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EDITORIAL COMMENTS

Improving the Alignment of Measles Notification in Nigeria with Response Activities (Measles Immunization): An Overview from 2012-2016

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Abstract

Immunization is a proven tool for controlling and eliminating life-threatening infectious diseases and is estimated to avert between 2 and 3 million deaths each year globally. Measles is one of the viral diseases preventable with adequate measles routine immunization (MRI). *WHO has the mandate that by* the end of 2020, at least five WHO regions amongst which is Africa should have eliminated measles. This study examined improving the alignment of measles notification with response activities (measles immunization) retrospectively in Nigeria from 2012-2016.

This is a 5 year retrospective MRI data from 2012-2016 collected from the National Primary Health Care Development Agency (NPHCDA), the agency responsible for immunization in the country with the permission of the Chief Executive Officer (CEO). This was examined to ascertain the extent of MRI coverage in Nigeria for five years. Also, measles data from the Integrated Disease Surveillance and Response (IDSR) collected from the Nigeria Centre for Disease Control (NCDC) was examined for the same period of time (2012-2016). The collected data were analyzed to see if MRI and measles cases are synergistic and aligned to eliminating measles.

The MRI coverage for the observed years appeared relatively high, yet the measles cases were also relatively high; suggesting that MRI coverage did not have significant effect in reducing the number of measles cases in the observed. Specifically, the number of measles cases in the North zones was relatively higher than the South zones despite apparent increase in MRI coverage in the North (2012-2016). The South zones showed inconsistencies in MRI coverage.

From this study, there is need for NCDC and NPHCDA to brainstorm and collaborate to consider strategies to harmoniously combat measles and key into the principles of the measles 2nd dose vaccination (MCV2) if Nigeria is to progress to the elimination phase of measles infection.

Keywords: Measles vaccine, Infectious disease, measles elimination, Nigeria,

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Introduction

According to the WHO [1] immunization is the process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine. Vaccines stimulate the body's own immune system to protect the person against subsequent infection or disease. Immunization is a proven tool for controlling and eliminating life-threatening infectious diseases and is estimated to avert between 2 and 3 million deaths each year globally.[2,3] It is one of the most cost-effective health interventions, with proven strategies that make it accessible to even the most hard-to-reach and vulnerable populations. The WHO described routine immunization as being "the sustainable, reliable and timely interaction between the vaccine, those who deliver it and those who receive it to ensure every person is fully immunized against vaccine-preventable diseases.[4]

By the end of 2016, 85% of children had received one dose of measles vaccine by their second birthday, and 164 countries had included a second dose as part of routine immunization with 64% of children receiving two doses of measles vaccine according to national immunization schedules.[3,4] NPHCDA, [4] which is a functional unit of Nigeria's Federal Ministry of Health, has the mandate to develop national primary health care (PHC) policies and support States and Local Government Areas (LGAs) to implement measles vaccination and other vaccinations for infectious diseases.[6] Also, the Nigeria Centre for Disease Control (NCDC), another Federal Government Agency was established in response to the challenges of public health emergencies and to enhance Nigeria's preparedness and response to epidemics through prevention, detection and control of communicable and non-communicable diseases. Its core mandate is to detect, investigate, prevent and control diseases of national and international public health importance.[7, 8] In Nigeria, where measles is endemic, and since immunization is the function of NPHCDA, the agency is expected to use surveillance reports to "concentrate on raising MRI coverage and focusing supplemental immunization efforts in areas with high measles mortality".[9]

The NCDC protects the health of Nigerians through evidence-based prevention, integrated disease surveillance and response (IDSR) activities, using a one health approach, guided by research and led by a skilled workforce. The IDSR collects, collates and analyse data on priority diseases from the 36 states and FCT to detect outbreaks and inform policy. This is done through the Integrated Disease Surveillance and Response strategy. According to IDSR Nigeria, 2010[6]; NPHCDA and NCDC are to work together to control measles and other infectious diseases in Nigeria.

Despite the defined roles of the two agencies, measles has remained a public health challenge in the country with wide variation in immunization coverage in different parts of the country. This low immunization status challenge, according to the Minister of State for Health is attributable to persistently low routine measles immunization coverage and the fact that several measles supplemental immunization campaigns conducted to provide a second opportunity to reach unimmunized children has failed to achieve the required 95 per cent coverage factors. Consequently, population immunity for measles is very low resulting in frequent outbreak of the disease across the country.[5,6]

WHO-AFRO defines ***a suspected outbreak of measles:*** *the occurrence of 5 or more suspected cases of measles in a health facility or district in one month. While* ***a confirmed outbreak of measles:*** *3 or more measles IgM positive (laboratory confirmed) cases in a health facility or district in one month.*[8] *The question is how does the IDSR assess for and capture measles outbreaks and how does NPHCDA utilize the report from the IDSR?*

Measles immunization coverage

WHO–recommended standards for surveillance of selected vaccine-preventable diseases.[10] Measles is exquisitely sensitive to immunization programs and good immunization coverage is followed by very low incidence of measles. Immunization coverage may be achieved with first dose of measles-containing vaccine (MCV), first and second doses of measles-containing vaccine and the implementation of supplementary immunization activities (SIAs).[11] Immunization coverage data can be collected from each district, on a quarterly or semi-annual basis. In case an outbreak is confirmed, there should be improved routine vaccine coverage through the expanded programme on immunization (EPI).[12] The goal of RI is to attain and sustain immunization; the RI coverage should be at least 80-90%.[12] Vaccination coverage levels of 90% or more might be required before a marked reduction in incidence is seen in younger infants through herd immunity.[9] Since routine immunization programmes, particularly in developing countries, have not been able to achieve high enough coverage with the recommended two doses of measles-containing vaccines, measles vaccination through mass campaigns, known as supplemental immunization activities (SIAs), have been part of the measles elimination strategy in much of the world. SIAs are periodic mass campaigns in which all children of a defined age range (usually children aged 9 months to 4 y) are vaccinated at one time regardless of vaccination status. Periodic SIAs are designed to ensure that children without protective immunity are reached by campaigns boosting population immunity.

This study examined retrospectively the effect of MRI on measles for five years (2012-2016) in Nigeria.

Materials And Methods

Approval letter was sought from the CEO of both the NPHCDA and NCDC to collect a 5 year retrospective MRI data from 2012-2016 and number of measles cases for the same period (2012-2016) in order to ascertain the effectiveness of MRI coverage in Nigeria. The results were also examined to bring to limelight the synergy of NPHCDA and NCDC in eradicating measles in Nigeria. The collected data was analyzed as shown in figures 1-7.

Results:

Figure 1 showed the analyzed data from NCDC on measles cases for Nigeria for the period of 2012-2016 and the NPHCDA data on MRI coverage for the same period. The lowest cases occurred in 2012 (11,061), but there was a hike in cases in 2013 (57,892), which cuts across all the geopolitical zones in the country. The number of measles cases reduced again in 2014 (15,989) but steadily increased in 2015 and 2016 respectively (24,421 & 25,251). The MRI coverage was relatively low (80%) in 2012 but maintained a relative high rate (> 90%) over the years. Figures 2- 7 show the measles cases and the MRI coverage in the six geopolitical zones of the country for 2012-2016. Figure 2 shows that in the North-central zone, measles cases occurred in an inconsistent manner in the examined years; though generally low (< 2,000) except in 2013, when cases were relatively high (11,678), corresponding to the low MRI coverage (75.6%) in the preceding year 2012. The MRI coverage remained consistently on the increase after 2012 (>100%). The North-west zone in figure 3 shows a moderately high number of measles cases (>11,000) and a high rate of MRI coverage (> 100%) except in 2013. Figure 4 shows measles cases and MRI coverage for North-east zone. The number of cases were relatively reduced from 2014-2016 but the figures were still relatively high (15,278-7,817) even though the MRI coverage was high (>100%). This indicates that North-east zone had the highest number of cases among the three zones in the Northern part of the country.

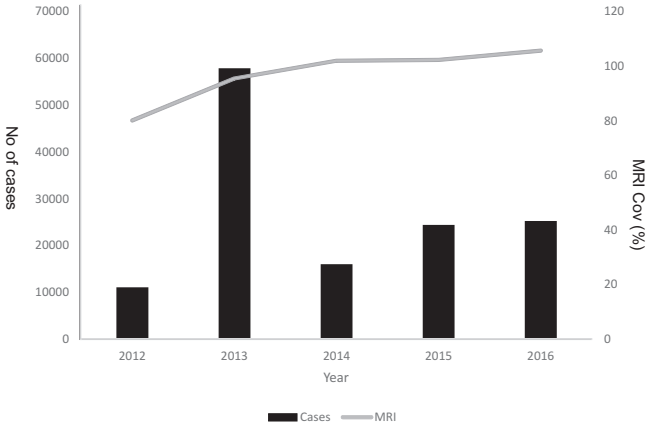


Figure 1. Measles Cases and Measles Immunization Coverage, Nigeria (2012 – 2016)

Figure 1 shows reported bar graph of measles cases in Nigeria from 2012-2016 and line graph of measles routine immunization (MRI) coverage for the same period.

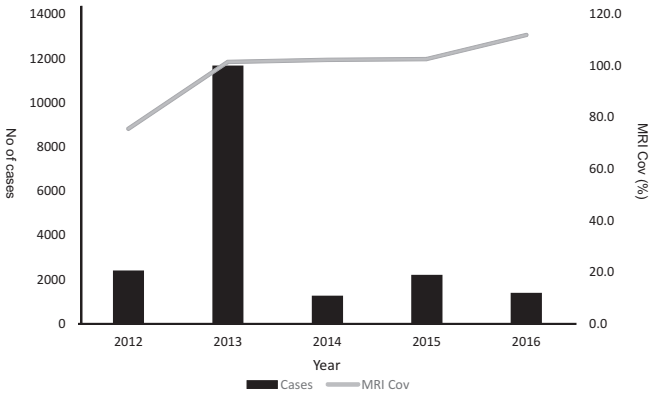


Figure 2. Measles Cases and Measles Immunization Coverage, North Central Zone, Nigeria (2012 – 2016)

Figure 2 shows the measles cases in the North-central zone from 2012-2016 and the measles routine immunization (MRI) coverage for the same period. The cases occurred in an inconsistent manner, though generally low except in 2013, when cases were relatively high (11,678), corresponding to the low MRI coverage (75.6%) in the preceding year. The MRI coverage remained consistently on the increase after then.

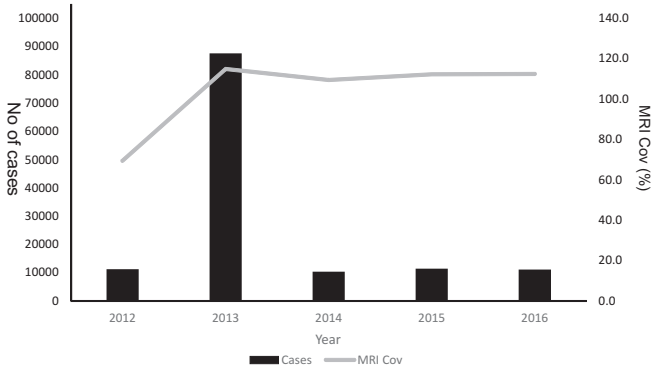


Figure 3. Measles Cases and Measles Immunization Coverage, North West Zone, Nigeria (2012 – 2016)

Figure 3 shows that measles cases in North-west zone was generally low over the years (2012-2016) reflecting a positive outcome of the effect of MRI coverage in the same period. However, 2013 had a high number of cases (87600), which also reflects the low MRI coverage in the preceding year (69.4%).

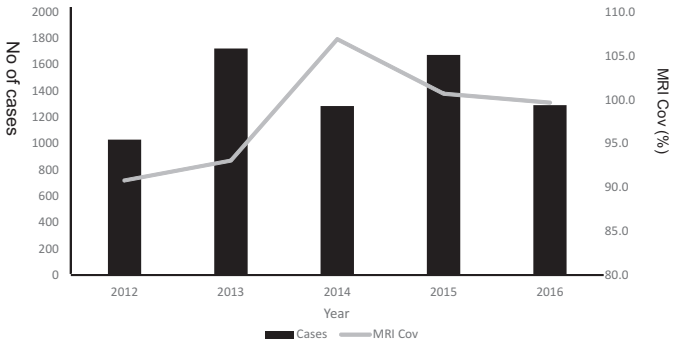


Figure 5. Measles Cases and Measles Immunization Coverage, South East Zone, Nigeria (2012 – 2016)

Figure 5 shows measles cases and MRI coverage for South-east zone for 2012-2016. The year 2012 had the lowest number of measles cases (1,030) and MRI coverage (90.8%) in the zone. Generally, the number of measles cases was fluctuating as well as the MRI coverage in the zone.

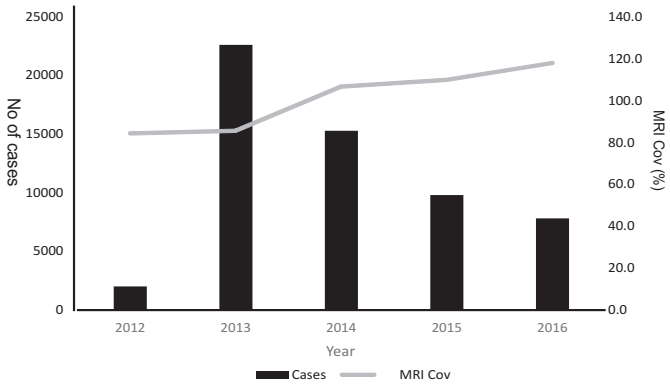


Figure 4. Measles Cases and Measles Immunization Coverage, North East Zone, Nigeria (2012 – 2016)

Figure 4 shows the measles cases and MRI coverage for North-east zone for 2012-2016. In 2012, the number of measles cases was very low (2,011) and the MRI coverage was 84.4% for the same year. In 2013, there was a hike in the number of cases (22,600) and the MRI coverage was 85.6%). From 2014 – 2016, the measles cases consistently reduced (15,278; 9,802; 7,817).

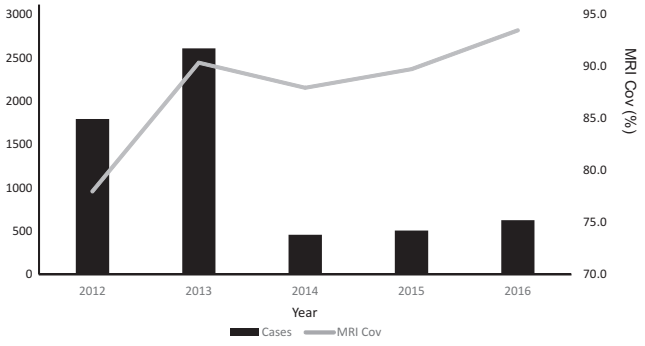


Figure 6. Measles Cases and Measles Immunization Coverage, South-south Zone, Nigeria (2012 – 2016)

Figure 6 shows the measles cases and MRI coverage for South-south zone. In 2012, the number of measles cases was quite low (1,794) and MRI coverage for the same year was very low (78%). The measles cases increased in 2013 (2,610) and the MRI for that year also increased (90.4%). In 2014, there was a drastic reduction in the number of measles (457); the MRI coverage slightly reduced to 88%. From 2015 – 2016, the number of measles cases increased gradually (507; 626) and the MRI coverage for the same period (2015-2016) also increased gradually (89.7% & 93.5%).

Figure 5 shows the South-east zone measles cases and MRI coverage. Generally, the number of measles cases was fluctuating as well as the MRI coverage in the zone. However, the measles cases in this zone were relatively low in all the examined years (< 1800) and the MRI was generally above 90%. Figure 6 shows the South-south zone measles cases and MRI coverage. Again, the cases observed were also very low

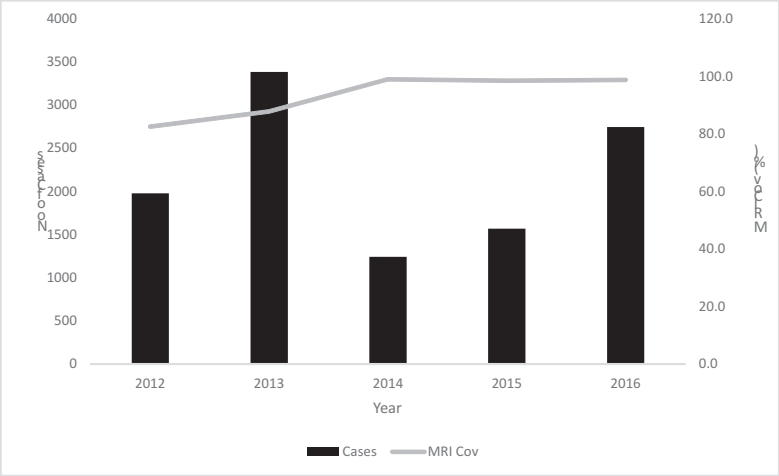


Figure 7. Measles Cases and Measles Immunization Coverage, South West Zone, Nigeria (2012 – 2016)
Figure 7, shows the measles cases for South-west zone and the MRI coverage for the same zone for 2012-2016. The measles cases for 2012 were 1978, and the MRI coverage for that year is 82.5%. A sharp increase in the number of measles cases (3,383) occurred in 2013 and the MRI coverage for the same year was 87.8%. A sharp decrease in the number of measles cases in 2014 (1242) was observed, then a consistent increase in the number of measles cases was maintained between 2105 and 2016 (1,568 and 2,745). The MRI coverage continued to increase gradually for the same period (98.5% and 98.7%).

(<1200) and the MRI was about 90%. Figure 7 shows the South-west zone measles cases were less than 3000; indicating that south-west has the largest measles cases among the three south zones in the country and the MRI was approximately 100% in the examined years.

Discussions

Immunization remains one of the most cost-effective public health strategies to reduce morbidity and mortality associated with measles. MRI has contributed immensely to significant reduction in morbidity and mortality from measles infection among children in Nigeria.[9] This study examined measles routine immunization in Nigeria from 2012 to 2016 in order to see adequacy in the coverage trend of measles vaccination and the alignment of NPHCDA with NCDC in the prevention and control of measles. From the result section, figure 1 shows the number of measles cases in Nigeria from 2012-2016 and the MRI coverage for the same period. The effect of MRI coverage manifests the following year after immunization. This implies that the effect of 2011 MRI coverage will be reflected in the number of measles cases in 2012 and the MRI coverage in 2012 will be reflected in 2013. The MRI coverage of 2013 will have effect in the number of cases in 2014; MRI of 2014 will have effect in 2015 and the MRI of 2015, will have effect on the number of cases in 2016. It is also expected that the MRI of 2016, will have effect on the number of cases in 2017 which this study did not cover.

Since the measles cases of 2012 were relatively low, it is assumed that the MRI coverage in 2011 must have been relatively adequate. However, the hike in the number of measles cases in 2013 also suggests that the MRI coverage in 2012 may not have been adequate. In the following years (2013-2016), the immunization coverage appeared high but the number of cases also remained relatively high. This suggests the need to review the immunization schedule since the MRI appear not effective enough to reduce the number of measles cases. However, the trend was not maintained in the following years (2015 and 2016) as it was observed that despite the high RI coverage, the number of measles cases increased steadily. This development brings to mind many questions and cause for concern as MRI coverage and measles cases appear to be at variance. One begins to wonder if actually the figures for the routine immunization coverage for these years are really adequate or there is a mix-up somewhere. One begins to wonder if epidemiological investigations properly undertaken and if response activity was initiated in a timely manner using the surveillance data as a guide for public health response.

The finding in this study is similar to the finding in other studies where it was reported that despite high vaccine coverage in some countries, single-dose measles immunization programmes have been unsuccessful in eliminating measles.[10] This finding of inconsistency in MRI coverage in eliminating cases of measles calls for the need of outlining an elimination strategy focusing on maintaining high levels of population immunity, strengthening surveillance, and responding rapidly to outbreaks. It is also necessary to take a cursory look at other possible causes that may cause immunization not to be effective; other possible explanations for the observed variance may include the following; vaccines used for the MRI may not have been potent for obvious reasons which include preservation of the vaccines, expired drug, under dosage among others. Also, the areas that were covered during the routine immunization coverage may have been limited to the cities (urban areas) leaving behind the interiors (rural areas) that may need the immunization the most.

A further look on the result of this study shows that the northern geopolitical zones are more affected with high number of measles cases than the southern geopolitical zones despite the apparent higher MRI coverage in the north (> 100%).

This finding corroborates the findings of other studies where it was pointed out that a single dose routine immunization may not be enough to combat or reduce cases of measles. [10, 11, 12, 13] This finding is an indication, a call for more proactive routine

immunization activities to combat measles infection in our country. It also points to the urgent need to embrace the two dose measles vaccination through mass campaigns, known as supplemental immunization activities (SIAs). Children of a defined age range (usually children aged 9 months to 4 y) should be vaccinated at one time regardless of vaccination status.[14] Also, everyone who can get vaccinated should get vaccinated – not only to protect themselves, but to protect those who can't, through herd immunity. This may help to ensure eradication of measles in our country especially as the disease affect more children less than five years with a high morbidity and mortality rate.[15,16,17,]

Through intensive research and surveillance, NCDC should be able to point out the states that are most affected by measles especially in the North-east where more measles cases have been reported so that NPHCDA can take more proactive action in the immunization of such states. In the same vein, the states in South-west that are also more affected should be identified and more efforts should be made by NPHCDA to reach the grassroots to immunize children in such states.

NCDC and NPHCDA in charge of the prevention and control of measles appear not to be working synergistically enough to move the elimination process forward. They would both need to work seamlessly together to successfully have an effective prevention of measles in Nigeria.

In conclusion, apart from increasing grass root coverage of MRI, an urgent consideration should be given to a second dose measles vaccination through mass campaigns, known as supplemental immunization activities (SIAs).

There is the need for NPHCDA and NCDC to come together to brainstorm on how to review the existing strategy of control of measles if the disease will be put absolutely under control in Nigeria. The NCDC has to increase its surveillance on measles to provide more in-depth information through intensive research on the age group and areas more affected by measles while the NPHCDA has to focus its immunization coverage more on the areas reported by NCDC as preponderant to measles infection.

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The researcher sincerely appreciates the immunization unit of NPHCDA especially Dr Bassey and Dr Onovo for their assistance in getting data for this report. The researcher is grateful to Dr Sola Aruna for her very useful contributions. Finally, special thanks for the tireless support of Dr Yahya Disu, a dependable analyst, who assisted in analyzing this data.

References

1. Immunization. From Accessed January 31, 2018.

2. Measles. From http://www.who.int/en/news-room/fact-sheets/detail/measles Accessed January 31, 2018.

3. Measles. From https://www.who.int/immunization/diseases/measles/en/ Accessed March 5, 2018.

4. FG targets 3.3m children for measles immunization. From http://nphcda.gov.ng/fg-targets-3-3m-children-measles-immunisation/ Accessed March 9, 2018.

5. Strengthening routine immunization. From http://www.who.int/immunization/diseases/poliomyelitis/endgame_objective2/routine_immunization/en/ Accessed March 31, 2018.

6. History. From http://nphcda.gov.ng/about-us/what-we-do/ Accessed March 06, 2018.

7. Reviewed National Policy on Integrated Disease Surveillance and Response (IDSR) Federal Ministry of Health Abuja, Nigeria December, 2010.

