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EDITORIAL COMMENTS

Assessment Of Pattern Of Non-steroidal Anti-Inflammatory Drugs (NSAIDS) Use Among Residents Of A North Central Nigerian City

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Abstract

Non-steroidal anti-inflammatory drugs (NSAIDs) are commonly used in the treatment of pains. Self-medication is a common practice all over the world. Unwanted effects from use of this class of medication could pose health challenges. This study evaluated the prevalence and pattern of inappropriate use of NSAIDs among Ilorin residents and identified factors that influence the pattern of use.

Survey of 630 residents of Ilorin selected using systematic random sampling was done with administration of semi-structured questionnaires. Data obtained were analyzed and presented in the form of texts, frequency tables and charts. Inferential statistics was done using logistic regression and chi square. p-values less than 0.05 were considered statistically significant.

The most important reason why residents used NSAIDs was body pain (54.1%), followed by headache (39.5%). The prevalence of inappropriate use of NSAIDs was 34.3% and self -medication accounted for 21.1%. Most residents (65.9%) were not aware of the side effects of NSAIDs. Lack of adequate knowledge in understanding written instructions on the drug information sheet was the most important reason why instructions were not followed. Level of education significantly influenced respondents level of awareness of NSAID's side effects (p=0.016). There was also significant association between frequency of NSAIDs use and level of pain relief by the respondents (p=0.003). Occupation of the respondents significantly affected their level of self-medication (p=0.001) whereas there was no gender difference in the respondents level of inappropriate use of NSAIDs.

There was high prevalence use of NSAIDs among the residents with similar proportion of male to female residents. The most widely used NSAID was ibuprofen. Educational status, occupation and prior knowledge of medication use contributed to inappropriate use of NSAIDs.

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Key words: NSAIDs, Ilorin, ibuprofen, self-medication.

Introduction

The use of NSAIDs accounts for an estimated 76,000 hospitalizations and 7600 deaths in the United States[1] and 3897 hospitalizations and 365 deaths in Canada every year[2]. These hospitalizations and deaths were mostly due to ulcer and gastrointestinal bleeding. Irrational prescribing has further complicated the adverse effects from the use of NSAIDs. Self-medication is widespread all over the world and occurs in both urban and rural population[3,4]. Studies from within and outside this country have shown that NSAIDs are commonly abused by people with attendant unwanted effects[5-8]. Poor medical services and lack of professional control of pharmaceutical products account for increased misuse[9]. Irrational use of medicines is capable of not only limiting access to medicine within a national healthcare system, it can also lead to a waste of scarce resources.[10]

Traditional NSAIDs include aspirin, ibuprofen (Advil, Motrin, etc.), naproxen (e.g., Aleve) and many other generic and brand name drugs. Celecoxib (Celebrex) belongs to a newer class of NSAIDs called a "Cyclooxygenase -2 inhibitor" or a "Cyclooxygenase -2 selective" NSAID[11]. Concerns have been raised regarding the safety of NSAIDs due to their gastrointestinal side effects and increased cardiovascular morbidity. [12].

Inappropriate use of these drugs can occur by using more than one prescription or over-the-counter NSAIDs or exceeding the manufacturer's recommended dosage[13]. Self-medication can be defined as the use of drugs to treat self-diagnosed disorders or symptoms, or the intermittent or continued use of a prescribed drug for chronic or recurrent disease or symptoms[14]. Self-medication may initially result in reduction of distress but in the long-run however, it can cause many serious problems. Symptoms may rebound, resulting in stronger desires to take more drugs[15].

Self-medication is a common practice all over the world[16]. In the face of current global economic downturn, a large number of countries are facing serious health challenges, with people finding it difficult to meet their health needs. The situation in developing countries is frightening, where there is poor medical services and lack of professional

control of pharmaceutical products. This therefore forces people to self-medicate and various forms of substances and herbs are often used for different medical complaints[16].

Other patient factors that might limit the effectiveness of pain treatment or predispose to greater risk of adverse effects are barriers to patient education regarding the proper use of medication, failure of the drug to properly and safely alleviate the pain, economic factors (cheaper NSAIDs are less safe), misperception about the safety of Over The Counter (OTC) medications regarding risk of overdosing, drug-drug interaction and chronic use and limited awareness about the NSAIDs sources whether prescription or OTC[9].

Before taking any type of medication, patients should be fully aware of the risks involved; however, data suggest that current patient education on NSAIDs, in particular side effects and how to manage them, is not adequate[17].

In addition to being ill-informed on the side effects of taking a single NSAID, patients are also unaware of the consequences of taking multiple NSAIDs or taking NSAIDs for long period of time. Some of the reasons for taking multiple doses of NSAIDs include seeking more or faster relief, experiencing no relief with the recommended dose, or a result of doctor's suggestion[18].

Study Methods

The study location was Ilorin metropolis which is made up of three Local Government Areas (LGAs) namely: Ilorin West, Ilorin East and Ilorin South. The population figure of the study area according to 2006 population census was 777, 667 with Ilorin West; 364,666, Ilorin South; 208,691 and Ilorin East; 204, 310[19].

The study area has one tertiary health facility, University of Ilorin Teaching Hospital, two secondary health facilities and a host of primary healthcare centers. The metropolis also has a number of wholesale and retail pharmacies distributed across the three LGAs but more concentrated in Ilorin West LGA which host the state capital city, Ilorin. Many outlets of patent medicine stores are visible within the main city and other settlements across the three LGAs.

Sample size determination

Sample size was determined by sample size of proportions using Cochrane's formular[20] which was also emphasized by Araoye[21]; $N = Z^2 pq/e^2$. With prevalence rate of 0.5% and precision of 96% (0.04); $N = 1.96^2 \times 0.5(1-0.5)/0.04^2$, $N = 600.25$.

To make up for possible non-response, 5% was added which gave 630 study sample size that was used. A proportionate number of respondents from each Local Government Area ware calculated for. Sample sizes of 295, 169 and 166 were obtained for each of Ilorin west, Ilorin South and Ilorin East respectively.

Sampling technique

Ten out of 12 political wards was selected in Ilorin West LGA using simple random sampling by simple balloting. One from every twenty households having resident that meet the inclusion criteria was selected in each of the selected ward in systematic sampling technique. Only one resident was selected per house hold. The index house was determined by Grid method in which a bottle was spun in the center of settlement. The direction of the bottle after being spun determined the starting point of the sampling. The sampling for Ilorin West LGA started from Oja Oba, the heart of the main city until a total of 295 respondents were obtained. The same method was used for Ilorin East and South LGAs until the desired sample size was obtained. Pretesting of the questionnaire was done in Afon using 20 questionnaires and reliability test was performed according to procedure described by Odunfa and Ariba[22]. Crombach alpha was 0.69. Self administration of questionnaire by adequately literate respondents and interviewer administered methods were both used to elicit responses. Questionnaire was designed to elicit responses concerning the use of NSAIDs similar to the ones used in other related studies[15,23].

Informed consent of respondents was obtained from participants. The data from the questionnaires were sorted and properly checked to ensure that the questionnaires were properly filled. Data were coded and analyzed with the computer using the Statistical Package for Social Sciences (SPSS) software package version 16.

Analyzed data were presented in form of texts, frequency tables, percentages, bar and pie charts for descriptive statistic. Chi-square and odd ratio from logistic regression were used to test for significant associations between categorical variables and p-value less than 0.05 was considered statistically significant.

Ethical Consideration

Ethical approval for the study was granted by the University of Ilorin Ethical Review Committee with reference number: UITH/CAT/189/18^{A}/883.

