it important to prevent, identify and treat CKD patients with anaemia.

Materials and methods

Patients were consecutively enrolled from the Nephrology clinic in JUTH after ethical approval was granted and informed consent to participate in the research was obtained. These patients were already diagnosed and staged following estimated glomerular filtration rate (eGFR) calculation using the CKD Epidemiology Collaboration (CKD-EPI) equation. Earlier evidences of kidney damage were also documented from urine, blood and or by imaging studies. For the purpose of the study, a repeat serum creatinine was however done to confirm present CKD stage. Exclusion criteria included prior history of dialysis and recent blood transfusion (<3months). Relevant history and physical examination findings were documented in a case record form. Venous blood was obtained into ethylene di-amine tetra-acetic acid (EDTA) anticoagulated bottle aseptically for immediate automated full blood count (Sysmex KT 2000-i1 Haematology auto-analyzer) while peripheral blood film was also made for quality control. A manual reticulocyte count (supravital stain technique) was done and reticulocyte index was calculated as:

$$= \frac{\text{Observed reticulocyte \% x Measured Hb (g/dL)}}{\text{Expected normal Hb for patient (g /dL) x Correction factor for premature release}}$$

All blood films were reported by trained haematologist at the hospital□s haematology laboratory. Anaemia was defined using World Health Organization (WHO) criteria, <13.0g/dl for men and <12.0g/dl in non-pregnant women {mild anaemia at Hb concentration 10.0-12.9g/dl for men and 10.0-11.9g/dl for non-pregnant women; moderate anaemia at Hb concentration 7.0-9.9g/dl and severe anaemia at Hb concentration <7g/dl for both genders}. The obtained data was analyzed using Epi Info verison 3.5.4 and p values <0.05 were considered statistically significant.

Results

We evaluated a total of 55 pre-dialysis CKD patients, comprising 20 males and 35females, between September, 2016 and May, 2017. Their clinical and laboratory data are presented in Table 1. The mean (± SD) age of the study population was 47±13years with M: F ratio of 1:2. Identified aetiologies for CKD were hypertension (38.2%), diabetes mellitus (32.7%), chronic glomerulonephritis (18.2%) and others (10.8%). Common physical examination findings included pallor (41.8%), pedal swelling (25.5%) and facial swelling (14.5%). Some drug classes used by the patients were angiotensin converting enzyme inhibitors [ACEIs] (67.3%), calcium channel blockers [CCBs] (63.6%), Diuretics (67.3%), beta blockers (23.6%) and angiotensin receptor blockers [ARBs] (18.2%). The aetiology of CKD and distribution of patients among CKD stages are shown in Figure1 and 2 respectively. The mean values for Hb concentration, MCV and MCH were 11.89±3.01g/dl, 86.6±51.2fl and 27.87±8.89pg respectively. The mean WBC and platelet counts were 6.22±2.42 $X10^9$/L and 283±137 $X10^9$/L respectively. The mean reticulocyte production index was 1.2±1.5%. The prevalence of anaemia among CKD patients was 54.5%. This comprised mild anaemia (27.3%), moderate (20%) and severe anaemia (7.2%). Peripheral blood film findings were predominantly a normocytic normochromic red cell picture, with microcytic hypochromic and macrocytic red cells seen in 10.9% and 7.3% of patients respectively. Other findings were burr cells, schistocytes and target cells. There was a negative correlation between age and haemoglobin concentration ($r= -0.17$; $p= 0.20$) though not statistically significant. There was a statistically significant difference in haemoglobin concentration between males and females ($X^2= 10.48$; $p= 0.02$). The prevalence (but not the severity) of anaemia was worse in females than males. Among the CKD patients, there was a statistically significant, negative association between haemoglobin concentration and diabetes mellitus as the aetiology of CKD when compared to other CKD aetiologies ($X^2= 11.02$; $p= 0.01$). The frequency of anaemia among CKD patients with diabetes mellitus (61.1%) was higher than in others without diabetes mellitus (43.2%). There was no statistically significant difference in the haemoglobin concentration of CKD patients who used ACEIs compared to those who did not ($X^2= 43.65$; $p= 0.49$). The prevalence of anaemia in CKD patients on ACEIs was 54.1% while it was 55.5% in those not on ACEIs. There was also no statistically significant difference in the haemoglobin concentration of those who used ARBs and those who did not ($X^2= 48.28$; $p= 0.30$). The prevalence of anaemia among CKD patients on ARBs was 50% as opposed to 55.6% in those who were not on ARBs. There was a positive correlation between haemoglobin concentration and eGFR which was statistically significant ($r= 0.51$; $p< 0.01$). This is represented in Figure 3.

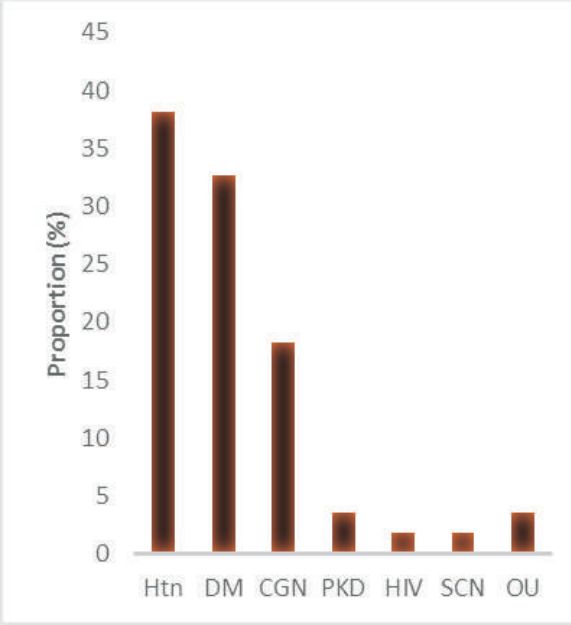
Table 1: CLINICAL AND LABORATORY DATA OF PATIENTS

Variable (mean±SD)	Males (n=20)	Females (n=35)	p
Age (years)	48±15	47±12	0.73
Blood pressure (mmHg)			
Systolic	126±21	140±29	0.06
diastolic	82±13	86±16	0.34
BMI (kg/m^2)	24.7±5.8	26.6±6.3	0.27
eGFR (ml/min/1.73m^2)	41.4±25.5	31.5±18.1	0.09
Hb concentration (g/dl)	12.7±4.1	11.4±2.1	<0.01
WBC (x10^9/L)	7.0±3.0	5.7±1.9	0.05
Plt (x10^9/L)	302±172	290±109	0.75
RDW (%)	15.6±3.6	15.5±2.5	0.93
MCV (fL)	81.3±4.8	78.9±8.0	0.23
MCH (pg)	26.8±3.1	26.8±2.5	0.97
RPI (%)	1.5±2.1	1.1±1.1	0.31
Anaemia*	9(45)	21(60)	
Mild	4(20)	11(31.4)	
Moderate	2(10)	9(25.7)	
Severe	3(15)	1(2.9)	

*= (n,%)

All CKD patients in CKD class two had a normal haemoglobin concentration. Mild anaemia was observed in CKD class three, four and five at 40%, 42.9% and 7.7% respectively. Moderate anaemia was seen in CKD class three, four and five at 20%, 14.3% and 38.5% respectively. Severe anaemia was noted in only CKD class three (5%) and class five (23.1%) CKD patients.

FIGURE 1: AETIOLOGY OF CKD AMONG THE STUDY POPULATION



KEY

Htn: Hypertension

DM: Diabetic nephropathy

CGN: Chronic glomerulonephritis

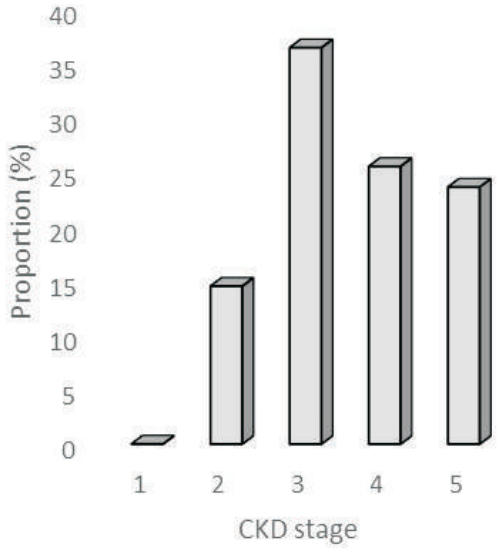
PKD: Polycystic kidney disease

SCN: Sickle cell nephropathy

HIV/AIDS: Human immunodeficiency virus infection/Acquired immune deficiency syndrome

OU: Obstructive uropathy

FIGURE 2: EGFR CLASS DISTRIBUTION OF STUDY POPULATION



KEY:
1= GFR >90ml/min/1.73m^2
2= GFR between 60–89ml/min/1.73m^2
3= GFR between 30–59ml/min/1.73m^2
4= GFR between 15–29ml/min/1.73m^2
5= GFR <15ml/min/1.73m^2

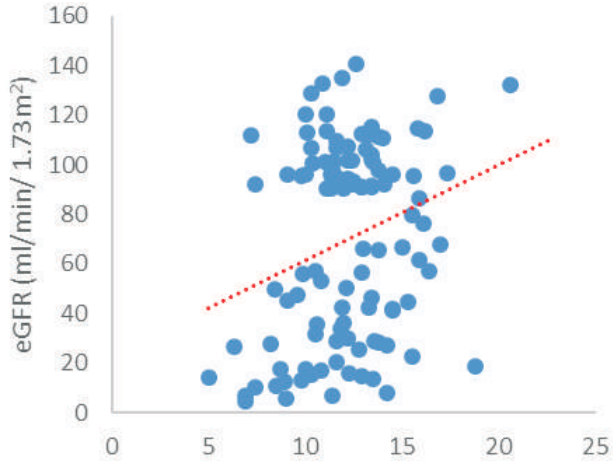


Figure 3: Correlation of eGFR/Hb

Discussion

The prevalence of anaemia among CKD patients in this study was as high as 54.5%. There were similar reports from developed countries such as Catalonia, Spain (58.5%), North Korea (44.9%) and China (51.5%).[11–13] However, lower values were noted in the National Health and Nutritional Examination Survey (NHANES) in USA (15.4%) and in a cohort study in Japan (32.3%).[14, 15] Higher values were observed in Africa and Nigeria previously. Amoako *et al* found out that 86.7% of CKD patients in Ghana had anaemia at presentation.[16] In Enugu–Nigeria, Ijoma *et al* reported that 77.5% of CKD patients were anaemic and 94.3% of end stage renal disease patients in Port Harcourt had anaemia as stated by Wokoma *et al*.[6, 17] These studies included patients who were already on dialysis as well as a high number of patients with advanced renal disease. These may explain the higher values as compared to this study which focused on pre–dialysis CKD patients. However, Akinsola *et al* in Ile–Ife, southwest Nigeria, who studied 37 pre–dialysis CKD patients found comparable results to that of this study.[18]

A predominantly normocytic normochromic red cell picture in this study is as expected in most chronic disorders and similar to the finding of Akinsola *et al.*[18] Also, 29.1% of patients had a microcytic hypochromic picture which may depict on-going iron deficient erythropoiesis Those patients (7.3%) who had a macrocytic blood picture may require further investigations to confirm Vitamin B12 and folate deficiency. Possible causes of these include malabsorption, uraemia-induced inhibition of erythropoiesis as well as disordered iron homeostasis.[19]

A negative correlation between age and haemoglobin concentration ($r = -0.17$; $p = 0.20$) was noted in this study. Though not statistically significant, this is expected physiologically, as the bone marrow haemopoietic capacity reduces with age due to marrow replacement by adipocytes.[20] Among CKD patients, Chen *et al* equally found an increase in anaemia with age when they compared younger and older adults in China.[21]

In this study, there were more females with mild and moderate anaemia, while severe anaemia was more in males. This is not in total agreement with most reports. Ijoma *et al* found that the frequency of anaemia was higher in females than males and this was uniform across all forms of anaemia and CKD classes.[6] The finding of this study was a statistically significant difference in haemoglobin concentration between males and females ($X^2 = 10.48$; $p = 0.02$). Due to menstrual blood loss as well as events accompanying parturition and lactation, adult females may also be more anaemic than adult males.[22, 23] These influences in women may be heightened by comorbidities such as CKD making them more affected by anaemia than their male counterparts.

There was no statistically significant difference in the haemoglobin concentration of CKD patients who used ACEIs compared to those who did not ($X^2 = 43.65$; $p = 0.49$). The prevalence of anaemia in CKD patients on ACEIs was 54.1% while it was 55.5% in those not on ACEIs. There was also no statistically significant difference in the haemoglobin concentration of those who used ARBs and those who did not ($X^2 = 48.28$; $p = 0.30$). The prevalence of anaemia among CKD patients on ARBs was 50% as opposed to 55.6% in those who were not on ARBs. These drugs (ACEIs and ARBs) are known to induce anaemia by sparing a circulating natural inhibitor of the bone marrow, which is usually metabolized by angiotensin converting enzyme (ACE) which they inhibit.[8] In a meta-analysis by Cheungpasitporn *et al*, an association between anaemia and the use of ACEIs and ARBs was documented.[24] They concluded with a recommendation of routine monitoring of haematological parameters in the concerned patients.[24] In a study on diabetic CKD patients, Inoue *et al* found that only ARB use (but not ACEIs) was associated with modest decrease in haemoglobin concentration.[25] Also, in a study on the effect of ACEIs and ARBs on haemoglobin level, Ajmal *et al* opined that these drugs be used with consideration especially in patients already at risk of developing anaemia.[26] This includes patients with diabetes mellitus and hypertension who formed majority of CKD patients enrolled in this study. The smaller sample size of this study compared to that in the above reports may account for the difference in these findings. There was also no local data for comparison. However, this study revealed that the prevalence of anaemia in CKD patients on ACEIs was higher than in those on ARBs, a finding in keeping with that of Ajmal and his colleagues.[26]

Wokoma *et al* and other researchers reported a positive correlation between eGFR and haematocrit.[6, 8, 17] This was at par with the finding of this study which showed a positive correlation

between haemoglobin concentration and eGFR among CKD patients (r= 0.5, p<0.01). Due to worsening renal function, it is expected that the incidence and severity of anaemia should rise because of the declining kidney□s role in erythropoietin synthesis.[27] It is therefore not surprising that the enrolled CKD patients in class five had a higher burden of moderate and severe anaemia than those in classes three and four. Worthy of note is the finding of a normal haemoglobin concentration among all those in eGFR class two. Adejumo *et al* had a similar experience and reported the prevalence of anaemia increased across the CKD classes of their study participants.[28] Ijoma *et al* had in an additiona lwork reported that the severity of anaemia worsened with decline in eGFR just as observed in this study.[6]

Barbieri *et al* stated that CKD patients with diabetes mellitus had the highest risk of developing anaemia.[29] Poor glycemic control and increased risk of cardiovascular disease have been implicated for this additional risk in diabetics.[30] The prevalence of anaemia in diabetic patients with CKD in this study was 61.1% while 43.2% was the case in others without diabetes mellitus. A statistically significant difference in the haemoglobin concentration when comparing those CKD patients with and without diabetes mellitus was found (X^2= 11.02; p= 0.01). This was similar to what Adejumo *et al* found when they compared diabetics with renal insufficiency and non-diabetic controls.[30] Several reports of studies outside Nigeria concurred with this finding.[31,32]

Conclusion

The prevalence of anaemia in pre-dialysis CKD patients in JUTH is high. Predisposing factors include aging, female gender, history of diabetes mellitus and a declining eGFR. It is recommended that anaemic CKD patients be screened routinely for the possible aetiology.

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SUICIDE RISK AMONG PSYCHIATRIC IN-PATIENTS IN NORTH-CENTRAL NIGERIA

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Background: Over the last 45 years, mortality due to suicide has increased in some developed and developing countries among both adults and young people. Suicide has also been reported to be high for individuals with substance abuse, mood and personality disorders, and relatively low rates were reported for patients with anxiety disorders. This study was therefore to determine the socio-demographic and clinical factors associated with the risk of suicide among psychiatric in-patients in North-Central Nigeria.