8. Technical Guidelines for Integrated Disease Surveillance and Response in the African Region. From https://www.cdc.gov/globalhealth/healthprotection/idsr/pdf/technicalguidelines/idsr-technical-guidelines-2nd-edition_2010_english.pdf *Accessed March 3, 2018.*

9. African Regional Guidelines for Measles and Rubella Surveillance. From WHO Regional Office for Africa Revised April 2015. From https://afro.who.int/publications/who-african-regional-measles-and-rubella-surveillance-guidelines-1 *Accessed January 20, 2018.*

10. WHO–recommended standards for surveillance of selected vaccine-preventable diseases. From http://www.measlesrubellainitiative.org/wp-content/uploads/2013/06/WHO-surveillance-standard.pdf Accessed *March 2, 2018.*

11. WHO Guidelines for Epidemic Preparedness and Response to Measles Outbreaks. From www.who.int/csr/resources/publications/measles/whocdscsrisr991.pd *Accessed March 23, 2018.*

12. Integrated Disease Surveillance and Response Technical Guidelines. https://ncdc.gov.ng/themes/common/docs/protocols/4_1476085948.pdf Accessed February 14, 2018.

13. Sodha S. Using Routine Immunization to Eliminate Measles & Rubella: Time for a change? From https://measlesrubellainitiative.org/wp-content/uploads/2014/09/Routine-Immunization-Overview.pdf Accessed April 1, 2018.

14. Garon J, Orenstein W. Improving the Science of Measles Prevention—Will It Make for a Better Immunization Program? From https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002145 Accessed March 20, 2018.

15. National routine immunization strategic plan. From http://www.nationalplanningcycles.org/sites/default/files/country_docs/Nigeria/ri_strategic_plan_combined_mahmud_draft_1.pdf Accessed March 20, 2018.

16. Saleh JEA. Trends of measles in Nigeria: A systematic review. Sahel Medical Journal. 2016; 19 (1): 5-11.

17. Salathé M. Herd immunity and measles: why we should aim for 100% vaccination coverage. From https://theconversation.com/herd-immunity-and-measles-why-we-should-aim-for-100-vaccination-coverage-36868 Accessed April 15, 2018.

Malaria Diagnosis And Treatment Practices By Patent And Proprietary Medicine Vendors In Bauchi Metropolis, Bauchi State in North Eastern Nigeria

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Abstract

Malaria is one of the leading causes of morbidity and mortality in Nigeria with about 50% of the population having at least an episode of clinical malaria each year. Patent medicine vendors are the first and most common source of malaria treatment in Nigeria. This study assessed malaria diagnosis and treatment practices by Patent and Proprietary Medicine Vendors (PPMVs) in Bauchi metropolis, Bauchi L.G.A., Bauchi State, Nigeria.

This study was a cross sectional analytical study involving PPMVs in Bauchi metropolis. A total of 396 PPMVs were recruited into the study. The data was collected using 40 items questionnaire and were analyzed with frequencies, percentages and chi-square. The hypotheses postulated were tested at 0.05 level of significance. The data was analyzed by using SPSS Version 16.0.

Respondents consisted of 253 (63.9%) health professionals (HPs) and 143 (36.15) non professionals (NHPs). About two third of the respondents; 99 (69.2%) among HPs and NHPs 88(61.3%) have good knowledge about malaria transmission. Only few respondents used Rapid Diagnostic Test (RDT) in identifying malaria; 12 (8.7%) among NHPs and 22 (12.6%) among HPs. The difference is not statistically significant (P-value 0.217). Moreover, 121 (47.8%) and 48 (33.6%) for both NHPs and HPs respectively reported lack of skills as the reason for not using RDT. Majority of the respondents are still dispensing Chloroquine (CQ) for malaria with 68.4% and 69.2% among NHPs and HPs respectively.

The used of RDT by the respondent is poor. There is need to train PPMVs on current national policy on malaria, especially malaria identification using RDT kits and used of Artemisinin –based Combination Therapy (ACT) in treatment of malaria. The RDT kits should also be made available.

Keywords: Malaria, Diagnosis, RDT, Patent Medicine Vendors, Bauchi metropolis.

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Introduction:

Malaria is a major cause of illness and death in Nigeria, it therefore significantly drains its economy. Most Nigerians do not obtain appropriate treatment with anti-malaria drugs (AMDs), largely due to over reliance on patent medicine vendors (PPMVs). A PPMV can be defined as a person without formal pharmacy training, who sells orthodox pharmaceutical products on retail basis for profit.[7] The rising malaria drug resistance has warranted changes in government guideline on malaria treatment, which now recommends the use of more expensive and less available artemisinin based-combination therapy (ACT).[1-3] The PPMVs can be found in drug shops, general stores, kiosks, market stalls and also operate as itinerant hawkers, with considerable variation in retailer type across different settings.[4] The proportion of caregivers visiting shops during recent childhood illness ranged from 15% to 83%, with a median across studies of roughly 50%.[5,6]

Ideally patent medicines should be sold in their original packages. Over the counter (OTC) drugs are the only drugs authorized to be sold by the PPMVs, but they basically sell all types of drugs as determined by their financial capability.[7] This ranges from drugs as common as Paracetamol to those as complex as psychotropic drugs and narcotics, which are clearly outside the scope of their license.[7]

Malaria is caused by a parasite called Plasmodium, which is transmitted via the bite of infected female anopheles mosquitoes. In the human body, the parasites multiply in the liver, and then infect red blood cells (RBC). It is characterized by cycles of chills, high fever, muscles pain, sweating, headache, and vomiting, symptoms like the flu, and usually appear between 10 and 15 days after the mosquito bite.[1,3] Most malaria infections are cause by one type of malaria; Plasmodium *falciparum* which may cause more serious problems, such as damage to the heart, lungs, kidneys, or brain. If not treated, malaria can quickly become life-threatening by disrupting the blood supply to vital organs.[1] In many parts of the world, especially in sub- Saharan African (SSA) countries, the parasites have developed resistance to a number of AMDs. Malaria control relies essentially on prompt and effective management of the clinical disease, but unfortunately, most early treatments in African countries occur through drugs recommended by or bought from PMVs.[3,4]

All over the world, the malaria situation is precarious. Malaria threatens the lives of 40% of the world's population.[1] Each year, there are an estimated 300-500 million clinical cases of malaria around the world.[1] Malaria is estimated to kill more than one million people annually, the majority of whom are young children. About 90% of malaria cases in the world occur in Africa.[1] Children under five years of age and pregnant women are the most affected by malaria. It is one of the leading causes of death among children. Malaria accounts for about 60% of outpatient visits and 30% of hospitalization in Nigeria and is responsible for estimated 225,000 deaths annually.[2] It also contribute to an estimated 11% of maternal mortality and 10% of low birth weight babies.[2]

An extensive literature on treatment seeking behavior for malaria and fever in SSA and even in Nigeria demonstrates that PPMVs are widely used as major sources of drugs for fever and malaria.[4] The proportion of caregivers visiting patent medicine shops during recent childhood illness ranged from 15% to 83%, with a median across studies of roughly 50%.[4,5] For example, in Kenyan Coast, patent medicine stores were used first solely in 69% of childhood fevers treated.[5] In Togo, only 20% of children under 5 years with malaria were seen at a health centre, while 83% were treated at home with AMDs obtained from a street or PPMVs.[6]

A study has shown that PPMVs have little knowledge on the diagnosis and treatment of malaria in Nigeria. They take advantage of the persistent shortage of trained health personals, so they are often the primary sources of orthodox drugs in both urban and rural populations which cut across the various socio-economic groups.[5,6] Also, because of the frequent drug stock-outs in government health facilities, recurrent health workers industrial strikes and long bureaucratic protocols, the services of these PPMVs become inevitable. Likewise, their drugs are perceived to be cheaper, while they are said to be more friendly.[6] Therefore, even where there are free medical care programmes in government health facilities, people are more likely to patronize PPMVs to avoid the travel, inconvenience and especially time wastage associated with government health services.[7]

Government policies have tried to keep pace with the rising malarial resistance to conventional AMDs and increasing counterfeit and substandard drugs. Yet the reality for most Nigerians is that the market has been little affected by these policies and access to quality malarial diagnosis and treatment remains low.[9] The PPMVs are widely used as source of drugs for malaria fever, diagnosis, treatment and management in Nigeria, but there are concerns regarding the appropriateness of the drugs and the information they provided.

Malaria diagnosis involves identifying malaria parasites microscopically or its antigens/products in patient's blood biochemically. Although this may seem simple, the diagnostic efficacy is subject to many factors. The 5 different types of malaria species; the developmental stages (e.g. erythrocytic trophozoites, schizonts, gametocytes), the endemicity of different species, the interrelation between levels of transmission, population movement, parasitaemia, immunity, signs/symptoms; drug resistance, the problems of recurrent malaria, persisting viable or non-viable parasitaemia. Also the sequestration of the parasites in the deeper tissues, the use of chemoprophylaxis or even presumptive treatment on the basis of clinical diagnosis, can all influence the correct identification and interpretation of malaria parasitaemia in a diagnostic test.[10]

The gold standard test for the diagnosis of malaria is blood microscopy; however it is expensive, requires some technical expertise and time consuming. The Rapid Diagnostic Tests (RDTs) offer a simple, fairly inexpensive, and reliable means of diagnosis that can be performed by healthcare workers with limited training. However, there are growing concerns with RDTs which include potential unreliability because of host factors (treatment), kits factors (inconsistent manufacturing standard, poor storage, transportation, handling) and health worker factors (potential misreading of results by unskilled or those with poor visual acuity).

This study aims at assesing the level of knowledge and use of RDTs amongst PPMVs; health professionals (HPs) and non health professionals (NHPs) in Bauchi metropolis. To the best of our knowledge, there was no study on this topic from the study area, hence this study will help in increasing the body of knowledge and in making appropriate recommendations to the concerned individuals/bodies.

Methodology

The study was a cross sectional analytical study, which compares HPs and NHPs. It was conducted amongst all Patent and Proprietary Medicine Vendors in Bauchi metropolis, Bauchi State, North Eastern Nigeria. All consenting registered members of the National Association of Patent and Proprietary Medicine Dealers (NAPPMED) were recruited into the study. The study population was broadly classified into; Health Professionals (Nurses, Community Health Officers and Community Extension Officers) and Non-Health Professionals (No formal training on health care).

Ethical approval was granted by University of Ilorin Ethical Review Committee, while permission for conducting this study was obtained from the Association of Patent Medicine Vendors, Bauchi metropolis. A duly signed informed consent form

which included the right of a participant to withdrew from the study at whatever stage; was obtained from each of the participants.

Interviewer administered questionnaire was used for collection of data with sections on socio-demographic characteristics, knowledge on malaria diagnosis and treatment as well as factors influencing their practice. The data analysis was analyzed using SPSS (statistical package for social science) Version 16.0. The data was presented as tables using frequency distribution and percentages. Chi Square was used to test the association between categorical variables. P-value of <0.05 was considered statistically significant at 95% confidence limits.

Results

A total of 396 PPMVs participated in the study. As shown in table 1, the modal age group of the respondents was 20-29 with frequency of 103 (40.7%) for the NHPs group, while that of HPs was 66 (46.0%). Male respondents account for the majority in both groups as 81.4% and 78.3% for NHPs and HPs respectively. The majority of NHPs group 160 (63.2%) identified malaria based on symptoms; however, in the HPs group the major means of identifying malaria was laboratory investigation 88 (58.0%). The use of RDT was very low in both groups 22 (8.7%) for NHPs and 18 (12.8%) HPs. However, the difference is not statistically significant, P-value of 0.217 (Table 2).

Treatment of clients based on RDTs was also very low in both groups 17.0% and 25.2% for NHPs and HPs respectively, which is not statistically significant Chi Square of 3.827 and P-value of 0.05 (Table 3). Fansidar is the predominant AMD used in both groups which constituted 222 (87.7%) and 127 (88.8%) for NHPs and HPs respectively. The use of ACT, is fairly high in both groups; NHPs has 132 (52.2%) and 92 (64.3%) for HPs (Table 3).

Physical examination scored the highest response in deciding the treatment of their clients in both groups of the respondents, 193 (76.3%) and 123 (86.0%), while treatment of client based on RDT results were the least in both groups; 43 (17.0%) and 36 (25.2%) for NHPs and HPs respectively (Table 4). Clients request for selection of treatment 153(60.5%) and 85(59.4%) was the reason for the selection for both NHPs and HPs respectively. However, reason for drug

Table 1: Socio-demographic characteristics of the respondents

Characteristics	NHPs (253) n (%)	HPs (143) n (%)
Age group (years)		
< 20	61 (24.1)	30 (21.0)
20 – 29	103 (40.7)	66 (46.0)
30 – 39	61 (24.1)	26 (18.0)
40 – 49	20 (7.9)	14 (10.0)
=50	8 (3.2)	7 (5.0)
Sex		
Male	206 (81.4)	112 (78.3)
Female	47 (18.6)	31 (21.7)
Education		
Primary	51 (20.2)	0 (0.0)
Secondary	147 (58.1)	0 (0.0)
Tertiary	34 (13.4)	143 (100)
Vocational	6 (2.4)	0 (0.0)
Quranic	15 (5.9)	0 (0.0)
Alternative occupation		
Trading	157 (62.1)	90 (62.9)
Farming	79 (31.2)	45 (31.5)
Others	17 (6.7)	8 (5.6)

Table 2: Methods used in Identifying Clients with Malaria by the Respondents

Methods of Identification	NHPs (253) n (%)	HPs (143) n (%)	χ^2	ρ
Clients complaints of symptoms	160 (63.2)	44 (30.8)	38.569	0.000
Based on laboratory investigations results	90 (35.6)	83 (58.0)	0.019	0.890
By examining the clients	31 (12.3)	12 (8.4)	1.407	0.235
Use of RDT kits	22 (8.7)	18 (12.6)	1.524	0.217

Multiple responses

Table 3 Treatment of clients for Malaria based on some Parameters by the Respondents

Treatment based	NHPs (253) n (%)	HPs (143) n (%)	χ^2	ρ
Physical examination	193(76.3)	123 (86.0)	5.365	0.021
Laboratory results	101(39.9)	78 (54.5)	7.889	0.004
Rapid diagnostic test	43(17.0)	36 (25.2)	3.827	0.050

Table 4: Drug of choice for the treatment of malaria by the respondents

Drugs	NHPs (253) n (%)	HPs (143) n (%)	χ^2	P
Fansidar	222(87.7)	127(88.8)	0.099	0.753
Artesunate alone	214(84.6)	126(88.1)	0.936	0.333
ACT	181(71.5)	117(81.8)	5.181	0.022
Chloroquine	173(68.4)	99(69.2)	0.031	0.860
Quinine	132(52.2)	92(64.3)	5.500	0.019

Multiple responses

Table: 5 Respondents reasons for drugs selection.

Reasons for drug selection	NHPs (253) n (%)	HPs (143) n (%)		ρ
Clients request	153 (60.5)	85 (59.4)	0.041	0.839
Condition of clients	54 (21.3)	35 (24.5)	0.514	0.473
Weight of clients	37 (14.6)	24 (16.8)	0.327	0.567
Illustrations on drug	33(13.0)	22 (15.4)	0.419	0.517
Age of clients	22 (8.7)	16 (11.2)	0.655	0.418

Multiple responses

selection that was determined by the age of client was the least determinant in both groups which constituted 22(8.7%) and 16 (11.2%) for both NHPs and HPs respectively (Table 5).

Discussion

The respondents' ages ranged from 18 to 64years. Most of the respondents; 81.4% and 78.3% were males for both NHPs and HPs respectively. This is in contrast to a study conducted in Ikorodu, Lagos State, where female respondents were 64.4% and males 35.6%.[10] However in this study, the wide gap is probably due to the predominant culture of the people in Northern Nigeria whereby women hardly work out-doors.

More than half 58.1% of the NHPs attended secondary schools. This is quite similar with a study research conducted among PMVs in Aba South LGA, Abia State where 57.0% of the PMVs attended secondary schools.[5] However; more than half 64.0% of the respondents have no professional training, only 36.0% have health care training from various cadres. This is in line with the study in Kaduna amongst Health care providers were only 14.7% were said to have professional training.[11] Among the NHPs 63.9.0% have alternative occupation apart from being a PPMV. More so 36% of the HPs have other engagement; some were working in hospitals as compared with Kaduna study where 15% of the HPs were working in hospitals.[12]

Almost all respondents 94.5% of NHPs and 95.1% of HPs have professional license. This is in contrast to the Kaduna South study where 22% only have PPMVs license.[12] Possession of license is a probable indicator of good practice as they are likely to be regulated. The number of years one spent as a PPMV; determines the experiences of the PPMV. This influenced willingness to adopt innovations which help in raising the skills in their drugs selling and thus raised their practice.[12] In this study 19.8% of the NHPs who had practiced for 0-4 years were modal class, which is in contrast to a study in Rivers State among PPMVs which have 58.5% with the same range of years.[13]

Laboratory diagnosis can improve rational provision of malaria treatment services, but the result shows that only few (39.9%) among NHPs 39.9% are using laboratory diagnosis to treat malaria. However, among the HPs 54.5% treats clients based on laboratory diagnosis. All the providers emphasized the used of physical examination as the basis for treating malaria which were 76.3% and 86.0% for NHPs and HPs respectively. While the treatment based on RDTs was 17.0% and 25.2% for both NHPs and HPs respectively. This was quite low when compared from previous study in Anambra State, where treatment based on RDTs were 39.8% and 2.6% for both providers.[14]

The best method to used in malaria diagnosis are based on confirm microscopic investigation then followed by the use of RDTs and finally by clinical basis. This study revealed that 63.2% among NHPs recognized malaria when clients complain of symptoms. However, 83.0% of the respondents among HPs diagnosed malaria by laboratory microscopy as the standard method of identification, where among NHPs only 35.6% identified malaria on the basis of laboratory tests this is not surprising, because they have did not undergo health training. More so, most studies have found that NHPs identify malaria only when clients

complain of symptom.[7,15] Other methods are the use of RDTs kits in which 8.7% and 12.6% for both NHPs and HPs respectively. This shows that RDTs as a method of identifying client with malaria was quite low and not in practice comparing client complain of symptom, physical examination and laboratory investigation among all the providers. The incidence of clients using self recognition of symptom to ask for was found mostly in the non professionals.

Despite the current change of the policy of treating malaria in Nigeria, Fansidar is the most frequent drugs used among both groups of the respondents. The usage of Fansidar for the treatment of Malaria among both NHPs and HPs was the highest among the AMDs. Majority of the respondents (NHPs 87.7% and HPs 88.8%) treated clients with Fansidar above other drugs. This is said to be similar with a study done in Oyo State, where treatment of clients with Fansidar (89.6%) was above other AMDs among PMVs.[16] ACT is the recommended treatment for the malaria in the current Nigerian Malaria Treatment Policy.[17]

Giving appropriate AMDs to clients by the PMVs is very important. More than half of NHPs and HPs (60.5 % and 59.4%) respectively treated malaria based on the customer's choice. The study showed that the reason for the selection of appropriate AMDs by clients or customers request is most predominant amongst the PPMVs. This is similar to a study conducted in (South Eastern Nigeria during formative research), which revealed that when the PMVs were asked how treatment decisions were made; 61.5% responded that they dispense what customers demand. Only 51.4% do take some form of history, which was mainly asking about the age of the clients only, before giving those AMDs.[18] Whereas, determining the choice of AMD in clients with malaria fever, were generally low based on clients' condition: 21.3% versus 24.5%; weight consideration: 14.6% versus 16.8%; use of illustrations on the drugs leaflet: 13.0% versus 15.4% and by determining the age of the client: 8.7% versus 11.2% for NHPs versus HPs respectively.

Conclusion

In conclusion, there was generally a low level of knowledge on the use of RDTs amongst both NHPs and HPs. Likewise, there were poor practices on the use of RDTs in the management of malaria amongst the two groups. Therefore there is urgent need for the Bauchi State Ministry of Health to organize a special training for this group and makes RDTs readily available. Also, the regulatory body of the PPMVs should ensure that only those that are professionally qualified are allow to diagnose, prescribe and dispense drugs within their competencies.

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References

1. United Nations International Children's Funds. Promoting rational use of drugs and correct case management in Basic Health services, published by UNICEF's Programme division with the world Health organization, malaria prevention and Treatment. Jan. 2008.
2. Keating J. Nigeria Reproductive Health, child health and Education Household, school, and Health facility Baseline Surveys 2005. Measure Evaluation/USAID. Available on: http://allafricans.com/stories/printable/200502140381.html. Accessed: 27/07/2013.
3. World Health organization. Guidelines for the treatment of malaria. Geneva: WHO, Who/HTM/MAL/2006.
4. Federal Republic of Nigeria. Malaria Desk Situation; National anti malaria Treatment Policy, Abuja: Federal ministry of health, National Malaria and vector control Division, 2005.
5. Salami KK, Brieger WR. Consumer Response and Satisfaction Survey. Promotion of prepackaged drugs: Aba, Abia state, Nigeria. Washington, Dc: Society for Family Health, 2004.
6. Mjota H. Medical Journal of Therapeutics Africa. Regulating Medicine in Nigeria, Mjota Publishers, 2010; 4(2):36-38
7. Odepo O, Bloom G, Lawal A, Salami KK, Brieger WR, Oti B. Future Health Systems. Malaria Treatment and Policy in three Regions in Nigeria; The Practice of Patent medicine Vendors. (working Paper 1 Nigeria series) September, 2000. Accessed at www.future health systems.org
8. Goodman C, Brieger W, Unwin A, Mills A, Meek S, Greer G. Medicine sellers and malaria treatment in sub-Saharan Africa: what do they do and how can their practice be improved? Am J Trop Med Hyg. 2007;77(6 Suppl):203-18
9. Molyneux CS. Maternal Response to Child Fevers: A comparison of moral and urban residents in Kenya. Tropical med Int. Health. 2007; 4: 836-45.
10. Federal Republic of Nigeria (FGN) Millenium Development Goals (MDGs) Reports 2010, Abuja; Federal Republic of Nigeria 2011; 4-6. Abisoye S, Babatunde E and Oluwakemi O. Tropical journal of Pharmaceutical Research, Patent Medicine Vendors in Rural Areas of Lagos, Compliance with Regulatory Guidelines and Implication for Malaria Control,

2014;13 (1) :163-169.
11. Malaria Consortium. Support to the National Malaria Programme, Nigeria: DFID-British council 2008-2012
12. Rosamund M, Edwin E, Abubakar A, William R. Patent Medicine Sellers: How can they help control childhood malaria, in Nigeria. Hindawi Publishing Company 2010: Article ID470754.
13. Usman M. Comparative Economic Analysis of Water Melon Production: A Study of Fadama ii Beneficiaries and Non-Beneficiaries in Misau Local Government Area, Bauchi State
14. Catherine G, William B, Alasdair U, Anne M, Sylvis M, George G. Treatment in Sub-Saharan African Medicine Sellers and Malaria Treatment, AM J TROP. med. hygiene.
15. Obinna O, Benjemin U, Nkem D, Nkoli U. Malaria Journal. Malaria Treatment Perception, Practice and influence on Provider Behaviour: comparing Hospital and non-hospitals in South-East Nigeria, Malar J. 2009;8: 246 PMCID;PMC2775747.
16. Brieger WR, Osamor PE, Salami KK, Oladepo O, Otusanya SA. Interactions between patent medicine vendors and customers in urban and rural Nigeria. Health Policy Plan. 2004;19(3):177-82.
17. FMOH: National Malaria and Vector Control Division Abuja 2005 Reproduced by Bauchi State Malaria Control/Booster Project (BACATMA) May, 2012.
18. Theodora A, Uzochukwu B. Improving Childhood Malaria Treatment and Referral Practice by Training PMVS in South-East Nigeria, Malaria Journal 2009,

Pattern Of Bleeding In Nigerian Haemophilliacs Seen In A Tertiary Hospital

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Abstract:

Haemophilia A and B are X-chromosome linked bleeding disorders, due to defective synthesis of factor VIII or IX respectively, and are characterised by delayed and sustained bleeding. Bleeding into the joints (Haemarthrosis) is the most common presentation. Recurrent haemarthrosis leads to crippling haemarthropathy and flexion deformities, typically in the hinge and socket joints. This study determined the pattern of bleeds in the Nigerian haemophiliacs in order to locate the usual sites and influence their care in emergencies. We reviewed the records of 28 haemophiliacs who were seen at the Haematology Day Care Unit over a 2-year period for emergency care of acute bleeds. The patients were aged between 16 months and 42 years with a median age of 12.5 years. Twenty-six of these patients had Haemophilia A (93%) and Haemophilia B constituted 7%. The coagulation factor levels ranged between 0.4% and 8%. The commonest bleeding site was the joint which constituted 41% of cases followed by soft tissue involvement, observed in 25% of patients and gastrointestinal tract, in 16% of cases. All 28 (100%) patients received fresh frozen plasma either given alone or in combination with other therapeutic options. Ten (36%) patients received cryoprecipitate; 6(21%) got recombinant factor VIII, 5(18%) received fresh whole blood and 3(11%) patients were given antifibrinolytic agents for the management of acute bleeding episodes. We concluded that the joints are the commonest site of bleeding in our hospital with knee joint involvement being the most frequent. This may result in physical disability. Patients experiencing bleeding episodes might require a more personalized approach to treatment in which case, there might be the need to consider prophylaxis for some of our patients.