Results

Socio-demographic distribution of residents

The maximum age of respondents was 80 years while the minimum age was 18. The mean age was found to be 33 years with standard deviation of ± 13.2. The demographic characteristics of the respondents are provided in Table 1. There were more number of male respondents than female and age between 18 and 30 dominated the age group with only 3.8% older than 60 years. The percentage of respondents who were single

Table 1: Socio-demographic characteristics of the residents.

Demographic data	Variable	Frequency (%) N = 630
Gender	Male	352(55.9)
	Female	278(44.1)
Age (in years)	18-30	344(54.6)
	31-40	127(20.2)
	41-50	100(15.9)
	51-60	62(9.8)
	61-70	13(2.1)
	?70	11(1.7)
Religion	Islam	399(63.3)
	Christianity	231(36.7)
Marital status	Married	277(44.0)
	Single	327(51.9)
	Widowed	2(0.3)
	Divorced	24(3.8)
Educational status	Primary	45(7.1)
	Secondary	223(35.4)
	Tertiary	308(48.8)
	Non-formal	54(8.6)
Occupational distribution	Civil servant (government/private)	191(30.3)
	Artisan	101(16.0)
	Driver	52(8.6)
	Trader	98(15.6)
	Unemployed/students	188(29.8)

Table 2: Residents use of NSAIDs (Continued)

Characteristics	Variables	Frequency (%)
Frequency of use of NSAIDs(n=630)	Always	82(13.0)
	Often	134(21.3)
	Rarely	364(57.8)
	Never	50(8)
	Total	630(100)
Reasons for self medication with NSAID (n=580)	Having knowledge of use of drugs	123(21.2)
	Because of time required to visit a clinic/ hospital	128(22.1)
	Because of high cost of hospital charges	67(11.6)
	For minor cases	161(27.8)
	Because of distance between hospital and respondents home	119(20.5)
Whether or not the respondents was relieved of symptoms (n=485)	Yes	355(61.2)
	No	15(2.6)
	Sometimes	210(36.2)
Whether or not Respondents experienced side effects on the use of NSAIDs(n=582)	Yes	115(18.3)
	No	465(73.8)
	No response	2(0.3)

Table 3: Logistic regression of Association between awareness of NSAIDs' side effects and educational status of residents

Educational status	Odd Ratio	Z	P-value	95% CI of OR
Primary	1.944	1.983	0.159	0.771 - 4.906
Secondary	1.144	0.172	0.678	0.606 - 2.160
Tertiary	2.000	5.765	0.016	0.786 - 2.721

Table 4: Logistic regression of Association between frequency of NSAIDS misuse and pain relief of the respondents

Frequency of self- medication with NSAIDs	Odd Ratio	Z	P-value	95% CI OR
Always	0.197	8.566	0.003	0.066- 0.585
Often	0.356	4.575	0.032	0.138 - 0.917
Rarely	0.167	14.857	0.000	0.067- 0.415

Table 5: Logistic regression of Association between gender and frequency of inappropriate use of NSAIDs

Frequency of inappropriate Use of NSAIDs	Odd Ratio	Z	P-value	95% CI OR
Always	0.899	0.089	0.765	0.412 - 1.920
Often	1.399	0.862	0.353	0.688 - 2.844
Rarely	1.408	1.047	0.306	0.731 - 2.714

Table 6: Cross-tabulation (Chi square analysis) to determine relationship between occupational status and frequency of self- medication with NSAIDs by the residents

	Frequency of self-medication				Total
	Always	Often	Rarely	Never	
Occupation Civil servant	19(10%)	47(27.7%)	105 (55.3%)	19(10%)	190
Artisan	20(19.8%)	15(34.5%)	55(54.5%)	11(10.9%)	101
Trader	13(13.3%)	31(31.6%)	51(52.0%)	3 (3.1%)	98
Unemployed	30(12.9%)	41(17.6%)	149(63.9%)	13(5.6%)	233
Total	82(13.2%)	134(21.5%)	364(58.5%)	46(7.4%)	622(100%)

Chi square =36.8, p=0.001

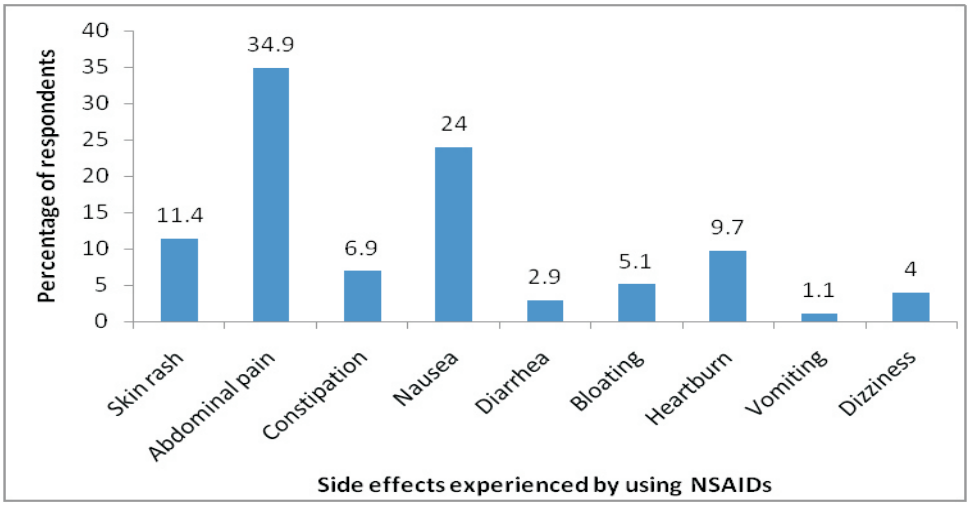


Figure 1: Types of side effects experienced by the respondents from the use NSAIDs

(marital status) was higher than others (51.9%) while only 0.3% were widowed. The educational distribution showed that there was higher percentage (48.8%) of respondents with tertiary level of education while the primary level of education was 7.1% indicating the least level in the group. Civil servant dominated the occupational status of the respondents with 33.3%.

Respondents' characteristics use of NSAIDs

The respondents' characteristics on the practice of the use of NSAIDs as shown in Table 2 indicates that most residents chose to use NSAIDs to manage body pain and 7.2% of the female respondents used NSAIDs in menstrual pain. Majority of the residents (39.7%) used community pharmacies as their first port of call in managing pain related ailments while 21.1% used NSAIDs without any course to seek information about the use.

The most commonly used NSAID among the residents was Ibuprofen (54.3%) with meloxicam the least commonly used (3%). There was low awareness of side effects of NSAIDs as only 22.9% were aware of possible side effects of the medication.

Seventy three point eight percent (73.8%) did not experience any side effects while using NSAIDs. Out of 18.3% who experienced side effects, the most common side effect experienced was abdominal pain (61%). This was followed by nausea (42%) and vomiting was the least experienced. Side effects commonly experienced by residents on taking NSAIDs are presented in Figure 1.

Statistical analyses were used to determine association between some categorical variables. Association between awareness of side effects and educational status of the residents was found to be significant (p=0.016) as shown in Table 3. Logistic regression analysis was also used to determine relationship between frequencies of use of NSAIDs by

the residents. There was significant relationship in pain relief with increased level of the drug used (Table 4). However, there was no association between gender and frequency frequency of inappropriate use of NSAIDs as shown in Table 5. Chi squared analysis was used to determine relationship between occupational status of the respondents and frequency of self-medication with NSAIDs through cross-tabulation. The result obtained showed a significant relationship with p=0.001(Table 6).