Objective: The aim of this study is to look at the socio-demographic and clinical correlates of having suicide risk among psychiatric in-patients.

***Method*:** This is a cross-sectional descriptive study conducted on 112 in-patients admitted in the psychiatric wards of BSUTH Makurdi, FMC Makurdi and JUTH Jos during the study period of July to September, 2017. Every consecutive in-patient who consented for the study was assessed with a proforma carefully designed by the authors to measure socio-demographic and clinical attributes. Suicide risk was determined using the 'Suicidality Module' of Mini International Neuropsychiatric Interview (M.I.N.I.).

***Results*:** Forty-five (40.2%) were males while 67(59.8%) were females. The mean age was 36.98 ±11.09 years, fifty−four (48.2%) subjects were still married at the time of the study. Eighty subjects representing 71.4% of the respondents reported having low (46), moderate (16) or high (18) suicide risk. Having a risk of suicide was significantly associated with the history of default (p=0.001), previous episodes of illness (p=0.005), co-morbid diagnosis (p=0.001), long duration of illness (p=0.001), and not having a good relationship with sexual partner (p=0.002).

***Conclusion*:** The study justifies the need for the assessment of suicide risk among in-patients with high degree of suspicion.

Key Words: Suicide risk, in-patient, correlates

INTRODUCTION

Over the last 45years, mortality due to suicide has increased in some developed and developing countries among both adults and young people[1,2].

As deaths rates decline for many medical conditions, suicide rates have risen approximately 60% over this 45 year period with yearly estimate of 1million suicides worldwide[3].

Approximately 25–40% of suicide victims are known to be in contact with psychiatric services in the year before death[4], 14% received in–patient care during this year and around one–fifth of these deaths occur while in hospital[5].

The clinical decision to admit a psychiatric patient to hospital is primarily based on judgment about dangerousness to self and others, and the patient's safety is one of the prerequisite for in–patient care in a psychiatric ward.

Clearly, in supporting such an admission, the patient's family and friends expressly assume that the patient will be protected from harm, including harm to self and this protection will extend for some reasonable time, and into the days after discharge.

The effective assessment of suicide risk is dependent on several factors like the availability of sensitive and specific measures of long term risks factors, the presence of short term warning signs and an appreciation for the complexity and variability of suicide risk over time.

Unlike many other diagnostic procedures that assess relatively stable phenomena, we are yet to obtain a test that accurately identifies the emergence of suicide behaviour. Thus, despite decades of research, the accurate prediction of suicide and suicide attempts remain elusive. Therefore, the American Psychiatric Association (APA) Guidelines on Suicide Behaviour concluded that, predicting suicide appears impossible in large part due to the rarity of suicide even among high risk individuals such as psychiatric in –patients[6]. Also, it is pertinent to note that, the longitudinal prediction of suicide using variables such as psychiatric diagnosis, demographic and self reported psychological states consistently yield high false–positive prediction rates, therefore, limiting their predictive values[7,8].

Retrospective and psychological autopsy studies however, indicate that a diagnosable mental illness is present in at least 90% of all completed suicide[9,10]. Many patients who attempted suicide have some affective symptoms, also personality disorders have been reported in about a third to halve of such persons. Clinicians and researchers have long presumed that some psychiatric disorders convey greater risk for suicide than others. Harris and Barracough found increased suicide risk for all psychiatric disorders except mental retardation. Suicide rates were highest for individuals diagnosed with substance abuse and eating disorders, moderately high rates for mood and personality disorders, and relatively low rates for anxiety disorders[11].

Here in Nigeria, there is a dearth of studies in the field of suicide, suicide risk and suicidal attempts. However, in a 6–year retrospective study of risk factors for repeated suicidal attempts among patients at the emergency unit of a tertiary hospital, Agbir et al[12] found a statistically significant association between repeated suicidal attempts and a diagnosis of depression. There was also a disproportional overrepresentation of alcohol use among patients with repeated suicidal attempt in that study[12].

METHODOLOGY

This cross–sectional descriptive study was conducted at the psychiatric wards of the major psychiatric facilities in the North–Central Nigeria namely: the Benue State University Teaching

Hospital (BSUTH), the Federal Medical Centre (FMC) Makurdi, and the Jos University Teaching Hospital (JUTH) Jos. These three Psychiatric centre located within Benue and Plateau States are known to take care of people in need of psychiatric services within this region and the neighboring states. The psychiatric unit of BSUTH has a total of 32-beds with at least 25-30% bed occupancy rates at most time of the year. The psychiatric unit of FMC, Makurdi also has a total of 32 beds with 70-80% bed occupancy rate most time of the year. Similarly, the psychiatry unit of JUTH has a total of 50 beds with 75-80% bed occupancy rate at most period of the year.

All patients on admission for psychiatry care in these wards during the period of study were recruited consecutively for the study after obtaining an informed consent using; (1) a proforma to measure the subjects' socio-demographic and clinical attributes like age, gender, marital status, religion, occupation, psychiatry diagnoses, physical comorbid conditions, duration of illness, duration of stay on admission etc. (2) the 'Suicidality Module' of Mini International Neuropsychiatric Interview (M.I.N.I.) which was used to assess the subjects' suicide risk. This instrument (M.I.N.I.) rate suicide risk on a scale of: low (1-8points), moderate (9-16points) and high ($\geq$ 17points). It has been reported to have shown an acceptably high validity and reliability[13]. Data entry was checked for accuracy, coded and analysed using the Statistical Package for Social Sciences version 22 and the level of significance was set at p? 0.05.

RESULTS

A total of 112 subjects (61 from Plateau and 51 from Benue) were studied, 45 (40.2%) were males while 67(59.8%) were females. The age ranged from 19 to 63 years with a mean of 36.98±11.09 years. As shown below in Table1, 30(26.8%) of the study subjects were never married, 54 (48.2%) were married at the time of the study while the remaining 28 (25.0%) were divorced, separated or widowed. The table also shows that 36 (32.2%) of the respondents were having a 'bad' relationship with their sexual partners.

Eighty out of the 112 study subjects were reported with having suicidal risk (Table2) representing 71.4% while the remaining 32(28.6%) had no risk of suicide. There was a statistically significant association between suicidal risk and respondents' average monthly income (p=0.001) and relationship with intimate partner (p=0.002). However, no statistically significant relationship was found between suicidal risk and occupational status (p=0.220), gender status (p=0.223), age group (p=0.293), marital status (p=0.332) as shown in Table 2.

Table3 shows the relationship between subjects' clinical characteristics and having the risk of suicide, there was a statistically significant association between suicidal risk and having a comorbid physical condition (p=0.001), previous episode of illness (p=0.005), long duration of illness (p=0.001), previous history of in-patient treatment (p=0.001), and default from follow up treatment (p=0.001).

Table 1: Distribution of Subjects by Socio-demographic Characteristics

VARIABLE	FREQUENCY (N)	PERCENTAGE (%)
AGE GROUP		
<35	46	41.1
35-44	36	32.1
45-54	22	19.6
=55	8	7.2
Total	112	100.0
GENDER		
Male	45	40.2
Female	67	59.8
Total	112	100.0
MARITAL STATUS		
Single	30	26.8
Married	54	48.2
Previously married	28	25.0
Total	112	100.0
PARTNER RELATIONSHIP		
Excellent	24	21.4
Good	52	46.4
Bad	36	32.2
Total	112	100.0
OCCUPATIONAL GROUP		
I-II	7	6.3
III-IV	24	21.4
V-VI	81	72.3
Total	112	100.0
EDUCATIONAL LEVEL		
No education	42	37.5
Primary	24	21.5
Secondary	23	20.5
Tertiary	14	12.5
Others	9	8.0
Total	112	100.0

Table 2: Relationship between Suicidal Risk and Subjects' Demographic Characteristics

VARIABLE	SUICIDE RISK	NO SUI. RISK	TOTAL	STATISTICS
AGE GRP(YRS)				X^2=3.722
<35	33	13	46	df =3
35-44	23	13	36	p=0.293
45-54	19	3	22	
=55	5	3	8	
Total	80	32	112	
GENDER				
Male	35	10	45	X^2=1.486
Female	45	22	67	df=1
Total	80	32	112	p=0.223
MARITAL ST				
Single	21	9	30	X^2=2.205
Married	36	18	54	df=2
Prv. married	23	5	28	p=0.332
Total	80	32	112	
PATNER REL.				
Excellent	17	7	24	X^2=12.039
Good	30	22	52	df=2
Bad	33	3	36	p=0.002
Total	80	32	112	
OCCUPATION				
I-II	3	4	7	X^2=3.029
III-IV	18	6	24	df=2
V-VI	59	22	81	p=0.220
Total	80	32	112	
INCOME				
<N18,000	36	22	58	X^2=19.423
N18-N35,000	27	0	27	df=4
N36-N53,000	4	0	4	p=0.001
N54-N71,000	11	10	21	
=N72,000	2	0	2	
Total	80	32	112	

Table 3: Relationship between Suicide Risk and Clinical Characteristics of Respondents

VARIABLE	SUICIDE RISK	NO SUI. RISK	TOTAL	STATISTICS
PSY. DIAGNOSIS				
Depression	23	13	36	X^2 =8.650
Substance	20	4	24	df=4
Schizophrenia	23	4	27	p=0.070
Bipolar	7	4	11	
Others	7	7	14	
Total	80	32	112	
COMORBID DIA				X^2=19.528
Present	34	0	34	df=1
Absent	46	32	78	p=0.001
Total	80	32	112	
DEFAULTED				
Present	33	2	35	X^2=13.033
Absent	47	30	77	df=1
Total	80	32	112	p=0.001
ILLNESS DURATION (YRS)				
<1	36	32	68	X^2=28.988
1-4	19	0	19	df=2
=5	25	0	25	p=0.001
Total	80	32	112	
LENGTH OF STAY (WKS)				
<4	45	25	70	X^2=5.717
4-8	16	5	21	df=2
>8	19	2	21	p=0.057
Total	80	32	112	
PREV. ADMISSION				
Present	36	4	40	X^2=10.516
Absent	44	28	72	df=1
Total	80	32	112	p=0.001
EPISODES				
1	56	31	86	X^2=10.655
2-4	6	1	7	df=2

DISCUSSION

The study found 59.8% of the admissions to be females a finding that compares well with that of Ribeiro et al in a 4–year retrospective study of gender differences in patients admitted to a psychiatry ward in Portugal where 53.1% of the admissions were females[14]. Also, Baba et al in a Nigerian Teaching Hospital study reported 51.8% of their in–patients to be females[15]. This finding however, is not in keeping with that of Thompson et al that found an excess of males over females in their study[16]. The following factors have been proposed to explain these gender differences in the admission rates: the general prevalence rates of certain diagnosis like depression which is more common in females as well as other gender specific biological factors have been put forward to explain some of these differences. It is also possible that the different gender role could explain the seasonality of the admissions.

A substantial proportion of the subjects in this study were reported to having suicide risk, a finding in support of other retrospective and psychological autopsy studies that found a diagnosable mental illness in most cases of completed suicide[9,10]. However, a comparative and community based study may be needed to generalize this finding.

This study shows a significant association between suicide risk and having a difficult relationship with intimate partner. A finding that compares well with that of Till B et al[17], that shows that the risk factors for suicide are higher among people with unsatisfactory relationship. Similarly, poor quality in relationship and relationship separation are both found to be important risk factors for suicidal thoughts and behavior and are frequent triggers for suicide attempts[18]. The status of a relationship alone therefore, doesn't necessarily in itself protect individuals from suicidal risk rather, it is the quality of the relationship that matters as shown in this study.

The over–representation of participants with suicide risk among low income earners in this study has concurred with other similar findings. For instance, in the United Kingdom, a differential increase in suicide among those in manual occupation compared to those in higher skilled jobs was reported[19]. The Risks of suicide has also been found to increase during the period of global financial crises partly due to increase in the level of unemployment and economically inactive population[20].

The study shows a preponderance of subjects with risk of suicide among patients with the diagnoses of depression, schizophrenia and substance abuse. This difference however was not statistically significant probably because of the study location, where all the subjects have mental disorders requiring hospitalization. This finding however agrees with other studies that found a differential increase in suicide risk for certain psychiatric diagnoses like depression, substance use and schizophrenia.

There is an overrepresentation of subjects with suicide risk among those with comorbid medical conditions in this study. This finding is in tandem with that of Ping et al[21], that found suicide risk in physically ill people to vary substantially by the presence of psychiatric comorbidy. Similarly, Jia et al, found increase in suicide risk among patients with comorbid psychiatric disorders and HIV/AIDS infection[22]. This has shown the impact of physical illness on mental disorders and vice versa. Studies have shown that certain mental disorders like depression are known to occur at higher rates in patients with general medical conditions with negative effects on the clinical outcome of both conditions[23]

There is also a statistically significant association between having suicide risk and previous episodes

of mental disorders, history of defaulted treatment as well as having repeated hospitalization in these study facilities. These findings may just explain the important of follow up treatment and regular medication in the management of mental disorders.

In conclusion, the study underscores the need for the assessment of suicide risk among psychiatric in–patients with high index of suspicion.

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MATERNAL FASTING BLOOD LIPIDS: A MARKER OF SEVERITY OF PRE-ECLAMPSIA IN JOS, NORTH-CENTRAL NIGERIA

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ABSRACT

***Background**:* Pre-eclampsia is a common medical disorder of pregnancy, in Nigeria, and has been reported to be characterized by blood lipid derangements with oxidative stress and endothelial dysfunction.
Objective

Methods and materials: This was comparative cross-sectional study, amongst women with Preeclampsia. Fasting venous blood samples were taken into plain vacuitainers and analyzed in batches after ——days for serum lipids using Cobas C-III Roche auto analyzer machine. The data were analysed using Epi-info version 3.5.4 The duration of study was for about seven month's period

Results: The mean serum levels of triglycerides in mild pre-eclampsia was1.13±0.50mmo/L, while in severe pre-eclampsia=2.22±0.92mmo/L, p-value=0.00001. Other lipid components: Total cholesterol, High density lipoprotein, Low density lipoprotein were not significantly different in the two studied groups (p>0.005) Multiple linear regressions model revealed serum triglycerides had the highest standardized absolute coefficient of 0.332 and lead value of 0.591.

Conclusion: Serum triglycerides alone, appear to be a significant predictor of severity of pre-eclampsia; hence can serve as a surveillance tool during conservative management of pre-eclampsia.

***Key Words**:* Maternal, Serum, lipids, Pre-eclampsia, Triglycerides, Total cholesterol, Low-density lipoprotein and High-density Lipoprotein

Introduction:

Pre-eclampsia is a potentially life threatening medical disorder of human pregnancy that complicates 2.0% to 16.7% of pregnancies in Nigeria[1] and is associated with significant maternal and perinatal morbidity and mortality[1]. Pre-eclampsia usually develops after 20th week of gestation and thereafter potentially affects multiplicity of human body organs such as the brain, eyes, lungs, liver and the kidneys[1]. Pre-eclampsia can be defined as new onset hypertension (Blood Pressure $\geq$ 140mmHg/90mmHg). Accompanied by proteinuria ++ or more in a strip dip test or total protein excretion of $\geq$ 300mg/dL in a 24 hour urine collection [1]. In the absence of intervention, the mother is at significant risk of seizures (eclampsia) pulmonary, renal, hepatic damages, stroke and possible death. Pre-eclampsia is a known main risk factor for cardio-vascular disease later in life for both the mother and the baby[1].