Key words: Bleeding Pattern, Haemophilia, Emergency Care.

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Introduction

Haemophilia A and B are X-chromosome linked bleeding disorders, in which there is defective synthesis of factor VIII or IX respectively, and are characterised by delayed and sustained bleeding involving various sites in the body (figure 1). Bleeding into the joints (Haemarthrosis) is the most common presentation accounting for about 75% of bleeding episodes in patients with severe disease. Haemarthrosis is characterised by joint discomfort, progressive joint pain, swelling and limitation of movement of the affected joint. The consequences of bleeding into the joints can be debilitating depending on the joint. The weight-bearing, hinge joints (knees and ankles) are more susceptible. However studies on the most frequently affected joint has not been consistent. Complication of bleeding into the joint includes arthropathy which can lead to a decline in patient autonomy and quality of life.

Another mode of presentation is Soft-tissue hematomas such as haemorrhage into subcutaneous connective tissues or into muscles. This may occur with or without a known trauma (i.e spontaneous). There are several other modes of presentation including, mucous membrane bleeding, Intracranial haemorrhage (one of the most dangerous haemorrhagic events in haemophilic patients), pseudotumours (blood cysts) and post-operative bleeding. Post-surgical bleeding is characterized by prolonged bleeding and delayed wound healing because of poor clot formation. Bleeding may persist for several hours or, occasionally, for several days. The frequency of bleeding has been reported to change with age. Bleeding was associated with increased absence from school, decreased levels of physical activity and decreased rates of household task performance. Relatively high rates of bleeding associated with trauma suggest the need for preventive interventions.

Replacement of the deficient factor is the main stay of haemophilia management. Replacement therapy is aimed at achieving haemostatically adequate levels of coagulation factor when bleeding has occurred or is suspected. It should be initiated at the onset of symptoms to reduce bleeding and to prevent damage to the surrounding tissues. This therapy was achieved in the past, by using cryoprecipitate (for haemophilia A) and fresh frozen plasma. However specific factor concentrate replacement is now the gold standard. Factor concentrates may be derived from pooled plasma or genetically engineered through

recombinant technology. Other adjunct therapies include the use of antifibrinolytic agents (such as epsilon aminocaproic acid- EACA) and topical haemostatic agents like fibrin sealant. For patients with haemarthrosis, resting, elevating the joint and use of ice or cold compression on the affected joint as well as the avoidance of contact sports and prevention of aspirin use and other non-steroidal anti-inflammatory agents are also important supportive measures. The cost and the duration of treatment would depend on the site of bleeding. Therefore, information on bleeding pattern in haemophilia patients is useful for clinical care, transfusion support and policy development in the management of inherited bleeding disorders.

This study investigated the pattern of bleeds in the Nigerian haemophiliacs so as to prioritize and ensure prompt haemostatic support in emergencies.

Methodology

This was a retrospective study carried out at the Department of Haematology, University College Hospital, Ibadan. We reviewed the records of 28 patients with haemophilia who were seen and managed at the Haematology Day Care Unit over a 2-year period for emergency care of acute bleeds. Information on socio - demographic characteristics and clinical data were retrieved. The treatment of the patient included on demand administration of blood product and antifibrinolytic agents as required. None of the patients was on prophylaxis. The statistical analysis employed, expressed categorical variables as frequencies and percentages.

Results

The patients were aged between 16 months and 42 years with a median age of 12.5 years. The age distribution of the patients is as shown in table 1 with majority (39%) of the patients within the age group 1 to 9 years. Twenty-six of these patients had Haemophilia A (93%) while the other two patients had Haemophilia B (7%). The coagulation factor levels ranged between 0.4% and 8% implying severe to moderately severe disease (table 2). Bleeding into the joints (haemarthrosis) was the commonest site of bleeding

Table1: Age distribution of patients

Age	Frequency	% (n=28)
1 – 9	11	39
10 – 19	7	25
20 – 29	5	18
30 – 39	4	14
40 – 44	1	4

Table 3: The sites/pattern of bleeding and their frequencies

Site of bleed	Frequency (N=44)	(%)
Haemathrosis	**18**	**41**
Left knee	7	16
Right knee	3	7
Left elbow	2	4.5
Right elbow	2	4.5
Left ankle	2	4.5
Right ankle	1	2.3
Right hip	1	2.3
Muscle/soft tissue haematoma	**11**	**25**
Gastrointestinal	**7**	**16**
Tongue	3	7
Gastritis/melena	3	7
Oral mucosa/gum	1	2.3
Others	**10**	**22.7**
Bone fracture	2	4.5
Post-circumcision	2	4.5
Post-operative	1	2.3
Epistaxis	1	2.3
Pseudo-tumour (left iliac fossa)	1	2.3
Central nervous system	1	2.3

Table 2: Disease severity among the Haemophiliac patients

Severity	Factor level (%)	frequency	% (n=28)
Mild	6 – 10	10	36
Moderate	1-5	12	43
Severe	0 - <1	6	21

Table4: Treatment options used alone or in combination and the frequency of use

Treatment option	Frequency	%	Haemophilia A	Haemophilia B
FFP	28	100	26	2
Cryoprecipitate	10	36	10	-
rFVIII	6	21	6	-
Fresh Whole Blood	5	18	5	-
Antifibrinolytic agents	3	11	3	-
FFP alone	13	46	11	2
FFP, CRYO, rFVIII, and FWB	2	7	2	-
FFP and CRYO only	7	25	25	-
FFP and rFVIII only	3	11	3	-
FFP and FWB only	3	11	3	-

Key: FFP= fresh frozen plasma; CRYO = cryoprecipitate; rFVIII = recombinant factor VIII; FWB = fresh whole blood;

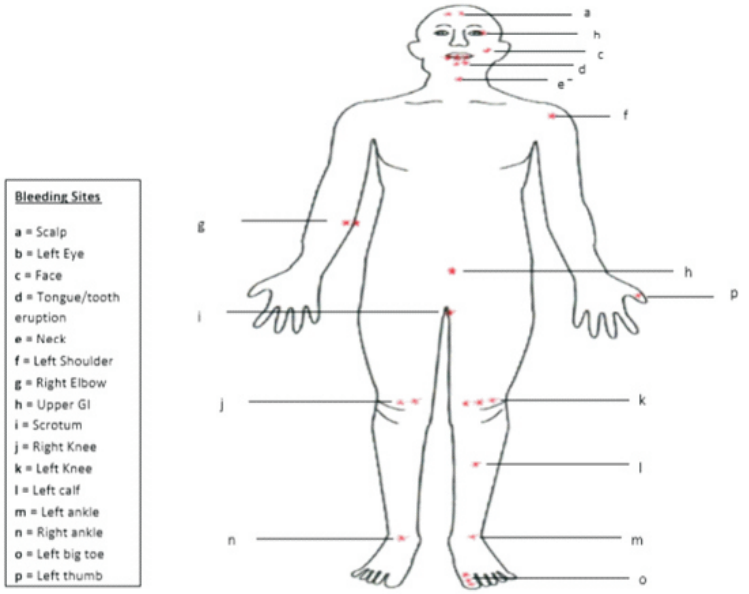


Figure 1: sites of bleeding in Nigerian Haemophiliacs seen at a tertiary Hospital over a two-year period

constituting 41%. The knee joint was the commonest site as a target joint (23%) mostly involving the left knee (16%). Soft tissue haematoma was next in frequency to haemarthrosis observed in 25% of patients, greater percentage of which occurred following a trauma. Gastro-intestinal (GIT) bleeding constituted 16% of all cases with bleeding into the tongue accounting for 7% of cases and gastritis with passage of melena accounting for another 7%. Tongue bleeding was usually self-inflicted while chewing food, meat or fish bone. Other patterns of bleeding experienced in these haemophilic patients included post-surgical, post circumcision, bone fracture, epistaxis, central nervous system (CNS) bleeding and left iliac fossa pseudotumor all together constituting 22.7%. The least commonly observed bleeding sites were hip joint, right ankle, epistaxis, CNS bleeding and pseudotumor each constituting about 2.3% (n=1) each (table 3).

The acute bleeds were managed with fresh frozen plasma (FFP), sometimes cryoprecipitate, and in recent times, recombinant factor VIII concentrate (Elocate). Fresh whole blood (screened for transfusion transmissible infections) was given in addition to factor replacement therapy, for correction of severe anaemia in patients with severe bleeding. The tongue bleeds required anti-fibrinolytic agent such as tranexamic acid or epsilon aminocaproic acid (EACA) in addition to the factor replacement therapy. Some patients received various combinations of these treatment options to achieve haemostasis (table 4). Overall, all 28 (100%) patients received FFP either given alone or in combination with other therapeutic options. Ten (36%) of patients received cryoprecipitate; 6(21%) got recombinant factor VIII, 5(18%) received fresh whole blood and 3(11%) patients were given antifibrinolytic agents [one of whom had EACA and remaining 2 got tranexamic acid] see (table 4). The two patients with haemophilia B received only FFP as recombinant factor IX was not available when they presented.

Discussion

Haemophilia A is commoner than haemophilia B with worldwide prevalence of 1/5000 and 1/40000 live male births respectively. Higher prevalence of haemophilia A was also observed among our patients with 93% (n=26) of our patients being haemophilia A and 7% haemophilia B. The pattern of bleeding observed in our patients is similar to what has been documented in the literature as observed by Srivastava who reported joint bleed as being the commonest (70-80%), followed by haematoma in (10-20%) and CNS bleed being the least (<5%).

Bleeding into the joints (haemarthrosis) is the commonest (41%) presentation in our patients involving mainly the knees followed by the elbows, then the ankles and thigh (knee>elbow>ankle>thigh). Studies have reported other sites such as elbow in adolescents by Aronstam et al and ankles being the commonest site in a more varied population across 21 countries as reported by K. Khair et al. Aronstam et al reported that the elbow being the most frequent site of bleeds occurred in age group 15-17 years, while the knee was the commonest site in ages 10-14 years. The difference was attributed to the adolescent using the arm more frequently as they become less physically active with inclination to academic work or due to a relative decrease in the use of leg because of the predominance of leg bleeds in earlier life.

Stephensen D et al also reported that the ankle joint has replaced the knee joint as the most common joint affected. However, our study showed that the traditional pattern of joint bleed is retained in our patients. This emphasises the need for early prevention

and treatment of haemarthrosis so as to restore function of the affected joints. Subsequent crippling haemarthropathy and flexion deformities in affected limb could impair quality of life and increase expenditure on health.

Haemorrhage into muscle (haematoma) and soft tissue was next in frequency after haemarthrosis. It was observed in 25% of patients similar to what has been documented in the literature. Sorensen B. et al also reported that 10 -25% and Srivastava et al 10-20%, of the bleeding in haemophilia involves the muscles. Hematomas and other soft tissue bleeding may occur spontaneously, but this is most often preceded by trauma. Haematomas once formed, may stabilize and later slowly resolve. However, in moderately and severely affected patients, hematomas have a tendency to enlarge progressively and to dissect in all directions, unless appropriately treated.

Gastrointestinal bleed was the next in frequency, constituting 16% with equal frequencies of tongue bleed and NSAID induced gastric bleeding occurring in 7% of cases each. Peptic ulcer disease has been found to be more frequent in the adult haemophiliacs than in the general male population. Ingestion of anti-inflammatory drugs for relief of pain is a frequent cause of upper gastrointestinal haemorrhage. The tongue bleeds were severe enough to cause anaemia requiring red cell transfusion in addition to factor replacement therapies. There was also the need to administer anti-fibrinolytic agent such as tranexamic acid at 1g orally every 8 hours or epsilon aminocaproic acid (EACA) at 25mg/kg orally every 8 hours, so as to reduce the digestion of fibrin by ptyalin, the digestive enzyme in the oral cavity.

Other forms of bleeding observed among few of our patients included CNS bleeding, pseudocysts, bone fracture, post-surgical, and epistaxis. Spontaneous intracranial haemorrhage is a rare complication of haemophilia with frequency of about 2.2 – 7.8% and a mortality rate of 34%. CNS bleeding was found in 2.3% of our patients similar to the above incidence of 2.2-7.8%. This rarity of CNS bleeding in haemophiliacs has been reported to be due to the high level of tissue factor in the brain providing additional haemostatic protection to this vital organ. Haemophilic pseudotumours are blood cysts that occur in soft tissues or bone. They are rare but dangerous complications of haemophilia. Pseudotumors often develop in the lower half of the body, usually in the thigh, buttock, or pelvis, but they can occur anywhere, including the temporal bone. Only 2.3% of our patients had a pseudotumor which was located in the left iliac fossa. Surgery in patients with haemophilia is characterized by delayed wound healing because of poor clot formation. Prolonged bleeding and subsequent infection of the wound hematoma may further complicate healing. The management of post-surgical bleeding in haemophiliacs has been made possible with the availability of factor concentrate. The factor concentrate should be commenced preoperatively after ruling out presence of antibodies in the patient. Factor replacement therapy is continued until about 1 to 2 weeks postoperatively so as to ensure adequate healing of surgical site. There is controversy on the frequency of bone fractures in haemophilic patients. Some authors believe that fractures are infrequent due to the fact that patients understanding of the gravity of their illness makes most haemophilic patients reduce their levels of activities thereby posing a risk to their physical well-being. Abreu et al are opposed to this argument in that they believe haemophiliacs suffer higher frequency of fractures than the general population as a result of loss of movement caused by haemophilic arthropathy, reduced muscular function, osteoporosis and increased number of traumas suffered by them because preventive treatments enables them to engage in sports, consequently leading to accidents. Pattern of fracture sites in haemophiliacs was reported to show a reversal from being previously commoner in the lower limbs, but now being more frequently found to involve the upper limbs, however overall frequency of fractures was reported to be less. In our study only one (2.3%) patient had a femoral mid shaft fracture, which was managed conservatively. Haematoma at fracture site was minimised by the use of FFP and Infusion of recombinant FVIII concentrate.

Conclusion

Bleeding into the joint is the commonest complication in haemophilia patients in our hospital. The knee joint was the commonest site of joint bleed. This may result in physical disability. Patients experiencing bleeding episodes might require a more personalized approach to treatment in which case, there might be the need to consider prophylaxis for some of our patients.

All efforts should be made to adequately treat haemarthrosis, as this is the most frequent type of acute bleed in haemophiliacs, so as to prevent flexion deformities. Oral bleeds tend to be relentless if anti-fibrinolytic agent is not added to the haemostatic support.

References

1. Basravi S, Shastry PP, Cynthia H, Zia SK, Chan RY. Delayed bleeding in a Toddler. Paediatric Annals. 2016;45(1):e10-e2. Epub 19 January 2016.
2. Lobet S, Hermans C, Lambert C. Optimal management of Hemophilic arthropathy and hematomas. J blood Med. 2014;5:207-18.
3. Knobe K, Berntop E. Haemophilia and joint disease: Pathophysiology, evaluation and management. J Comorb. 2011;1:51-9.
4. Soucie JM, Monohan PE, Kulkarni R, Konkle

BA, Mazepa MA. The Frequency of joint haemorrhages and procedures in non-severe Haemophilia A Vs B. Blood Adv. 2018 Aug 28;2(16):2136-44.
5. Reinke C, Spodeck A, Schildhauer TA, Swol J. Haemophilia A in a major trauma patient. BMJ Case Rep. 2015. Pubmed Central PMCID: PMC4691853. PMID: 26677147. Epub Dec 16, 2015.
6. Prasant J, et al. Recent trends and advances in Haemophilia, its management and therapeutic outcomes. Indian J pharm Biol Res. 2014;2(4):68-76.
7. Guidelines for the management of Haemophilia 2nd ed. [Internet]. Blackwell publishing. 2012. Available from: www.wfh.org.
8. Franchini M, Mannucci PM. Haemophilia B is clinically less severe than Haemophilia A: further evidence. Blood Transfus. March 2018;16(2):121-2.
9. Srivastava A, et al. Guidelines for the management of Haemophilia. Haemophilia. 2013;19(1):e1-47. Epub 2012,July 6.
10. Aronstam A, Ranfor SG, Painter MJ. Pattern of bleeding in adolescents with severe haemophilia A. BMJ. 1979;1:469.
11. Khair K, Mazzucconi MG, Parra R, Santagostino E, Tsakiris DA, Hermans C, et al. Pattern of bleeding in a large prospective cohort of haemophilia A patients: A three-year follow-up of the AHEAD (Advate i HaEmophilia A outcome Database) study. Haemophilia. 2018;24(1):85-95.
12. Stephensen D, Tait RC, Brodie N, Collins P, Cheal R, Keeling D, et al. Changing Patterrns of bleeding in patients with severe haemophilia A. Haemophilia. 2009;15(6):1210-4. Epub 2009 Jul 29.
13. Sorensen B, Benson GM, Bladen M, Classey S, Keeling DM, McLaughlin P, et al. Management of muscle haematomas in patients with severe haemophilia in an evidence-poor world. Haemophilia. Jul 2012;18(4):598-606.
14. Pettersson H, Gilbert MS, editors. Soft tissue bleeding, In: diagnostic Imaging in Haemophilia. 1st ed. London: Springer; 2017.
15. Eyester ME, Asaad SM, Gold BD, Cohn SE, Goedert JJ. Upper gastrointestinal bleeding in hemophilics: incidence and relation to use of non-steroidal anti-inflammatory drugs (second multicenter hemophilia study group. Hemophilia. 2007;13(3):279-86.
16. Shokunbi WA, Shonde-Adebola KB, Fowodu FO, Ogundeji PS, Busari OE. Gastrointestinal Bleeding in a patient with Haemophilia A. Nigerian Society For Haematology and Blood Transfusion, 40th Annual general Meeting and Scientific conference; Benin. Benin Nigeria 2013. p. 19-20.
17. Hegde A, Nair R, Upadhyaya S. spontaneous intracerebral hemorrhage in hemophilics- A treatment dilemma. Int J Surg Case Rep. 2016;29:17-9.
18. Mackman N. the role of tissue factor and factor VIIIa in Haemostasis. Anesth Analg. May 2009; 108 (5):1447 -52.
19. Lewis TR, Webb HR, Bell JP, Beall DP, Fish JR. Hemophilic Pseudotumor. J Okla State Med Assoc. 2005; 98(10):485-7.
20. Rodriguez-Merchan EC. Surgical wound healing in bleeding disorders. Haemophilia. 2012. Epub 15 February.
21. Sethi M. perioperative management of patient with Hemophilia A for major abdominal surgery. Indian J Anaesth. 2017;61(4):354-5.
22. Fell F, Bentley C, Rizza CR. Fracture management in patients with haemophilia. J Bone Joint Surg (Br). 1974; 56B:643-9.
23. Abreu A, etal. Tratamento ortopedico de urgencia no hemofilico. Tratamiento ortopedico de las lesiones Hemofilicos des Aparato locomotor. New York: Schattauer Verlag; 1981.
24. Caviglia H, Landro ME, Galatro G, Candela M, Neme D. Epidemiology of fractures in patients with Haemophilia. Injury. 2015 Oct;46(10):1885-90

Knowledge of School Health Programme Among Teachers and its Practice by Secondary Schools in Sabon-Gari Zaria.

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Abstract

School Health Programme (SHP) which focuses on promoting safe environment for school children has not been given proper attention in Nigeria.The success of school-based health programme relies on the personal knowledge and perspective on the health needs of students by their teachers. This study determined the awareness and knowledge of SHP among teachers and the practice of SHP in secondary schools in Sabon Gari Zaria, Kaduna State.

A descriptive cross-sectional study was conducted among 160 teachers in 11 Secondary schools using multistage sampling technique. A self-administered, semi-structured questionnaire was used. Informed consent was sought and obtained from each respondent. Analysis was done using IBM® Statistical Package for Social Sciences version 19 statistical software.

Mean age of respondents was 35.35 years. Females were in the majority (55.1%). All (100%) the respondents were aware of SHP. However, majority (96.2%) had poor knowledge. The practice of SHP was also poor in all the schools although majority 8(72.7%) of them provided some form of health services. Only 9.7% of the schools had a sick bay. Majority 72.7% of the schools did not provide immunisation services. Most 72.7% of the schools practiced regular environmental sanitation.

There is a high level of awareness of SHP among the teachers, however their knowledge was poor with a low practice of school health in all the schools. There is an urgent need for concerted efforts by the Ministries of education and health to upgrade the standards in secondary schools in the State.

Keywords; School Health Programme, Sanitation, Head teachers, School based healthcare.

Introduction

School Health Programme (SHP) refers to all aspects of the school programme which contributes to the understanding, maintenance and improvement of the health of the school population. School health program (SHP) is an important component of the overall health care delivery system of any country. It is designed to promote the optimal physical, emotional, social and educational development of students. According to WHO, settings such as schools, universities, work sites, hospitals, villages and cities are efficient "places and contexts" to promote health, to reach individuals, to gain access to service to synergistically bring together interactions throughout the wider community. In developing countries like Nigeria, the importance of the school as places of promoting health of children cannot be overemphasised. Children are very important in every society. Children and youth are recognized as prime population. Academic success, optimal health and well-being of its children and youth predict national development. It is common knowledge, at least, that the child of today is the adult of tomorrow, as well as, a potential parent of a child of tomorrow. Teachers play a central role in the promotion and successful implementation of this programme. Teachers' knowledge on SHP is critical in determining the success of the program, i.e., the availability of qualified, interested, and enthusiastic teachers. In fact, teachers play a strategic role in the implementation of any effective SHP that is largely determined by the appropriateness of teachers' knowledge of the programme. Also the importance of teachers' preconceptions with tackling some commonly misconceived diseases e.g epilepsy has been verified by multiple studies. The ability of a country to meet its school health needs depends largely on the knowledge, skills, deployment and motivation of the teachers who are most often than not saddled with the responsibility of providing major part of school health services. Research has shown that when school districts and schools have effective policies and practices that support the health of their students and staff, their absenteeism decreases, student concentration improves, student behaviour problems are reduced, children and adolescents establish life-long health-promoting behaviours

In Nigerian schools, teachers place little emphasis on the health of students unlike on their academic performance. This is because the latter directly determines the students' progress through

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school or retention in school. The academic performance is also used to accredit standard to schools. In Nigeria, there are various methodologies for teachers to evaluate the academic performance of their student at various times, but not much is available to evaluate and improve the health of the students either due to lack of or inadequate knowledge of school health programme by the school personnel as well as lack of policy or its implementation. The School Health Programme which focuses on promoting safe environment for school children has not been given proper attention in Nigeria.