Discussion

Result showed that close to 40% of the respondents consult the Pharmacy for their pain management. This may be because of some possible reasons including proximity of Pharmacy to patients, relatively less expensive services by pharmacies compared to hospital among other reasons. About a quarter of respondents also said they visit the hospital. Generally, more than half of the respondents patronize good health services for their pain management: Hospital and Pharmacy. These are places where they can be properly be advised, managed, treated and referred if necessary.

The use of NSAIDs was highest among people with body pain which is consistent with many studies[24]. The most widely used NSAIDs among the public was ibuprofen (54%) which was consistent with a study carried out by Wilcox and his co-researchers in 2005[6] among residents of Roper where diclofenac was found to be more widely used than other NSAIDs. In contrast, study by McGettigan and Henry in 2013[25] found that Diclofenac was the most widely used NSAIDs using England and Canada as case studies. The residents' high literacy rate may influence their knowledge of medication as about 80% of them had secondary and tertiary education and about one third of them were civil servants. Prior knowledge of medication use has also been known to account for increased incidence of medication abuse[26,27]. It has also been established that menstrual pain is one of the reasons why NSAIDs are used[28]. Up to 7.2% of total female respondents used NSAIDs of one type or the other during menstrual pain (Table 2).

Low awareness of side effects of NSAIDs could account for high level of inappropriate use recorded in this study. Majority of the respondents (61.2%) claimed to have relief whenever they use NSAIDs for controlling their pain although some pains could be relieved without taking any medication[29].

There was a significant association between the level of awareness of side effects of NSAIDs and educational status of the residents as more residents with higher level of education were aware of side effects of NSAIDs, p=0.016. Male gender also appeared to show higher level of awareness of NSAIDs side effects than their female counterpart, p=0.035. A similar study carried out in Malaysia on patient's knowledge and perception towards the use of NSAIDs indicated a higher level of awareness of NSAID's side effects, 54.2% compared to the value obtained in this study, 22.9%[30]. Perceived level of improvement was found to be related to the frequency of use of NSAIDs by the residents as the respondents claimed to achieve cure of the pain ailment with increased use of NSAIDs, p=0.003(Table 4) although this has also been known to be associated with increased level of NSAID toxicity[31]. There was no gender difference in the (Table 5). Occupational distribution of the residents was also found to influence frequency of self-medication with NSAIDs among the residents (Table 6). Reason for this could result from the fact that different types of occupation might be associated with different level of stress associated with it. A careful look at the table shows that artisans are those that always and often self-medicate with NSAIDs compared to other forms of occupation like civil servants. The work of a lot of artisans involves a great deal of energy which may lead to frequent body pains that might be their reason for their high frequency in the use of NSAIDs. Artisans were closely followed by traders and then civil servants. Possible reason for low frequency of self-medication with NSAIDs among civil servants compared with artisans and traders may also be linked to the fact that civil servants are likely to be more educated than others and a good number of them may understand the implication of self-medication.

Conclusion

There was high prevalence use of NSAIDs among the residents with similar proportion of male to female residents. Educational status, occupation and prior knowledge of medication use are factors that contributed to inappropriate use of NSAIDs. The most widely used NSAID was ibuprofen.

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References

1. Fries JF. Assessing and understanding patient risk. Journal of Rheumatology Suppl.1992; 92:21–24.
2. Awodele O, Fadipe AO , Adekoya M, Adeyemi OO. Prescibing pattern of nonsteroidal anti-inflammatory drugs at the Outpatient Pharmacy

Department of a University Teaching Hospital in Nigeria. Ghana Medical Journal 2015; 49(1): 25-29.
3. Pandya RN, Jhaveri KS, Vyas FI, Patel VJ. Prevalence, pattern and perceptions of self-medication in medical students. International Journal of Basic & Clinical Pharmacology 2013; 2:275-80.
4. Bello SI, Bello IK .Impacts of Community Pharmacists on Self-medication Management among Rural Dwellers, Kwara State Central, Nigeria. Dhaka University Journal of Pharmaceutical Sciences 2013; 12(1): 1-9.
5. Russell RI. Non-steroidal anti-inflammatory drugs and gastrointestinal damage—problems and solutions. Postgraduate Medical Journal 2001; 77(904): 82–88.
6. Wilcox CM, Cryer B, Triadafilopoulos G. Patterns of use and public perception of over-the-counter pain relievers: focus on nonsteroidal antiinflammatory drugs. Journal of Rheumatolology 2012; 32(11):2218-24.
7. Teslim OA, Vyvienne M , Olatokunbo, OM , Oluwafisayo, AJ , Mlenzana, NB , Shamila M, Nesto M, Grace M. Side effects of non-steroidal anti-inflammatory drugs: The experience of patients with musculoskeletal disorders. American Journal of Health Research 2014; 2(4):54-62.
8. Crowe SE, Feldman M, Grover S. Patient information: Peptic ulcer disease (Beyond the Basics) 2015. Assessed online on 5/8/2015: http://www.uptodate.com/contents/peptic-ulcer-disease-beyond-the-basics.
9. Taylor R, Lemtouni S, Weiss K, Pergolizzi JV. Pain Management in the Elderly: An FDA Safe Use Initiative Expert Panel's View on Preventable Harm Associated with NSAID. Therapy of Current Gerontology and Geriatrics Research., 2012; 196159:1-9 .doi:10.1155/2012/196159.
10. Alfa J, Adigwe OP. Rational Use of Medicines in Nigeria. Journal of Biology, Agriculture and Healthcare 2014; 4(16): 89-98.
11. American College of Rheumatology. Non-steroidal antiinflamatory drugs 2015; Available on http://www.rheumatology.org/I-Am-A/Patient . Caregiver/Treatments/NSAIDs Assessed on 10/09/2015.
12. FitzGerald GA. Coxibs and cardiovascular disease. New English Journal of Medicine 2003; 351:1709-1711.
13. Kovac SH, Houston TK, Weinberger M. Inappropriate nonsteroidal anti-inflammatory drug use: prevalence and predictors. Journal of Patient Safety 2010; 6(2):86-91
14. Donkor SE, Tetteh-Quarcoo BP Patrick NP, Agyeman OS. Self-Medication Practices with Antibiotics among Tertiary Level Students in Accra, Ghana: A Cross-Sectional Study. International Journal of Environmental Research and Public Health 2012; 9: 3519-3529.
15. Lawan UM, Abubakar IS, Jibo AM, Rufai APattern. Awareness and Perceptions of Health Hazards Associated with Self Medication Among Adult Residents of Kano Metropolis, Northwestern Nigeria. Indian Journal of Community Medicine 2013; 38(3): 144–151.
16. Abasiubong F, Bassey EA , Udobang JA , Akinbami OS, Udoh SB, Alphonsus Udo Idung AU. Self-Medication: potential risks and hazards among pregnant women in Uyo, Nigeria. *The Pan African Medical Journal 2012;* 13:15-22.
17. Schmitt MR, Miller MJ, Harrison DL. Communicating non-steroidal anti-inflammatory drug risks: verbalcounseling, written medicine information, and patients' risk awareness. Patient Education and Counseling 2011; 83 (3): 391–397.
18. Cham E, Hall L, Ernst AA, Weiss SJ. Awareness and use of over-the-counter pain medications: a survey of emergency department patients. Southern Medical Journal 2002; 95(5):529–535.
19. National Population Commission. Nigeria 2006 Census Figures 2006; Available online at http://www.nigeriamasterweb.com/Nigeria06CensusFigs.html. Assessed on 12/11/2013
20. Cochran WG. Sampling Techniques, 2nd Ed., New York: John Wiley and Sons, Inc. 1963; pg 413
21. Araoye MO. Research methodology with statistics for health and social sciences. 2nd ed.; Ilorin: Nathadex*:* 2004*;* 115-121.
22. Odunfa OO, Ariba A. My research companion with SPSS statistical analysis. Reindeer and Arish Publications, Nigeria. First Edition: 2013; 42-66
23. Keshari SS, Kesarwani P, Mishra M. Prevalence and Pattern of Self-medication Practices in Rural Area of Barabanki Indian Journal of Clinical Practice 2014; 25(7): 636-639.
24. Mart van de Laar M, Pergolizzi, JV, Mellinghoff H, Merchante IM, Nalamachu S, O'Brien J, Perrot S, Raffa RB. Pain Treatment in Arthritis-Related Pain: Beyond NSAIDs. Rheumatology Journal 2012; 6: 320-330.
25. McGettigan P, Henry D. Use of Non-Steroidal Anti-Inflammatory Drugs That Elevate Cardiovascular Risk: An Examination of Sales and Essential Medicines Lists in Low, Middle and High-Income Countries. Pubmed journal 2013; 10(2):e1001388. doi: 10.1371-1001388.
26. Huang Y , Gu J, Zhang M, Ren Z, Yang W, Chen Y, Fu Y, Chen X, Cals JWL, FZhang F. Knowledge, attitude and practice of antibiotics: a questionnaire study among 2500 Chinese Students. Biomed Central for Education 2013;13:163 http://www.biomedcentral.com/1472-6920/13/163.
27. Syed NZ, Reema S, Sana W, Akbar Z, Talha V, Mehrine S, Wajeeha Y, Saman S, Sarah S. Self-