Maternal vascular endothelial dysfunction is the hallmark in the pathophysiology of pre-eclampsia[2]. This occurs in relation to increased levels of circulating lipids, which result in accumulation of these lipids within the endothelial cells, leading to impediment to the release of prostacyclin, resulting in oxidative stress and cascade of events in vascular endothelial dysfunction and release of more lipids particularly triglycerides, total cholesterol, low density lipoprotein and very low density lipoprotein[2,3].A meta-analysis on the relationship between maternal serum triglycerides levels and pre-eclampsia, found that women with pre-eclampsia had significantly higher levels of triglycerides than normotensive women[3]. Although numerous studies suggests that a dyslipidemia pattern that showed increased total cholesterol, triglycerides, and low-density lipoprotein-cholesterol along with decreased high-density lipoprotein-cholesterol concentrations, may be associated with an increased risk of pre-eclampsia, results are inconsistent and inconclusive[3]. Many of these studies had small sample sizes, the gestational age of the time of the lipid measurement varied, making it difficult to compare findings across the studies.Therefore, we conducted comparative cross-sectional study to examine the link between maternal serum lipids and pre-eclampsia[3].

Materials and Methods

This study was conducted at the Jos University Teaching Hospital, North-central, Nigeria. The sampled populations were obtained from the antenatal clinic and antenatal ward. A total of one hundred pregnant women with confirmed singleton gestation were placed into two groups (Mild Pre-eclampsia and Severe preeclampsia). Each of the groups consisted of fifty pregnant women, who were recruited based on non-probability convenient sampling method. The two groups were matched for age in years, parity, gestational age in weeks based on ultrasonography and Body Mass Index in Kg/M^2 .

The basis for the diagnosis of Mild pre-eclampsia follows newly identified blood pressure measurement(aided by mercury sphygmomanometer)of minimum 140 mmHg systolic but not up to 160mmHg and at least 90 mmHg but not upto 110mmHg diastolic blood pressure after 20th weeks of gestation, taken in sitting position, done twice, at least 4-6 hours apart. The diagnosis of proteinuria was based on newly identified urine dipstick test of at least 2+, after the 20th week of gestation, with the use of COMBI-URISCREEN reagent strip. A newly identified blood pressure measurement of at least 160 mmHg systolic and 110 mmHg diastolic pressures, alongside newly identified proteinuria of at least 3+, after the 20th week of gestation, was considered

severe Preeclampsia. In order to measure the maternal serum lipids, Five milliliter (5 mL) of fasting blood sample was collected via the ante–cubital vein from the sampled populations, by the use of plain vacuitainers with appropriate biosafety measures, The samples were thereafter centrifuged at 4000 revolutions per minute (rpm) for 10 minutes and each serum sample separated was transferred into a new appropriately labeled sample container (cryovials) and stored at –70^{0}C refrigerator until the time–please state storage duration of analysis for serum lipids. The biochemical analysis was done for total cholesterol (TC), triglycerides (TG), high density lipoprotein (HDL) and low density lipoprotein (LDL) using the appropriate reagent kits for Cobas C – 111® Autoanalyser The Low density lipoprotein was calculated using the Friedewald's formula. The data obtained was analyzed using Epi–info version 3.5.4 from CDC Atlanta, Georgia. The Mean Value, Standard deviation and their variations were determined. Student t–test was used to test for their mean difference and also to determine statistical significant difference for the continuous data. The level of significance was set at P <0.05.

Ethical Consideration: This study was undertaken after due approval from the ethical and research committee of the Jos University Teaching Hospital (JUTH). Informed consent was duly obtained from all subjects who participated in the study after they were duly counseled about the study.

RESULTS

Results obtained from this study are summarized in three tables below

Table 1: Relationship of Age, BMI and Gestational Age in the studied population----

Factors	%/Mean(Sd)		Student t-test	P-Value
	Mild	Severe		
Age (Years)	28.90 ±4.1	29.10 ±5.9	0.003	0.99(>0.05)
<29yrs	65.2%	34.8%	0.911	0.340(>0.05)
=29yrs	51.9%	48.1%		
Mean BMI(Kg/m^2)	23.3 ±3.5	34.0 ±4.2	2.400	0.002(<0.05)
Mean Gestational Age(Weeks)	33.31± 3.8	33.05± 2.8	0.270	0.7919(>0.05)

N values not clear

Table 2: Mean Serum lipids components between mild and severe Pre-eclamptic group

Lipid components	%/Mean (Std) Mild	Severe	Student t-test	P-Value
Mean Serum levels of (Total Cholesterol)	4.44±1.0	4.69±0. 95	0.857	0.396
Mean Serum Levels of Triglycerides	1.13 ±0.50	2.22±0.92	5.406	0.00001
Mean Serum Levels of HDLc	0.83 ±0.31	0.74 ±0.26	1.12	0.27
Mean Calculated Levels of LDLc	1.89 ±0.39	1.78±0.37	1.05	0.30

Table 3: Multiple Linear Regression Model

Model	Unstandardized Coefficients		Standardized Coefficients	t-test	P-Value	95.0% Confidence Interval for B	
	B	Standard Error	Beta			Lower Bound	Upper Bound
(Constant)	1.117	.368		3.033	.004	.375	1.859
Serum levels Total Cholesterol	.041	.062	.080	.659	.514	-.084	.166
Serum Levels of Triglycerides	.332	.065	.591	5.071	0.0002	.200	.464
Serum Levels of HDLc	-.167	.202	-.098	-.826	.413	-.575	.241
Calculated Levels of LDLc	-.150	.162	-.116	-.931	.357	-.476	.175

a. Dependent Variable: Severity of preeclampsia

DISCUSSION

This study revealed that age distribution of the studied population was between 28.90±4.1 years and 29.10±5.9 years for those with mild and severe preeclampsia respectively, reflecting a reproductive aged population. The subgroup differ significantly in terms of their Body mass index (BMI) where women with severe preeclampsia had higher mean BMI indicating obesity compared with mild preeclampsia with a normal mean BMI. Elevated serum triglyceride, as seen in this study, is a feature of maternal obesity, metabolic syndrome and long term cardiovascular[4]

Also there was a significant reduction in maternal serum HDL (0.83±0.31mmol/L versus 0.74±0.26mmol/L) i.e. Mild preeclampsia and severe preeclampsia respectively, but it was not statistically significant. However, in the severe Pre–eclampsia subgroup, maternal serum Triglycerides alone was found to be significantly elevated (1.13±0.50 versus 2.22±0.92). Further analysis with multiple linear regression analysis (Table 4) also showed that, maternal serum Triglycerides appeared to be the one of the significant predictor of the severity of preeclampsia in the studied population. Table 4 shows that maternal serum triglycerides contributes more to the model since it has the highest coefficient of 0.332 and also the lead value of 0.591 absolute standardized coefficients.

Our study is at variance with work done by Timalsina S et.al[5] who reported lipid parameters are poor markers of severity of preeclampsia. This difference in findings may be due to some other factors including dietary and environmental.

Our finding depicting elevated serum triglycerides is similar to the case– control study by Abubakar et.al[6] from North–eastern Nigeria, Islam NAF et.al[7]from Bangladesh. However these separate studies did not report relationship between severity of preeclampsia and maternal serum lipids in the subgroup of preeclampsia but rather focused on association between maternal serum lipids and preeclampsia for which serum triglycerides was included in this association. IA Siddiqui et.al[8] reported that women, from their study who had preeclampsia had higher triglyceride levels compared with non–pregnant women and other measured lipid component in their study did differ significantly in the two groups. Conversely, K. Rajyalakshmi et.al[9] found no statistical significant difference in serum lipid concentration between preeclampsia women and normal pregnant women.

Our study is in line with Cassandra N.S et.al[3] in a systematic review and meta–analysis who demonstrated that women who develop preeclampsia have elevated levels of Total cholesterol, Non–HDL–c and Triglycerides during all trimesters of pregnancy as well as lower levels of HDL–c during the third trimester. However, it differs with our study in that serum Total cholesterol was not found to be significantly different in the groups and subgroups and Non–HDL–c was not part of the component measured in our study. Hypertriglyceridemia is well documented as an endothelial disruptor in atherosclerosis[10] and is a potential candidate for endothelial dysfunction seen in this disease[10] The findings from our study is also in agreement with studies done by Onuegbu AJ et.al[11] and Lima VJ et.al[12]

Based on our findings, maternal serum triglycerides can be adopted as a biochemical tool in the monitoring protocol of pregnant women with preeclampsia on conservative management. The maternal serum Triglycerides can be used along side other biochemical markers such as serum uric acid[13], creatinine and electrolytes amongst others, to detect worsening pathological process of preeclampsia while carrying out conservative management of

preeclampsia. In a study to assess the level of uric acid level in maternal circulation during normal pregnancy and found that uric acid was significantly higher in pregnant women than in non-pregnant women[14]

CONCLUSION

This study has revealed higher levels of maternal serum triglycerides among women with severe preeclampsia compared with those with mild preeclampsia. Its is not clear at this point if this finding is from the cause of the preeclampsia or effect of the disease progression.. It is therefore noted that elevated serum triglycerides among women with severe preeclampsia can be used to determine worsening maternal condition and hence can serve in antepartum monitoring parameter. This may also guide timing of delivery of the foetus during conservative management of preeclampsia.

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ARE SKIN DISEASES IN SCHOOL CHILDREN RELATEDTO KEEPING OF ANIMALS IN HOMES?

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ABSTRACT

Background Families in Jos keep animals in the home vicinity for various reasons such as companionship, security, nutrition, and financial support. Children in such homes live in close proximity with such animals. The skin being the outermost organ to interface with animals may be exposed to infections and allergens. There is therefore a need to determine the proportion of children in the population who are exposed to animals in their homes, and to describe any relationship with skin diseases.

Objectives The study was carried out to investigate the proportion of school children in close contact with animals and the relationship between skin disease and presence of such animals in homes.

Methods This was a descriptive cross sectional study of 390 (aged 6−12years) children of primary schools in Jos North Local Government Area of Plateau state, Nigeria. Clinical diagnosis of skin disease was made from information on, disease symptomatology and examination of skin, hair and nails of respondents. Diseases were grouped into Infectious skin diseases (fungal, bacterial, viral and ectoparasitosis), dermatitis, urticaria and others. Data was analyzed using SPSS version 21.

Results The proportion of school aged children that had animals at home were 77.2 % (301 of 390).The prevalence of skin diseases in the school children was 36.2% (141 among 390). There was no statistically significant difference (p=0.144) in the occurrence of skin disease among those that kept animals 34.2%(103 of 301) and those that did not 42.7%(38 of 89). However there was a statistically significant difference in the pattern as children who had animals in their homes were observed to have more infectious skin diseases and

less urticaria and dermatitis (p–0.001)

Conclusion A large proportion of families with children keep animals in the vicinity of the homes and this may affect the type of skin diseases children present with. Simple personal hygiene should be taught to children and practiced at home after contact with animals

Keywords: Skin diseases, animals, zoonosis, children

INTRODUCTION

Humans have domesticated animals for various reasons such as hunting, protection, livestock and company (pets).[1-2] The practice of keeping animals within the vicinity of human dwelling is practiced globally across different races, cultures and socioeconomic class. Studies from developed nations have reported large proportions of their populations keeping animals. Between 56 –68 % of households in Canada and the United States keep pets in their homes[3-4] In Africa, a growing livestock-keeping practice in and around urban centers as a way to supplement income and diet has also been reported.[1,2,5]This relationship involving humans and animals living in close proximity with each other exposes humans to zoonotic diseases which can range from self–limiting skin conditions to life–threatening systemic illnesses.

The skin is the outermost organ to interface with animals and may be exposed to infections and allergens from such contacts. Animals have transmitted infective organisms to humans causing specific skin diseases such as Tinea (capitis, corporis), scabies and pyoderma .[6,7] They may also be the source of proteins that trigger dermatitis or urticaria while on the other hand it has been suggested that early exposure to animals in childhood is associated with a reduced risk of subsequent allergic skin disease.[6,8,9]

Groups well known to have greater exposure to animals and thus zoonotic infections include livestock handlers, agriculturists, veterinarians and abattoir workers. Young children with their relatively immature immune system may be at increased risk of contracting cutaneous zoonotic infections.[10] There is therefore a need to determine the proportion of children in the population who are exposed to animals in their homes, to describe their demographics and possible relationship between keeping animals and occurrence of skin diseases

METHODOLOGY

This was a cross–sectional study conducted among 390 (aged 6–12years) children of selected private and public schools from Jos North Local Government Area of Plateau state from August–October 2013. The study was approved by the Research and Ethical Committee of the Jos University Teaching Hospital. Informed consent was obtained from parents/guardians and assent from the child was also sought and obtained. Information on Biodata, school attended, type of animals kept at home, and disease symptomatology was obtained. Socioeconomic status was determined by application of the scoring system designed by Olusanya and classified as upper, middle and lower Socioeconomic class. Key diagnostics features were used for clinical diagnosis of major skin diseases

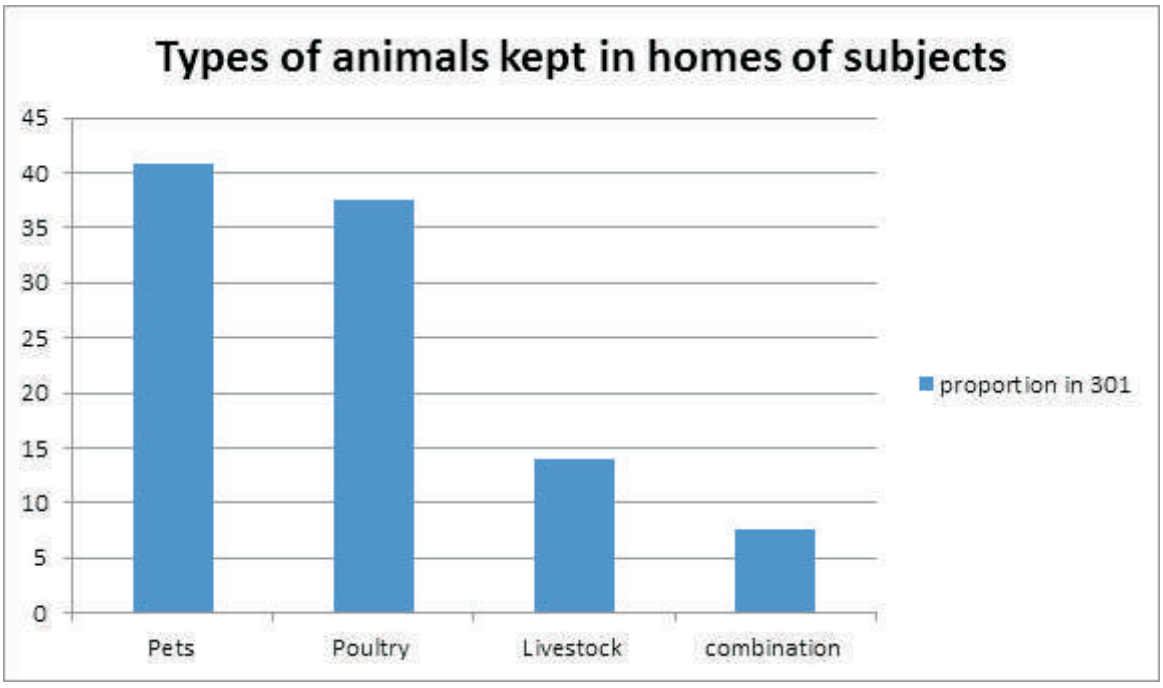
after full examination. Skin diseases were grouped into Infections, dermatitis, urticaria and others. Animals were classified as pets(those kept for sentimental and guard purposes such as dogs and cats), poultry (any avian species kept for eggs, meat and sales) and livestock(mammals raised in a formal or informal agricultural setting kept for meat, milk, wool, fur and sales).A hand lens and 12 mega pixel camera was used to view and capture skin lesions for detailed review. Data was analyzed using SPSS version 21.

RESULTS

Of the 390 pupils sampled, 301 children (77.2%) were from households who kept animals and 89(22.8%)did not. Twelve animal types were kept within the premises of the house. They were classed as Pets (dogs, cats), free range and caged poultry (turkey, chicken, quails, pigeon, duck) and livestock (rabbit, pig, goat, sheep, cow).