The success of school-based health programme would therefore rely heavily on the personal knowledge, attitude and perspective on the health needs of students by their teachers. The aim of this study was to determine the awareness and knowledge school health programme among teachers as well as to determine the practice of SHP by schools in Sabon-Gari Zaria, Kaduna State.

Methodology

The study was carried out in Zaria. Zaria is an ancient city located in the heart of Northern Nigeria. It occupies a strategic position, the southern out post of the Hausa land; even today it still commands a respectable socio-political position. Zaria is a major city in Kaduna State in Northwest geopolitical zone of Nigeria. This metropolitan city consists of two local government areas (LGAs), Zaria and Sabon Gari. Popularly and traditionally called Zazzau, it was one of the original seven Hausa city-states. According to the 2006 Census its population was 408,198. It is one of the biggest towns in Kaduna state. It was founded as a capital of the old Hausa Kingdom. It has five districts namely: Giwa, Sabon-Gari, Igabi, Soba and Zaria Districts. Sabon Gari being the largest settlement in Sabon Gari local government area is characterized by lots of commercial activities. It has lots of public and private institutions a large market and industries. A "Sabon gari" (strangers' quarters or literally new town in the Hausa language, plural *Sabon Garuruwa*) is a section of cities and towns in Northern Nigeria and south central Niger whose residents are not indigenous to Hausa lands. Sabon-Gari is a cosmopolitan town comprising of various ethnic groups ranging from the predominant tribes – Hausa, Yoruba, Igbo to other ethnic groups such as Kagoro, Jaba, Edo, Idoma, Kaje e.t.c. There are seven public and twenty private registered secondary schools in Sabon-Gari.

A cross-sectional descriptive study was carried out among teachers in Secondary schools in Sabon-Gari. The study population comprised all teachers of secondary schools in Sabon Gari, Zaria.

Inclusion criteria

Inclusion criteria were all willing and consenting teachers; all the teachers who were appointed on permanent basis.

Sampling

A Cluster sampling technique was used to obtain the required sample size.

Stage 1: The first stage was selection of the schools to be surveyed. Out of the 27 registered Secondary schools in Sabon-Gari (7 private and 20 public), using proportionate allocation to size, 11 were selected (4 private and 7 public) by simple random sampling by balloting.

Stage 2: In the second stage, 15 teachers were selected from each school from a list of all the teachers (from the payroll) in each school by simple random sampling using balloting method. This was continued until the required sample size of 163 was obtained.

Instrument for data collection

A self-administered, pre-tested, pre-coded, semi-structured questionnaire was used to collect data from the eligible respondents. Questionnaire was adapted from the tools used in previous studies in published literature. This was developed with the help of specialists from the field and experienced faculty members to provide face as well as content validity. The questionnaire had 4 sections lettered A-D in line with the specific objectives. Section A covered socio-demographics, B- Knowledge of school health among teachers. C- Practice of school health by the teachers and section D covered factors affecting knowledge of school health. The questionnaires were pretested in a private secondary school in Zaria LGA. Necessary modifications were made to the tool after the pre-test.

Data collection

Data was collected by researcher and 2 research assistants who were trained for 2 hours on how to administer the questionnaires and record appropriate responses.

Data Analysis

Data was checked for completeness and entered into IBM® SPSS version 19 statistical software. Descriptive summary statistics using mean and standard deviation was done for numeric data while frequencies and proportions were used for categorical data. Chi square test or Fishers exact was used to determine differences in proportions. The results were summarised in tables and charts using Microsoft excel 2016.

Ethics

Ethical clearance was sought and obtained from the Kaduna state Ministry of health Ethics review board. Permission was obtained from the Ministry of Education, Divisional Inspectorate, Zaria as well as each school principal. The respondents were assured of

confidentiality. Verbal informed consent was obtained from each teacher. Data collected was stored in safe location on a computer without unauthorised access.

Results

In this survey, 11 schools were included with 165 questionnaires distributed. However, only 160 were retrieved giving a response rate of 96.9%. Mean age of respondents was 35.35 years. Majority of the respondents 86 (55.1%) were females. Most of them 84 (60.0%) were graduates from university. Table 1 shows the socio-demographic characteristics of the respondents.

All (100%) the respondents were aware of school health programme.

Knowledge of school health among teachers

Most of the respondents 102(63.8%) could only mention one component of school health programme. The major component of school health programme known was school health services 52(32%). Healthful environment was the least known (15.6%). Majority 155(96.2%) had poor knowledge of school health programme. Table 2 shows the level of knowledge of school health programme among the head teachers.

Practice of school health among secondary schools

Majority (72.7%) of the schools provide some form of health services to their students. Although all the schools (100%) provided first aid services for their students, only 9.7% of the schools had a sick bay. None of the schools had a school physician and only 9.1% of the schools had a school nurse. Only 33.6% of the teachers record results obtained from screening tests. With regards to communicable disease prevention, majority (72.7%) of the schools did not provide immunisation services, 81.8% of the schools practiced separation of students having communicable diseases. Majority of the schools (54.5%) had class periods allotted to health education instruction. Most (72.7%) of the schools practiced regular environmental sanitation. Only 18% of the schools had waste paper baskets in their classrooms. Most of the schools had adequate and regular water supply within their premises. Majority 81.8% of the schools had functional toilets.

Discussion

Although School Health Programme (SHP) has been an integral part of the educational system in Nigeria for decades now, researches done in the last 3 decades have shown poor status of the implementation and practice of school health program. A functional SHP has been recognized as an important aspect in the care of children and by implication the future citizenry of any nation. This study was carried out to assess the awareness, Knowledge and practice of

Table 1 Socio-demographic characteristics of respondents

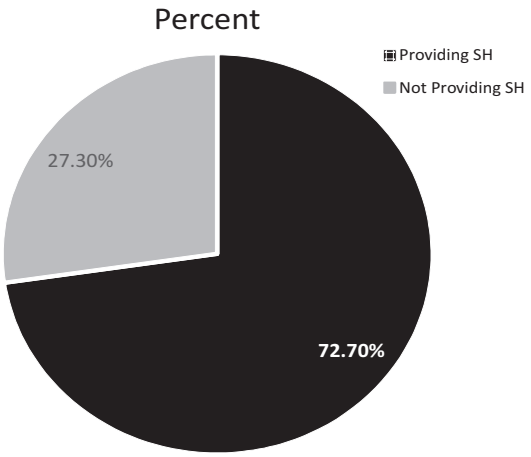
Variable	Frequency	Percent
Sex		
Male	70	44.9
Female	86	55.1
Ethnicity		
Hausa	59	37.3
Yoruba	35	22.2
Igbo	35	22.2
Religion		
Christianity	98	61.3
Islam	62	38.8
Marital status		
Single	43	26.9
Married	115	71.9
Divorced	1	0.4
Widowed	1	0.6
Qualification		
University degree	90	60.0
Others(NCE,PGDE)	60	40.0

Table 2 Knowledge of School Health Programme among teachers in schools in Sabon Gari

Knowledge score	Frequency	Percent
Poor Knowledge	53	33.0
Fair Knowledge	107	67.0
Good Knowledge	-	-
Total	160	100.0

Table 3: Distribution of Secondary schools practicing healthful environment in Sabon-Gari, Zaria

Variable	Frequency	Percent
Waste Collection		
Yes	7	63.6
No	4	36.4
Sweeping of compound		
Yes	8	72.7
No	3	27.3
Water supply in premises		
Yes	10	90.9
No	1	9.1
Drinking water source		
Borehole only	1	9.1
Tap Only	7	63.6
Borehole and Tap	2	18.2
None	1	9.1
Sewage disposal method		
Pit latrine	2	18.2
Water closet	9	81.8
Toilet Disinfection		
Yes	10	90.9
no	1	9.1



-Figure 1: Distribution of Secondary schools providing formal school health services in Sabon-Gari, Zaria.

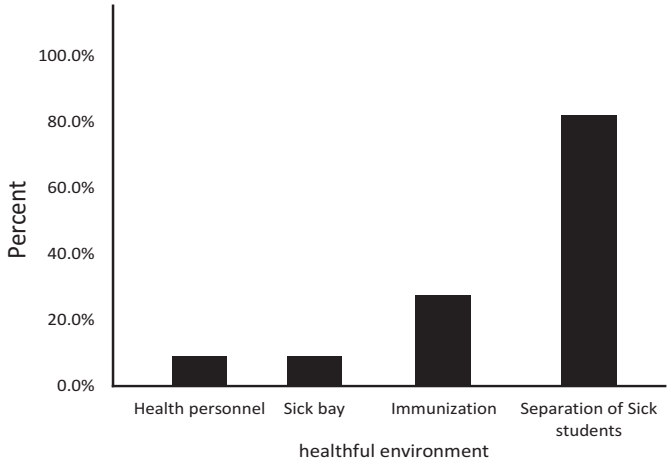


Figure 2: Distribution of Secondary schools with health personnel, Sick bay and other school health services in Sabon-Gari, Zaria.

school health programme among teachers in schools in Sabon Gari, Zaria.

All the teachers (100%) in our study were aware of SHP. This is in contrast with findings in a similar study in Ibadan where only about half of the teachers were aware of school health programme. However, despite this high level of awareness in our study, none of the respondents had adequate knowledge of SHP as most could only mention correctly one component of school health programme. This finding is in consonance with a study done in Benin, Edo state that also found that a school teachers had poor knowledge. Another Nigerian study done in Oyo state also recorded inadequate knowledge among the teachers. This general lack of knowledge of SHP among schools teachers could be as a result of the poor implementation of National School Health Policy as well as the lack of continuing education for most teachers (addressing school health) besides their professional training in education. It is important that appropriate continuing education for teachers in the form of training should be conducted regularly to help teachers in playing their role in the implementation of school health programme. There is an increased likelihood of continued and appropriate implementation of SHP if the teachers are well trained in school health. Studies carried out in Austrailia, United States and Northern Ireland indicated the need for continued career training for the teachers in order to achieve positive effects on school health. Other studies have shown that the knowledge of teachers regarding school health programme is adequate. This has been attributed to their implementation of their school health policy as well as adequate and regular training of teachers.

The need for a well-organized SHP in Nigeria is very key to achieving Sustainable Developmental Goals(SDG). Originally, SHP consists of three basic components; Health services, Health Education and Healthful environment. Practice of this programme is measured based on how well individual schools have been able to provide all of these components to the school pupils and staff. In our study, only 2(50%) out of 4 Public schools and 6(85.7%) out of 7 public schools formally provided health services to their pupils and staff. This is similar to findings from a study in Ogun state, Nigeria. It is however in contrast to a study done in Edo state where only 38.3% of the schools had a school health programme in place. The difference in provision of health services between the public and private schools was not statistically significant.

Sanitation and provision of sanitary facilities is a pre-requisite for building a healthy environment within the school premises. Majority (72.7%) of the schools clean up their environment regularly which was more so in private than in public schools. This was in contrast to the Edo study where all the schools cleaned up their environment regularly. The practice of cleaning up the environment regularly should be further encouraged in all schools by the school health programme so as to maintain proper hygiene and provide a disease free environment conducive for learning. Access to safe drinking water remains a problem in Nigeria. Most (90.9%) of the schools in our study had water supply within their premises, although the main source of water was tap (63.6%) in the schools which has been known to be erratic in Zaria and its environs. This finding is similar to findings in a study in Ogun state where most of the schools also reported lack of regular water supply. Lack of regular water supply is a precursor to poor hygienic practices and thus increasing the risk of infectious disease transmission within the school premises. Estimates from the core welfare questionnaire indicator survey(CWIQS) showed low levels of improved drinking water and sanitation coverage rates in Nigeria with Kaduna state having one of the highest coverage rates at 71.4 %, above the national average of 51.4%. The direct implication of this poor level of sanitation in our study sites includes the increased risk of perpetuation of

childhood diseases like diarrhea, dysentery and infectious hepatitis which are endemic in most parts of the country that lack proper sanitation and poor supply of potable water. Improving the sanitation and supply of water would help to drastically lower the burden of disease in the schools which has good implications on the health of our future leaders.

Limitations

The limitation of this study is that the practice of school health programme in the schools was not determined by observation but based on information obtained from the teachers. This could give an exaggerated level of practice among the schools which may not be a true reflection of the situation on ground in the schools.

Conclusion

This study revealed a high level of awareness of school health programme among all respondents. Majority of the teachers had inadequate knowledge of SHP. School health programme is being practiced in most schools however not all components of school health programme were being implemented. The State Ministry of Education in conjunction with the school authorities should provide more training of the teachers to improve their knowledge on school health. There is also a need for further research to assess teachers' training in SHP and other factors that could affect the full implementation of the programme in the study area. This follow up study may help inform interventions to upgrade the knowledge of the SHP in the study area.

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References

1. Adebayo AM, Onadeko MO. Knowledge of school health programme among public primary school teachers in Oyo State, South-Western Nigeria: a rural-urban comparative study. Afr J Reprod Health. 2015;19(3):55-60.
2. Odeyemi K, Chukwu E. Knowledge, attitude and practice of school health among Primary school teachers in Ogun State, Nigeria. Niger J Paediatr. 2015 Sep 18;42(4):340.
3. WHO | Introduction to Healthy Settings [Internet]. WHO. [cited 2017 Dec 27]. Available from: http://www.who.int/healthy_settings/about/en/
4. Chavan GM, Chavan VM. Knowledge, attitude and practices of secondary school teachers regarding school health services in children. Int J Community Med Public Health. 2018 Mar 23;5(4):1541.
5. Obembe TA, Osungbade KO, Ademokun OM. Awareness and knowledge of National School Health Policy and School Health Programme among public secondary school teachers in Ibadan metropolis. Niger Med J J Niger Med Assoc. 2016 Aug;57(4):217-25.
6. Oyinlade OA, Ogunkunle OO, Olanrewaju DM. An evaluation of school health services in Sagamu, Nigeria. Niger J Clin Pract. 2014;17:336-42.
7. Kalra MB, Baveja B. Teacher thinking about knowledge, learning and learners: A metaphor analysis. Procedia Soc Behav Sci. 2012;55:317-26.
8. Owolabi LF, Shehu NM, Owolabi SD. Epilepsy and education in developing countries: A survey of school teachers' knowledge about epilepsy and their attitude towards students with epilepsy in Northwestern Nigeria. Pan Afr Med J. 2014;18:255.
9. Akpan MU, Ikpeme EE, Utuk EO. Teachers' knowledge and attitudes towards seizure disorder: A comparative study of urban and rural school teachers in Akwa Ibom state, Nigeria. Niger J Clin Pract. 2013;16:365-70.
10. Adegbenro CA. Effect of a school health programme on ensuring safe environments for primary school children. J R Soc Promot Health. 2007 Jan;127(1):29-32.
11. National Population Commission. Official Gazette of 2006 Census. 2007.
12. Stanley A, Andrew S, Dania A, Sani I. An assessment of household solid waste disposal practices in Sabon Gari, Zaria. ATBU J Environ Technol. 2012;5(1):48-59.
13. Ministry of Education. Kaduna State Annual School census report. [Internet]. Kaduna; Available from: https://www.esspin.org/reports/download/416-file-KADUNA-ASC-2013-14.pdf
14. Ofovwe GE, Ofili AN. Knowledge, attitude and practice of school health programme among head teachers of primary schools in Egor Local Government Area of Edo State, Nigeria. Ann Afr Med. 2007 Sep;6(3):99-103.
15. Ojugo AI. Status of Health Appraisal Services for Primary School Children in Edo State, Nigeria. Int Electron J Health Educ. 2005;8:146-52.
16. Mooney E, Kelly-Blakeney E, Mc Cloat A, Black D. Primary school teachers' experiences of teaching healthy eating within the curriculum: a report for the Standing Conference on Teacher Education North and South (SCoTENS). 2011.
17. Htun YM, Lwin KT, Oo NN, Soe K, Sein TT. Knowledge, attitude and reported practice of primary school teachers on specified school health activities in Danuphyu Township, Ayeyarwaddy Region, Myanmar. South East Asia Journal of Public Health. 2013;3(1):24-9.
18. Nigeria - National Core Welfare Indicators Survey, 2006, Third edition - Overview [Internet]. [cited 2018 Jan 31]. Available from: http://www.nigerianstat.gov.ng/nada/index.php/catalog/30

Socio-Demographic Determinants of Malnutrition among Under-Fives in Mil-Goma: A Rural Community in Kaduna State, North Western Nigeria.

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Abstract

Malnutrition remains a major public health problem in the developing world. It is a major underlying factor in many childhood diseases; and it is still one of the leading causes of under-five mortality in Sub-Saharan Africa. It is particularly prevalent in rural areas where it affects one out every three preschool age children. This study was carried out to investigate the prevalence of malnutrition and associated socio-demographic factors that affect malnutrition among under-fives in Mil-Goma community, Kaduna State, North Western Nigeria.

This cross-sectional descriptive survey was carried out using structured questionnaires and anthropometric measurements of height and weight of 288 children selected by multi-staged sampling method. Data was analyzed based on descriptive statistics, chi-square and logistic regression analysis using SPSS version 20. The SPSS results were presented in tables.

The prevalence of stunting, underweight and wasting in the children under-five years were 59.72%, 36.81% and 13.54% respectively. Malnutrition was found to be higher in children in their second year of life as compared to children in other age groups. There was a statistically significant association between maternal education, family income, mother's occupation and stunting. Mothers who had only Quranic education were 11 times more likely to have stunted children than those with secondary education. There was also a statistically significant relationship between family income, maternal occupation and the prevalence of underweight among under-fives.

There was a high prevalence of stunting observed among the children. Maternal education, maternal occupation and economic status of the family were important associations of poor nutritional status among under-five children. There is an urgent need for mounting nutritional intervention programmes to improve the nutritional status of the children.

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Keywords: Malnutrition, under-fives, stunting, wasting, underweight.

Introduction

Malnutrition poses a significant public health problem in Sub Saharan Africa especially resource poor countries like Nigeria. Over one third of all child deaths is estimated to be directly or indirectly caused by malnutrition and diseases related to it. The term under-nutrition is commonly used interchangeably with the term malnutrition, however, is not the only form of malnutrition. Other forms include over-nutrition and micronutrient related malnutrition. However, the main types of malnutrition that have been identified in Nigerian children are protein-energy malnutrition (a form of under nutrition) and micronutrient malnutrition. Protein-energy malnutrition among preschool children is a major public health problem across the country. Stunting is the most prevalent form of malnutrition globally in children and has longer-term impacts on physical, neurodevelopmental and economic capacities. Children who are under nourished have a greater risk of dying from common infections, increased frequency and severity of such infections and have longer recovery periods.[1]

Malnutrition in childhood has an impact on intellectual achievement. Cognitive impairments are worse in children with severe stunting and iron deficiency anaemia. Studies show that stunted children in the first two years of life have lower cognitive test scores, delayed enrolment, higher absenteeism and more class repetition compared with children who are not stunted. Vitamin A deficiency reduces immunity and increases the incidence and gravity of infectious diseases resulting in increased school absenteeism. Childhood malnutrition also has an effect on economic productivity. The mental impairment caused by iodine deficiency is permanent and directly linked to productivity loss.

In Kaduna state, malnutrition rates among children who are less than 5 years show that 56.6%, 41.7% and 57.6% of them are stunted, wasted and underweight respectively. There are significant disparities in children from different geo-political zones. Those from the North-West and North-East have higher prevalence of malnutrition. The underlying causes of malnutrition in Nigeria are poverty, poor food production, insufficient food intake, ignorance, poor food preservation techniques, improper preparation of foods, poor distribution of food within the households,

food restrictions and taboos, and poor sanitation. The nutritional status of children is a reflection of the social status of the family and the social wellbeing of the community. The socio-demographic characteristics of families which can affect the nutritional status of a child include parents' education, occupation, and family composition. It is important, therefore, to address the various persisting social determinants of malnutrition in Nigeria, such as poverty, illiteracy, unemployment, corruption, inequalities, and inequities. There is paucity of information about prevalence of malnutrition among children under five years in Mil-Goma, Kaduna state. This study was carried out to determine the prevalence of and associated socio-demographic determinants of malnutrition among children under five years in Mil-Goma, Kaduna state.

Methodology

This study was carried out in Mil Goma, a rural settlement in Sabon-Gari LGA of Kaduna State, Nigeria. It was a descriptive cross sectional study carried out among 288 under-five children. The minimum sample size was determined using the statistical formula for sample size determination for cross sectional surveys and the prevalence of wasting of 15.3% from a previous survey. The multistage sampling technique was used to select the children. In the first stage, the village was divided into four settlements of which three were selected. Households were listed and numbered to form secondary sampling units. In the third stage, in each household, a mother and child pair was randomly selected. Children with chronic illnesses and skeletal deformities were excluded from the study.

Data was collected from the mothers of selected children using interviewer administered structured and pre-tested questionnaires. Anthropometric measurements of the children were also taken. The parameters assessed were height and weight. The information obtained was analysed using SPSS version 20. Stunting (height-for-age), wasting (weight-for-height), underweight (weight-for-age) was analysed based on WHO reference standard. Computed Z scores for weight for age, weight-for-height and height for age were then used to assess underweight, wasting and stunting using the WHO reference standards. Normal height was defined as height for age which is between -2 and +2 Z score while normal weight was defined as weight for age between -2 and +2 Z score. Stunting and underweight were defined as height and weight for age less than -2 Z score respectively. Wasting was defined as BMI for age less than -2 Z score. Permission was obtained from the village head and informed consent was from the respondents before commencement of data collection while confidentiality of responses was maintained.