medication amongst university students of Karachi: Prevalence, knowledge and attitudes. Journal of Pakistan Medical Association 2008; 58: 214–217.
28. Alexa ID, Pancu AG, Moroşanu AI, Ghiciuc CM, Lupuşoru C, Pradag I, Cepol V. The impact of self-medication with nsaids / analgesics in a north-eastern region of Romania. Farmacia 2014; 62(6):1164-1170.
29. Bekerom MPJ, Struijs PAA, Blankevoort L, Welling L, C. Niek van Dijk N, Kerkhoffs MM. What Is the Evidence for Rest, Ice, Compression, and Elevation Therapy in the Treatment of Ankle Sprains in Adults?. *Journal of **Athletic** Training*. 2012; 47(4): 435–443.
30. Sulaiman W, Seung OP and Ismail R. Patient's Knowledge and Perception Towards the use of Non-steroidal Anti-Inflammatory Drugs in Rheumatology Clinic Northern Malaysia. Oman Medical Journal 2012; 27(6): 505–508.
31. Ong, CKS. , Tan CH, Seymour RA. An Evidence-Based Update on Nonsteroidal Anti-Inflammatory Drugs .Clinical Medicine Research 2007; 5(1): 19–34.

Prevalence And Determinants Of Drug Abuse Among Youths In A Rural Community In North Western Nigeria

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Abstract

Drug abuse is a global public health problem that impacts negatively on health, family, society, educational and professional life. Majority of youths ignorantly depend on one form of substance or the other for various daily activities such as social, educational, political and moral. The objective of this study was to assess the prevalence and determinants of drug abuse among youths in a rural agrarian community in North Western Nigeria.

A cross-sectional, community based descriptive study conducted among 359 rural youths aged 15-35 years. The study was conducted from 19th September 2016 to 14th October 2016. An interviewer-administered questionnaire was used to collect data which was analyzed using SPSS (version 20).

The prevalence of drug abuse was 10% and the most abused drug was Tramadol (52.8%). There was a statistically significant association between drug abuse and the following variables: Type of family *(P=0.025*); occupation of respondents (*P=0.001*) and monthly income (*P= 0.005)*. Farming occupation was a determinant of drug abuse. Farmers were 6.52 times more likely to abuse drugs than non-farmers (OR= 6.52**, 95% C.I: 2.25 – 18.91,** *P=0.001).*

The result indicated that youth in the study area abuse drugs such Tramadol and Marijuana and farming occupation was a determinant of drug abuse. For effective control of drug abuse in the study area, there is need for health education campaigns on harmful effects of drug abuse.

Key words: Drug abuse, prevalence, determinants, youth, rural, Nigeria

Introduction

Drug use and abuse is a social and public health problem in most countries worldwide, as a result of the several negative effects it may have on people's emotional and physical development.[1] Drug abuse is the maladaptive addictive use of drugs for non-medicinal purposes. It is characterized by an emotional, psychological or physical dependence or compulsion to take drugs constantly to experience its mental effects. It involves the repeated and excessive use of chemical substances which may be obtained from the street or with prescription.[2]

According to *UNODC* reports on the use of illicit substances, there was an increase usage rate throughout the world in recent years.[3] Drug abuse and addiction have negative consequences for individuals and for society, spawning crimes, spreading diseases like AIDS and killing people.[4] The global disease burden attributable to alcohol and illicit drugs is estimated at 5.4%.[5] The trend is increasing as period goes [6]. Estimates of the total overall costs of substance abuse in the United States, including productivity and health- and crime-related costs exceed $600 billion annually. There are an estimated 90 million drug users around the world and no country is immune and no person really is.[4]

Youths are a high risk group for the use of drugs .[7] Among the youth, drug abuse is a worldwide epidemic that can impact negatively on health, family, society, and educational and professional life. [8-10] Majority of Nigerian youth ignorantly depend on one form of substance or the other for various daily activities such as social, educational, political and moral .[11] In Nigeria today, there is no part of the country that is free from the curse of misguided drug use and addiction, and the epidemic has assumed an alarming dimension causing enormous problems to the individual and society. There is evidence that rural youth are more likely to use drugs such as marijuana, cocaine, methamphetamines, and inhalants than are urban youth. [12-15]

Young people abuse drugs due to complex social and peer groups influence, frustration, depression, curiosity, sub-cultural and psychological environment that induce the youths to take drugs. Major risk factors responsible for drug abuse are family disorganization, parental neglect, parent-child conflict, loss of spouse strife, indiscipline, isolation, lack of emotional support, rejection of love, over protection, unemployment, repeated failure and personality mal adjustment and easy availability of drugs.[16] Parental

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deprivation due to deaths, divorces, separation or discord has also been strongly associated with drug abuse .[17]

In Nigeria, youths have been identified as the most affected group by drug abuse[18] and the North-western region (where our study area is located) was rated as having the highest rate of drug abuse (37.47%) followed by Southwest (17.32%); then south-East(13.5 %); then the North-central (11.71%) and lastly the North-East zone (8.54%).[19] There is scanty data on patterns of drug abuse in specific groups in the community and due to increasing urbanization of the country, there is a tendency of changing patterns in illicit drug use and therefore the need to constantly update information on the use of drugs among Nigerian youths .[20] The aim of this study was therefore, to assess the prevalence and determinants of drug abuse among youths in a rural agrarian community in North Western Nigeria .

Methodology

Kwaba community is a rural agrarian settlement in Dutsen Abba district of Zaria Local Government Area of Kaduna State, North-western Nigeria. The community has a total population of 2,324 with 240 households; 395 women of reproductive age .[20] They have a community Youth Association. There was only one health facility (a Primary Health Care centre) in the community. Non-mechanized farming was the predominant occupation.[20]

A cross-sectional, community based descriptive study conducted from 19th September 2016 to 14th October 2016. The study population comprised all male youths (aged 15- 35 years) in the community (total population study). Data was collected using a structured interviewer administered questionnaire with closed and open ended question. It contains questions on socio-demographic profile of respondents and their utilization of unprescribed drugs.