The prevalence of skin disease was 36.2% (141 of 390) among respondents. The spectrum of skin diseases observed were: Infectious diseases (Tinea,Pityriasis versicolor,Furuncle/carbuncles Folliculitis ,Impetigo Ecthyma, Molluscum contagiosium, Warts, Herpes simplex, Scabies, Peduculosis capitis), Dermatitis (contact, atopic and seborrheic), Urticaria– (acute and papular) and others– (acne, scars, lichen nitidus,cheleitis, disorders of pigmentation, Alopecia, Hypertrichosis Onchogryphosis)

Figure 1: Proportion of school children with animal type in their home



More than a third (40.9%) kept pets,37.5 % kept poultry,14% kept livestock and 7.6% kept various combination of animal types.

Table 1: Socioeconomic class (SEC) and type of school of children with animals in their homes

SEC	Types of animals kept							
	Pets (%)	Poultry (%)	Mammal Livestock (%)	Combination (%)	Total (%)	X2	df	P
Low	30(36.1)	34(41.0)	13(15.7)	6(7.2)	83	3.169	6	0.787
Middle	60(40.5)	53(35.8)	22(14.9)	13(8.8)	148			
Upper	33(47.1)	26(37.1)	7(10.0)	4(5.7)	70			
Total	123(40.8)	113(37.5)	42(14.0)	23(7.6)	301			
Type of School								
Public	49(34.0)	70(48.6)	16(11.1)	9(6.3)	144(100)	14.46	3	0.002*
Private	74(47.1)	43(27.4)	26(16.6)	14(8.9)	157(100)			

The commonest animals kept in homes of children from upper and middle SEC were Pets (47.1% and 40,5%) while Poultry (41%) was commonest in lower SEC. The least type of animals kept by all SEC was livestock. More children attending private schools had household pets (47.1%) while more children attending public schools kept poultry (48.6%). The differences were statistically

Table 2: Relationship between keeping of animals and presence of skin diseases in general

	Keeping of animals					
Presence of skin disease	**Yes**	**No**	**Total**	**X2**	**df**	**p**
Present	103(34.2)	38(42.7)	141	2.139	1	0.144
Absent	198(65.8)	51(57.3)	249			
Total	301	89				

There was no association between skin disease as an entity and keeping of animals P=0.144

Table 3. Relationship between keeping of animals and presence of specific types skin diseases

	Keeping of animals					
skin disease group	**Yes**	**No**	**Total**	**X^2**	**df**	**p**
Infections(n=87)	63(72.4)	24(27.6)	87(100)	18.415	2	0.001*
Dermatitis(n=38)	17(44.7)	21(55.3)	38(100)			
Urticaria(n=11)	2(18.2)	9(81.8)	11(100)			
Infectious skin diseases						
Fungal n=46	32(50.8)	14(58.3)		0.029	1	0.865
Other–bact,viral, parasites(n=41)	31(49.2)	10(41.7)				
Total	63(100)	24(100)				

Infectious skin diseases were seen more in children whose family kept animals. While urticaria and dermatitis, were highest in children that kept no animal. (p–0.001). The difference was statistically significant (P=0.001). There was no statistically significant difference relationship between the type of infectious disease and type of animal kept (p=0.865)

DISCUSSION

A large proportion (77.2%) of children in Jos metropolis lived in homes that kept animals within the house and immediate vicinity. This is a common practice in many developing countries and is a way of augmenting food/ protein supply, and income generation.[2] Our results showed that most animals kept in homes generally were pets with more children from upper Socioeconomic class (SEC) and in private schools reported having them. This is consistent with findings in other studies which showed pets being the commonest animals kept in urban areas in most counties.[4,6]

Among all respondents seen, prevalence of skin disease was 36.2%. This is a significantly high proportion as about 4 in every 10 children had skin disease. There was no statistical difference in the

occurrence of skin diseases between children that had animals at home and those that did not, (34.2%vs42.7%, p=0.144). This is probably due to inclusion of all skin conditions that have no etiological relationship with animals such as acne or seborrheic dermatitis.

There was a wide spectrum of skin diseases observed among the school children. The infective skin disease group showed a greater variety than the other groups. This is expected of the disease pattern in the tropics where infectious disease agents and vectors thrive in the hot, humid conditions. When specific groups of skin diseases were analyzed, Infective skin diseases as a group were significantly more prevalent among children who kept animals (72.4% vs 27.6%.p=0.001) than in those without animals. Animal have been reported to be carriers or be infected by organisms such as Staphylococcus intermedius, Methillicin Resistant Staphylococcus aureus(MRSA), Dermatophytes and Sarcoptes scabiei.[10-14] Thus persons who have close contact with animals such as pet owners have greater risk for colonization, local or systemic infection.[5,6] Children particularly may be more at risk of zoonotic skin infections, firstly because of the of rigorous contact during play with domestic animals especially pets such that organisms are easily transmitted between the animals and children by inoculation. Secondly, the developing immune system of children may put them at risk of acquiring any of the infective skin diseases from the animals.

Within the infectious disease group, fungal diseases occurred most commonly in both subject groups that kept animals and in those that did not, although there was no statistical significance. This could be on account of the relatively small sample size of each subgroup within the infectious diseases group such that the difference was not detected.

A well-recognized factor in exacerbating dermatitis and urticaria is protein from animal dander, hair, saliva and urine. Previous works have indicated that children who have regular contact with animals during early life have reduced risks of allergic sensitization when older. [11] This supports our findings of significantly lower occurrences of Urticaria and Dermatitis in pupils that had animals within their homes.[7,8] On the other hand; there was significantly higher occurrence of dermatitis and urticaria in those that didn't keep animals. This could be explained by the 'Hygiene Hypothesis' where there is defective immune tolerance due to a lack of exposure to animal related allergen or microbial exposure in the environment by excessive cleanliness.[12]

CONCLUSION

The findings presented suggest a significant proportion of school children in Jos live in close

contacts with animals in their daily life and pets were the most common animals kept in homes. Almost 4 in every 10 school children had skin diseases in general (36.2%), which is quite significant. While the study does not show that keeping animals was associated with increased prevalence of skin diseases, it does show that keeping animals at home is associated with a pattern where infective skin disease occurred more, with less occurrences of dermatitis and urticaria.

RECOMMENDATIONS

In the light of these findings it is important for health practitioners to be aware of and utilize this knowledge in managing children presenting with skin lesions. School children and family members should be educated on best practices of keeping animals such as, routine veterinary checks sanitation, personal and house hygiene

The close relationship of humans and their animals calls for partnership between human and veterinary medicine. It also sets up a basis of collaboration between the Ministries of Health, Agriculture and Education for more research in zoonotic infections, and development of regulations for keeping animals within homes particularly near children.

The authors have no conflict of interest to declare.

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FEMALE GENITAL MUTILATION: OPINION OF OUTPATIENTS OF A DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY IN NORTH CENTRAL NIGERIA

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Background Female genital mutilation is known to exist especially in developing countries like Nigeria. This study aimed to determine women's views on aspects of female genital mutilation, types of female genital mutilation, reason for and attitude towards female genital mutilation.

Method: A Pretested questionnaire was administered to women attending the antenatal clinic in Jos University Teaching Hospital from October 2013 to February 2014. The data obtained were analysed using SPSS version 20

Result The prevalence of FGM from this study was 21.9%. In total, 429 respondents (97.9%) reported the existence of FGM at the time of the interview. Majority of respondents [(283) 66.0%] said that the clitoris was the main part removed. The main reason given for genital cutting was to prevent sexual promiscuity in sexual practice, and was the response of one hundred and thirty two (30.8%) of the women, while thirty five (8.2%) women responded that it was done to preserve virginity. Three hundred and eighty four(89.5%) were aware of the campaign against female genital mutilation and two hundred and ninety eight(69.5%) were in support of the legislation against FGM. Seventy nine(18.4%) were not in support of the legislation out of which nineteen(24.1%) feel that to stop is to interfere with the norm.

Conclusion Female genital cutting/mutilation is still practiced in our environment and some of the women knew the negative reproductive health consequences of FGM and had experienced them during sexual intercourse and childbirth. However, with regard to stopping FGM, majority had not taken any steps towards stopping the practice. There should be public enlightenment about the dangers of FGM and policies against this harmful practice should be enforced.

INTRODUCTION

Female Genital Mutilation (FGM) or female circumcision is one of those traditional practices whose origin can be traced to antiquity. Even though it was first discovered in Egyptian mummies about 200BC, it is practiced on all the continents of the world.[1,2] WHO (1997) reported that Female Genital Mutilation is a practice which involves cutting off part or whole of a clitoris and some other parts of her sex organs whether for cultural or any other non–therapeutic reasons.[3]FGM is practised as a cultural ritual by ethnic groups in 27 countries in sub–Saharan and Northeast Africa, and to a lesser extent in Asia, the Middle East and within immigrant communities elsewhere. However, the worst types of FGM are practiced in Sudan, Egypt, Mali, Ghana and Nigeria.[4] All the four types of FGM are practiced in various areas of these geographical locations.

It is typically carried out, with or without anaesthesia, by a traditional circumciser using a knife or razor. The age of the girls varies from weeks after birth to puberty; in half the countries for which figures were available in 2013, most girls were cut before the age of five.[5,6]

A World Health Organization interagency group has classified female genital cutting into four types: type 1, partial or total removal of the clitoris and/or the prepuce (clitoridectomy); type 2, partial or total removal of the clitoris and labia minora, with or without excision of the labia majora (excision); type 3, narrowing of the vaginal orifice with creation of a covering seal by cutting and appositioning the labia minora and/or the labia majora, with or without excision of the clitoris (infibulation); and type 4, all other harmful procedures to the female genitalia for nonmedical purposes, for example, pricking, piercing, incising, scraping, and cauterization. Herein, the term "female genital mutilation" (FGM) is used, because this term is recommended by the World Health Organization and all UN agencies.[6]It is estimated that about 100–140 million girls and women worldwide have undergone FGM, and each year a further two million girls and women are at risk of this practice. It is performed on girls aged 4–12 years and in some cultures as early as a few days after birth or as late as just before marriage.[5] As at 2013, FGM is found in many African countries with great variation in its prevalence between and within countries reflecting ethnicity and tradition.[7,8,9] According to the 2013 Nigeria Demographic and Health Survey (NDHS),about 25% of Nigerian women have experienced at least one form of female genital mutilation.[10]The prevalence of female circumcision in Southeast Nigeria based on a study done by Ezenyeaku et al was 42.1% , 53.0% by Adeokun *et al* in the Southwest Nigeria, 23.3% by Abubakar *et al* in Kano and 53.2% found by Ugboma *et al* in Port–Harcourt.[11,12,13] Various reasons have been given for the practice of FGM in these different geographical and cultural settings ranging from culture, religion to superstition.[14]

Among the reasons practitioners cite as benefits of FGM, according to UNICEF in 2013, are hygiene, social acceptance, marriageability, preservation of virginity/reduction of female sexual desire, male sexual pleasure, and religious requirement.[7] Infibulation is said by several sources to enhance male sexual pleasure; Gruenbaum reported that men seem to enjoy the effort of penetrating their wife's infibulation.[8]Most often cited is the promotion of female virginity and fidelity.[15] Infibulation almost guarantees monogamy because of the pain associated with sex and the difficulty of opening an infibulation without being discovered.[16] In Kenya, 30% of women supporting continuation of the practice agreed that FGM helped to preserve virginity and avoid immorality. In Nigeria, similar rates (36%) were reported by women, while 45% of

men supporting continuation of the practice agreed with this statement. FGM was believed to be proof of a girl's virginity, thereby improving the marriage prospects of unmarried girls who have undergone the procedure. In Côte d'Ivoire, "improved marriage prospects" was cited by 36% of women favouring continuation of the practice once married. FGM is also believed by some communities to ensure that a woman is faithful and loyal to her husband. For example, 51% of women in Egypt believe that FGM prevents adultery.[9]

FGM is outlawed in several African countries It is also outlawed in 33 countries outside Africa and the Middle East,[7] including across the European Union, North America, Scandinavia, Australia and New Zealand.

We therefore sought to determine women's views on aspects of female genital mutilation, types of female genital mutilation, reason for and attitude towards female genital mutilation and to determine the prevalence among the study population

Method:

A Pretested interviewer administered questionnaire was administered to women attending the antenatal, gynaecology and family planning clinics of the Jos University Teaching Hospital after obtaining informed verbal consent. The questionnaires contain questions aimed at obtaining basic socio–demographic characteristics. Questions related to awareness of the practice of female genital mutilation (FGM), awareness of the campaign against FGM, perceived reasons for FGM, complications experienced from the procedure and acceptance of the legislation against FGM were asked.

Sample size determination

The minimum sample size for the study was obtained using the previously reported prevalence of FGM from this environment with the following formula:

$n = p \times (1-p) \times (Z^2/d)^2$. This is same as $n = Z^2pq/d^2$

where Z=1.96 (coefficient of Z statistics for normal distribution table),

p = prevalence from previous studies,

q = 1−p,

p= Prevalence of 42% (Ezenyeaku CC et al. Enugu 2010)[17]

d= Desired degree of accuracy; here taken to be 0.05

$$\text{Sample size (n)} = \frac{(1.96)^2 \times 0.42\ (1-0.42)}{0.05 \times 0.05}$$

$$n = \frac{3.84 \times 0.42 \times 0.58}{0.0025} = \frac{0.935}{0.0025}$$

$$= 374$$

The sample size, was adjusted to compensate for an attrition rate of 10%

Therefore 10% of 374 = 37.4 ˜ 37.

Minimum sample size = 374 + 37 = 411 = 411

Another 10% of 374 was added because of those that will not fill the questionnaire properly = 411 +37 = 448.

Sample size of 448 was chosen

The data collected were analyzed using the SPSS statistical package version 20.0 (SPSS Inc, Chicago,IL).

Results

Questionnaires were distributed to 448 women. However, 10 questionnaires were not properly filled. Therefore a total of 438 questionnaires were analysed

The age group 20–44 years comprised 74.0% of participants. Fifty nine(13.5%) had no formal education, twenty four(5.5%) had Islamic education only, two hundred and one(45.9%) had primary education, ninety seven(22.1%) had secondary education and fifty seven(13.0%) had tertiary education (Table 1). Housewives (33.6%) and peasant farmers (29.2%) made up the majority of the respondents

In total, 429 respondents (97.9%) reported the existence of FGM at the time of the interview (Table 2). Majority of respondents [283, (66.0%)] said that the clitoris was the main part removed (Table 2). The

prevalence of FGM from this study was 21.9% (Table 3).The main reason given for genital cutting was to prevent sexual promiscuity in sexual practice, and was the response of one hundred and thirty two (30.8%) of the women, while thirty five (8.2%) women responded that it was done to preserve virginity (Table 4). Furthermore, 94 (21.9%) of participants had been circumcised and of these, 42(44.7%) reported having suffered some form of reproductive health and psychological problems after the procedure, during delivery and during sexual intercourse(Table 5). The participants were asked about the role of women in stopping the practice of FGM. The majority of women (397[92.5%]) had not tried to prevent FGM in the community but some (18 [4.2%]) had attempted to stop it (Figure 2). Three hundred and eighty four(89.5%) were aware of the campaign against female genital mutilation and 298 (69.5%) were in support of the legislation against FGM..Seventy nine (18.4%) were not in support of the legislation out of which nineteen (24.1%) felt that to stop is to interfere with the norm (Figure 1).

Table 1 Sociodemographic characteristics of the respondents (n = 438).

VARIABLE	FREQUENCY	PERCENT
AGE		
15–19	44	10.0
20–24	56	12.8
25–29	76	17.4
30–34	77	17.6
35–39	65	14.8
40–44	50	11.4
45–49	31	7.1
50+	39	8.9
RELIGION		
Christianity	329	75.1
Islam	109	24.9
MARITAL STATUS		
Married	396	90.4
Single	21	4.8
Divorced	2	0.5
Widowed	19	4.3

EDUCATIONAL STATUS		
No education	59	13.5
Islamic education only	24	5.5
Primary education	201	45.9
Secondary education	97	22.1
Tertiary education	57	13.0
OCCUPATION		
Housewife	147	33.6
Student	27	6.2
Salaried employee	39	2.7
Business	85	19.4
Peasant farmer	128	29.2
Others	12	8.9

Table 2: Awareness about the specific types of FGM being practiced among respondents who knew about this practice(n = 429).