Table 1: Distribution of the Age group and Educational status of mothers of the children (n=288)

Socio-demographic characteristic	Frequency	Percentage
Age Group (Years)		
10-19	37	12.8
20-29	159	55.2
30-39	61	21.2
40-49	29	10.1
50-59	2	0.7
Educational Status		
None	23	8.0
Quranic	114	39.6
Primary	111	38.5
Secondary	40	13.9

Results

The study showed that more than half (55.2%) of the mothers of under-five children were within the age group 20-29 years while only 0.7% of the respondents were within the 50-59 year age group (Table 1). The mean age of the mothers was 26 ±7.6 years. With regard to their educational level 39.6% of them had only Quranic education while 13.9% had secondary education; none of the respondents had tertiary education (Table 2). Of the 288 children, 59.72% were stunted, 36.81% were underweight while 13.54% were wasted (Table 3). The greatest proportion of under-fives (37.6%) who were malnourished were within the 12 to 23 months age group (Table 4). There was a statistically significant relationship between the educational level of the mother and stunting $p<0.001$ but the relationship between underweight and wasting among under-fives and maternal educational level was statistically insignificant (Table 5). Those respondents with only Quranic education were 11 times more likely to have a stunted child than those with secondary education [AOR=11.21, 95% CI (2.01, 8.39)] ($p<0.001$) (Table 8). The relationship between the mother's occupation, stunting and underweight among under-fives was statistically significant $p<0.0001$and 0.019 respectively, however the relationship between the mother's occupation and wasting was statistically

Table 2: Nutritional Status of the Children (n=288)

Nutritional Status	Frequency	Percentage
Stunted	172	59.72
Underweight	106	36.81
Wasted	39	13.54

Table 3: Prevalence of malnutrition in children according to age group (n=221)

Age (months)	Malnourished	Percentage
0-11	55	24.8
12-23	83	37.6
24-35	28	12.7
36-47	32	14.5
48-59	23	10.4

Table 4: Relationship between educational status of the mother, maternal occupation, family income and stunting, underweight and wasting (n=288)

Variables	Normal	Stunting	p-value	Normal	Underweight	p-value	Normal	Wasting	p-value
Educational Status									
None	5	18	χ^2 =64.7, df = 3 p<0.0001	16	7	χ^2 =5.55, df = 3 p= 0.136	20	3	
Quranic	19	95		63	51		97	17	
Primary	60	51		74	37		100	11	
Secondary	32	8		29	11		32	8	
Occupation									
None	19	71	χ^2 =63.79, df = 4, p<0.0001	59	31	χ^2 = 11.84 df = 4, p=0.019	86	4	
Farming	24	68		65	27		85	7	
Trading	19	20		23	16		28	11	
Civil Servant	29	8		24	13		29	8	
Vocational (tailor,hairdresser/barber, dyer, manual labourer)	15	25		11	19		21	9	
Family income									
<10,000	54	148	χ^2 = 49.73, df = 1, p<0.0001	117	85	χ^2 = 11.84 df = 4, p=0.019	171	31	*Fisher's exact test p= 0.823
	62	24		65	21		78	8	

insignificant (Table 6). Those mothers with no occupation were three times more likely to have stunted children than those who were civil servants [AOR=3.85, 95% CI (1.42, 6.37)] (p = 0.013) (Table 8). There was a statistically significant relationship between family income and stunting and underweight among under-fives p<0.0001and 0.0067 respectively however, the relationship with wasting was statistically insignificant. (Table 7) It was found that families with a monthly family income of less than 10,000 naira were 6 times more likely to have a stunted child than those with higher incomes [AOR=6.38, 95% CI (3.26, 10.85)] (p<0.001) (Table 8)

Discussion

This study reports on the level of malnutrition and the effects of socio-demographic factors on the nutritional status of children under five years old in a rural community in North-West Nigeria.

The study revealed that malnutrition is still a problem affecting among under-fives in Mil-Goma. The prevalence of stunting (59.72%) and under-fives who were underweight 36.81%) is comparable to prevalence rates from previous studies. The prevalence of wasting (13.54%) in this study is comparable to a previous survey in a rural community in Zamfara state where the prevalence of wasting was 15%. These alarming values could be explained by the studies were carried out in rural communities where the lower educational level, lower socio economic status, large family size and/ composition and limited resources are associated with developing malnutrition especially among under-fives. Studies have shown that children in rural areas are two times more likely to be stunted than those in the urban areas. There is similarity of the findings of the current study when compared with national figures from the National Demographic Health Survey 2013, as the prevalence of wasting, underweight and stunting in the North-West region was 12.5%, 42.9% and 55.3%.[12] It was observed that the trend was the same with statistics of stunting being the highest and wasting the lowest. Stunting is the result of chronic or recurrent under-nutrition, usually associated with poor socioeconomic conditions, poor maternal health and nutrition, frequent illness, and/or inappropriate infant and young child feeding and care in early life. Furthermore, stunting holds children back from reaching their physical and cognitive potential. For these reasons, the high prevalence is quite alarming and there is an urgent need to address it with sustainable, resilient food systems and ensuring the health facilities are aligned with the nutritional needs of the community they serve. The disparity observed from the national values may be as a result of the contribution from other factors, such as differences in sociocultural contexts and also morbidity patterns in the different states in the country their contribution to the determination of the nutritional status of children under the age of five.[13]

It has been observed from this study that children aged 12 to 23 months had the highest prevalence of malnutrition (37.6%). This is similar to a study carried out in Ethiopia where the children aged 12 to 23 months had the highest prevalence of malnutrition. This could be due to early weaning, delayed introduction of complementary foods, a low-protein diet and severe or frequent infections. Malnutrition at this early stage could have effects on cognitive function, metabolic syndrome, gastrointestinal and immunity which could last well into adulthood. In line with the aforementioned reason, these children are at an increased risk for severe infections and dying from these infections as a result of the poor immunity associated with malnutrition.

There was a statistically significant

relationship between stunting, underweight under-fives and the monthly family income as shown in this study. Additionally the study showed that those who earned less than 10,000 naira were 6 times more likely to have stunted children than those who earned more. A study in Ibadan showed that socioeconomic factors like monthly income, monthly food expenditure are significant risk factors for malnutrition. In Nigeria, it has been reported that over half of the population live in poverty, with regional disparities showing a higher proportion of those who live in poverty located in the north of the country. With poverty, comes a reduced purchasing power for necessities like food. Poor feeding in turn leads to poor immunity and increased susceptibility to various diseases. Majority of the health expenditure comes from out-of-pocket and as such, those who live below the poverty line are less likely to utilize health facilities as they will be unable to afford it. This would give a plausible explanation as to why the prevalence of chronic malnutrition (which is associated with recurrent infections) is high in this study. There is a statistically significant association between lower family income and stunting as shown in a study carried out in Iran. This highlights the need for interventions targeted to improving the socioeconomic prowess of the populace thereby ensuring food security.

There was a statistically significant relationship between maternal occupation and the prevalence of stunting and underweight. There was a statistically significant relationship between maternal occupation and malnutrition in study carried out in Pakistan. This association is not unexpected as job security goes hand in hand with economic power. Consequently, the mother is likely going to be able to feed her family, make decisions regarding their health and access health care.

The association between stunting and maternal education was shown to be statistically significant ($p<0.0001$) in this study. Furthermore, a woman who had only Quranic education was 11 times more likely to have a stunted child than a woman who had secondary education. A study conducted in Enugu, eastern Nigeria reported that maternal education had significant statistical influence on the nutritional indices tested. Other studies have also shown that maternal education is crucial to child survival and good nutritional status.[3] Highly educated women have been found to be more likely to engage in healthy behaviour, hygienic practices and ensure equitable distribution of the family resources to ensure better care of their children. An educated mother will challenge harmful traditional beliefs and practices which could have a negative effect on children. Maternal education could also be a proxy to socio-economic conditions implying that an educated mother is more likely to be economically stable and make autonomous decisions regarding her family. Thus, the importance of strategies targeted at improving maternal education among residents in the community cannot be overemphasized considering that none of the mothers of the sampled children had tertiary education.

Conclusion

The study showed that there was a high prevalence of stunting in the community which was associated with poor socioeconomic status and maternal education. In order to meet the relevant targets in the Agenda for Sustainable Development by 2030—in particular, Sustainable Development Goal (SDG) 2 (end hunger, achieve food security and improved nutrition and promote sustainable agriculture) and SDG 3 (ensure healthy lives and promote wellbeing for all at all ages), there is an urgent need for mounting sustainable nutritional, intervention programmes which will consist of an integrated package of measures that tackle both the cause and effect of malnutrition. The programme should be targeted towards improving the socioeconomic status of families, and also empowering mothers through education, vocational training and job creation; as well as providing nutrition-related education for all, creating sustainable, resilient food systems for healthy diets; and providing universal coverage of essential nutrition interventions.

References

1. WHO | Malnutrition. WHO [Internet]. 2017 [cited 2018 May 21]; Available from: http://www.who.int/topics/malnutrition/en/

2. Kuku-Shittu O, Onabanjo O, Fadare O, Oyeyemi M. Child Malnutrition in Nigeria: Evidence from Kwara State. 2016 [cited 2018 May 22]; Available from: https://nssp.ifpri.info/files/2016/08/NSSP-WP-33-Child-Malnutrition-in-Nigeria_July-2016.pdf

3. Malnutrition - UNICEF Data [Internet]. [cited 2018 May 27]. Available from: https://data.unicef.org/topic/nutrition/malnutrition/

4. Impact of Malnutrition - Mother, Infant and Young Child Nutrition & Malnutrition - Feeding practices including micronutrient deficiencies prevention, control of wasting, stunting and underweight [Internet]. [cited 2018 May 27]. Available from: http://motherchildnutrition.org/malnutrition/about-malnutrition/impact-of-malnutrition.html

5. Hoddinott J, Behrman JR, Maluccio JA, Melgar P, Quisumbing AR, Ramirez-Zea M, et al. Adult consequences of growth failure in early childhood. Am J Clin Nutr [Internet]. 2013 Nov [cited 2018 Nov 25];98(5):1170-8. Available from: http://www.ncbi.nlm.nih.gov/pubmed/24004889

6. NDHS. Nigeria Demographic and Health Survey 2013. Niger Demogr Heal Surv 2013 Natl Popul Comm Fed Repub Niger [Internet]. 2014;1-400. Available from: https://dhsprogram.com/

pubs/pdf/FR293/FR293.pdf
7. Bain LE, Awah PK, Geraldine N, Kindong NP, Sigal Y, Bernard N, et al. Malnutrition in Sub-Saharan Africa: burden, causes and prospects. Pan Afr Med J [Internet]. 2013 [cited 2018 May 27];15. Available from: http://www.panafrican-med-journal.com/content/article/15/120/full/
8. Igbokwe O, Adimorah G, Ikefuna A, Ibeziako N, Ubesie A, Ekeh C, et al. Socio-demographic determinants of malnutrition among primary school aged children in Enugu, Nigeria. Pan Afr Med J [Internet]. 2017 [cited 2018 May 27];28. Available from: http://www.panafrican-med-journal.com/content/article/28/248/full/
9. Ubesie A, Ibeziakor N. High burden of protein-energy malnutrition in Nigeria: beyond the health care setting. Ann Med Health Sci Res [Internet]. 2012 Jan [cited 2018 May 27];2(1):66-9. Available from: http://www.ncbi.nlm.nih.gov/pubmed/23209994
10. Pourhoseingholi MA, Vahedi M, Rahimzadeh M. Sample size calculation in medical studies. Gastroenterol Hepatol from bed to bench [Internet]. 2013 [cited 2018 Sep 30];6(1):14-7. Available from: http://www.ncbi.nlm.nih.gov/pubmed/24834239
11. Aliyu AA, Oguntunde OO, Dahiru T, Raji T. Prevalence and Determinants of Malnutrition among Pre-School Children in Northern Nigeria. Pakistan J Nutr [Internet]. 2012 Nov 1 [cited 2018 Oct 3];11(11):1092-5. Available from: http://www.scialert.net/abstract/?doi=pjn.2012.1092.1095
12. Alabi A, Ijadunola MY, Alabi O, Onayade A, Aluko O. Assessment of Childhood Nutritional Status: Findings from a Health and Demographic Surveillance System. Int J Clin Nutr Vol 4, 2016, Pages 7-11 [Internet]. 2016;4(1):7-11. Available from: http://pubs.sciepub.com/ijcn/4/1/2/index.html
13. Mengistu K, Alemu K, Destaw B. Prevalence of Malnutrition and Associated Factors Among Children Aged 6-59 Months at Hidabu Abote District, North Shewa, Oromia Regional State. J Nutr Disord Ther [Internet]. 2013 Jul 25 [cited 2018 Sep 22];03(03). Available from: https://www.omicsonline.org/prevalence-of-malnutrition-and-associated-factors-among-children-aged-months-at-hidabu-abote-district-north-shewa-oromia-regional-state-2161-0509-3-T1-001.php?aid=16270
14. Malnutrition rates in children under 5 years [Internet]. [cited 2018 Sep 25]. Available from: https://www.unicef.org/nigeria/factsheets_NUTRITION_low.pdf
15. Castrogiovanni P. The Role of Malnutrition during Pregnancy and Its Effects on Brain and Skeletal Muscle Postnatal Development. J Funct Morphol Kinesiol [Internet]. 2017;2(3):30. Available from: http://www.mdpi.com/2411-5142/2/3/30
16. Owoaje E, Onifade O, Desmennu A. Family and socioeconomic risk factors for undernutrition among children aged 6 to 23 Months in Ibadan, Nigeria. Pan Afr Med J [Internet]. 2014 [cited 2018 Sep 22];17:161. Available from: http://www.ncbi.nlm.nih.gov/pubmed/25120874
17. UNICEF Nigeria - Overview - The situation [Internet]. [cited 2018 Sep 22]. Available from: https://www.unicef.org/nigeria/overview.html
18. Aregbeshola BS. Out-of-pocket payments in Nigeria. Lancet (London, England) [Internet]. 2016 Jun 18 [cited 2018 Sep 28];387(10037):2506. Available from: http://www.ncbi.nlm.nih.gov/pubmed/27353683
19. Kavosi E, Hassanzadeh Rostami Z, Kavosi Z, Nasihatkon A, Moghadami M, Heidari M. Prevalence and determinants of under-nutrition among children under six: a cross-sectional survey in Fars province, Iran. Int J Heal Policy Manag. 2014;
20. Khattak UK, Iqbal SP, Ghazanfar H. The Role of Parents' Literacy in Malnutrition of Children Under the Age of Five Years in a Semi-Urban Community of Pakistan: A Case-Control Study. Cureus [Internet]. 2017 Jun 5 [cited 2018 Oct 5];9(6):e1316. Available from: http://www.ncbi.nlm.nih.gov/pubmed/28690950
21. Chukwuechefulam Kingsley I, Uche Charlie I-A, David Chidi C. International Journal of Sociology and Anthropology Socioeconomic determinants of under-five children health outcome among childbearing mothers in Abia state, Nigeria. 2017 [cited 2018 Sep 22];9(2):17-27. Available from: http://www.academicjournals.org/IJSA
22. Ravallion M, Wodon Q, Ainsworth M, Galasso E, Hussain Z, Latif M, et al. Does Child Labor Displace Schooling? Evidence on Behavioral Responses to an Enrollment Subsidy The support of the World Bank's Human Development Network is gratefully acknowledged. We have benefited from discussions with [Internet]. [cited 2018 Sep 22]. Available from: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.461.7430&rep=rep1&type=pdf
23. Babar NF, Muzaffar R, Khan MA, Imdad S. Impact of socioeconomic factors on nutritional status in primary school children. J Ayub Med Coll Abbottabad [Internet]. [cited 2018 Sep 22];22(4):15-8. Available from: http://www.ncbi.nlm.nih.gov/pubmed/22455252
24. Kanmiki EW, Bawah AA, Agorinya I, Achana FS, Awoonor-williams JK, Oduro AR, et al. Socio-economic and demographic determinants of under-five mortality in rural northern Ghana. BMC Int Health Hum Rights [Internet]. 2014 Dec 21 [cited 2018 Sep 28];14(1):24. Available from: http://bmcinthealthhumrights.biomedcentral.com/articles/10.1186/1472-698X-14-24

Body Mass Index Profile of School Children aged 6 – 12 Years in Ilorin, North-Central Nigeria.

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Abstract.

Body mass index (BMI), defined as weight in kilograms divided by height in meter square, is a reliable indicator of body fat and is sex and age dependent in children. It is a measure of nutritional assessment, useful in the demonstration of the pattern of nutritional transition being experienced around the world today. Under-nutrition (underweight/stunting) and over-nutrition (overweight/obesity) are now seen to be co-existing in developing parts of the world despite the prevailing poor socioeconomic situations.

BMI growth chart percentiles categorize underweight as BMI less than the 5th percentile, healthy weight as BMI between 5th and 84th percentile, overweight as BMI of 85th percentile to < 95th percentile and obesity as BMI of ≥95th percentile.

This was aimed at determining the Body Mass Index of school – aged children in Ilorin.

Cross sectional descriptive study of school – aged children in Ilorin Kwara State using a multi – staged sampling techniques was conducted. Sixteen primary schools, eight public and eight private school pupils were recruited. The anthropometric measurements were taken to determine the anthropometric indices using the World Health Organization reference 2007.

A total number of 480 primary school pupils from Ilorin were recruited. Males were 221 (46.0%) with a M:F of 1:1.2 and a mean age of 9.2 ± 1.8 years. The mean BMI of the study population was 15.7 ± 2.4 kg/m². The prevalence of underweight and stunting was 15.4% and 11.5%, while the prevalence of overweight and obesity were 7.3% and 3.1% respectively.

The study affirms the existent of double burden of malnutrition among school children in Ilorin. Routine nutritional assessment of primary school children and the implementation of school meal program is advocated.

Key Words: Under-nutrition, Over-nutrition, School age, Body Mass Index, Malnutrition

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Introduction

Body mass index, defined as weight in kilograms divided by height in meter square, is a reliable indicator of body fat and is sex and age dependent in children. It is the best anthropometric tool available in quantifying nutritional status for public health purposes. It is a reliable indicator of body fat for children and gives valid information about an individual's nutritional and health status. Although the BMI number is calculated the same way for children and adults, the criteria for interpreting BMI differs. Although malnutrition is a global disorder, prevalence and pattern differ between nations and regions in a country.[1] While over-nutrition (overweight and obesity) is the major concern in developed countries, under-nutrition (underweight, wasting and stunting) predominates in the developing countries.[2] However, the trend seems to be changing. Importantly, the nutritional status of children is known internationally as a good proxy indicator of a community's state of health.

Overweight and obesity are the leading nutrition-related disorder of clinical and public health concern.[3] Approximately 1.1 billion people are overweight and 300 million are obese globally.[4] There has been a dramatic increment in the prevalence of overweight worldwide. Ten percent of the world's school age children are either overweight or obese. This affects the developed countries more with about a third of American school children overweight/obese compared to sub Saharan Africa with < 3%. Obesity-related diseases affect more than 115 million people in developing countries. This studied determined Body mass index (BMI) of school children aged 6 – 12 years in public and private primary schools in Ilorin.

Subjects, Materials And Methods

A descriptive cross-sectional school-based study carried out among public and private primary school children aged 6 – 12 years from the three Local Government Areas of Ilorin the capital of Kwara State. The number of schools recruited per LGA was based on population size in a ratio 2:1:1 in Ilorin West, South and East respectively. A minimum sample size with attrition was calculated to recruit a total number of 480 Subjects.

A multi stage stratified sampling technique was used to select subjects from sixteen schools using the school lists provided by the State Ministry of Health.In each of the selected schools, 30 pupils were recruited to make a total of 480 pupils.

Excluded were children with history suggestive of chronic diseases such as Sickle cell disease, seizure disorders, renal, cardiovascular, hepatic or gastrointestinal diseases and or features compatible with genetic syndrome.

Weight was measured using the weighing scale with attached stadiometer (Seca Model 213, USA). The recordings were measured to the nearest 0.01kg. Height was measured using a standard stadiometer (Seca Model 213, USA). The recordings were measured in centimeter to the nearest 0.1cm and body mass index was calculated from weight and height in kg/m² . BMI was interpreted as underweight once the BMI from WHO growth chart is less than the 5th percentile, healthy weight as BMI between 5th and 84th percentile, overweight as BMI of 85th percentile to 95th percentile and obese as BMI of greater than 95th percentile. The Z scores for height-for-age, weight-for-age and BMI-for-age were calculated by comparing to the standard reference values for the age and sex using the WHO Anthroplus soft-ware. A child was adjudged undernourished if his measured anthropometric values were below -2 Z score and over nourished when the value for BMI Z score is $\geq +2$.

Statistical Package for the Social Sciences (SPSS) version 20 Program was used for analyzing the data. The student's t-test was used to analyze continuous variables and to identify the significance between two means while the analysis of variance (ANOVA) test was used when there were more than two means. Discrete variables were compared using the Chi-square test. The level of significance was established at P-value of < 0.05.

Ethical approval was obtained from the Ethical Review Committee of University of Ilorin Teaching Hospital. Written permission was obtained from Kwara State Ministry of Education. Permission was also obtained from the school head teachers and class teachers during field work. In addition, written informed consent was obtained from the parents or guardians of the participants. Assent was also sought and obtained from participants aged 10 years and above.

Results

A total of 480 primary school pupils were recruited, 240 from the public and 240 from private schools. There were fewer proportion of children aged 11 and 12 years among the private school pupils 23 (9.6%) compared with the public school pupils 101 (42.1%). The public school pupils 18 (7.5%) on the other hand had fewer children within the age brackets of 6 and 7 years when compared to the private school pupils 89 (37.1%). The gender distribution of children between the public and private schools is comparable. Of the total study population, 221 (46.0%) were males while 259 (54.0%) were females, with a male to female ratio of **1:1.2** (**Table 1)**.

Age and Anthropometric parameters of the school children

The mean (±SD) weight and height for public school children were significantly higher than that of the private schools (*p* = 0.0001). The mean age (±SD) of the study population was 9.2±1.8 years. The mean age (±SD) of children in public schools (10.0 ± 1.6 years) was significantly higher than those in the private schools (8.3 ± 1.7 years) *p* = 0.0001. The mean age (SD) of males in the public schools (9.8 ± 1.7 years) was significantly higher than males in the private schools (8.5 ± 1.7 years) (*p* = 0.0001). Similarly, the mean age (SD) of females in the public schools (10.1 ± 1.6 years) was significantly higher than those in the private schools (8.2 ± 1.6 years) *p* = 0.0001 (Table 2).

Body mass index profile of study population by school type

A higher proportion of private school pupils 23 (9.6%) were overweight compared to the public school pupils 12 (5.0%). Similarly, of the private school pupils, 10 (4.2%) were obese compared to the public school pupils 5 (2.0%). On the contrary, underweight status was higher among public school pupils 45 (18.8%) when compared with the private school pupils 29 (12.0%) **(Table 3**).

Body mass index profile of pupils by age

There was no significant difference between the BMI profiles of subjects in the pupils aged 10 – 12 years relative to the pupils aged 6 – 9 years. There was a higher proportion of pupils aged 6 – 9 years 46 (16.8%) in the underweight category relative to pupils aged 10 – 12 years 28 (13.6%). A higher proportion of the pupils aged 10 – 12 years 22 (10.7%) were overweight

Table 1: Demographic characteristics of the study population

Parameters	Public schools n (%)	Private schools n (%)	Total n (%)
Age (years)	n=240	n=240	n = 480
6	5 (2.1)	41 (17.0)	46 (9.6)
7	13 (5.4)	48 (20.0)	61 (12.7)
8	34 (14.2)	38 (15.8)	72 (15.0)
9	38 (15.8)	45 (18.8)	83 (17.3)
10	49 (20.4)	45 (18.8)	94 (19.6)
11	43 (17.9)	18 (7.5)	61 (12.7)
12	58 (24.2)	5 (2.1)	63 (13.1)
Gender	n=240	n=240	n=480
Male	111 (46.3)	110 (45.8)	221 (46.0)
Female	129 (53.7)	130 (54.2)	259 (54.0)

Figures in parentheses (percentages) were added up across columns.
The mean age (±SD) of study population was 9.2 ± 1.8 years.