The data obtained was cleaned and analyzed using IBM Statistical Package for Social Sciences (SPSS) software (version 21.0) and results were presented in tables. Bivariate analysis was done using Chi-square test to assess the association between socio-demographic variables and use of unprescribed drugs. The level of statistical significance was set at a p-value of ≤ 0.05 and the corresponding χ^2 value and degrees of freedom (df) were cited. Variables that were statistically significant in the bivariate analysis were included in a multivariate analysis using logistic regression model in which level of significance was set at 0.05. Appropriate entry permission to conduct the study was sought from Zaria Local Government Area, Kaduna State and from Kwaba community leaders. Informed written consent was obtained from all the respondents.

Results

Table 1 shows the socio-demographic characteristics of the respondents. Majority of the respondents were from nuclear families (65.2%); the mean household size was 10.8 ± 7.2; only 27.8% had formal education; almost half of them (49.6%) were unemployed and their mean monthly income was N2,211 ± 5.11. Few, 16.6% of respondents' father had formal education while 6.4% of respondents' mother had formal education. Table 2 presents the type of drugs abused by respondents. The most abused drug was Tramadol (52.8%), followed by Tobacco (38.9%), Marijuana33.3% and pentazocine16.7%). Other abused drugs were alcohol (19.4%); codeine (5.6%); cocaine (5.6%) and Heroine (2.8%).

Table 3 presents results of bivariate analysis of the relationship between socio-demographic characteristics of respondents and drug abuse. As shown in the table, 36 respondents (10.0%) were drug abusers and there was a statistically significant association between drug abuse and the following variables: type of family (P=0.025); occupation of respondents (P=0.001) and monthly income (P= 0.005). There was no statistically significant association between drug abuse and respondents' household size (P=0.965); educational level (P=0.222); paternal education (0.822) and maternal education (P=0.856).

Table 4 shows results of simple logistic regression of drug abuse on the associated factors. As shown in the table, of all variables that were significantly associated with drug abuse at bivariate level, only farming occupation (P=0.001); other occupations (P=0.047) and monthly income (P=0.002) were associated with it after regression analysis.

Table 5 shows results of multivariable logistic regression of drug abuse on the associated factors. As shown in the table, only farming occupation was a determinant of drug abuse. Farmers were 6.52 times more likely to abuse drugs than non-farmers (OR= 6.52, 95% C.I: 2.25 – 18.91, *P=0.001)*

Discussion

Prevalence of drug abuse among respondents was 10%. This is lower than the regional value of 37.47%. The most abused drug was Tramadol, an opioid analgesic that produces euphoric high when taken in high doses. Some of its abusers take it for its euphoric and mood-enhancing effects.[21] This finding is similar to findings of two other Nigerian studies conducted in Ilesa and Oshogbo where analgesics were also the most abuse drugs among which was Tramadol. According to the study done on substance use among senior secondary students in rural and urban communities in Ilesa, south western Nigeria , the most commonly used drugs and their current prevalence

Table 1: Socio-demographic characteristics

Variable	Frequency (n = 359)	Percent
Type of family		
Nuclear	234	65.2
Extended	122	34.0
Single parent	1	0.3
Sibling household	2	0.6
Household size		
= 5	82	22.8
6 – 10	119	33.1
11 – 15	102	28.4
> 15	56	15.6
Mean household size	10.8 ± 7.2	
Median household size	10	
Education		
None	53	14.8
Qur'anic	204	56.8
Informal	2	0.6
Primary	78	21.7
Secondary	22	6.1
Father's education		
None	24	6.7
Qur'anic	275	76.6
Primary	36	10.0
Secondary	21	5.8
Tertiary	3	.8
Mother's education		
None	46	12.8
Qur'anic	289	80.5
Informal	1	0.3
Primary	17	4.7
Secondary	5	1.4
Tertiary	1	0.3
Occupation		
None	178	49.6
Farming	87	24.2
Petty trading	34	9.5
Student	40	11.1
Others	20	5.6
Monthly income (?)		
< 1,000	228	63.5
1,000 – 5,000	96	26.7
> 5,000	35	9.7
Mean income	2,211 ± 5.11	

rates were salicylate analgesics, 48.7%; stimulants, 20.9%; antibiotics, 16.6%; alcohol, 13.4%; hypno-sedatives, 8.9% and tobacco, 3.0%. [22] In the study conducted in Oshogbo, Osun State, Nigeria, the substances that were found to be commonly currently abused were analgesics (46.7%), cannabis (16.7%), tobacco (14.3%) and inhalers (14.0%) while 8.3%, 7.4%, and 6.4% of the respondents were found to be using alcohol, sedatives and solvents respectively.[23] However, this finding is contrary to that of a study conducted in a rural community of Plateau State, Nigeria , where a combination of valium and amphetamine was the most abused drug(55.1%).[24] It is also contrary to findings in Rwanda where alcohol was the most abused drug (50.6%) among youths, followed by tobacco (10.6%); cannabis (4.4%); . solvents (5%) and diazepam (0.1%). [25]

Table 2: Types of abused drugs by respondents (n = 36)

Drug Type	Frequency
Tramadol	19 (52.8%)
Tobacco	14 (38.9%)
Marijuana	12 (33.3%)
Pentazocin	6 (16.7%)
Alcohol	7 (19.4%)
Codeine	2 (5.6%)
Cocaine	2 (5.6%)
Heroin	1 (2.8%)
Buska	2 (5.6%)
Others	9(24.9%)

The study revealed that only farming occupation was a determinant of drug abuse among youths in our study area. Other socio-demographic variables such as family type, educational level, paternal and maternal education, monthly income were not determinants of drug abuse. This is similar to findings in Rwanda were the level of education of the head of household, and the socio economic category of youth households were not associated with drug abuse ($p > 0.15$). [25] On the contrary, type of family was associated with drug abuse in Rwanda: youth without parents were more likely to use drugs than those with one or both parents ($p < 0.001$).[25]

A possible explanation as to why farming occupation was a determinant of drug abuse among youths is that farming, especially non mechanized, is associated with low back pains (LBP).[26] In rural settings, farmers complain of LBP than other dwellers.[26] Young Farmers therefore, take drugs, such as Tramadol, to relive the pains. Another possible explanation is from an economic perspective, where drugs are taken to enhance farming activities.

For effective control of drug abuse in the study area, sustained health education on drug abuse and its effects is recommended. This can be achieved through health talks in the community and through radio programmes. Farming youths can be reached for the health education through their association.

Conclusion

The result indicated that youth in the study area abuse drugs such Tramadol and Marijuana and farming occupation was a determinant of drug abuse. For effective control of drug abuse in the study area, there is need for health education campaigns on harmful effects of drug abuse.

Conflict of Interest. The authors declare that they have no competing interests.