Most of the respondents[429(97.9%0] are aware of the practice of female genital mutilation and the clitoris is the commonest site involved

TYPE OF GENITAL CUTTING	FREQUENCY	PERCENT
Clitoris only	283	66.0
Clitoris, labia	84	21.5
Clitoris,labia and surrounding part	41	10.5
Clitoris,labia,surrounding part and stitching	17	4.4
Others	4	1.0
Total	**429**	**100.0**

Table 3: Prevalence of female genital mutilation in the study population

	FREQUENCY	PERCENT
Circumcised	94	21.9
Uncircumcised	299	69.7
Don't know	36	8.4
Total	**429**	**100.0**

The prevalence of FGM is 21.9% while 8.4% do not know if they had been circumcised

Table 4: Perceived reasons for female genital mutilation (n = 429)

VARIABLE	FREQUENCY	PERCENT
Reasons for FGM practice		
Preserves virginity	35	8.2
Maintains hygiene	40	9.3
Religion	78	18.2
Tradition/culture	107	24.9
Prevents promiscuity	132	30.8
Aids future childbirth	5	1.2
Dont know	28	6.5
Others	4	0.9
Total	**429**	**100.0**

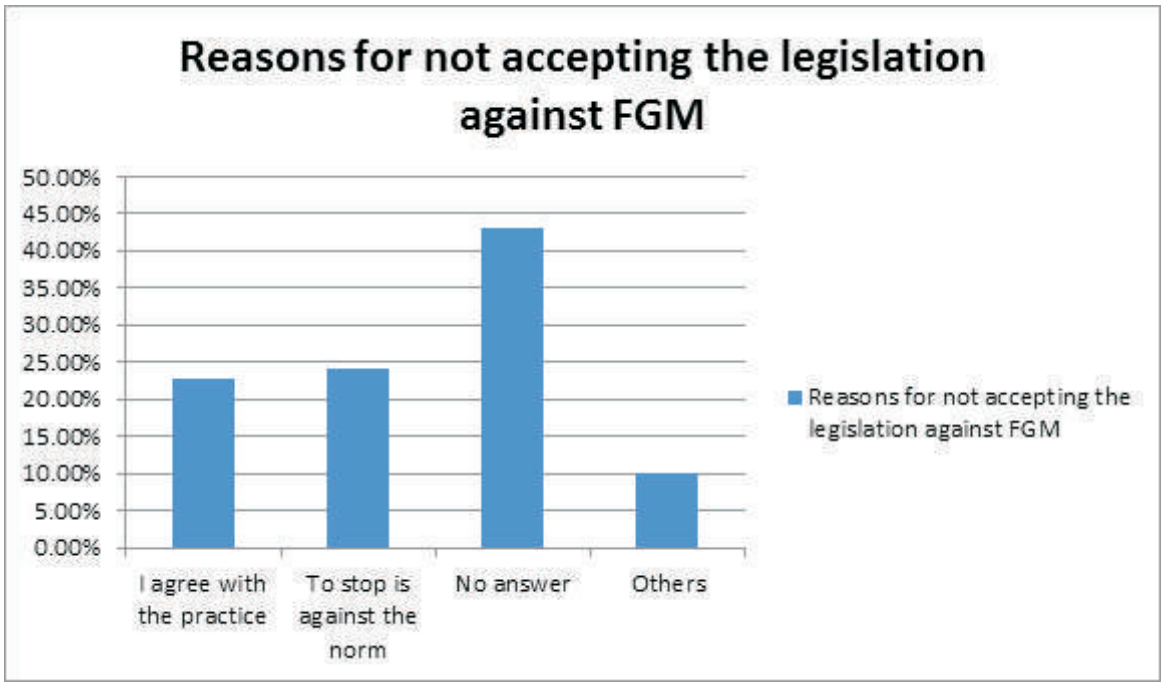
Table 5: Negative effects on the circumcised respondents (n = 42)

42 (44.7%) out of the 94 circumcised respondents had negative effects (complications)

NEGATIVE EFFECTS	FREQUENCY	PERCENT
Feeling of incompleteness	7	16.7
Reduced sexual satisfaction	16	38.1
Difficult childbirth	3	7.1
Pain during sexual intercourse	8	19.0
Pain during menstruation	2	4.8
Genital infection	2	4.8
Bleeding after the procedure	4	9.5
Total	**42**	**100.0**

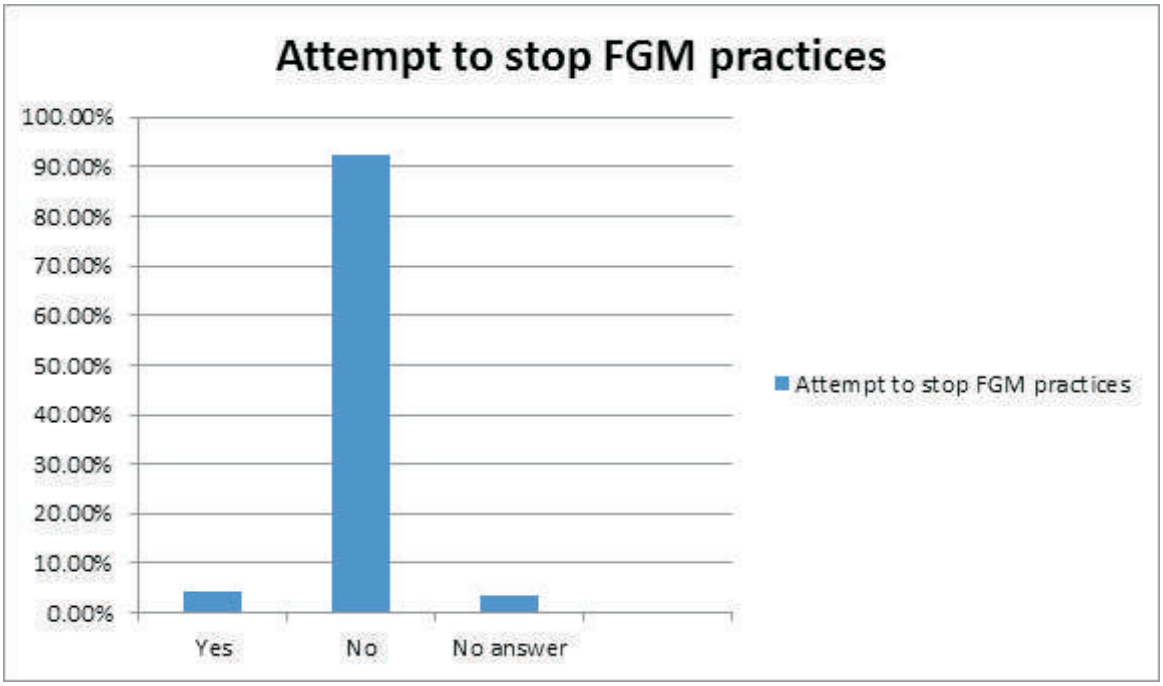
Among respondents aware of female genital mutilation, three hundred and eighty four (89.5%) are aware of the campaign against female genital mutilation while forty five (10.5%) are not aware. Most of the women are in support of legislation against female genital mutilation [289(69.5%)], seventy nine(18.4%) are not in support and fifty two (12.1%) are indifferent.

Figure 1: Reasons for not accepting the legislation to stop female genital mutilation(n= 79)



Among women that are not in support of the legislation against female genital mutilation, about 43% have no reason.

Figure 2: Women's behaviour and attitudes to stopping female genital mutilation. All 429 participants that are aware of the practice of female genital mutilation were asked general questions about FGM practices



About 92.5% of the women have made no attempt to stop the practice of FGM

DISCUSSION:

In this study, the prevalence of FGM was 21.9%. This is similar to the prevalence obtained from a study done by Abubakar et al. in Kano in 2004 (23.3%).[12] It is however lower than the findings of 53.0% by Adeokun, *et al*. in the Southwest Nigeria[11], 53.2% found by Ugboma *et al*. in Port-Harcourt[13] and 42.1% by Ezenyeaku et al. in the Southeast Nigeria[17]. In a similar study in the Somali region of Ethiopia, an even higher prevalence of 97% was reported.[18] The prevalence of FGM in this study is also less than the finding of the 2013 Nigerian Demographic and Health Survey report(25%)[10]. It appears that the rates vary across regions.

Majority of the respondents (97.9%) were aware of the practice of FGM and the level of awareness is higher than the level reported following the 2013 Nigerian Demographic and Health Survey which revealed that 68% of Nigerian women have heard of female circumcision.[10] This shows that majority of the study population are already aware of this practice.

The type of FGM most commonly practiced from this study was clitoridectomy (66%) and the least practiced was infibulation(4.4%). Garba et al. also found out that clitoridectomy was the commonest form practiced accounting for 96.2% of FGM in Kano.[19] This is similar to the findings in most countries in Africa where clitoridectomy is the commonest practiced form of FGM. Yirga et al. found out that clitoridectomy accounted for 78.9% of the types of FGM and infibulation accounted for 10.4% in the Kersa district of Ethiopia where the prevalence of FGM is very high(94%).[20]

Prevention of promiscuity (30.8%) was the commonest reason for the practice of FGM among the respondents for the procedure followed by culture/tradition (24.9%). This is not in keeping with the finding of Garba et al. and Anuforo et al who found culture/tradition as the most common reason.[19,21] This shows a trend towards shift from blind adherence to culture to the respondent 's own conviction. This is an important finding because practices based on individual conviction are easier to eradicate than those based on culture. The implication of this is that advocacy campaigns should be stepped up with more emphasis on educating these women on the harmful effects of FGM. About 8.2% of the respondents gave preservation of virginity as the reason for the practice of FGM. This is higher than the finding of Garba et al where only 3.8% gave preservation of virginity as a reason.[19] However, higher values were obtained from some African countries. Yirga et al. reported that 25.1% of women who knew about the practice gave preservation of virginity as the reason for the practice.[20] In another study, similar findings were reported by 30% of Kenyan women who supported this practice to preserve female virginity.[4] Similarly, more than half of Egyptian women believed that FGM would prevent adultery and that it is proof of a girl's virginity.[9] This erroneous impression held by 8.2% of the respondents in this study means obviously that more work is needed to be done as regards educating the women.

The study enquired about the negative effects/complications experienced among those who had undergone FGM (n = 42). Reduced sexual satisfaction was the commonest reported negative effect (complication) of FGM (38.1%). Ezenyeaku et al. also reported reduced sexual satisfaction as the commonest complication (50%) while Abubakar *et al.* reported 25.7% of their study population with FGM having sexual dissatisfaction.[12,17] Most studies recognized that this practice has negative consequences for delivery as shown in this study where 7.1% reported that they had difficult

deliveries in pregnancies following the procedure. Difficult deliveries following the procedure was also reported by Abubakar et al. (8.6%) and Ezenyeaku et al.(22%).[12,17]FGM also has negative consequences on sexual intercourse and menstruation as shown in this study where 19% and 4.2% of the women that had FGM developed dyspareunia(painful intercourse) and dysmenorrhea (painful menstruation) respectively which is higher than reported by Yirgisa et al. (6.2% and 1.5% respectively)[20]. These results are consistent with findings from other countries where FGM is common. About 16.7% of the respondents that had FGM reported feeling of incompleteness. This is not in keeping with the finding of 23.8% by Ezenyeaku et al.[17] The above findings show that women who have undergone any form of FGM are traumatized and likely to develop physical, psychological, and social problems associated with it.[20] The feeling of incompleteness has the potential of affecting the psyche of these women leading to feelings of physical violation and low self esteem. These may lead to psychosexual problems.[17]Studies on the psychological effects of FGM are scarce and need to be given due emphasis, given that FGM is one of the reported risk factors for post-traumatic stress disorder in women.[22-27]

Majority of the respondents (89.5%) were aware of the campaign against FGM. Abubakar et al reported 91.4% awareness among antenatal patients in their study at Aminu Kano Teaching Hospital Kano, Northern Nigeria and Ezenyeaku et al. reported 97.1% in Southeast Nigeria.[12,17] Of the total respondents that are aware of the practice of FGM, 69.5% would accept legislation against FGM while 18.4% would not. This is in keeping with the study by Ezenyeaku et al. who reported that 63.7% would accept the legislation against FGM while 19.3% would not.[17]

Among the respondents that would not accept the legislation, 43% had no reason for not accepting. This is in keeping with the finding of 41.7% by Yirgisa et al.[20] This further buttresses the fact that even though 97.9% of the study population are aware of the practice, there is limited knowledge of the procedure and its impact on women's reproductive health and social life.

The study also showed that majority of the respondents that are aware of the practice have not attempted to stop the practice (92.5%) and only 4.2% have attempted to stop the practice. Yirgisa et al also found out that most of the respondents (76.2%) have not attempted to stop the practice and only 23.2% attempted to stop the practice. If there was good knowledge and understanding of FGM, motivation towards stopping the practice would have been greater. The finding that the majority of women took no action and knew little about stopping the practice might be due to inadequate knowledge and lack of information. Therefore, information, communication, and integration are very important in the community.

A limitation to this study is that due to the sensitivity of the topic, some respondents may not volunteer genuine answers to the questions.

CONCLUSION

Female genital cutting/mutilation is still practiced in our environment. It is clear that there is a knowledge gap because a reasonable number of women that are not in support of the legislation against this harmful practice have no reason. Some of the women knew the negative reproductive health consequences of FGM and had experienced them during sexual intercourse and childbirth. However, with regard to stopping FGM, few of them had tried to do so and the majority had not taken any steps towards stopping

the practice. The principal reason for performing FGM is to prevent promiscuity. This perception has no scientific justification and hampers women's self–determination in the area of sexuality. Therefore, FGM violates the right of girls and women to determine their own reproductive health and sexuality. Health education as well as implementation of policies against this harmful practice should be done.

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BINGE DRINKING AND SEXUAL ASSAULT AMONG WOMEN IN JOS METROPOLIS, NIGERIA

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ABSTRACT

Background Alcohol related sexual assault is a growing epidemic world wide that affects mainly women. There is urgent need to empower women to identify behaviors and situations that may predispose them to sexual victimization.

Objectives The study was carried out to determine the relationship between binge drinking and socio-demographic factors. It also assessed the relationship between binge drinking and sexual assault.

Methods The cross-sectional descriptive study was carried out in Jos North Local Government Area from March to July, 2017. Multistage sampling technique was employed to select 272 participants aged 18 years and above who consented after obtaining ethical approval.

RESULTS The total numbers of participants were 272 females with an age range of 18-60 years. The mean age was 28.8 ± 8.6 years. The socio-demographic variables significantly associated with binge drinking were marital status (χ^2 = 9.847, DF = 2, p = 0.007), educational status (χ^2 = 10.684, DF = 3, p = 0.014) and employment status (χ^2= 5.122, DF = 1, p = 0.024). Binge drinking was significantly associated with sexual assault (χ^2 = 10.732, DF = 1, p = 0.001). Previously married were significantly more likely to binge drink compared with never married and married. Those with no formal education were more likely to binge drink compared to those with tertiary education while the unemployed were less likely to binge drink compared with the employed. The sexually assaulted (P = 0.01, OR = 2.429, CI = 1.419-4.157) were 2 times more likely to binge drink.

Conclusion There was a significant relationship between binge drinking with marital status, employment, lower level of education and sexual assault. Women should be provided with information about the safe level of alcohol consumption and the many consequences of heavy drinking including sexual assault.

Keywords: Binge drinking, women, sexual assault, socio-demographic, Jos

Introduction

Harmful alcohol consumption and sexual violence are public health problems of growing concern globally and women are mainly affected [1]. These factors often co-occur and are associated with complex set of psychosocial elements. Research has shown that 7.2% of women aged 15 years and above have suffered sexual assault [3].