Table 2: Age & Anthropometric parameters of public and private school children

Age/Anthropometry	Public schools Mean ± SD	Private schools Mean ± SD	*t*	*p* value
Age (years)	10.0 ± 1.6	8.3 ± 1.7	10.9	**0.0001**
Male	9.8 ± 1.7	8.5 ± 1.7	5.5	**0.0001**
Female	10.1 ±1.6	8.2 ± 1.6	10.0	**0.0001**
Weight (kg)	27.9 ± 8.0	25.3 ± 7.3	3.7	**0.0001**
Male	27.1 ± 7.1	26.6 ± 7.7	0.5	0.6280
Female	28.7 ± 8.7	24.3 ± 6.7	4.6	**0.0001**
Height (cm)	131.3 ± 12.3	126.7 ± 10.9	4.4	**0.0001**
Male	129.9 ± 12.0	128.4 ± 11.1	0.9	0.3590
Female	132.5 ± 12.5	125.2 ± 10.5	5.1	**0.0001**
BMI (Kg/m^2)	15.9 ± 2.3	15.5 ± 2.4	1.7	0.0910
Male	15.8 ± 2.0	15.8 ± 2.4	-0.0	0.9700
Female	15.9 ± 2.5	15.3 ± 2.4	2.2	0.0580
BAZ	-0.7	-0.6	-0.7	0.5130
Male	-0.7	-0.6	-0.4	0.6610
Female	-0.6	-0.6	-0.5	0.6270

BAZ is the BMI for age Z scores. The mean age (SD) of the study population was 9.2 ± 1.8.

Table 3: Body mass index profile of study population by school type

Parameters	Public n (%)	Private n (%)	Total n (%)
BMI class	n=240	n=240	n=480
Normal	178 (74.2)	178 (74.2)	356 (74.2)
Underweight	45 (18.8)	29 (12.0)	74 (15.4)
Overweight	12 (5.0)	23 (9.6)	35 (7.3)
Obesity	5 (2.0)	10 (4.2)	15 (3.1)

Figures in parentheses (percentages) were added up across columns.

Table 4: Body mass index profile of pupils by age

Parameters	6 – 9 years n (%)	10 – 12 years n (%)	Total n (%)
BMI class	n=274	n=206	n=480
Normal	211 (77.0)	145 (70.4)	356 (74.2)
Underweight	46 (16.8)	28 (13.6)	74 (15.4)
Overweight	13 (4.7)	22 (10.7)	35 (7.3)
Obesity	4 (1.5)	11 (5.3)	15 (3.1)

Figures in parentheses (percentages) were added up across columns.

Table 5: Body mass index profile of pupils by gender

Parameters	Male n (%)	Female n (%)	Total n (%)
BMI class	n=221	n=259	n=480
Normal	160 (72.4)	196 (75.7)	356 (74.2)
Underweight	40 (18.1)	34 (13.1)	74 (15.4)
Overweight	15 (6.8)	20 (7.7)	35 (7.3)
Obese	6 (2.7)	9 (3.5)	15 (3.1)

Figures in parentheses (percentages) were added up across columns.

compared to the pupils aged 6 – 9 years 13 (4.7%). Of the fifteen children with obesity, 11 (5.3%) belonged to the age group 10 – 12 years compared to the age group 6 – 9 years 4 (1.5%) **Table 4.**

Body mass index profile of pupils by gender

There was a total of 124 (25.8%) malnourished children, 15.4% were underweight, 7.3% overweight and 3.1% were obese. Gender had no significant relationship with BMI **Table 5.**

Discussion

The mean BMI of this study population (15.7 ± 2.4) was lower than (16.3 ± 2.3) reported in Enugu among children aged 2 – 15 years, the age difference may explain the BMI variation between both study findings. There was no significant difference in the mean BMI of males (15.8 ± 2.2) and females (15.6 ± 2.5) in this study. This finding differs from the higher mean BMI reported in females when compared with males in Sokoto. The plausible reason for this may be attributed to the absence of significant difference in the means of weight and height between males and females in this study when compared with the Sokoto study. There was no significant difference in the mean BMI of public (15.9 ± 2.3) and private (15.5 ± 2.4) school children. The possible reason may be the significant age difference of pupils in the school categories. More than two – third (74.2%) of children in this study, had normal BMI, this is lower than the 93.3% reported by Alkali *et al* in Gombe that included the underweight children.

The prevalence of underweight in this study (15.4%) was higher than the 10.2% reported by Ajayi et al in Lagos, but lower than 25.5% reported from Sagamu. The higher prevalence compared to the Lagos study may be due to the relatively higher proportion of lower socio-economic status among pupils in this study. The much higher prevalence reported in Sagamu could be attributed to the study population which was among public school children, where lower socio-economic status predominates compared to the present study that included equal number of public and private school pupils.

Underweight status was higher in males than females in this study, similar to the findings from Kaduna among school children aged 5 – 12 years. The similarity with the Kaduna study may be due to a comparable Geo-political zone with possible similarity in diets and lifestyle. A study in Enugu found a higher prevalence of underweight among females. The exact reason for this is not clear but may be due to gender preference and care for males rather than females in that part of the country. The proportion of children who were underweight in this study was higher among public than the private school pupils similar to the report in Lagos. This similarity may be due to lower socio-economic status reported among public school pupils in both studies.

The overweight status from this study was 7.3%, which is comparable to the 7.5% reported in Enugu. The similarity in these studies may be due to the urban nature of the study sites with possible similar lifestyles as seen in the Enugu study. A study in Lagos reported a higher prevalence (10%) of overweight, the difference may stem from the overall higher level of socio-economic status (47.6%) reported in the Lagos subjects compared to 31% in the current study as higher socio-economic status tend to produce a population with the tendency to being overweight. In contrast, a study in Sagamu reported a lower prevalence of overweight in 3% of school pupils. This difference may be attributed to the subjects in this study that included the upper and lower socio-economic class compared with Sagamu study among pupils with lower socio-economic class.

The proportion of pupils who were overweight in this study was higher among private than public school pupils, a finding similar to the report from Osogbo. The higher proportion (>2/3rd) of the private school pupils from the upper socio-economic class reported in these studies may explain the similarity. A significantly higher proportion of females compared to males were overweight in this study, consistent with earlier reports from Enugu and Abuja. The reason for this finding could be due to the fact that females are more likely to engage less in out-door physical activities in this environment. They also have more accessibility to food through their involvement in food preparation as well as the effect of estrogen. A higher overweight among males than females was however reported in Ebonyi, this difference may be attributed to the gender disparity and male preference in the region.

The prevalence of obesity in this study was 3.1% which is similar to the 2.8% earlier reported in Gombe. The reason for this similarity is not clear but may be explained by the similarities in the major occupation of the people which is farming as well as the effect of genetics. This finding (3.1%) was higher than the 1.7% reported in Enugu, but lower than the 5.2% and 8.6% reported in Ile-Ife and Port-Harcourt respectively. The International Obesity Task Force (IOTF) which was the tool used in the Enugu study compared to the WHO Anthroplus software with a different cut-off used in this study may be responsible for the identified difference. The Ile-Ife and the Port-Harcourt studies on the other hands were done in the preschool aged children among whom an earlier study had reported that the prevalence of obesity decreases with advancing age. Obesity in this study was higher among private than public school pupils, similar to a report in Lagos. This may be due to the higher SEC with reduced physical activity occasioned by the use of motorized form of transportation which is predominant among private

school pupils. A higher proportion of females than the males had obesity in this study buttressing an earlier report in Abuja. This may be due to a higher sedentary life-style, increased Television viewing time, accessibility to food and the effect of estrogen on fat accumulation among the females.

The study concluded that there was no significant difference in the overall mean body mass index of public and private school children. This study affirm the existence of double burden of malnutrition . Underweight status was higher in public school pupils while overweight and obesity were higher in private school pupils.

References

1. Anyiam J, Ogala W, Onuora C. BMI of healthy Nigerian children. Nig J Med. 2008;17:407-13.
2. Ahmad MM, Ahmed H, Airede K. Body mass index among school adolescents in Sokoto, North-Western Nigeria. Sahel Med J. 2013;16(1):5-9.
3. Gorstein J. Assessment of nutritional status: Effects of different methods to determine age on the classification of undernutrition. Bull World Heal Organ. 1989;67:143-150.
4. Eke CB, Ubesie AC, Ibe BC. Challenges of childhood obesity in a developing economy: A review. Niger J Paed. 2015;42:169 - 179.
5. Suzanne D. No relationship between academic achievement and body mass index BMI. J Acad Nutr Diet. 2013;113:551-557.
6. Bhurosy T, Jeewon R. Pitfalls of using body mass index in assessment of obesity risks. Curr Res Nutr Food Sci Jour. 2013;1(1):71-76.
7. Moafi A, Rahgozar S, Ghias M, Vahdat ahas E, Borumand A, Sabbaghi A, et al. A study of body mass index, blood pressure and red blood cell indices in new entering students of the university of Isfahan. Int J Prev Med. 2011;1(4):280-285.
8. Bain LE, Awah PK, Geraldine N, Kindong NP, Sigal Y, Bernard N, et al. Malnutrition in sub-saharan Africa: Burden, causes and prospects. Pan Afr Med J. 2013;15:120-126.
9. Abdulkarim A, Otuneye A, Ahmed P, Shattima D. Adolescent malnutrition: prevalence and pattern in Abuja municipal area council, Nigeria. Niger J Paed. 2014;41:99-103.
10. Ulasi TO, Ebenebe J. Nutritional disorders in childhood. 2nd ed. Owerri: African Educational Services; 2007.
11. Prentice AM. The emerging epidemic of obesity in developing countries. Int J Epidemiol. 2006;35(1):93-99.
12. Olumakaiye MF. Prevalence of underweight: A matter of concern among adolescents in Osun state, Nigeria. Pak J Nutr. 2008;7(3):503-508.
13. Veneman AM, UNICEF. Progress for children: A Report Card on Nutrition. In: Progress for children. New York: UNICEF; 2006. p. 1-32.
14. Kuczmarski R, Flegal K. Overweight and obesity. Am J Clin Nutr. 2000;72(5):1074-1081.
15. Nagata J, Valeggia C, Barg F, Bream K. Economics and human biology: Body mass index, socio-economic status and socio-behavioral practices among Tz ' utujil Maya women. Elsevier. 2009;7:96-106.
16. Jennifer C. Undernutrition and overnutrition. Triple Cris. 2012;:5-17.
17. Burslem C. The changing face of malnutrition. Int. Food Policy Res. Inst. 2004;:1-6.
18. Lobstein T, Jackson-Leach R, Moody ML, Hall KD, Gortmaker SL, Swinburn BA, et al. Child and adolescent obesity: Part of a bigger picture. Lancet. 2015;385:2510-2520.
19. Lobstein T, Baur L, Uauy R. Obesity in children and young people: a crisis in public health. Obes Rev. 2004;5:4-85.
20. Mollentze W. Obesity in SouthA frica: A call for action. Jounal Endocrinol , Metab an Diabetes South Africa. 2006;11(2):44-45.
21. Nwaiwu O, Ibe BC. Body mass index of children aged 2 to 15 years in Enugu Nigeria. Niger J Paed. 2014;41(3):194-198.
22. Alkali Y, Ambe J, Sabin M, Zacharin M. Socio-economic status, lifestyle and childhood obesity in Gombe. Niger J Paed. 2015;42(2):107-110.
23. Ajayi EO, Elechi HA, Alhaji MA. Prevalence of overweight and obesity among primary school pupils in urban centre, Nigeria. Saudi J Obes. 2015;3(2):59-65.
24. Fetuga MB, Ogunlesi TA, Adekanmbi AF, Alabi AD. Nutritional status of semi urban Nigerian school children using the 2007 WHO reference population. West Afr J Med. 2011;30(5):331-336.
25. Atawodi SE, Aliyu B, Abbas O, Ilouno LE. Nutritional status of primary school children in Kawo district of Kaduna metropolis, Nigeria. Annu Res Rev Biol. 2015;5(1):64-70.
26. Ani PN, Uvere PO, Ene-Obong HN. Prevalence of overweight, obesity and thinning among adolescents in rural and urban areas of Enugu state, Nigeria. Int J Basic Appl Sci. 2014;3(1):1-7.
27. Adeomi AA, Adeoye OA, Bamidele JO, Abodunrin OL, Odu OO, Adeomi OA. Pattern and determinants of the weight of school age children from rural and urban communities of Osun state, Nigeria. J Med Nutraceut. 2015;4:107-114.
28. Nto NJ, Anibeze CI, Egwu EO, Eteudo AN, Egwu AO, Esom EA, et al. Prevalence of nutrition associated Ponderal outcome among school children and Adolescents in Ebonyi state, South-East Nigeria. J Exp Clin Anat. 2015;14(2):105-110.
29. Ndu A, Uzochukwu B. Child gender preferences in an urban and rural community in Enugu, eastern Nigeria. Int J Med Heal Dev. 2011;16:37-42.

30. AbdulAzeez OA. The study of anthropometry and somatotype among school children in Zaria, Nigeria. 2003;:1-150.
31. Senbanjo I, Adejuyigbe E. Prevalence of overweight and obesity in Nigeria preschool children. Nutr Heal. 2007;18:391-399.
32. Mezie-Okoye MM, Alex-Hart B. Overweight and obesity among preschool children in Port Harcourt , Nigeria. Pakistan J Nutr. 2015;14(4):209-213.
33. Premanath M, Basavanagowdappa H, Shekar MA, Vikram SB, Narayanappa D. Mysore childhood obesity study. Indian Pediatr. 2010;47:171 - 173.
34. Burt Solorzano M, McCarteney C. Obesity and the pubertal transition in girls and boys. Reproduction. 2010;140(3):399-410.

Practices of Contraception among Married Women in Kwara State: Implications for Counselling Practice

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Abstract

This study investigated the practices of contraception among married women in Kwara State.

Descriptive survey was employed for the study and a questionnaire was used to collect data. Mean and rank order was used to answer the research question while Analysis of Variance was used to test the hypotheses at 0.05 level of significance.

Findings revealed that the common practices of contraception among married women in Kwara State involve the use of condom by their spouses, engaging in sexual intercourse during safe period and avoidance of sex during ovulation period. The study also revealed that no significant difference was found in the practices of contraception among married women in Kwara State based on age, religion, educational attainment and number of children.

It was therefore recommended that married women of different educational backgrounds, especially those with lower qualifications should be regularly enlightened and encouraged on contraception practices.

Keywords: Practices, Contraception, Married Women, Kwara State.

Introduction

Population growth in Nigeria, according to Rosenthal[1], represents 3.2% or 5.6 million people per annum. The Federal Ministry of Women Affairs[2] projected that there may be as many as 174 million heads in Nigeria in later years. The Population Reference Bureau[3] supported that the population of Nigeria has reached about 170 million people and has the potential of expanding at a geometrical rate in few years to come. Also, the International Data Base[4] projected a population of 264 million by 2050 for Nigeria, while National Population Commission and ICF Macro[5] forecast 338 million persons. Such rapid population growth (if not appropriately managed) may spell doom for economic growth and development of the nation. For instance, the political insecurity, leadership instability and economic crisis could lead to high rates of unemployment and poverty which in turn can contribute tremendously to increase birth rate.

Nigeria's high population is not in tune with the level of social and economic development of the country. Khurfeld[6] opined that Nigeria is facing a population explosion with the resultant effect that food production cannot match the growing population. This is based on the fact that high population growth rate is associated with increased level of poverty[7]. According to United Nations Fund for Population Activities (UNFPA)[8], more than 70% of Nigerians live below the international poverty line. Rosenthal[1] posited that as graduates turn out of high schools and universities, Nigeria's unemployment rate is increasing most especially in the urban areas. This has contributed to increase in the crime rate and development of mental illnesses such as depression, anxiety, psychic problem among others. In another perspective, high population rate may also indicate undue burden on the child bearing women. Studies[8,9] have associated high fertility rate to poor child and maternal health as well as increased risk of maternal mortality.

One of the set objectives of the Millennium Development Goals is to improve maternal health because maternal mortality figures in developing countries including Nigeria are still quite alarming[10]. In 1996, the World Health Organisation (WHO), UNICEF and Johns Hopkins University reported that in Sub-Saharan Africa and South Asia, 1 in 13 and 1 in 35 women respectively die of causes related to pregnancy and childbirth, compared to 1 in 3,200 in Europe, 1 in 3,300 in USA, and 1 in 7,300 in Canada. In Nigeria, the average maternal mortality ratio is about 800 deaths per 100,000 live births, with a wide zonal variation, ranging from 165 in the Southwest to 1,549 in the Northeast[11]. Over the 6 years between 1995 and 2000, there were an estimated 338 million unintended pregnancies world-wide resulting in nearly 700,000 maternal deaths and 64% of these were from complications from unsafe abortions[12]. Henshaw, Singh, Oye-Adeniran and Adewole[13] stated that the situation is worse in developing countries like Nigeria where an estimated 610,000 unwanted pregnancies are terminated annually. The resultant effect of this has been a persistent rise in maternal mortality ratio with abortion contributing to 40% in some cases[12].

In order to prevent child and maternal mortality and sustain higher standard of living, the population size of a country has to be stabilized. This

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can be achieved by reduction in the fertility rate in line with the attainment of economic and social goals[14]. According to Rahman and Kabir[15], contraceptive use is one of the curtailing factors mediating between sexual activities and pregnancy rates among child bearing women. Contraceptive is defined by Stedman's Medical Dictionary[16] as an agent to prevent conception; relating to any measure or agent designed to prevent conception; a medical device designed to prevent spermatozoa from penetrating the cervical, usually used in combination with a spermicidal agent.

Planned Parenthood Federation of Nigeria[7] referred to contraception as devices or techniques used to control or prevent pregnancy. It should be seen as part of the general family programme. When two partners have intercourse, contraception is a device or means to prevent the woman from conception.

Several related studies have been carried out on knowledge and practices of contraceptives at both local and international level. For example, the study of Oni and McCarthy[18] focused on a male sample, Tunde-Ayinmode's[19] study was on contraceptive use among psychiatric out-patients, while Babatude, Ibirongbe, Durowade, Salaudeen and Akande's[20] study was carried out among secondary schools students (both male and female). Even though few cited studies are locally based and were carried out in Ilorin, it has been observed that contraceptive knowledge and practices are still low. Moreover, these studies also did not cover the whole of Kwara State and they were not focused on married women. This implies that there is gap observed from the existing researches that need to be bridged by other studies. This gap is what the present study filled. It therefore investigated the practices of contraception among married women in Kwara State.

Methodology

The descriptive survey method used is a research design that enables a researcher to obtain the opinions of representative sample of a target population in order to draw inference from the entire population. It is an operational tool of research in social and behavioural enquiries. Stangor[21] stated that descriptive survey method is based on the information gathering through questionnaire, interview (oral or written, structured or unstructured), inventories, observations and so on.

Multi-stage sampling technique which consisted of proportional, purposive and stratified sampling was used to select the sample for this study. At stage 1, proportional sampling technique was used to select Local Government Areas from the three senatorial districts of Kwara State, that is, Kwara South, North and Central in ratio 3:2:2 respectively. This means that the study covered 7 LGA's out of the 16 LGA's in Kwara State. That is, 3 LGA's were selected from the 7 LGA's in Kwara South, 2 out of the 5 LGA's in Kwara North and 2 out of the 4 LGA's in Kwara Central.

At stage 2, purposive sampling technique was used to select sixty (60) respondents from each of the seven LGA's in places such as religious gathering, ministries, tertiary institutions and secondary schools. Hence, 420 married women participated in the study, that is, 60 participants from each of the seven LGA's selected for this study. Thus, for Kwara South 60 participants were selected from each of the 3 LGA's making 180 participants, 60 participants were selected from each of the 2 LGA's which sum up to 120 participants for Kwara Central and 60 participants from each of the 2 LGA's making 120 participants for Kwara North. Purposive sampling is a sampling method which deliberately chooses a sample population because of significant characteristics it possesses for the purpose of the study.

At stage 3, stratified sampling method was used to categorize the respondents into the strata of age, religion, educational attainment and number of children.

The questionnaire consisted of three (2) sections. Section "A" elicits information on the demographic data of the respondents such as age, religion, educational attainment and number of children. Sections "B" is designed to find out the practices of contraception and they contain 20 items. In section B four point Likert-type scale format was used for the respondents to indicate their level of agreement and disagreement, such as, Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). The instrument (questionnaire) was validated by experts in counseling while the reliability of the questionnaire was determined through test re-test method. The set of scores were subjected to Pearson's Product Moment Correlation and a reliability co-efficient of 0.84 was obtained, indicating that the instrument is reliable for use.

Data was analysed using descriptive and inferential statistical analysis. Percentage was used to analyse respondents' personal information in section A. Analysis of Variance (ANOVA) statistical methods was used to test the hypotheses at 0.05 level of significance.

Results

Three hundred and ninety three (393) respondents eventually participated in the study (see Table 1). Out of the 420 questionnaire forms administered, 393 were filled correctly while 27 were invalid because they were not filled correctly some were not returned to the researcher. The table indicated that out of these 393 married women, 139 (35.4%) were between 18-30 years of age, 202 (51.4%) were between 31-43 years old, while 52 (13.2%) were 44 years old and above. This implies that more than averages of the respondents were between 31-43 years of age. With

Table 1
Demographic Distribution of the Respondents

N	Variable		Frequency	Percentage %
1	Age	18-30 years	139	35.4
		31-43 years	202	51.4
		44 years & above	52	13.2
		Total	**393**	**100.0**
2	Religion	African Trad. Religion	50	12.7
		Christianity	193	49.1
		Islam	150	38.2
		Total	**393**	**100.0**
3	Educational Attainment	Non-formal Education	15	3.8
		Primary	24	6.1
		Secondary	85	21.6
		ND/NCE or equivalent	161	41.0
		1st Degree	86	21.9
		Postgraduate	22	5.6
		Total	**393**	**100.0**
4	Number of Children	None	9	2.3
		1-4	226	57.5
		5-8	119	30.3
		9 & above	39	9.9
		Total	**393**	**100.0**

Table 2
ANOVA Analysis showing Difference in Respondents' Practice of Contraception based on Age

Source	Sum of Squares	df	Mean Squares	Cal. F ratio	Crit. F ratio	p-value
Between groups	152.537	2	76.769	0.82	3.00	0.43
Within groups	36214.097	390	92.857			
Total	36367.634	392				

Table 3
ANOVA Analysis showing Difference in Respondents' Practice of Contraception based on Religion

Source	Sum of Squares	df	Mean Squares	Cal. F	Crit. F	p-value
Between groups	38.169	2	19.085	0.20	3.00	0.81
Within groups	36329.464	390	93.152			
Total	36367.634	392				

Table 4
ANOVA Analysis showing Difference in Respondents' Practice of Contraception based on Educational Attainment

Source	Sum of Squares	df	Mean Squares	Cal. F	Crit. F	p-value
Between groups	498.541	5	99.708	1.07	2.21	0.37
Within groups	35869.092	387	92.685			
Total	36367.634	392				

Table 5
ANOVA Result showing Difference in Respondents' Practice of Contraception based on Number of Children

Source	Sum of Squares	df	Mean Squares	Cal. F ratio	Crit. F ratio	p-value
Between groups	85.212	3	28.404	0.30	2.60	0.82
Within groups	36282.422	389	93.271			
Total	36367.634	392				

respect to their religion, 50 (12.7%) of the respondents were African Traditional Religion (ATR) adherents, 193 (49.1%) were Christians, while 150 (38.2%) of the participants were Muslims. This means that the Christianity and Islam religions are fairly represented among the study sample.

Educational attainment of the respondents showed that 15 (3.8%) have non-formal education, 24 (6.1%) have primary education, 85 (21.6%) possessed secondary school certificate, 161 (41.0%) were ND/NCE holders or equivalent, 86 (21.9%) possessed first degree, while 22 (5.6%) have postgraduate education. This suggests that majority of the respondents were averagely educated. Based on the number of children, 9 (2.3%) of the participants have no children, 226 (57.5%) have between 1-4 children, 119 (30.3%) have between 5-8 children, while 39 (9.9%) have 9 children and above. This explained that more than fifty percent of the women have minimum children of between 1 and 4.