Table 3: Associations between socio-demographic characteristics and drug abuse

Variable	Drug abuse (%)			χ^2	df	p-value	Fisher exact p
	Yes	No	Total				
	n = 36	n = 323	n = 359				
Type of family							
Nuclear	22 (9.4)	212 (90.6)	234	9.350	3	0.025	0.134
Extended	13 (10.7)	109 (89.3)	122				
Single parent	1 (100)	0 (0)	1				
Sibling household	0 (0)	2 (100)	2				
Household size							
= 5	9 (11.0)	73 (89.0)	82	0.275	3	0.965	
6 – 10	12 (10.1)	107 (89.9)	119				
11 – 15	9 (8.8)	93 (91.2)	102				
> 15	6 (10.7)	50 (89.3)	56				
Education							
None	6 (11.3)	147 (88.7)	53	5.711	4	0.222	0.186
Qur'anic	16 (7.8)	188 (92.2)	204				
Informal	1 (50.0)	1 (50.0)	2				
Primary	10 (12.8)	68 (87.2)	78				
Secondary	3 (73.6)	19 (86.4)	22				
Father's education							
None	2 (8.5)	22 (91.7)	24	1.528	4	0.822	0.729
Qur'anic	26 (9.5)	249 (90.5)	275				
Primary	5 (13.9)	31 (86.1)	36				
Secondary	3 (14.3)	18 (85.7)	21				
Tertiary	0 (0)	3 (100)	3				
Mother's education							
None	5 (10.9)	41 (89.1)	46	1.947	5	0.856	0.731
Qur'anic	28 (9.7)	261 (90.3)	289				
Informal	0 (0)	1 (100)	1				
Primary	3 (17.6)	14 (82.4)	17				
Secondary	0 (0)	5 (100)	5				
Tertiary	0 (0)	1 (100)	1				
Occupation							
None	7 (3.9)	171 (96.1)	178	28.969	4	0.001	< 0.001*
Farming	21 (24.1)	66 (75.9)	87				
Petty trading	1 (2.9)	33 (97.1)	34				
Student	4 (10.0)	36 (90.0)	40				
Others	3 (15.0)	17 (85.0)	20				
Monthly income (?)							
< 1,000	15 (6.6)	213 (93.4)	228	10.705	2	0.005*	
1,000 – 5,000	13 (13.5)	83 (86.5)	96				
> 5,000	8 (22.9)	27 (77.1)	35				

Table 4: Simple logistic regression of drug abuse on the associated factors (n = 36)

Variable	b	SE	Wald statistic	Odds ratio	95% CI		p-value
					Lower	Upper	
Occupation (Farming)	2.05	0.46	19.88	7.77	3.16	19.14	0.001*
Occupation (Petty trading)	-0.30	1.09	0.08	0.74	0.09	6.22	0.782
Occupation (Student	1.00	0.65	2.34	2.71	0.76	9.76	0.126
Occupation (Others)	1.46	0.74	3.95	4.31	1.02	18.22	0.047*
Monthly income group	0.73	0.23	9.91	2.08	1.32	3.27	0.002*

*Statistically significant; b = regression coefficient; SE = standard error

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References

1. Anderson NLR. Perceptions about substance use among male adolescents in juvenile detention. West J Nurs Res. 1999;21:652-72.

2. Melissa C. S. 2010. Drug Abuse and Addiction, Prescription Drug Abuse, an Alarming Trend. Available from: http://www.medicine.com .Accessed

Table 5: Multiple logistic regression of drug abuse on the associated factors (n = 36)

Variable	b	SE	Wald statistic	Odds ratio	95% CI		p-value
					Lower	Upper	
Occupation (Farming)	1.88	0.54	11.90	6.52	2.25	18.91	0.001
Occupation (Petty trading)	-0.46	1.12	0.17	0.63	0.07	5.64	0.679
Occupation (Student)	0.98	0.65	2.24	2.66	0.74	9.60	0.134
Occupation (Others)	1.22	0.84	2.11	3.38	0.65	17.42	0.146
Monthly income group (1,2,3)	0.19	0.31	0.38	1.21	0.66	2.22	0.536
Constant	-3.41	0.51	43.83				

*Statistically significant; b = regression coefficient; SE = standard error

19 October 2016
3. World Drug Report. United Nations Office on Drugs and Crime (UNODC).Executive Summary, United Nations Publication. 2005
4. Awake. Drug abuse, there is a solution. Benin City: Watchtower Bible and Tract Society.2001; 82 (13) July 8: 3–11.
5. WHO, ATLAS on Substance Use, Resources for the Prevention and Treatment of Substance Use Disorders, World Health Organization. 2010. Geneva, Switzerland,
6. DACA. Hand Book on Substances of Abuse for Trainers. Addis Ababa: Commercial Printing Enterprise, 2005. pp 7-36.
7. Makanjuola A, Abiodun O, and Sajo S. Alcohol and psychoactive substance use among medical students of the University of Ilorin, Nigeria. European Scientific Journa.2014; 10(8): 69–83.
8 Steyl T and Phillips J. Actual and perceived substance use of health science students at a university in the Western Cape, South Africa. African Health Sciences.2011; 11(3): 329–333.
9. Babalola E, Ogunwale A, and Akinhanmi A. Pattern of psychoactive substance use among university students in South- Western Nigeria. Journal of Behavioral Health, 2013; 2(4):334–342.
10. Olfson M, Shea S, and Feder A. Prevalence of anxiety, depression and substance use disorders in an urban general medicine practice. Archives of Family Medicine.2009; 9(9):876–883,
11. Moronkola OA. Essays on issues in health. 2003;Ibadan, Royal People (Nigeria) Limited .
12. Aronson, KR.; Feinberg, ME.; Kozlowski, L. Alcohol, Tobacco, and Other Drug Use Among Youth in Rural Pennsylvania.2009. Harrisburg, PA: Center for Rural Pennsylvania.
13. National Center on Addiction and Substance Abuse at Columbia University. No Place to Hide: Substance Abuse in Mid-size Cities and Rural America.2000. New York.
14. Lambert D, Gale JA, Hartley D. Substance abuse by youth and young adults in rural America. J Rural Health. 2008; 24(3):221–228.
15. Gfroerer JC, Larson SL, Colliver JD. Drug use patterns and trends in rural communities. Journal of Rural Health. 2007; 23:10–15.
16. Shazzad M.N, Abdal S.J, Majumder M.S.M, Sohel J.U.A, Ali S.M.M, Ahmed S. Drug Addiction in Bangladesh and its Effect . Medicine Today; 2013; 25 (02): 84- 89.
17. Odejide A.O and Sanda A.O, Observation on drug abuse in Western Nigeria, African Journal of Psychology. 1997; 15(80): 113-128.
18. Onajole AT and GbangbalaA.O. Sociodermographic characteristics of drug misuse in a polytechnic in Lagos, Nigeria, Nigeria Journal of Health and Biomedical Sciences. 2004; 3(1): 40-43.
19. Akannam, T. North-West Rank Highest in Drug Addiction. Nigerian Drug Statistics by Zone. Accessed November 5, 2016. Available from http://www.nairaland.com/nigerian-drug-statistics-zone
20. Department of Community Medicine, Ahmadu Bello University, Zaria, Nigeria. Year 2016 Community Diagnosis Conduct Census for Kwaba Village, D/Abba District, Zaria Local Government Area, Kaduna State, Nigeria.
21.Condron. P. Tramadol Abuse. Availabe from :www.drugabuse.com . Accessed on 26 November 2016
22. Fatoye F.O and Morakinyo O. Substance use amongst senior secondary school students in urban communities in South Western Nigeria, East African Medical Journal.2001; 79(6): 299-305.
23. Atoyebi O.A, Atoyebi O.E. Pattern of Substance Abuse among Senior Secondary School Students in a Southwestern Nigerian City. International Review of Social Sciences and Humanities.2013; 4(2): 54-65.
24. Fiki. A. Globalization and Drug and Alcohol Use in Rural Communities in Nigeria: A Case Study. The Journal of Sociology & Social Welfare: 2007; 34(2), Article 4: 37-56
25. Kanyoni M, Gishoma D and Ndahindwa V. Prevalence of psychoactive substance use among youth in Rwanda. BMC Research Notes. 2015; 8: 190.
26. Holmberg S, Thelin A, Stiernström EL, Svärdsudd K. Low back pain comorbidity among male farmers and rural referents: a population-based study. Annals of Agricultural and Environmental Medicine. 2005; 12(2):261-8