Sexual assault is a severely traumatic experience that disproportionately affects women and girls [4]. Sexual assault include forced or coerced vaginal or anal penetration by any other parts or object; breast or genitalia fondling; or being forced or coerced to touch another persons genitalia [5]. It involves lack of consent; the use of physical force, coercion, deception or threat, and or involvement of a victim that is mentally incapacitated or physically impaired due to voluntary or involuntary alcohol or drug consumption, asleep or unconscious [6]. It has been found that only 2 of 40 cases of rapes are reported in Nigeria. These studies were largely conducted in the hospital with prevalence rates ranging from 0.06% to 5.2% [7,8]. Community based studies showed rather high prevalence of sexual assault from 14% to 69.9% among out of school adolescents and juvenile hawkers [9,10]. This high prevalence of sexual assault in community based studies may be attributed to the tedious legal procedures needed to prove the cases and the fear of rejection and stigmatization by the society [11]. Nevertheless, research on proximal factors that predispose victims is necessarily important in designing preventive measures. Although there are myriad of these factors alcohol has been implicated world wide as the most commonly use substance to perpetrate or be a victim of sexual assault [2,3].

Alcohol consumption among women has increased significantly because of societal change in gender roles [12]. In addition, women are also been targeted with large numbers of female friendly sweetened alcoholic beverages which may even have higher percentage of alcohol with beer [13, 26]. Research has shown that only few females are aware of the percentage of alcohol by volume in these females friendly designed alcoholic beverages [26]. Therefore binge drinking is becoming a common phenomenon. The National Institute of Alcohol Abuse and Alcoholism defines binge drinking for a typical adult as an alcohol drinking pattern that brings the blood alcohol concentration to ≥ 0.08g percent equivalent to ≥ 5 drinks for males and ≥ 4 drinks for females in two hours [17]. The amount of alcohol consumed as well as the drinking pattern has serious implication on alcohol related harm. For instance, it has been reported that women with heavy episodic drinking are at greater risks of being forced to have sexual contact or sexual relations[14]. Furthermore, it has been found that 38-55% of the sexually assaulted women reported being under the influenced of alcohol during assault[15, 16]. Binge alcohol drinking is a risk factor for sexual assault because of its effects on physical and cognitive process by reducing self control, judgment and the inability to recognize signs of danger [1]. Because of this some men encourage women to drink large quantities of alcohol believing that when women are intoxicated, they are more unlikely to resist sexual advances[2, 18]. Sexual assaults involving alcohol consumption are more likely than other sexual assaults to occur between men and women who do not know each other well[22].

On the other hand, women who are sexually assaulted are 2.3 times more likely to abuse alcohol and 2.6 times more likely to develop depression or anxiety. Therefore, it has been suggested that harmful consumption of alcohol by victims may be a coping strategy adopted to address the stress caused by violent situation [1, 19]. Some researchers have argued that the co-occurence of alcohol and sexual

assault is not a proved that alcohol causes sexual assault [20]. For example, a woman who drinks alone to intoxication in the comfort of her home is not at a greater risk than a sober woman [20]. Rather, the victims personality characteristics, attitudes and experiences as well as situational factors are predictors of victimization [21]. As plausible as these findings are they do not substitute the role of women consumption of alcohol as a risk factor for sexual victimization. Perpetrators often perceived women who drink alcohol as being more sexually available and promiscuous compared to women who do not drink [22].

Despite, the growing public health implication of alcohol-related sexual assault there is paucity of literature on this in North Central, Nigeria which findings can inform prevention and treatment plan. Therefore the study was undertaken to determine the relationship between binge drinking and socio-demographic factors, and also to assess the association betweens binge drinking and sexual assault.

METHODS

The study was a community based cross-sectional descriptive study that was conducted from March to July in Jos North Local Government Area of Plateau State, located in north central Nigeria. The sample size of 272 for the study was determined by Kish formula for cross sectional studies. Formula, $n = Z^2pq/d^2$

Where: Z = standard score variance 1.96 which correspond to 95% confidence level. P = prevalence rate of 23%, q = proportion of failure = 1-p, d = degree of accuracy desired estimated at 0.05 (5%). Therefore, $n = 1.96^2 \times 0.23 \times 0.77/0.05^2 = 272$.

Multistage sampling technique was employed to select the respondents after obtaining ethical approval. In the first stage Jos North LGA was purposively selected. Simple random sampling was used to select two wards from the twelve wards and one community from each ward that was selected. One consented eligible adult was interviewed at the time of data collection from each household. If there were more than one adult in a household balloting was used for selection.

The socio-demographic variables of interest were appropriately collected. Alcohol consumption was determined by *"Do you ever drink alcohol nowadays, including drinks you brew or make at home* Those who answered yes to this question were administered the Alcohol Use Disorder Identification Test (AUDIT). The number three question *"How often do you have four or more drinks in one occasion?"* in the AUDIT was used to assess for binge drinking; Never = 0, Less than monthly = 1, Monthly = 2, weekly = 3, Daily or almost daily = 4. These responses were divided into No for those who scored zero and yes for those who scored 1 to 4.The AUDIT is a cross-culturally validated instrument for assessment of alcohol use in the general population. Sexual assault was assessed by positive answer to the question "*Have you ever been forced to have sexual contact or sexual relations?"*

The data generated was coded and entered using Statistical Package for Social Science (SPSS 20). Frequencies and proportions were computed. Chi square was used to test for association between categorical variables and logistics for variables that were significant. The statistical significant level was set at $p \leq 0.05$ at 95% confidence interval.

RESULTS

The total numbers of participants were 272 females with an age range of 18-60 years. The mean age was 28.8 ± 8.6 years. Majority 112(41.2%) were in the age group 25-34 years. Most of them were never

married 168(61.8%), protestants 151(55.55) and had secondary education 97(35.7%). About half 148(54.4%) were employed with 167(61.4%) of them on an average monthly income of 20,000 naira or less. Ninety six (35.3%) were sexually assaulted with 80(29.4%) had binge drank as indicated in Table: 1.

The socio-demographic variables significantly associated with binge drinking were marital status ($\chi^2 = 9.847$, DF = 2, p = 0.007), educational status ($\chi^2 = 10.684$, DF = 3, p = 0.014) and employment status ($\chi^2 = 5.122$, DF = 1, p = 0.024). Binge drinking was significantly associated with sexual assault ($\chi^2 = 10.732$, DF = 1, p = 0.001) as tabulated in Table: 3.

Logistic regression revealed that previously married were significantly more likely to binge drink compared with never married (P = 0.04, OR= 0.427, CI= 0.760–0.960) and married (P = 0.03, OR = 0.368, CI = 0.147–0.960). Those with no formal education (P = 0.164, OR = 2.002, CI = 0.753–5.300) were 2 times more likely to binge drink compared to those with tertiary education but it was not significant while the unemployed (P = 0.117, OR = 0.616) were less likely to binge drink compared with the employed. The sexually assaulted were 2 times more likely to binge drink Table: 2.

Table: 1 Socio-demographic factors, Binge drinking and Sexual Assault

Socio-demographic variables	Number	percentage
Age group		
18–24	96	35.3
25–34	112	41.2
35–44	44	16.2
45–60	20	7.4
Marital Status		
Never–Married	168	61.8
Married	74	27.2
Previously Married	30	11.0
Employment Status		
Unemployed	124	45.6
Employed	148	54.4
Educational Status		
No formal education	23	8.5
Primary	61	22.4
Secondary	97	35.7
Tertiary	91	33.5

Religion		
Protestant	151	55.5
Catholic	80	29.4
Islam	23	8.5
Others	18	6.6
Monthly Income		
= 20,000	167	61.4
=21,000	105	38.6
Binge drinking		
NO	192	70.6
Yes	80	29.4
Sexual assault		
Yes	96	35.3
NO	176	64.7
Total	272	100

Table: 2 Relationship between Binge drinking and Socio-demographic factors, Sexual assault

Socio-demographics	Binge drinking		Chi-square	DF	P-value
Age Group	No	Yes	(χ^2)		(= 0.05)
18-24	74(38.5)	22(27.5)	4.807	3	0.186
25-34	72(37.5)	40(50.0)			
35-44	33(17.2)	11(13.8)			
45-60	13(6.8)	7(8.8)			
Total	192(100)	80(100)			
Marital Status			9.847	2	?0.007
Never-Married	126(65.6)	42(52.5)			
Married	52(27.1)	22(27.5)			
Previously Married	14(7.3)	16(20.0)			
Employment Status			5.122	1	?0.024
Unemployed	96(50.0)	28(35.0)			
Employed	96(50.0)	52(65.0)			

Educational Status			10.684	3	?0.014
No formal education	11(5.7)	12(15.0)			
Primary	39(20.3)	22(27.5)			
Secondary	77(40.1)	20(25.0)			
Tertiary	65(33.9)	26(32.5)			
Religion			2.112	3	0.549
Protestant	112(58.3)	39(48.8)			
Catholic	53(27.6)	27(33.8)			
Islam	15(7.8)	8(10.0)			
Others	12(6.8)	6(7.5)			
Average monthly income			0.093	1	0.076
= 20,000	119(62.0)	48(60.0)			
= 21,000	73(38.0)	32(40.0)			
Sexual assault			10.732	1	?0.001
Yes	56(29.2)	40(50.0)			
No	136(70.8)	40(50.0)			
Total	192(100)	80(100)			

? Significant *P*–Values

Table: 3 Logistic regression Binge drinking and Socio-demographic factors, Sexual assault

socio-demographics	Binge drinking		D F	P = 0.05	B	OR	95% C.I.
Educational Status	No	Yes	3				
No formal education	11(5.7)	12(15.)		0.164		2.002	0.753–5.322
Primary	39(20.3)	22(27.)		0.560		1.237	0.606–2.525
Secondary	77(40.1)	20(25.)		0.213		0.644	0.322–1.288
Tertiary	65(33.9)	26(32.)				1.0	
Employment Status							
unemployed	96(50.0)	28(35.)				1.0	
employed	96(50.0)	52(65.)	1	0.117	–0.484	0.616	0.336–1.129
Marital status			2				
Never–Married	126(65.)	42(52.)		0.040	–0.887	0.412	0.176–0.960
Married	52(27.1)	22(27.)		0.033	–0.999	0.368	0.147–0.921
Previously Married	14 (7.3)	16(20.)				1.0	
Sexual Assault							
Yes	56(29.2)	40(40.)	1	0.001	0.887	2.429	1.419–4.157
No	136(70.)	40(50.)				1.0	

Discussion

The prevalence of binge drinking in this study is 29.4%. This concurred with studies that found Nigerian women who consume alcohol were often frequent or heavy episodic drinkers [23, 24]. It has been suggested that the thresh hold for hazardous drinking is too low. However, this threshold has been set based on robust research findings of the biological and behavioral effects of alcohol [25]. This pattern of alcohol consumption clearly put these women at an increased risk of both the short and long term consequences of harmful use of alcohol.

Binge drinking among women has been found to decrease as they grow older. Similarly, this study found that younger age group engaged more in heavy episodic drinking than the older age group. It is assumed that women reduced their consumption of alcohol as they get married and have to fulfill the role of wife and motherhood [26, 27]. Other demographic factors found in women with heavy episodic drinking have been unmarried, less educated and lower socioeconomic status [28, 29]. Whereas, in this study the association between episodic heavy drinking and being previously married, employed and less educated was found. These findings may be a result of and or a way of coping with the harsh economic and social conditions.

Some literature have documented that religion confers protection against alcohol consumption among females [30, 31]. However, this study did not find significant relationship between religion and binge drinking. The differential in finding could be as a result of assessing religion as a single item, such as having religion or not rather than using religiosity which is a multi-dimensional concept [31].

The prevalence of 35.3% of sexual assault found in this study is higher than 14.0% found in Lagos[10] and lower compared with 69.9% found among females hawkers in Anambra state in Nigeria [9]. These differences may be attributed to the operational definition, study sample and methods used. It was found in this study that those who binge drink were two times more likely to be victims of sexual assault. This concurred with previous studies that found females with heavy episodic drinking were more likely to be victims of sexual assault [14, 33]. However, a positive relationship between alcohol consumption and sexual assault in it self is inadequate to establish that women's drinking contributes to victimization, rather than alcohol consumption increasing vulnerability to sexual assault, alcohol could have been used to self medicate following a traumatic experienced of sexual assault [34]. In addition to amount of alcohol consumed, the drinker characteristics, the influence of drinker expectations [35], and the drinking context and situation [36] have been found to be important in drinking sexual assault relationship and should be considered for subsequent study.

Conclusion

There was a high prevalence of binge drinking especially among the unmarried, lower educated, employed and less educated, and they were more likely to be victims of sexual assault. Therefore, women should be provided with information on safe drinking and to identify behaviors and situations that may put them at risk without feeling responsible.

Limitation: The study may not be a true reflection of the prevalence of binge drinking and sexual assault in the community because of the associated stigma. The sample size was small therefore the study may not be generalizable in the region. Further study involving more local government areas with a larger sample size is needed.

Conflict of interest: Nil

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ORAL HYGIENE KNOWLEDGE HABITS AND PRACTICES AMONG PRIMARY SCHOOL PUPILS IN KANO NIGERIA

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ABSTRACT

Background: Promotion of oral hygiene is one of the components of primary health care in Nigeria. However, good dental health is a privilege of the wealthy few who can afford expensive dental care. Though most studies reported that between four to 30% of Nigerians have dental caries a prevalence of 58% was reported among northern urban dwellers. Periodontal disease with deep pocketing occurs in Nigerians at an early age. Dental caries and periodontal diseases are the two dental diseases which are entirely preventable

Aim: To compare oral hygiene, habits and practices among primary school children attending public and private schools in Gwale local government, Kano state.

Method: A descriptive comparative cross sectional study was conducted by administering pre-tested, structured, mostly closed ended interviewer-administered questionnaires to 400 children. Respondents were selected using systematic sampling technique from two schools in the study area. Their responses were collated and analyzed.

Results: The mean age of the respondents was 11.7± 2 (years) for the public and 11.5 ± 1.1 (years) for the private school. Better knowledge of oral hygiene was observed among students of private school students (63.5%) compared to those in public school (36.5%) and better practices in private school (81.5%). Significant differences were observed among students of the study schools in methods of brushing, frequency, parental supervision as well as visit to dentists ($p<0.05$).

Conclusion: More attention should be given to oral hygiene particularly through mothers' involvement which most certainly will result in remarkable improvement in oral hygiene among our children.

Key words: Pupils, Oral Hygiene, Knowledge, Practices

Introduction

Oral health is increasingly being recognized as an important part of general health all over the world, however in developing countries, it is given less priority possibly because of the prevalence of communicable disease like tuberculosis, diarrheal diseases, HIV/AIDS, measles, etc. which are often life threatening. Oral health can be defined as standard of health of the oral cavity and related tissues which enables an individual to eat, speak and socialize without active disease, discomfort or embarrassment and which contributes to the general well being of that individual.[1] On the other hand Oral hygiene can best be described as the practice of keeping the mouth and teeth clean to prevent dental problems and bad breath.[2] Oral health and hygiene are considered important in maintaining adequate health of the oral cavity.

Dental ailments have remained remarkably similar throughout human history. Decay, toothache, periodontal disease and premature tooth loss were documented in ancient chronicles. In the Egyptian manuscripts known as Eber's papyri, which dated back to 3700 B.C., dental maladies such as toothaches and swollen gums were mentioned. Dental caries and periodontal diseases are the two dental diseases which are entirely preventable. In spite of the mouth's natural cleansing factors (like the cleansing effect of saliva, cheeks and lips etc) the teeth and the tongue often remains not very clean . These natural factors of self-cleansing may not be able to eliminate contaminants such as food debris, tobacco, metallic salt, medicaments that tend to alter the normal chemical, bacterial and physical balance of the forces of oral hygiene in the mouth.[3]

There is evidence that dental caries is most prevalent among well-nourished communities in developed countries, while the incidence tends to be low where living standards are poor.[4] On the other hand prevalence of periodontal disease is high in developing countries, [5] and its occurrence is related to poor oral hygiene and low socio-economic status. [6] Thus periodontal disease accounts for high proportion of teeth loss in the population in developing countries.