It was inferred based on results that married women contraception practice involve the use of condom by their men, engaging in sexual intercourse during safe period and avoidance of sex during fertilization period.

Also no significant difference exists in the respondents' practice of contraception based on age, meaning that age group difference has no influence on the practice of contraception among married women in Kwara State.

The result also indicated that no significant difference exists in the respondents' practice of contraception based on religion. Indicating that religious difference has no influence on the practice of contraception among married women in Kwara State.

The result indicated that no significant difference exists in the respondents' practice of contraception based on educational attainment. Therefore, difference in educational attainment has no influence on the practice of contraception among married women in Kwara State.

Results indicated that no significant difference exists in the respondents' practice of contraception based on number of children. hence, the hypothesis was not rejected. Therefore, difference in number of children possessed has no influence on the practice of contraception among married women in Kwara State.

Discussion

The major finding of the study revealed that married women in Kwara State contraceptive practices involve the use of condom by their men, engaging in sexual intercourse during safe period and avoid sex during ovulation period. Abstinence during fertility period and engagement during safe period as forms of contraception do not suggest that such a person does not involve in other sexual behaviour which could make it difficult to conclude that most women in Kwara State women adopt this method. The finding of this study is against the expectation of the researcher believing that high knowledge of contraception should facilitate increase in the use of modern contraceptive methods among married women. This implies that married women in Kwara State have adequate knowledge of contraception but were low in its practices or they prefer the traditional contraceptive practices to modern ones, except for the use of condom, of which, similar practice has been in use since the olden days before the introduction of condom. The finding suggests that the Africans' love of children reflects in their contraceptive practices as it seems many of these women are afraid of using any sophisticated contraceptive methods that might prevent them from further conception or impact negatively on their reproductive or general health status. They as well belief in their husband participation in contraceptive practice. However, Abiodun and Balogun[24] found in their study that few women who use modern contraceptives depended on less effective traditional methods as they rely on periodic abstinence. Olugbenga-Bello, et al[25] also revealed condom use as a common contraceptive practice among the study population.

Study result revealed that there was no significant difference in the practices of contraception among married women in Kwara state based on age. This means that age group has no influence in the respondents' practices of contraception. This might be due to the fact that, health care providers in every hospital in many communities usually encouraged both young and old married women to make use of contraception in order to enjoy their sexual life, reduce birth rate so as to prevent poverty. This finding is against the finding of Olugbenga-Bello, et al[25], where age was reported to exert significant influence on practices of contraception among married people in Ilorin metropolis.

There was no significant difference in the practices of contraception among married women in Kwara state based on religion. This implies that the practice of contraception among married adults was not influence by the difference in the religion sects. Reason for this finding may be deduced from the fact that no religion is against the type of contraceptive practices identified by the respondents in this study such as engaging in sex during safe period, using of condom and avoidance of sex during ovulation. Previous finding by Olugbenga-Bello, et al[25] have established similar outcome, where religion was found as significant differential factor in contraception practices among the study population.

There was no significant difference in the practices of contraception among married women in Kwara State based on educational attainment. The

implication of this is that difference in educational attainment of the respondents had no influence on their contraception practices. The widespread of information on reproductive issue at different avenue might have equipped many married women with the appropriate contraception practices that could discourage the negative side of their use; hence, their indifference to educational attainment differences. Past finding by Hussain, et al[26] also reported similar outcome as this study.

Study revealed no significant difference in the practices of contraception among married women in Kwara State based on number of children. This means that variation in number of children the respondents have, has no influence on their practices of contraception. This is because the major contraception practices such as avoidance of sex during ovulation, the use of condom and engaging in sex during safe period as identified by this study are not those that can put permanent end to one's fertility or cause irreparable complications in their reproductive life. The finding of this study is similar with the finding of Mohammed-Durosinlorun and Krishna[27], which noted that number of children significantly influenced practice of contraception among married women.

Conclusion

The findings of the study revealed that married women in Kwara State contraception practices involve the use of condom by their spouses, engaging in sexual intercourse during safe period and avoidance of sex during ovulation period. The study also revealed that no significant difference was found in the practices of contraception among married women in Kwara State based on age, religion, educational attainment and number of children.

Implications of Findings for Counselling Practice

Based on the findings of this study, it was been discovered that counselling has a significant role to play for the married women's improvement in the level of modern contraception practices. In view of this, counsellors can during counselling sessions with couples or married women, present factual information and skills development in relation to reproductive education within the counseling interaction. They can give married women information about relevant community agencies from whom they could get different kinds of contraception options. Counsellors can have printed materials available with contact details and phone numbers of these agencies and make necessary referrals and follow-up with the clients after the referral.

Counsellors can become involved, even if briefly, in some sex and fertility-related education with married women in the community. This will facilitate acquaintances and trust for effective discussion of contraception practice as to the reason it should be practiced in this current economic situation.

Recommendations

Counsellors should organise interactive sessions with the community married women on contraception and reproductive health related matters in order to sustain respondents high level of contraception knowledge and to enhance their practices of contraceptive options.

Married women of different educational backgrounds, especially those with lower qualifications should be regularly enlightened and encouraged on contraception practices so that their knowledge of contraception can be sustained and its practice can easily be adopted.

Religious leaders, especially adherents of Islam and ATR, should keep enlightening their worshippers on the importance of contraception and ways by which they can improve their health and the economic status through effective practice of contraception.

Government and non-governmental organizations should not relent in their efforts in helping married women to sustain their high knowledge of contraception and encourage them towards the use of modern contraceptive options, thereby, achieving a sustainable development through reduction in fertility and poverty rates.

More family planning centre's should be created and well equipped with modern contraceptives so as to enhance the married women practices of contraception.

References

1. Rosenthal E. Nigeria tested by rapid rise in population. Retrieved from www.nytimes .com/2012/04/15/world/africa, 2012.
2. The Federal Ministry of Women Affairs. Population of male and female in Nigeria. 2004.
3. Population Reference Bureau. World population data sheet.www.prb.org/pdf10/10 world data sheet.PDF, 2010.
4. Ashraf QH, Weil DN, Wilde J. The effect of fertility reduction on economic growth. Population and Development Review. 2013; 39(1): 97–130.
5. National Population Commission (NPC) and ICF Macro. Nigeria demographic and health survey Abuja, Nigeria: National Population Commission and ICF Macro, 2009.
6. Khurfeld M. Thousands feared born in Nigeria's population explosion. Retrieved from http://*www.theonion.com, 2006.*
7. Adiri F., Ibrahim HI, Ajayi V., Sulayman HU., Yafeh AM., Ejembi CL. Fertility behaviour of men and women in three communities in Kaduna state, Nigeria. *African Journal of Reproductive Health*. 2001; 14(3):

97-105.
8. United Nations for Development on Population. Tracking the millennium development goals: Improve Maternal health. Retrieved from http://www.mdgmonitor.org/goal5.cfm, 2007.
9. Agarwal M., Samanta S., Bhusan D. Anant M. Assessing knowledge, attitude, and practice of contraception: A cross- sectional study among patients in a semi- urban tertiary hospital. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2017; 6(2): 720-724.
10. Obaid TA. Achieving the millennium development goals: Population and development strategies (foreword). 2003; New York, NY: UNFPA. p. 10017
11. Galadanci HS. Maternal mortality. In: Ikpeze, O. C. Fundamentals of obstetrics and gynecology. Onitsha, Nigeria: Africana First Publishers, 2009; 159-66.
12. Grimes DA., Benson J., Singh S., Romero M., Ganatra B., Okonofua FE. 2006.
13. Henshaw SK., Singh S., Oye-Adeniran B., Adewole IF. The incidence of induced abortion in Nigeria. International Family Planning Perspective. 1998; 24: 156-64.

14. Bankole A., Oye-Adeniran BA., Sigh S. Unwanted pregnancy: The root cause of induced abortion. In: Bankole, A., Oye-Adeniran, B. A. & Singh, S. editors. Unwanted pregnancy and induced abortion in Nigeria, causes and consequences. 2006; New York: Guttmacher Institute; p. 10-31.
15. Rahman AO., Kabri AA. Use of contraceptive for birth spacing in Nigeria. African Journal of Reproductive Health. 2005; 17(4): 63–71.
16. Medical Dictionary. Contraception. Retrieved from http://www.medicaldiction aryonline.org/htm, 2000.

17. Planned Parenthood of Nigerian. Birth control or never. 1990; Lagos: PPF Press.
18. Oni GA., McCarthy J. Family planning knowledge, attitudes and practices of males in Ilorin, Nigeria. International Family Planning Perspectives. 1991; 17(2): 50-64.
19. Tunde-Ayinmode, MF. Current knowledge and pattern of use of family planning methods among a severely ill female Nigerian psychiatric outpatients: Implication for existing service. Anal of African Medicine. 2013; 12: 16-23.

20. Babatude OA., Ibirongbe DO., Omede O., Babatunde OO., Durowade KA., Salaudeen AG., Akande TM. Knowledge and use of emergency contraception among students of public secondary schools in Ilorin, Nigeria. The Pan African Medical Journal. 2016; 23: 74.

21. Stangor CO. Research methods for behavioural sciences. 2004; Boston: Houghton Mifflin Co.

22. The National Bureau of Statistics. Population of married women in Kwara State. 2010.
23. Research Advisor. Sample size determination table. 2006.
24. Abiodun OM., Balogun OR. Sexual activity and contraceptive use among young female students of tertiary educational institutions in Ilorin, Nigeria. Contraception. 2009; 79(2): 146–149.
25. Olugbenga-Bello AI., Oboro VO, Araoye MO., Musa IO. Contraceptive practices among intercity drivers in an urban settlement in North Central, Nigeria. International Journal of Tropical Medicine. 2009; 4(2): 55-58.
26. Hussain NA., Akande TM., Osagbemi GK., Olasupo ST., Salawu KY. Adebayo ET. Perception and practice of contraception among male soldiers in Sobi barracks, Ilorin, Nigeria. African Health Science. 2013; 13(2): 415- 422.
27. Mohammed-Durosinlorun A., Krishna, R. A quantitative survey on the knowledge, attitudes and practices on emergency contraceptive pills among adult female students of a tertiary institution in Kaduna, Nigeria. Primary Health Care. 2014; 4: 148.

Factors Influencing Midwives' Attitude Towards Women In Labour In Selected Hospitals In Niger Delta Region Of Nigeria

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Abstract

The positive attitude of midwives is an essential factor in the utilization of maternal health services by pregnant women. This hospital based cross sectional study was conducted to explore the factors influencing midwives' attitude towards women in labour in selected hospitals in Niger Delta Region of Nigeria. Systematic random sampling technique was used to select 200 respondents from two tertiary hospitals. Data were collected with a validated structured questionnaire. Descriptive analysis was done using SPSS (version 21).

Majority of the respondents were between the ages of 35-44 years. More than half 118 (61.1%) were registered nurse-midwives which is the least qualification among respondents with 77 (61.1%) having 6-10 years working experience. The study revealed that the factors influencing midwives' attitude towards women in labour based on responses were: number of midwives to clients 187 (96.9%), workload of the midwives 187 (96.9%), incentives 182 (94.3%), adherence/non-adherence to midwives instructions 176 (91.2%), hospital environment 171 (88.6%), hospital equipments169 (87.6%), therapeutic communication between the midwife and patient 169 (87.6%) and the individual personality 163 (84.5%). Furthermore, the respondents identified employment of more staff 188 (97.4%), good remuneration and incentive 176 (91.2%), provision of adequate equipment and materials 170 (88.1%), proper monitoring and supervision of midwives 140 (72.5%), as well as training and retraining of midwives 128 (66.3%) as ways of improving midwives attitude toward women in labor.

Conclusively, midwives have the necessary qualifications and experiences needed to care for women in labour effectively, but certain factors influence their attitude either positively or negatively. Therefore, it is reasonable to suggest that periodic assessment of midwives and what motivate them should be considered by the hospital management and government in order to encourage them to have the right attitudes towards women in labour.

Key words: Attitude, Factors, Midwives, Labour, Women, Hospitals, Nigeria

Introduction

The midwives are the closest health care professional to women in labour [1] and their attitude is intricately linked to the women choice of health facility for delivery [2, 3]. Childbirth in a health facility attended by trained health professional has been shown to be associated with lower rates of maternal and neonatal mortality [2, 4] . Gayawan[4] stated that access to quality healthcare during pregnancy and in particular, during delivery is a crucial factor in reducing maternal and perinatal morbidity and mortality.

According to the World Health Organization[5], approximately 830 women die each day from complications of pregnancy and child birth with majority of these deaths occurring in resource poor countries of Sub-Saharan Africa like Nigeria[5]. Furthermore, several studies affirmed that over 90% of these deaths are preventable especially when a multi-dimensional approach aimed at ensuring accessibility and usability of all forms of maternal and child health services are put in place [6, 7, 8, 9].

In Nigeria, with a population of about 46 million women of child bearing age; only 34% of deliveries are attended to by skilled personnel [10, 11]. In order to reduce morbidity and mortality during pregnancy and childbirth, women need to be looked after by trained professionals who can spot complications at an early stage. For pregnant women to choose these services the health workers must endeavour to treat the women with respect and empathy.

Nwokoro, (2014) [2] maintained that the health care professional poor attitude remains an hindrance to accessing professional services among pregnant women. Poor healthcare provider's attitude in form of abusive language, denying women service, lack of compassion and refusing to assist properly resulted in seldom decision making among the pregnant women to deliver in a health facility. Many women report dissatisfaction with rude, arrogant and neglectful behavior at health facilities and prefer the care of

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Traditional Birth Attendants (TBAs) or relatives. [2, 12]
The main source of client's dissatisfaction is the negative behaviors of caregivers such as shouting at them; ignoring them, frowning at them, belittling them, and whispering among caregivers that make clients uncomfortable [13,17]. This might directly affect the well-being of patients, as well as the relationship between patients and providers [14]

The lack of respectful care from health care providers may lead to dissatisfaction with the health system, diminishing the likelihood of seeking antenatal care (ANC), delivery and postnatal services[13,14]. Moreover, negative attitudes could undermine the quality of care and the effectiveness of maternal and infant health promotion efforts.[15, 16.] According to Atiya [17] midwives' attitude is the strongest factor in determining maternal satisfaction from care received even when other factors were not addressed. Studies have shown that the attitude of health care providers towards women during pregnancy and delivery was a major factor in women's decisions about choice of place to give birth [15, 18, 19]. According to Mannava et al.[20] the attitudes of midwives are important element of quality as they influence both positively and negatively the perception of women, their partners and families about maternal health care. This may consistently affect the outcome of labour and also influence their decision to patronize the health facility during their subsequent pregnancies.

There is no doubt that midwives attitude has a profound effects on how labour progresses and on how women remember their birth experience [15,20]. Therefore, midwives need to respond to the woman in labor in a reasonably caring manner (attitude) for psychological wellbeing. Although, studies have shown that women in labour have expressed both satisfaction and dissatisfaction on the attitude of midwives during labour [1, 21, 22]. Only a few studies have looked at the factors influencing the attitude of midwives toward women in labour. It is against this background that the researchers explore the possible factors that influence the attitudes of midwives towards women in labour, as well as determining ways of improving them.

Research Methodology

A descriptive cross-sectional survey was carried out in two tertiary hospitals namely: Federal Medical Centre (FMC), Yenagoa and Niger Delta University Teaching Hospital (NDUTH), Okolobiri; both in Bayelsa State, Nigeria. The health facilities were chosen because they have high patronage of clients for maternity. The target population for this study consists of all registered midwives working in these hospitals at the time of this study. The instrument for data collection was a self-developed questionnaire which consists of open and close ended questions relevant to the objectives of the study. The instrument was given to the senior colleague for face and content validity and necessary modification was done according to their recommendations. To ensure reliability of the instrument, a pre-test was conducted using 15 respondents from Amassoma general hospital (secondary health facility), who had similar characteristics with the study population .A reliability coefficient of 0.85 was obtained and this showed that the instrument was suitable for the study. Systematic random sample technique was used to select 200 nurse-midwives for the study. Out of 200 questionnaires administered to the respondents, only 193 copies were retrieved and same was analyzed; hence the response rate was approximately 97% .The permission to carry out the study was obtained from the hospital management and the researchers distributed the questionnaires personally. The respondents' consent was obtained, confidentiality and anonymity was also maintained. The analysis of the data collected were done using SPSS version 20.0 and descriptive statistics in the form of frequencies and percentages tables were used to represent the analyzed data

Result

Majority of the respondents were between the ages of 35-44 years and were married. More than half 118 (61.1%) of the respondents were registered nurse-midwife which is the least qualification and the highest qualification possessed by respondents were masters (M.Sc.) degree and more than one-third 77 (61.1%) of the respondents had 6-10 years working experience. More than half 113 (58.5%) of the respondents said that the ratio of the midwives to the clients in the hospital is 1:6 while 80 (41.5%) of the respondents said that the ratio is 1:5 above (Table 2).

Table 3 reveals the factors influencing midwives attitude towards women in labour. More than three-quarter 187 (96.9%) of the respondents stated number of midwives to clients, 169 (87.6%) identified therapeutic communication between the midwife and patient, 187 (96.9%) of the respondents indicated workload of the midwives, and 169 (87.6%) identified shortage and non-functional equipment as a factor. Furthermore, 163 (84.5%) of the respondents affirmed individual personality to be one of the factors influencing midwives attitudes towards women in Labor but only 10 (5.2%) of the respondents identified cultural background as a factor. Majority of the respondents 171 (88.6%) also stated that the condition of the hospital environment whether conducive or unconducive, while 182 (94.3%) identified incentives. Most of the respondents 176 (91.2%) identified adherence/non-adherence to midwives instructions while 133 (69.9%) of the respondents affirmed that the attitude of the client could also influence the midwives' attitude.

On the ways of improving midwives' attitude

Table 1: Demographic Data of Respondents (n=193)

Variable	Frequency	Percentages
Age (in years)		
15-24	20	10.4
25-34	38	19.7
35-44	55	28.5
45-54	47	24.4
55 and above	33	17.0
Marital Status		
Married	154	79.8
Single	39	20.2
Educational Qualification		
Registered nurse-Midwife	118	61.1
BNSc	34	17.6
MSc	11	5.7
Others(Diplomas and B.Sc.)	30	15.6
Years of working experience		
<1	0.0	0.0
1 – 5	47	24.4
6-10	77	39.8
.>10	69	35.8

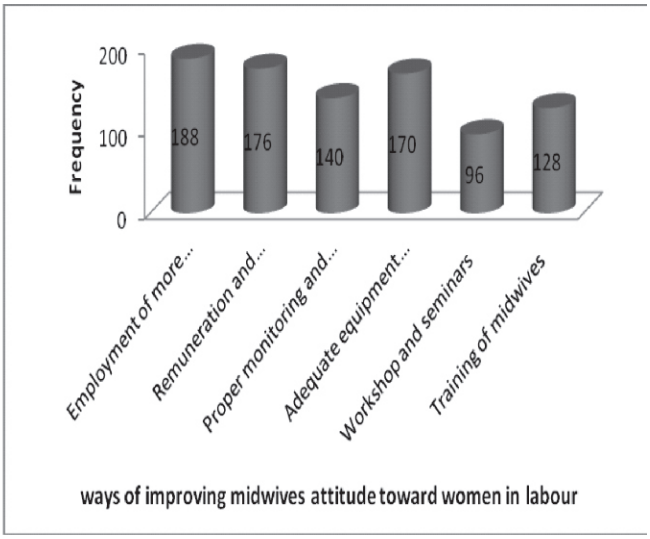


Table 2: Midwives Responses on Number of Midwives Per Clients (n=193)

Variable	Response	Frequency	Percentages
NUMBER OF MIDWIVES PER CLIENTS	1:1	-	-
	1:2	-	-
	1:3	-	-
	1:4	-	-
	1:5	80	41.5
	1:6 and above	113	58.5
Total		193	100

Table 3: Common factors influencing midwives' attitude towards women in labour n=193

Variables	Response	Frequency	Percentage
Midwives -Clients ratio	Yes	187	96.9
	No	6	3.1
Therapeutic Communication between client and midwife	Yes	133	68.9
	No	60	31.1
Workload of the midwives	YES	187	96.9
	No	6	3.1
Hospital equipments (Available or not available)	Yes	169	87.6
	No	24	12.4
Individual personality	Yes	163	84.5
	No	30	15.5
Incentive	Yes	182	94.3
	No	11	5.7
Hospital Environment (Conducive or unconducive)	Yes	171	88.6
	No	22	11.4
Cultural background	Yes	10	5.2
	No	183	94.8
Adherence /Non adherence to midwife's instructions	Yes	176	91.2
	No	17	8.8
Attitude of client	Yes	133	69.9
	No	20	30.1
	TOTAL	193	100.0

toward women in labour, almost all of the respondents 188 (97.4%) identified employment of more staffs as a way of improving midwives attitude toward women in labour, 170 (88.1%) identified provision of adequate equipment and materials, 176 (91.2%) identified remuneration and incentive, 140 (72.5%) mentioned proper monitoring and supervision of midwives, 96 (49.7%) stated workshop and seminars for midwives while 128 (66.3%) of the respondents said retraining of midwives is essential for improvement of midwives attitude toward women in labour

Discussion

The study indicated that the respondents were adults between the ages of 35-44 years with necessary qualifications and experiences in midwifery to adequately care for women in labour. However, several factors influence their attitude towards women in labour. One of such factors was the ratio of nurse-midwives to clients which was found to be 1:6 in the study settings. This significantly increases the work load and stress of the midwives and prevent one-one quality midwifery care. According to Taheri et.al[23] one-to-one support of a woman during labour creates a strong feeling of security and satisfaction as well as having a positive effect on labour outcomes.

Incentive package was also identified as a factor which influences attitude of midwives toward women in labour. This may be due to the fact that incentives are good motivators that play prominent roles in enhancing employee's right attitudes to work. Various studies have shown that attitude is significantly influenced by Incentive Structure [24, 25, 26]. Incentives propel and influence employees' attitudes in work place and stimulate understanding between the employer and the employee which will consequently cumulate into unprecedented performance for both the employees and the organization [24, 25, 26]. This Implies that the more preferred the incentive structure of the nurse-midwives, the more positive the midwives attitude will be towards women in labour.

Majority of the respondents also pointed out that the functionality and sufficiency of hospital equipments as well as the environment in which the midwives' work can influence their attitude positively toward women in labour. This is in line with the view of The WHO [27] that midwives need to work in a conducive environment which has a reliable supply of drugs, equipment and transport to render quality care to the woman in labour.

Furthermore, therapeutic communication between client and midwife was also identified as a factor influencing the attitude of midwives towards women in labour. Mohammed and Odetola[28] stated that therapeutic communication is a communication based relationship, in which the nurse has a responsibility to interact, educate and share information genuinely with the patients. Therefore, clients' perception of the quality of healthcare received during labour depends highly on the interaction with the healthcare providers especially the midwives. Moreover, when good communication exists between the nurse-midwife and patient, it leads to successful outcome of individualized nursing care [29].

Non-adherence of patient to instructions was also identified as a factor that can affect the attitude of midwives and studies have shown that quality healthcare outcomes depend upon patients' adherence to recommended instructions and treatment regimens [30, 31]. According to Martin et.al[32], more than 40% of patients sustain significant risks by ignoring healthcare advice. Therefore, non-adherence to instructions can be a persistent threat to the wellbeing of the patients and can carry an appreciable economic burden [33].