Practice And Perceived Effectiveness Of Non-Pharmacological Strategies Used For Pain Management Among Nurses In University Of Maiduguri Teaching Hospital

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Abstract

Pain is one of the major leading symptoms of diseases and the most common cause of hospital visitation and hospitalization. Studies have shown that ineffective pain management has a deleterious effect on both patient and the care giver especially the nurse. This study determines the practice and perceived effect of non-pharmacological strategies used for pain management among nurses in University of Maiduguri Teaching Hospital (UMTH). A multistage sampling technique was used to select 150 out of 360 nurses working in various wards and units of UMTH. A semi-structured questionnaire was used to obtain data from the respondents. The result of this study revealed that respondent's years of working experience played a greater role in the practice of non-pharmacological strategies. While, almost all (94%) of the respondents have knowledge about non-pharmacological strategies to pain management and almost two third (68%) of respondents claimed to have been applying both pharmacological and non-pharmacological strategies to pain management at one time and the other. Base on the findings of this study, it was concluded that, non-pharmacological strategies to pain management has not received an appreciable attention among nurses in UMTH. It was recommended that non pharmacological strategies should be adopted alongside the conventional pharmacological approach to pain management, and nurses should be encouraged to use non-pharmacological strategies to reduce over dependence on drugs and avoid addiction among patients on pain management.

Keywords: Pain Management, Non pharmacological strategy, Nurses, University of Maiduguri teaching hospital.

Introduction

Pain is an unpleasant sensation of hurt referred to the body that serves as an alert to potential or actual damage to the body. This damage can arise from injury as well as disease, after the pain message is received and interpreted; the expression varies from individual to individual and culture to culture[1.] Studies have viewed Pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage[3].

In whatever ways and manners pain is perceived, pain has been the main reason why client visit health institutions and seek for health attention. Whatever definition given as to what pain is, pain is viewed in five dimensional angles, that is, affective, behavioral cognitive, sensory and physiologic dimensions.[4] This implies that affective pain management is a sum of multidimensional strategy of which pharmacotherapy is just a part and many others are non-pharmacologic strategies. This therefore, shows that pain managers especially nurses are duty bound to have adequate knowledge of most non-pharmacologic strategies for relieving pain as well as methods of application. Pain do present itself in varying degree and intensity. Acute pain is intense and generally of relatively short duration, Chronic Pain develops merely slowly and last much longer than acute pain. Phantom Pain is pain felt in a body part that is no longer present, such as an amputated foot, while, Radiating Pain is perceived at the source and extends to surrounding or nearby tissues[4,2,5].

The American Society Panel on the study of persistent pain identified pain as two main types thus; Acute or Rapidly conducted pain: That is, sharp, well-localize pricking or knife-life pain and chronically or Slowly propagated pain described as diffuse, burning or aching pain.[5,6] Studies on persistent pain describe various factors like depression, anxiety, decrease socialization, and sleep disturbances and impaired mobility as often associated with pain syndrome.[7] The Joint Commission on Acceleration of Healthcare Organization (JCAHO) standards of pain looked into the impact of pain on the victim as a serious problem that inhibits daily functioning and most times under-treated for a variety of reasons.[8]

Nurse's knowledge and attitudes towards pain management greatly affects patient's care for pain. Studies on the nurses' knowledge and attitudes of pain management revealed that lack of pain management knowledge lead to inadequate management and treatment of pain[9]. Some of these deficits included problems in assessment, pharmacological management with opioids, and knowledge of how to use non

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pharmacological pain interventions. Non-pharmacological pain therapies and techniques have great potential to relieve client's pain and can be used with or without pharmacological methods.[10] Studies have shown that for effective pain management, it requires adequate and effective utilization of non-pharmacologic strategies to pain management by the care giver.[11,12] Although, non-pharmacological strategies to pain management do not replace pharmacological methods of pain management but they can be used in combination with pharmacological pain practices to enhance the patient's relief of pain.

Studies revealed that most of the nurses have over relied on pharmacological aspect of pain management which is though, effective but somehow costly and most times prolong usage led to patient over dependency[13] A survey on complementary or alternative therapies to pain management, among nurses showed that seventy-nine percent of nurses perceived their professional education in the area of complementary or alternative therapies to be fair or poor. The study however, recommended that complementary and alternative therapies be included in basic baccalaureate nursing education curriculum[14]. This implies that nurse's knowledge about various strategies of non-pharmacological strategy to pain management become very crucial to the care of their clients.

Non-pharmacological pain management strategy are often neglected especially in tertiary health institution like University of Maiduguri Teaching Hospitals, enough attention are not given to use of non-pharmacological strategies on patient with pain despite its cost-effectiveness to patient physiological and economic status. There are many benefits derived from using non-pharmacological methods in relieving pain, hence, the barriers keeping patients, nurses, and physicians from using them need to be explored especially Nurse's attitudes on non-pharmacological pain management therapies. For this reason, this study was aimed to determine practice and perceived effect of non-pharmacological strategies used for pain management among nurses in University of Maiduguri Teaching Hospital (UMTH).

Materials and Methods

This study is a descriptive research using exploratory design to determine the practice and perceived effect of non-pharmacological strategies used for pain management among nurses in University of Maiduguri Teaching Hospital (UMTH). The target population comprises of 360 nurses in the various wards/units of the University of Maiduguri Teaching Hospital from which 150 nurses were drawn for the study.

The instrument used was a 15 items researcher's self-designed questionnaire administered on 150 respondents. The questionnaire comprises of information on demographic characteristics, information on the knowledge, practice and effect of non-pharmacological strategies to pain management of the patient as well as information on challenges in the utilization of non-pharmacological strategy to pain management. The instrument was pretested at Umaru Shehu Ultra-Modern Hospital Maiduguri for its validity and reliability.

A stratified random sampling technique was used to select wards and unit in UMTH and purposive sampling method was used to select nurses from various wards and units of the UMTH based stratum. Data Analysis was based on 145 fully completed questionnaires using descriptive statistic of frequency count and percentages presented on tables.

Ethical approval was obtained for the conduct of the study from the Ethical Research Committee of the University of Maiduguri Teaching Hospital. Consent to participate in the study was also sought from the respondents in various wards/units of Maiduguri Teaching Hospital.

Result

Out of 150 nurses enrolled for this study, 145 nurses fully completed the questionnaire given a response rate of 96%. Table 1, revealed demographic characteristics and working experience of the nurses, their mean age was 35year with majority of them falling within the age range of 30-39 years, indicating that the bulk of nursing staff in University of Maiduguri Teaching Hospital were young adults. The gender distribution of respondents is closely related in percentage with Female been 80(55.2%) and Males (44.8%) respectively. The larger proportion of the respondents (42.1%) had put in 5-10 years of working experience as against (9.7%) that had longer years of working experience. Table 2, presents the majority, 114(78.6%) of respondents that were aware of non-pharmacologic strategies (NPS) for pain management, while 51(44%) of the have knowledge of various forms of NPS, and were able to identify various forms of non-pharmacological strategies to pain management. Table 2 further shows majority (86.2%) of respondents knew about regular management of patient with pain in their respective wards/units, but very few (24.2%) of them recommended non pharmacology strategy for pain management. A little above half (55.8%) of respondents got their information about Non pharmacological strategies through formal education in Schools of Nursing and others through workshop/seminars and literatures respectively.