During the last two decades many developed countries experienced a decline in prevalence of dental caries among children and adolescents. [7,8] The reasons for this improved oral health are many but specifically could be attributed to reduced sugar consumption, improved oral hygiene practices , use of fluorides in tooth pastes, establishment of school based oral health preventive services and effective use of oral health services. [9, 10, 11] Paradoxically, a rise in prevalence of dental caries is continuously being observed in developing countries partly because preventive programs are nonexistent or poorly implemented or Increasing urbanisation and changing dietary habits have ushered in rapidly escalating rates of dental caries. [12-15]

Millions of Nigerians suffer from poor oral health which has negative consequences for nutritional and developmental well-being. Even though provision of oral health is one of the components of primary health care in Nigeria, good dental health is a privilege of the wealthy few . The caries pattern follows closely, the affluence level as well as ethnic variation, both of which reflect dietary practices within the society. Though most studies reported that between four to 30% of Nigerians have dental caries a prevalence of 58% was reported among northern urban dwellers. [13] Periodontal disease with deep pocketing occurs in Nigerians at an early age, the prevalence being 15-58% in those aged above 15 years. Caries experience has been reported to vary between very low and low in most studies, but is moderate in urban communities.[15]

About 90% of school children worldwide and most

adults have experienced caries, with the disease being most prevalent in Asian and Latin American countries.[16]

Apart from these two diseases which constitute the commonest oral health challenge, In Nigeria there are other oral health conditions of greater public health concern like cancrum oris (NOMA) and acute necrotising ulcerative gingivitis (ANUG). Annual incidence of noma is approximately 20 cases per 100 000 children with about 90% resulting in death from lack of medical intervention1.[17] Other conditions like the occurrence of maxillofacial traumas in Nigeria is assuming an alarming dimension as a consequence of communal violence, banditry and motor vehicle accidents . The prevalence of oral cancer is also on the

increase, as a consequence of rapid urbanisation and increasing use of tobacco and alcohol. The incidence of pre-cancer and oral cancer lesions is estimated to approximate 25 cases per 100 000 annually in developing countries.[18]

Studies on oral hygiene in Nigeria are few and rather limited to certain parts of the country and even though some of them are representatives of both rural and urban communities, the availability of these results for the total population of the country is lacking. This study therefore identifies the relative roles of some socio-demographic variables on habits and interplay of such habits on oral health among primary school children in Kano, urban Nigeria.

METHODS

The study schools selected were Dandago special primary school (public) and Sheikh Basher primary school (private school). Dandago special primary school was founded in the year 1934 and has 5481 pupils with 53 teachers, while Sheikh Bashir school was founded in 1993 and has 500 pupils with 30 school teachers. None of these schools has a school clinic, thus school pupils and their teachers utilize nearby primary health centres for health care services

The study design is comparative descriptive study design. The study population was primary school pupils up to grade six drawn from these selected private and public schools within the LGA. Using a multistage sampling technique, Gwale, a metropolitan local government area (LGA) was first selected from the list of eight metropolitan LGAs in Kano. In the second stage schools were selected from the list of public schools on one hand and private schools on the other using a simple random selection procedure. Taking pupil's class attendance registers as our samplings frame, sampling intervals were determined and every second pupil in Dandago and 14th pupil in Sheik Bashir's schools were enrolled for this study until the required sample size was obtained. The survey was carried out for five days during schooldays to ensure no eligible pupil was left out.

Preparation for data collection

Data was collected using a structured interviewer administered questionnaire adapted from World Health Organization (WHO) oral health assessment form and tools (OHAT).The questionnaire collects basic information on knowledge, practices and physical assessment of oral health.

Six research assistants: two medical doctors, two dental officers and two nurses were trained on the technique of questionnaire administration for 2 days. The questionnaire was pre tested in a different LGA, and corrections were made to the tool to capture the necessary information needed. Spot checks on questionnaire filling were conducted by the author during the study to ensure quality data collection.

Data collected from the questionnaires was entered in to Microsoft excel by data entry clerks for

cleaning and 10% of the data was entered to check for consistency and quality of the entries. The data collected was analyzed using SPSS software version 20.0. Categorical data was presented in form of frequency tables and percentages. Chi square statistical test of significance (x^2) was used to determine significant association between qualitative variables using $p<0.05$ as significant level.

RESULTS

Four hundred primary school students from Dandago special primary school and sheikh Bashir Primary school constituted the subjects of the study. The age range of the respondents was 5–19 years. The mean age of the respondents was 11.7± 2 (years) and 11.5 ± 1.1 (years) and also most of the respondents were between 10–14 years, 86% and 95.5% for Dandago and Sheikh Bashir primary schools respectively.

The information henceforth was obtained from the questionnaires.

Table 1: Sociodemographic characteristics of the respondents

S.No	Socio demographic features	N=400	%
1.	**Age groups (years)**		
	5–9	31	(7.8)
	10–14	363	(90.8)
	15–19	6	(1.5)
2.	**Sex**		
	Male	202	(50.5)
	Female	198	(49.5)
3.	**Ethnic group**		
	Hausa	341	(85.3)
	Fulani	50	(12.5)
	Yoruba	3	(0.8)
	Igbo	4	(1.0)
	Others	2	(0.5)
4.	**Fathers Education**		
	None	4	(1.0)
	Qur anic	163	(40.8)
	Primary	56	(14.0)
	Secondary	177	(44.3)
	Tertiary	0	0
5.	**Mothers Education**		
	None	17	(4.3)
	Qur anic	209	(52.3)
	Primary	6	(1.5)
	Secondary	67	(16.8)
	Tertiary	101	(25.3)
6.	**Fathers Occupation**		
	Farmer	8	(2.0)
	Businessman	216	(54.0)
	Civil servant	142	(35.5)
	Others	34	(8.5)
7.	**Mothers Occupation**		
	Housewife	276	(69.0)
	Trader	25	(6.3)

Table 2: Knowledge of the Pupils on Oral Health

	Knowledge Assessed (n=400)	Correct	Incorrect	Don't Know
		N %	N %	N %
1.	Eating Sweet food can cause dental decay and caries	333 (83.3)	61 (15.3)	6 (1.5)
2.	Regular tooth brushing protects the teeth	369 (92.3)	13 (3.3)	3 (4.5)
3.	Teeth Appearance is affected by decayed or carious tooth	310 (77.5)	46 (11.5)	44 (11.0)
4.	Sweet can cause tooth decay	353 (88.3)	33 (8.3)	14 (3.5)
5.	Soft drinks can damage the teeth	141 (35.3)	246 (61.5)	13 (3.3)
6.	General body health has relationship	281 (70.3)	100 (25.0)	3 (4.8)
7	Regular visit to dentist improves dental Health	205 (51.3)	175 (43.8)	20 (5.0)

Table 3: Students Habits and Practices regarding Oral Hygiene

S.No	Habits and Practices		
1.	**Methods used to brush teeth**		
	Tooth brush	168	(42.0)
	Chewing stick	44	(11.0)
	Charcoal	37	(9.3)
	Others [1]	151	(37.8)
2.	**Frequency of tooth brushing**		
	Less than once a day	8	(2.0)
	Once a day	220	(55.0)
	Twice a day	132	(33.0)
	More than twice a day	40	(10.0)
3.	**Time spent on brushing**		
	Less than 3 min	391	(92.7)
	More than 3 min	29	(7.30)
4.	**Frequency of eating sweet food**		
	Less than once a day	179	(44.8)
	Twice or more a day	221	(45.2)
5.	**Frequency of taking soft drinks**		
	Never	169	(42.3)
	Once a while	177	(44.3)
	Everyday	54	(13.5)
6.	**Parent supervising child while brushing**		
	Watch and advise	68	(17.0)
	Advise	20	(5.0)
	Do not watch and supervise	312	(78.0)
7.	**Ever Visit a Dentist**		
	Yes	52	(13.0)
	No	348	(87.0)
8.	**Reason for not visiting a Dentist**		
	I don't have tooth problem	146	(42.0)
	High cost	37	(10.6)
	No clinic nearby	12	(3.4)
	Fear of tooth drilling or removal	153	(44.0)

Table 4: Comparing Practices of Oral Hygiene of Dandago and Sheikh Bashir Primary School Pupils.

Practice of Oral Hygiene	Dandago	Sheikh Bashir	Chi square	P–value
	n=200	n=200		
Method used	f %	f %		
Toothbrush	168 (84.0)	188 (94.0)	10.21	0.001
Others	32 (16.0)	12 (6.0)		
Frequency of brushing				
<1/day	66 (33.7)	18 (9.0)	162.78	0.000
1/day	110 (56.1)	35 (17.5)		
>1/day	20 (10.2)	147 (73.5)		
Time spent				
<3min	116 (59.2)	129 (64.5)	1.19	0.276
>3min	80 (40.8)	71 (35.5)		
Frequency of eating sweet food				
<1/day	160 (80.0)	50 (25.0)	121.30	0.000
≥2/day	40 (20.0)	150 (75.0)		
Frequency of eating candy				
Never	40 (20.0)	19 (9.5)	43.57	0.000
Once in a while	118 (59.0)	76 (38.0)		
Everyday	42 (21.0)	105 (52.5)		
Frequency of taking soft drinks				
Never	10 (5.0)	13 (6.5)	92.48	0.000
Once in a while	154 (77.0)	60 (30.5)		
Everyday	36 (18.0)	127 (63.5)		
Parent supervision				
Watch and advice	16 (8.0)	159 (79.5)	223.27	0.000
Advice	164 (82.0)	23 (11.5)		
None	20 (10.0)	18 (9.0)		
Visit to a dentist				
Yes	46 (23.0)	148 (74.0)	104.13	0.000
No	154 (77.0)	52 (26.0)		

Table 5: Comparing Oral Hygiene Practices between Public and Private school

Oral Hygiene	Public School F=200 (%)	Private School F=200 %	Test Statistics	P Value
Knowledge Assessed				
	86 (43.0)	**73 (36.5)**	**1.31**	**0.184**
Poor	**114 (57.0)**	**127 (63.5)**		
Good				
Practices				
Poor	**46 (23)**	**37 (18.5)**	**1.23**	**0.27**
Good	**154 (77)**	**163 (81.5)**		
DMF Scores				
	64 (32.0)	21 (10.5)		
Decayed	18 (9.0)	35 (17.5)		
Missed	4 (2.0)	23 (11.5)		
Filled				

DISCUSSION

This study presented an overview of the oral hygiene, knowledge and practices of primary school pupils in Gwale LG, Kano. Four hundred primary school pupils from Dandago special primary school and Sheikh Bashir primary school constituted the subjects of the study. The age range of the respondents was 5–19 years..

There is a significant association between gender and oral hygiene ($p<0.05$) with females having better oral hygiene. This finding differs from what was reported from Burkina Faso where males were found to have better oral hygiene as compared to females.[19, 20] Students attending public schools are considered to be from lower socioeconomic background compared to those attending private school. Respondents from the public school (Dandago) have better oral hygiene where 56% have good oral hygiene as against 28% at Sheikh Bashir, however this finding is not significant ($p<0.05$). This finding differs from a study conducted by Olojugba and Lennon on sugar consumption in 5 and 12 year old pupils in Ondo state found out that carries was increasing among children of higher social class families compared to lower social class families.[8] Aderinokun and Oyemade in 1999 in their study of relative influence of socio-demographic variables on oral health and habits of some Nigerian school children reported that children in the lower socio-economic groups in the rural area were found to have poorer oral hygiene and gingival health in comparison to their higher socio-economic counterparts at the university staff school in the urban area. This difference is thought to be due to

differences in their diet and oral hygiene habits.[21]

An association between oral hygiene status of the respondents and parent's educational level was observed ($p<0.05$). Oral hygiene status was found to be better in those children whose parents have formal education. This result is comparable to that of Adenirokun and Oyemada which showed that debris and calculus score recorded in pupils whose mothers were highly education were less when compared with those whose mothers had primary and secondary education only. This implies that of all the variables studied, mothers' educational status appeared to be the single most significant variable influencing oral hygiene.[21]

There was a statistically significant association between respondents' school and knowledge of oral hygiene with pupils from Sheikh Bashir having better knowledge (75.0% versus 57.0%). In a similar study designed to investigate the oral health knowledge, attitudes and preventive practices of third grade school children in Harris County, most children reported "fairly adequate" oral hygiene habits (58%) and oral health knowledge (48%), and "adequate" dietary patterns (59%). Children with inadequate oral health knowledge were twice as likely to have caries as children with adequate knowledge.[28]

Most of the respondents (94%) from Sheikh Bashir used toothbrush and paste to clean their mouth as against 84% of respondents from Dandago. About 46.5% of respondents from Sheikh Bashir brushed their teeth twice per day, four times more than the figures from Dandago school per day. A similar study at Jordan found out that approximately 69% of the study sample brushed their teeth at least twice daily, while 17% reported irregular tooth brushing. Approximately 83% of the subjects reported using a tooth brush and toothpaste to clean their teeth. 2% reported using dental floss, 6% reported using mouthwash, and 7% reported using toothpicks as extra aids for oral hygiene. The study population did not brush their teeth at a similar time during the day. However, most subjects brushed their teeth before going to bed and/or in the morning.[24] Another study carried out in China showed no significant difference between tooth brushing and gender, ($p>0.05$) and nearly half of the respondents claim to brush their teeth at least twice per day and such practice was reported more often in urban areas than in rural areas.[15]

About three quarters (64.5%) of respondents spent less than three minutes to brush their teeth at Sheikh Bashir while 41% spent less than three minutes at Dandago. The respondents' eating habit shows that pupils from the private school ate sweet food more times in a day than those from the public school which explains the high prevalence of dental caries among children with high socio-economic background. This is similar to the findings of Hofstedt and Shelter in a study carried out to determine the oral health status, knowledge and dietary habits among urban and rural 6–7 year old children in Windhoek area, Namibia which showed that the number of children that consumed sweets on daily basis among urban children (62%) was significantly higher ($P <0.01$) compared to the rural children.

Most of the respondents at Sheikh Bashir have parental supervision of oral health. Parents watched and advised 79.5% of the respondents while at Dandago, parents watched and advised 10% of the respondents. Thus this indicates that parents from higher socio-economic class are more educated and more aware of their children's dental hygiene. However this doesn't necessarily translate into better oral hygiene, what is more important is the effectiveness of such cleaning procedure which only comes with good oral health skills[3].

Seventy-two percent of respondents at Sheikh Bashir have visited a dentist at least once while this is not the case at Dandago where only 23% have visited a dentist at least once, the remaining 77% have never visited a dentist.

The oral hygiene habits of the respondents shows that those who use tooth brush to clean their teeth have better oral hygiene in both the public and private schools. There is also a statistically significant association between the frequency of tooth brushing and oral hygiene, being better in those who brush at least twice a day in both the public and private schools. In a study on the effect of frequency of tooth brushing on oral health of 14–16 year olds by Taani DS and al-Wahadni AM, the occurrence of shallow and deep pockets in students who brushed or didn't brush their teeth were minimal (6.6–8.4 per cent). The oral health status among those who did not brush or brushed their teeth on regular or irregular basis was found to be poor and slightly varied. Therefore, more emphasis should be placed on proper oral hygiene. Also, implementation of school based oral health promotion and prevention programs is urgently needed.[32]

Respondents at Dandago who eat candy once in a while have better oral hygiene compared to those that eat candy at least twice a day. There was no significant association between eating sweet food and oral hygiene. There was also no significant association between oral hygiene and taking soft drink. This can be explained by the fact that this study didn't quantify the amount of sweet food, soft drinks or candy taken. The study also didn't take into consideration the interval between intake of these substances and brushing.

CONCLUSION

The study also revealed that parent's educational status, oral hygiene practices, dietary habits and knowledge of oral hygiene greatly influenced the level of dental hygiene. Thus, if more attention is given to dental hygiene particularly through mothers' involvement, it is most certain that there will be a remarkable improvement in dental hygiene among our children.