Most of the respondents were of the opinion that the midwives' personality influences their attitude, whether positive or negative towards women in labour. This implies that there is need for Personality testing before placing midwives in labour units. This can help to identify personality characteristics which can inform how a midwife is likely to respond to women in labour when exposed to different situations [34].

The study also indicated that most of the respondents knew more than one way to improve midwives' attitude towards women in labor and the most commonly measures identified were employment of more midwives 188 (97.4%), improvement in remuneration and incentive 176 (91.2%), provision of adequate equipment and materials 170 (88.1%), proper monitoring and supervision of midwives 140 (72.5%) and retraining of midwives 128 (66.3%). The findings is in line with The WHO[27] statement that the views of midwives and what motivates them should be considered, receiving training to improve their interpersonal skills, and need to work in an environment where there is reliable supply of drugs, equipments and transport.

Conclusion

Midwives' attitude elicit both positive and negative effect on women in labour, but when the negative attitude overshadow the positive, it brings about clients dissatisfaction with midwifery care and project a wrong notion of the midwives which is a major factor influencing women's utilization of maternal health services. On the other hand, positive attitude of midwives will increase utilization of maternal and child health facilities thereby reduce maternal and child perinatal mortality and morbidity rate; as well as improving the quality and standard of midwifery practice. In conclusion, the study revealed the principal factors influencing midwives attitude towards women in labour and appreciating these factors is the first step needed for planning and

implementing intervention strategies to improve midwives attitude towards women in labour.

Recommendation

Based on the findings in this study, the researchers' recommended that periodic assessment of Midwives and what motivate them should be favorably considered by the hospital management and government in order to encourage them to have the right attitudes towards women in labour. Furthermore, government should employ more midwives to reduce the workload and stress which may trigger frustration and a negative attitude. A conducive environment and good conditions of service should also be put in place for Midwives practitioners. Finally, the hospital management should ensure personality testing before the placement of midwives in labour units in order to identify personality characteristics which can inform how a midwife is likely to respond to women in labour when exposed to different situations.

References

1. Adeyemo, F.O. Comparative Analysis of Health Institutions on the Attitude and Practice of Midwives Towards Pregnant Women During Child Delivery In Ogbomoso, Oyo State, Nigeria. IOSR Journal of Nursing and Health Science, 2013; 1(3), 14-19 www.iosrjournals.org www.iosrjournals.org
2. Nwokoro, U. I. Choice of Birthplace and Use of Birth Attendants among Child Bearing Women in Akanu, Ohafia Local Government Area, Abia State Nigeria 2014, [M.Sc. Dissertation, Department of Nursing Sciences,University of Nigeria Enugu Campus] http://www.unn.edu.ng/publications/files/NWOKORO,%20UCHECHUKWU%20IRENE.pdf
3. Envuladu E.A, Agbo H.A, Lassa S, Kigbu J.H & Zoakah, A.I. Factors determining the choice of a place of delivery among pregnant women in Russian village of Jos North, Nigeria: Achieveing the MDGs 4 and 5. International Journal of Medicine and Biomedical Research. 2013;2 (1):23-27
4. Gayawan, E., Choice of place of delivery in Nigeria: examining spatial Pattern. Sexual and Reproductive Health care. 2014; 5(2):59-67. doi: 10.1016/j.srhc.2014.01.004.
5. World Health Organization. Maternal health. 2017 Retrieved from http://afro.who.int/health-topics/maternal-health
6. Say, L., Chou, D., Gemmill, A., Tunçalp, Ö., Moller, A. B., Daniels, J., & Alkema, L. Global causes of maternal death: a WHO systematic analysis. The Lancet Global Health, 2014; 2(6), 323-333.
7. Montoya, A., Calvert, C., & Filippi, V. Explaining differences in maternal mortality levels in sub-Saharan African hospitals: a systematic review and meta-analysis. Int Health. 2014; 6(1):12–22.
8. Chinkhumba, J., de Allegri M, Munla A.S., & Robberstad, B. Maternal and perinatal mortality by place of delivery in sub-Saharan Africa: a meta-analysis of population-based cohort studies. BMC Public Health. 2014; 14:1014.
9. Moyer, C.A., Dako-Gyeke, P, & Adanu R.M. Facility-based delivery and maternal and early neonatal mortality in sub-Saharan Africa: a regional review of the literature. Afr J Reprod Health. 2013; 17(3):30–43.
10. IndexMundi. Nigeria demographics profile. 2018; Retrieved from https://www.indexmundi.com/nigeria/demographics_profile.html
11. Abimbola, J. M., Makanjuola, A. T., Ganiyu, S. A., Babatunde, U. M. M., Adekunle, D. K., & Olatayo, A. A. Pattern of utilization of ante-natal and delivery services in a semi-urban community of North-Central Nigeria. African health sciences, 2016; 16(4), 962-971.
12. Gabrysh, S. & Campbell. O. Still too far to walk: Literature review of the determinants of delivery services use. Department of epidermiology and and population health. London school of tropical medicine. London, U K BMC Pregnancy Childbirth. 2009; 11; 9:34. doi: 10.1186/1471-2393-9-34.
13. Ishola, F., Owolabi, O., & Filippi, V. Disrespect and abuse of women during childbirth in Nigeria: A systematic review. PLoS ONE 2017; 12 (3): e0174084. https://doi.org/10.1371/journal.pone.0174084
14. Srivastava, A., Avan, B. I., Rajbangshi, P., & Bhattacharyya, S. Determinants of women's satisfaction with maternal health care: a review of literature from developing countries. BMC pregnancy and childbirth, 2015; 15(1), 97.
15. World Health Organization Human Reproduction Programme. The prevention and elimination of disrespect and abuse during facility-based childbirth, WHO statement. 2014 http://apps.who.int/iris/bitstream/handle/10665/134588/WHO_RHR_14.23_eng.pdf;jsessionid=2915721348D69B653303AF92FE70EF84?sequence=1
16. White Ribbon Alliance. Respectful Maternity Care: The Universal Rights of Childbearing Women.; 2011 Available from: http://www.healthpolicyproject.com/pubs/46_FinalRespectfulCareCharter.pdf
17. Atiya, M. K. Maternal satisfaction regarding quality of nursing care during labor and delivery in Sulaimani teaching hospital. International Journal of Nursing and Midwifery 2016; 8 (3), 18-27
18. Ngowi, A. F., Kamazima, S. R., Kibusi, S., Gesase, A., & Bali, T. Women's determinant factors for preferred place of delivery in Dodoma region Tanzania: a cross sectional study. Reproductive health, 2017; 14(1), 112-120.
19. Lamaze, I. Position Paper: Promoting, Supporting, and Protecting Normal Birth. Journal of Prenatal Education. 2007; 16 (3).11-15.
20. Mannava, P., Durrant, K., Fisher, J., Chersich,

M., & Luchters, S. Attitudes and behaviours of maternal health care providers in interactions with clients: a systematic review. Globalization and Health, 2015; 11,36. http://doi.org/10.1186/s12992-015-0117-9

21. Adeyemo, F. O., Oyadiran, G. O., Ijedimma, M O., Akinlabi, B. O., & Adewale, A. J. Perception of pregnant women towards midwives: attitude and practice during child delivery in health institutions in Ogbomoso, South-West, Nigeria Epidemiology Biostatistics and Public Health 2014; 11 (2) 1-7

22. Onasoga, O.A., Opiah, M. M.,Osaji T. A., & Iwolisi A. Perceived effects of midwives attitude towards women in labour in Bayelsa State, Nigeria Archives of Applied Science Research, 2012; 4 (2)826-830 (http://scholarsresearchlibrary.com/archive.html)

23. Taheri, M., Takian, A., Taghizadeh, Z., Jafari, N., & Sarafraz, N. Creating a positive perception of childbirth experience: systematic review and meta-analysis of prenatal and intrapartum interventions. Reproductive health, 2018; 15(1), 73.

24. Block, E. S., Glavas, A., Mannor, M. J., & Erskine, L. Business for good? An investigation into the strategies firms use to maximize the impact of financial corporate philanthropy on employee attitudes. Journal of Business Ethics, 2017; 146(1), 167-183.

25. Osibanjo, A.O., Abiodun, A.J., & Fadugba, A.O. Executive Perception of the Impact of Flexitime on Organisational Performamce: Evidence from the Nigerian Private Sector, International Journal of Applied BehaviouralEconomics (IJABE). 2012; 1(3)

26. Falola, H.O., Ibidunni A.S., & Olokundun, M. Incentives Packages and Employees' Attitudes to Work: A Study Of Selected Government Parastatals In Ogun State, South-West, Nigeria International Journal of Research in Business and Social Science, 2014; 3 (1), 16-27 ISSN: 2147-4478 available online at www.ssbfnet.com

27. World Health Organization. Standards for improving quality of maternal and newborn care in health facilities. 2016; Retrieved from http://apps.who.int/iris/bitstream/handle/10665/249155/9789241511216-eng.pdf?sequence=1

28. Mohammed, M.A & Odetola, T.D. Evaluation of patient's perceptions of Nursing Care in selected Health Institutions in Edo State, Nigeria. Journal of Medice and Medical Sciences 2014; 5(1) 12-19

29. Kourkouta, L., and Papathanasiou, I.V. Communication in Nursing Practice. Materia Socio-Medica, 2014; 26(1), 65–67. http://doi.org/10.5455/msm.2014.26.65-67

30. Kruse, C. S., Bolton, K., & Freriks, G. The effect of patient portals on quality outcomes and its implications to meaningful use: a systematic review. Journal of medical Internet research, 2015; 17(2) e44.

31. Mosadeghrad, A. M. Factors influencing healthcare service quality. International Journal of Health Policy and Management, 2014; 3(2), 77–89. http://doi.org/10.15171/ijhpm.2014.65

32. Martin, L. R., Williams, S. L., Haskard, K. B., & DiMatteo, M. R. The challenge of patient adherence. Therapeutics and Clinical Risk Management, 2005; 1(3), 189–199.

33. Klok, T., Kaptein, A. A., & Brand, P. L. Non-adherence in children with asthma reviewed: The need for improvement of asthma care and medical education. Pediatric Allergy and Immunology, 2015; 26(3), 197-205.

34. Judge, T. A., & Zapata, C. P. The person–situation debate revisited: Effect of situation strength and trait activation on the validity of the Big Five personality traits in predicting job performance. Academy of Management Journal, 2015; 58(4), 1149-117

Thyrotoxicosis Associated with Jaundice in a Human Immunodeficiency Virus (HIV) Infected Patient - Treatment Challenges in a Resource Constrained Tertiary Health Facility in South East, Nigeria.

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Abstract:

Thyrotoxicosis complicated by jaundice is not rare. In the presence of other co-morbid conditions, it may pose significant treatment challenges especially in resource constrained settings. There is a dearth of published case reports on thyrotoxicosis with liver dysfunction in a patient living with HIV infection, hence, we set out to highlight the challenges in their treatment.

A patient with thyrotoxicosis due to Graves disease with background HIV infection presented initially with heart failure and later jaundice in Abia State University Teaching Hospital (ABSUTH), Aba, Nigeria. Heart failure resolved before jaundice developed, therefore, hepatic congestion from heart failure may not account for the jaundice.

In conclusion, coexistence of HIV infection with Grave's disease and jaundice could present management challenges in view of possible hepatotoxic drug side effects and drug-drug interactions. Definitive treatment for Graves disease (surgery or radioiodine therapy) are options but are not available everywhere.

Key words: Thyrotoxicosis, Liver Dysfunction, Jaundice, Graves disease, HIV infection and HAART

Introduction

Hyperthyroidism is known to cause nonspecific abnormalities in liver enzymes and serum bilirubin[1]. Appropriate treatment of hyperthyroidism results in resolution of jaundice arising from hyperthyroidism per se. Graves disease, an autoimmune disease, is the leading cause of hyperthyroidism both in the general population and in HIV - infected persons[2]. In the latter, it occurs as a late immune reconstitution inflammatory syndrome (IRIS) manifestation[3] of highly active antiretroviral therapy (HAART).

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The classic IRIS caused by mycobacteria and other opportunistic infections develops during the first 3 months of HAART[4, 5] while Graves disease is most commonly diagnosed 12 - 36 months after HAART initiation. HAART can, also, cause thyroiditis leading to hyperthyroidism[6,7]. Non nucleoside reverse transcriptase inhibitors (NNRTI) especially Efavirenz are associated with hyperthyroidism in 1.01% of HIV patients[8]. NNRTI (Efavirenz) may, also, induce CYT P450 enzyme system whereas ritonavir boosted protease inhibitors inhibit the enzyme system, thereby altering drug metabolism[9].

Thyrotoxicosis associated with jaundice, as reported by Akande TO and Balogun WO, is not rare in Nigeria[10]. Autoimmune hepatocellular damage remains the explanation for jaundice in Graves disease and the features of primary biliary cirrhosis or autoimmune hepatitis[11] associated with Graves disease. Other conditions that may cause jaundice in patients with hyperthyroidism include thyrotoxicosis per se, heart failure with hepatic congestion and other unrelated conditions such as sepsis, viral hepatitis, alcoholic hepatitis, nonalcoholic fatty liver disease (NAFLD) and cholangitis.

Jaundice due to carbimazole (thionamide) appears to be due to a hypersensitivity reaction in patients receiving normal doses of the drug, and is generally associated with cholestatic liver dysfunction[12]. This side effect typically resolves with discontinuation of the drug therapy.

HIV-infected patients with controlled disease (suppressed HIV RNA and restored CD4 counts) are prone to developing liver diseases from causes such as alcoholic and NAFLD, viral hepatitis, in addition to more HIV-specific processes such as HAART-related toxicity and direct injury to the liver by the HIV virus itself. The primary mechanisms by which antiretroviral therapy (ART) can lead to liver damage include direct drug toxicity and/or drug metabolism, hypersensitivity reactions, mitochondrial toxicity, and IRIS[13,14].

Published reports of thyrotoxicosis with liver dysfunction in a patient living with HIV infection is, to the best of our scrutiny, rare in Nigeria; hence our decision to report this case. This becomes more relevant considering the link between HIV infected persons on HAART and Graves disease.

Case Report

Mrs B.E, a 46 year old petty trader, living with HIV

infection and adherent to HAART for 4 years, presented to the Endocrinology clinic on account of 2 months history of progressively increasing anterior neck swelling, heat and exercise intolerance, weight loss, frequent defecations, bulging, discomforting eyes and 1 week history of abdominal and leg swelling. She, also, complained of cough productive of frothy sputum, palpitation and easy satiety.

There was no prior history of autoimmune disease, or a family history of thyroid disease.

General examination revealed a chronically ill looking, middle aged lady with marked proptosis and a diffusely enlarged thyroid gland. She was afebrile, anicteric, not pale with no peripheral lymphadenopathy or digital clubbing. She had pitting bilateral leg oedema up to the thigh and sacral oedema.

Cardiovascular system examination revealed a pulse with a rate of 136 beats/minute with an irregular rhythm, blood pressure of 160/70mmHg, raised JVP and a hyperactive praecordium. The apex beat was not displaced and there were no heart murmurs. She had a uniformly distended abdomen, tender hepatomegaly (liver span was 17cm) with moderate ascites. She was tachypnoeic, had vesicular breathsounds with fine bibasal crackles.

An assessment of congestive cardiac failure (CCF) secondary to Thyrotoxicosis (NYHA class 3) with background HIV infection was made.

Results of a thyroid funtion test revealed a serum fT4 was 62 pmol/L, serum fT3 - 37 pmol/L and an undetectable TSH. TPO antibodies were positive. At this time her CD4+ T-cell count was 925 cells/mm^3 and HIV viral load was undetectable. She was commenced on treatment with carbimazole (15 mg twice daily), propranolol (40 mg twice daily) and an anti-heart failure regimen. Her thyroid function normalized within the next 8 weeks and the heart failure resolved. She continued on the antithyroid medication, maintenance doses of anti heart failure regimen and her usual HAART (Lamivudine, Efavirenz and Tenofovir).

However, 12 weeks after her initial presentation, she complained of yellowness of her eyes and general body weakness but no fever, nausea or vomiting. Liver function were requested for but she was, subsequently, lost to follow up.

Discussion

We are reporting this case for 2 reasons. Firstly, to draw attention to the increased risk of Graves disease in HIV-infected persons who have been on prolonged treatment with HAART and, therefore, can develop Graves disease as a 'late' IRIS manifestation. Secondly, we want to highlight the dilemma of the clinician/endocrinologist who is compelled to commence or continue antithyroid drug (with it's potential hepatotoxic effects) on a patient who has jaundice, probably, resulting from some hepatic dysfunction or one who is taking other molecules (HAART) which may have some hepatic side effects and or drug-drug interactions with the ATD or a patient who has thyrotoxicosis (Graves disease) in which autoimmune hepatocellular damage can account for liver dysfunction. We are, also, concerned about using ATD on thyrotoxic patients who had heart failure (secondary to thyrotoxicosis) which resulted to hepatic congestion and those who have no access to definitive treatment for Graves disease (surgery or radioactive iodine therapy) which may have been a safer and more liver friendly option.

The liver plays a central role in all metabolic processes in the body and is prone to insults from different bacteria, viruses, drugs, alcohol, chemicals and diseases of other organs of the body. For a HIV infected person on HAART with other comorbid conditions and jaundice, the choice of treatment modality could pose a challenge as one tries to avoid further liver damage/insults. Treatment options for Graves disease include use of antithyroid drugs (thionamide), radioiodine therapy and surgery (total thyroidectomy followed by thyroxine replacement). The antithyroid drugs are well known to cause remission in Graves disease for 5 - 10 years after 18 - 24 months of treatment. They are more readily available and cheaper than radioiodine therapy or thyroidectomy. The latter two are usuallly reserved for cases of relapse or in non remission after completion of anti thyroid drug. In a resource limited setting, the favoured treatment option for Graves disease should be the thionamides.

In their report[10], Akande TO and Balogun WO noted an improvement in liver enzymes and function following treatment of the 3 cases they reported with carbimazole. It has, also, been reported[15] that treatment of hyperthyroidism from conventional Graves disease and that from IRIS induced Graves disease results in resolution of jaundice. In view of the foregoing, one is justified to administer antithyroid drug (thionamides) to the patients with Graves disease who have jaundice..

However, thionamides (carbimazole, methimazole or propylthiouracil) have been shown to inflict liver injury[1, 16 - 18]. Raised liver enzymes (transaminases) have been reported in patients with hyperthyroidism few months after they received treatment with thionamides[18, 19]. It was therefore, a challenging decision in the index case to continue thionamide treatment when jaundice developed after few weeks of being on thionamide. Hepatic side effects of the thionamide are rare, ranging from 0.1 - 0.2%, risk of liver injury increasing with age of patient and dose of thionamide used.

The index patient is HIV infected and adherent to HAART, has hyperthyroidism from Graves disease, had congestive heart failure and developed jaundice. The jaundice of this patient could have been from HIV

itself, hepatotoxic effects of HAART, hyperthyroidism per se, congestive heart failure or from non related causes such as sepsis, viral hepatitis, alcohol abuse, NAFLD etc. To commence or continue antithyroid drug on the index patient was not an easy decision because of the potential danger of the drug to a liver that already shows sign (jaundice) of some dysfunction. Radioactive iodine therapy or thyroidectomy were the alternative options but they were not available in the health facility managing the index patient whose financial challenges were such that she would not go to the centres that have those facilities when referred.

Heart failure resulting in hepatic congestion is associated with liver abnormalities including acute hepatocellular injury and clotting disorders. The case we are reporting - which describes a patient with HIV infection on chronic HAART, Graves disease, heart failure and later jaundice - illustrates the challenges of finding out the exact cause(s) of of liver dysfunction in this setting. Therefore, the objective of ensuring that appropriate diagnosis of a liver condition of a patient who present with hyperthyroidism and jaundice may not be realistic.

Finally, with the introduction of HAART and effectiveness of ART in the management of HIV/AIDS, life expectancy of persons living with HIV/AIDS has increased. A possible implication of this to the endocrinologists is possible increased cases of Graves disease in the future.

Limitation:

Because the index patient was lost to follow up without doing the requested liver function test, we could not conclusively determine whether the jaundice she had was of liver origin or not, and whether of hepatocellular injury or obstructive pattern.

References:

1. . Fisher MG, Nayer HR, Miller A. Methimazole induced jaundice. JAMA. 1973; 223:1028–1029.
2. Pearce EN, Farwell AP, Braverman LE. Thyroiditis, N Engl J Med. 2003; 348: 2646-2655.
3. Weetman A. Immune reconstitution syndrome and the thyroid. Best Pract Res Clin Endocrinol Metab. 2009; 23(6): 693–702
4. Hirsch HH, Kaufmann G, Sendi P, Battegay M. Immune reconstitution in HIV-infected patients, Clin Infect Dis. 2004; 38: 1159-1166.
5. Battegay M, Drechsler H. Clinical spectrum of the immune restoration inflammatory syndrome, Curr Opin HIV AIDS. 2006; 1: 56-61.
6. Zandman-Goddard G, Shoenfeld Y. HIV and autoimmunity. Autoimmun Rev . 2002; 1(6): 329–337.
7. Weetman AP. Graves' disease following immune reconstitution or immunomodulatory treatment: should we manage it any differently? Clin Endocrinol (Oxf). 2014; 80(5): 629–632.
8. Rasul S, Delapenha R, Farhat F, Gajjala J, Zahra SM. Graves' disease as a manifestation of immune reconstitution in HIV-infected individuals after initiation of highly active antiretroviral therapy. AIDS Res Treat. 2011; 2011:743597.
9. Joint Formulary Committee. British National Formulary. BMJ Group and Pharmaceutical Press . http://www.medicinescomplete.com. Accessed February 8, 2014
10. Akande TO and Balogun WO. A report of three cases of jaundice with thytotoxicosis. Afr Health Sci. 2013; 13(3): 853–856
11. Czaja AJ, Carpenter HA, Santrach PJ, Moore SB. Genetic predisposition for the immunological features of chronic active hepatitis. Hepatology. 1993; 18: 816-822.
12. Boelaert K, Newby PR, Simmonds MJ, Holder RL, Carr Smith JD, Heward JM, et al. Prevalence and relative risk of other autoimmune diseases in subjects with autoimmune thyroid disease. Am J Med. 2010; 123(2): 183.e1–9.
13. Puoti M, Nasta P, Gatti F, Matti A, Prestini K, Biasi L, et al. HIV-related liver disease: ARV drugs, coinfection, and other risk factors. J Int Assoc Physicians AIDS Care (Chic Ill) 2009; 8(1): 30–42.
14. Soriano V, Pouti M, Garcia-Gasco P, Rockstroh JK, Benhamou Y, Barreiro P, et al. Antiretroviral drugs and liver injury. AIDS. 2008; 22(1): 1–13.
15. Fong TL, McHutchison JG, Reynolds TB. Hyperthyroidism and hepatic dysfunction: a case series analysis. J Clin Gastroenterol 1992; 14: 240–244.
16. Woeber KA. Methimazole-induced hepatotoxicity. Endocr Pract. 2002; 8: 222–224.
17. Williams KV, Nayak S, Becker D, Reyes J, Burmeister LA. Fifty years of experience with propylthiouracil-associated hepatotoxicity: what have we learned? J Clin Endocrinol Metab. 1997; 82: 1727–1733.
18. Vitug AC, Goldman JM. Hepatotoxicity from antithyroid drugs. Horm Res. 1985; 21: 229–234.
19. Ekpebegh CO, Levitt NS. A 40-year-old woman who developed jaundice during therapy for thyrotoxicosis. PLoS Med. 2006; 3: e12.

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