Conflict of interest: I declare that I have no financial or personal relationship(s) which may have inappropriately influenced me in writing this paper.

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AWARENESS, KNOWLEDGE AND PERCEPTION ON MDGS AMONG CLINICAL STUDENTS OF BINGHAM UNIVERSITY TEACHING HOSPITAL, JOS

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ABSTRACT

Background*:* The Millennium Development Goals (MDGs) are eight goals adopted by 189 nations and signed by 147 Heads of State and Governments during the UN Millennium Summit in September 2000 with the aim of attaining these goals by the year 2015. The aim of the study is to determine the awareness, knowledge and perception on MDGs among clinical medical students of Bingham University Teaching Hospital, Jos.

Methods*:* The sampling method was consecutive sampling of all the students until sample size was obtained. A total of 173 questionnaires were distributed and 171 were duly filled and returned.

Results*:* Analysis of the results obtained showed that about 90% of the students are aware of MDGs, Majority of the students heard about the MDGs by surfing the internet (59%), followed by information from television set (21%). The results from their responses showed that majority of them disagree that Nigerians felt the impact of MDGs (52%, disagree and 15%, strongly disagree). The knowledge on MDGs was good in some indicators. The highest knowledge was on the education, environment and gender equality, with 60%, 54% and 40% respectively knowing that the MDGs had indicators on these. However, on health only 18% knew the correct number of indicators that were centered on health.

Conclusion*:* There will be need to educate the universities students on MDGs, so as to have a greater impact on the ongoing SDGs.

Introduction

The Millennium Development Goals (MDGs) are eight goals adopted by 189 nations and signed by 147 Heads of State and Governments during the UN Millennium Summit in September 2000 with the aim of attaining these goals by the year 2015.[1] In September 2000, at the Millennium Summit, the world leaders adopted the UN Millennium Declaration, which committed the nations of the world to a new global partnership, aimed at reducing extreme poverty and other time-bound targets, with a stated deadline of 2015.[2] This eight goal initiative was planned to eradicate extreme poverty and hunger, while aiming to achieve universal primary education, promote gender equality, reduce child mortality, improve maternal health, combat HIV/AIDS, malaria, and other diseases, ensure environmental sustainability and develop a global partnership for development.[3]

Nashash et al,[4] argues that for MDGs to be achieved "grassroots are required before demand, where people must first be aware of the MDGs and work with them to demand their fulfillment from their governments". The implication of this is that awareness can be linked to possible achievement of MDGs. Adegboye, et al,[5] in 2011 did a multi-centered cross- sectional study in University of Ilorin Teaching Hospital, (IUTH), Federal medical Centre (FMC), Bida and Federal Medical Centre, Yola on: Millennium development goals-Knowledge and attainability as perceived by doctors: The awareness of doctors in the three health centers about MDGs is significantly low. The largest number of respondents who had heard of the acronym "MDG" before the study (90, 62.5%) Only 77 (42%) of the total respondents knew the number of the goals to be eight, It is therefore not surprising that only 8.3% of the respondents believed that the MDGs are very achievable.

Ogbodo et al,[6] in his study to obtain the level of awareness of MDGs in a rural and urban community got the level of awareness to be 76% and the level of knowledge on MDGs to be 61% which is much higher than that gotten by Adegboye et al,[5] that was done among doctors. However it is of note that the way the questionnaires were framed are different, the study done by Adegboye et al,[5] tried to remove bias and used the acronym "MDGs" in the questionnaires to deliberately prevent suggestive questions, while that done by Ogbodo et al,[6] asked if they have heard of the Millennium development goals directly, with an option of yes or no, there was no room to test if they actually have heard of it, by them providing the full meaning of MDGs. The level of knowledge was also tested based on a yes or no basis which left no room for proper assessment and a true test of the depth of knowledge, by asking questions on the indicators, targets or even when it was launched like what adegboye et al,[5] did in their questionnaires.

Nashash et al,[4] also found the awareness of the Millennium Development Goals among students of Princess Alia University College Jordan to be generally low. Although it was not clear from the results the types of questions asked and the type of data generated, the analysis using a t-test showed that there was a low awareness of the MDGs among the students.

The impact of MDGs program has been perceived as generally low by some surveys. In the study done by Ogbodo at al,[6] 45.5% of the respondents rated the level of implementation of MDGs in Nigeria as very low as against 17.9% which rated the implementation as very high. On the other hand, 36.5% could not take a stand on the implementation of MDGs in Nigeria. According to the UN report in 2015, about two third of the world population who are extremely poor lived in just five countries in

2011: India, Nigeria, China, Bangladesh and the Democratic Republic of the Congo.[3] Nigeria contributed significantly to more than 42,000 people who were forced to become refugees and seek protection due to armed conflicts in 2014.[3] In 2013, of the 2.1 million new HIV infections, 75% occurred in just 15 countries with Nigeria, South Africa and Uganda accounting for about 50% of them all.[3] Nigeria also has one of the lowest numbers of children sleeping under the mosquito nets, in a comparison of surveys among nations of the world.[3] Nigeria ranks 118 of 134 countries in the gender equality Index.[7] According to the UKaid Report, women make up only 21% of the non-agricultural paid labour force. Gender inequality is a major problem in the educational system, with low representation of girls as they move up in the education ladder, especially in the Northern part of Nigeria where girl-child education is still an issue.[6]

In contrast to what is happening in Nigeria: there was a decline in the total number of people living in extreme poverty by more than 50%, from 1.9 billion in 1990 to 836 million in 2015; primary school enrolment rate has increased and the number of out-of-school children of primary school age worldwide has fallen by almost half, to an estimated 57 million in 2015, down from 100 million in 2000 across the world.[3]There are more girls in school now leading to a significant improvement in gender equality with empowerment of women, more women are in paid employment and many more women are now in government around the world. Global under-five year mortality rate has declined by more than 50%, dropping from 90 to 43 deaths per 1,000 live births between 1990 and 2015.[3] Maternal mortality ratio has declined by 45 per cent worldwide since 1990 with an improvement in contraceptive use. and new malaria and HIV cases have declined, with new HIV infections falling by approximately 40 percent between 2000 and 2013, from an estimated 3.5 million cases to 2.1million.[3]

Sub-Saharan Africa remains the most underdeveloped region despite the achievements of the MDGs in other continents of the world.[8] The reasons why Nigeria failed in achieving the MDGs could be explained by inadequate and unreliable data systems, inadequate funding, poor access to primary healthcare delivery systems, lack of human capacity for implementation, incessant strikes in the health sector, high cost of healthcare, and indiscipline with corruption are the challenges facing the proper implementation of MDGs in Nigeria by Ajiye et al.[9] Olabode KT et al,[10] also highlighted on poverty as one of the major reasons why Nigeria failed to implement the MDGs. The government has been supportive since the inception of MDG, with release of funds and the creation of the office of the senior special adviser to the presidents on MDG. However, it is unclear given the data available whether there has been any real impact on achieving the targets set or whether Nigeria's engagement has instead been dominated by political signaling.[11]

The MDGs program ended three years ago with plans of building on the existing frame work to achieve the SDGs. Discussion has been ongoing on how link post-MDG targets with SDGs. [12,13,14] The SDGs seeks to complete the unfinished business of the MDGs, to achieve this there is need to revisit the uncompleted missions related to MDGs.[15] The nature of the MDGs and SDGs requires a multi-sectorial collaboration approach for effective service delivery.[15] Education is considered to be the core aspect for achieving a better life, it is centered on sustainable development, which empowers people to get out of poverty, improves their living conditions, and acts as an instrument for social mobility through gaining knowledge, experience

and skills that empower individuals to seek better more informed options thus make better decisions.[4,16] The UNDP established an initiative with Cairo University to assess students' awareness of the Millennium Development Goals, by conducting surveys among the university students. They divide the initiative into two components: the first is to raise students' awareness and the second to promote MDGs related research.[17] The UN also launched the "Teach Ins" initiative to teach on the importance of the Millennium Development Goals for all institutions in Lebanon. The UN officials and staff members spoke in all the different regions of Lebanon, in their schools and universities, raising awareness on MDGs and the work being done to achieve them.[18]

Methods and Materials

The study was a cross-sectional descriptive study. A self-designed semi-structured questionnaire was administered to the students who fulfilled the criteria and consented to the study. The sampling method was consecutive sampling of all the students until sample size was obtained. The proposal for this study was approved by the Ethical committee of the Teaching Hospital. A total of 173 questionnaires were administered but 2 of them were not properly filled, so a total of 171 questionnaires were analyzed.

The data was entered into SPSS statistical package version 20 and analyzed. Frequency tables and charts were drawn to show the awareness, knowledge and perception of the students.

Results

One hundred and seventy-one students were enrolled into the study. There were 102 (59.60%) females and 69 (40.35%) males with M: F ratio of 1:1.48. A total of 154 (90.06%) are aware of MDGs while 17 (9.54%) have not heard about MDGs. The difference was not statistically significant with a p value of 0.94.

Table 1. Distribution of have you heard of MDGs by sex

	Female	Male	
Have you heard of MDGs	Frequency (%)	Frequency (%)	Total (%)
Yes	92(90.20)	62(89.86)	154(90.06)
No	10(9.80)	7(10.14)	17(9.94)
Total	102(59.65)	69(40.35)	171(100)

Chi=0.0053 p= 0.94

The major sources of information about MDGs was from the internet with 101 (59.06%), Television 36 (21.05%). The least was from conferences with 5 (2.92%).

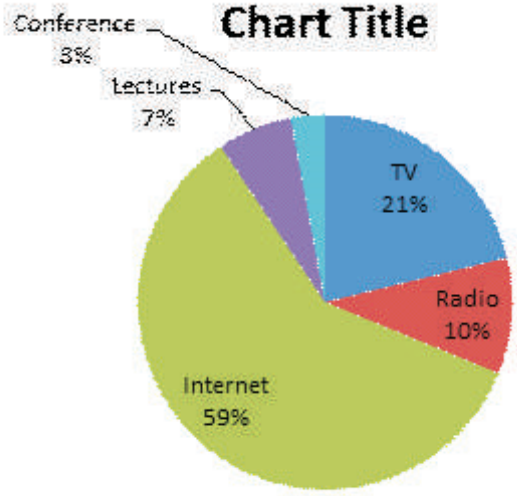

Fig. 1 Sources of information about MDGs

The highest percentage on knowledge about the MDGs was on knowing the full meaning of MDGs 145 (84.4%), knowing that there are goals on education 103 (60.23%), environment 93(54.39%), gender equality 69 (40.39%). The leasts knowledge were on the number of indicators, targets and countries who signed the agreement, 5 (2.92%), 15 (8.77%), and 7 (4.07%) respectively.

Table 2. Knowledge about MDGs

	Correct	Wrong	I don't know
Knowledge	Frequency (%)	Frequency (%)	Frequency (%)
Meaning of MDGs	145(84.80)	9(5.26)	17(9.94)
The year it was launched	58(33.92)	11(6.43)	102(59.65)
The year it ended	47(27.49)	18(10.52)	106(38.01)
How long it lasted	36(21.05)	16(9.35)	119(69.59)
How many goals	62(36.26)	13(7.60)	96(56.14)
How many targets	15(8.77)	25(15.79)	129(75.44)
How many indicators	5(2.92)	9(5.26)	157(91.81)
How many countries signed agreement	7(4.09)	13(7.60)	151(88.38)
How many goals on health	31(18.13)	19(11.06)	121(70.78)
Any goals on environment	93(54.39)	2(1.17)	76(44.44)
Any goals on education	103(60.23)	0(0.00)	68(39.77)
Any goals on gender equality	69(40.35)	10(5.85)	92(53.80)
Did Nigeria Government release any funds for MDGs	48(28.07)	8(4.68)	115(67.25)

Impart of MDGs in Nigeria was perceived to be poor by 116 (67.84%) and good by 55 (32.16%).

Table 3. The impart of MDGs was felt by Nigerians

	Strongly disagree	Disagree	Agree	Strongly agree
Impact	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Yes	26(15.20)	90(52.65)	52(30.41)	3(1.75)
No	145(84.80)	81(47.95)	119(69.59)	168(98.25)

One hundred and forty-five (84.79%) of the students taught that the MDGs program was not successful, while only 26 (15.21%) believed it was successful.

Table 4. MDGs was successful in Nigeria

	Strongly disagree	Disagree	Agree	Strongly agree
Impact	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Yes	32(18.71)	113(66.08)	20(11.17)	6(3.51)
No	139(81.29)	58(34.50)	151(88.30)	165(96.49)

About 145 (85%) disagree about the awareness of MDGs in Nigeria being good while 26 (15%) agreed that the awareness was good.

Table 5. The awareness of MDGs in Nigeria was good

	Strongly disagree	Disagree	Agree	Strongly agree
Impact	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Yes	46(26.90)	99(57.80)	25(14.62)	1(0.58)
No	125(74.27)	72(43.27)	146(85.38)	170(99.42)

Thirty-seven (21.64%) 0f the students did not want to be taught about the MDGs, while 134 (78.37%) would want to be taught about MDGs.

Table 6. MDGs should be taught in schools

	Strongly disagree	Disagree	Agree	Strongly agree
Impact	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Yes	13(7.60)	24(14.04)	87(50.88)	47(27.49)
No	158(92.40)	147(85.96)	84(49.12)	124(75.51)

Of the 171 students, 44 (25.73%) disagreed about having the knowledge about MDGs helping them play their part in the fulfillment of MDGs, while 127 (74.27%) agreed that having the knowledge about MDGs would have helped them in playing the part in the fulfillment of MDGs.

Table 7. I would have done my part to the fulfillment of MDGs if I had the knowledge

	Strongly disagree	Disagree	Agree	Strongly agree
Impact	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Yes	6(3.51)	38(22.22)	112(65.50)	15(8.77)
No	165(96.49)	133(77.78)	59(34.50)	156(91.23)

Discussion

The awareness about MDGs was good with almost 90% of the students having heard about MDGs, this could be because they are in the university and have a quest for knowledge, this is higher than what Adegboye et al,[5] who did a multi-centered study got in 2011 among medical doctors, where he got the level of awareness to be about 63%. A plausible explanation could be because of the difference in the timing, the awareness could have improved over the years, from 2011 to 2018.

The major source of information was from the internet, this could be because only the 600L students have had their tutorial on MDGs and therefore most of the students got their information via the internet since they have access to the internet through their smartphones.

The knowledge on the full meaning of MDGs was good, they also had good knowledge on what some of the indicators were about, and these include education and environment. The knowledge on whether there were indicators on gender equality was fair. However, the knowledge on the number of goals, targets, the year it was launched, how long it lasted and when it ended were poor. In fact, the knowledge on the number of goals on health was very poor. This could be because not all the students have had a tutorial on MDGs and the knowledge

acquired from the internet might not be enough. This is comparable to the results gotten by Adegboye et al,[5] where the knowledge on the number of goals was 42%, listing at least 4 of the goals (36%) and the year it will end (33%).

The perception of the students on the impact of MDGs in Nigeria was that it was very poor, as about 68% of them disagree about the impact being good; they also believed that it was not successful with over 70% of them disagreeing about the program being successful. The awareness of MDGs generally among Nigerians was believed to be poor, over 80% of them disagreed about the awareness being good. A plausible explanation could have been because their knowledge about the MDGs was poor with only about 28% of them being aware that funds were released by the Federal government of Nigeria in the pursuit of the fulfillment of the MDGs. The results is similar to the results gotten by different studies done by Adegboye et al,[5] Ogbodo et al,[6] Olabode et al,[10] Sachs et al,[19] and Ajiye et al, [3] in Nigeria, another study done by Nashash Hyash in Jordan also showed that that the perception about the impact of MDGs was poor. Marta Lomazzi et al,[20] observed that it will be difficult for poor countries to meet the MDGs because of our challenges like economic crisis and lack of synergy among the goals.

Conclusion

There is the need to make the students not only aware about the MDGs, but to educate and increase their knowledge and perception about it, so as to help them understand their roles in the fulfillment of the ongoing SDGs.

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