Table 3 revealed higher number (34.4%) of respondents administered pharmacological strategy compare to 27.6% who used non pharmacological strategy for pain management. Out of 27.6% who used non pharmacological strategy, 32.5% of them use all

Table 1: Respondents Demographic variables (N=145)

Demographic characteristics	Frequency	Percentage (%)
Age		
20- 29	45	16.7
30-39	50	33.3
40-49	35	20
50 and above	15	15
Sex		
Male	65	44.8
Female	80	55.2
Years in service		
5-10	61	42.1
11-16	40	27.6
17-22	30	20.7
23 and above	14	9.7

Table 2: Respondent Knowledge about Non Pharmacological Strategies;

	Yes (%)	No (%)
Do you know about non pharmacological strategies n= 145	114(78.6%)	31(21.4%)
Do you know about any form of non-pharmacological Pain management? n=114	51(44.8)	63(55.2%)
Do you know about regular pain management of patient in your ward?	98(86.2%)	16(13.8%)
Are non-pharmacological strategy to pain management recommended in your ward?	28(24.2%)	86(75.8%)

Sources of information about non- pharmacological use for pain management	**Freq.**	**percentage**
Literatures, journals/magazine	24	16.5
In School of nursing	81	55.8
Through workshop/seminars	40	27.7

Table 3: Type and Practice of pain management strategies in various wards /units of UITH

Types of strategy used on pain management by nurses	Freq.	%
Pharmacologic	50	34.4
Non-pharmacologic	40	27.6
Both pharm & Non-Pharm	55	38.0
Total	**145**	**100**
Methods of non-pharmacological strategy used in the management of pain UITH. (n = 40)		
Distraction	08	20
Relaxation	10	25
Hypnosis	09	22.5
Hot and cold application/ nursing procedures	13	32.5
Total	**40**	**100**

Table 4 : Perceived satisfaction and Effectiveness of Non -Pharmacological strategies to Pain Management

Respondents	**Frequency**	**Percentage (%)**
Satisfactory	97	66.9
Not Satisfactory	48	33.1
Total	**145**	**100**
The effectiveness of non-pharmacological strategies use on pain management (n =97)		
Effective	45	46.4
Very effective	25	25.8
Not-effective	15	15.5
Poorly effective	12	12.4
Total	**97**	**100**
Challenges faced while using non-pharmacological strategy on patient. (n= 40)		
Lack of encouragement from the institution	53	54.6
Lack of facilities to use	30	30.9
Lack of interest for its use	14	14.5
Total	**97**	**100**

forms of routine nursing procedure as non-pharmacological strategies to pain, while others use distraction, relaxation and hypnosis as various methods for pain management.

Table 4 revealed the perceived effectiveness of non-pharmacological strategy used for pain management, majority (66.9%) of nurses observed that patients responded positively by demonstrating satisfactory responses to non-pharmacological strategy used. Out of these 66.9 percent of nurses, 46.4% constituting majority agreed that non pharmacological strategies are effective, against 27% of nurses who claimed on the contrary. On the challenges faced while using NPS on patient pain management, almost all (92.5%) of the nurses agreed that there are challenges such as lack of institutional or nurses interest (54.6%) and non-availabilities of facilities to use (30.9%) respectively in UMTH.

Discussion

This study determines the practice and perceived effect of non-pharmacological strategies used for pain management among Nurses in University of Maiduguri Teaching Hospital (UMTH). The Nurses in this study with mean age of 35years constituted more than half of the respondents which showed that this category of nurses were the major work force of the University of Maiduguri Teaching Hospital (UMTH), dominated by females in various wards and units of the hospital. The bulk of nurses who had put in 5-10 years

of service constituted the larger proportion of work force compared with others with longer years of working experience. The shorter length of service of nurses may have probably influenced negatively the use of non-pharmacological strategy in various wards, this opposed the study on knowledge of specialist nurses and general nurse about non pharmacological strategies in Afghanistan, where it was observed that nurses working experience might not affect their knowledge about the use of non-pharmacological strategies but additional educational qualification also played a significant role[5].

The knowledge of non-pharmacological strategies to pain management among nurses was averagely high evidence by their position on the significance of non-pharmacological strategies (NPS) used in pain management, This finding is similar to the study on the Nurses' knowledge and attitudes, and pain management practice of post-operative children in Bangladesh. [18] Although, nurses' level of awareness about NPS was not inconformity with standard recommended by Joint Commission on Acceleration of healthcare Organization (JCAHO) for pain management.[8] This finding implied that much is still needed in practice of NPS in health institutions particularly UMTH to comply with the standard recommended by JCAHO for pain management.

The nurses' main sources of information about non pharmacological management of pain were through formal nursing training programme and print media which by implication indicated that most nurses do not read literatures or journals to improve their knowledge about non-pharmacological management of pain since after graduation from school. This may probably account for the nurses' low level of knowledge and use of non-pharmacological strategies on their patient. These lukewarm attitudes toward reading for information about NPS agreed with the study that associated lack of knowledge of pain management and assessment by nurses and physicians to limited educational preparation in pain and symptom management during training.[10] Other factors responsible for non-utilization of NPS was reported by studies as lack of staff interest on the use of non-pharmacological strategies (NPS), the fear of been reprimand by the management of the hospital as well as non-institutionalized use of non-pharmacological strategy to pain management in the hospital contributed to low level use of non-pharmacological strategy in most hospitals.[10,16,17]

The non-pharmacological methods mainly used in the management of pain among nurses in UMTH was routine nursing procedures such as changing patient position, losing tight appliances and application of heat or cold compresses, other measure such as distraction, relaxation and hypnosis were also in use for the management of pain with proven effectiveness on patients. These methods identified were in agreement with methods reported by other studies. [4, 13,14,15,16]. On the effectiveness of non-pharmacological strategies to pain management, almost half of the respondents agreed that NPS are effective, in varying degrees. Relaxation and music was also found to be one of the most effective means of relieving pain in a patient.[24] A large number of nurses in UMTH opined that their clients responded positively to non-pharmacological strategy to pain management as reported by other studies on various strategies to pain management. [6,14,16]

Majority of nurses in UMTH recommended the use of both drugs and non-pharmacological strategies combined in the management of pain on admission which in their views provided effective means of pain management than when used separately. This finding corroborated with the recommendation of other studies and reports.[2,6] There are obstacles Nurses faced in the implementation of NPS in UMTH, these challenges were identified to be lack of institutional interest and non-availabilities of facilities to use in UMTH and this invariably discourage them from using NPS to meet the demand of the patient in pain.

As health practitioners, nurses spend most of their working hours with the patients than other health workers and provide immediate care to patients, they have the opportunity of interacting with patient and identify patient in distress resulting from pain. Nurses have a tremendous role to play in the care of patient in pain. Exploring non pharmacological strategies to pain management provide opportunities for nurses to know various NPS available to alleviate patient suffering resulting from pain and to reduce unnecessary expenses incurred by patient during the course of treatment. While the nurse needs to wait for the doctor to prescribe analgesic, the nurse should employ non-pharmacological management of pain to compliment the prescribed analgesic in relieving patients' pain before further intervention.

Nurses understanding of various forms and significance of non-pharmacological strategies will help to make the patient relaxed, fill comfortable and further provide opportunities to nurses to alternate and complement the use of prescribed medications with non-pharmacological strategies. Many nursing skills are aimed at relieving patient pain and improve patient comfort, all these will be put into practice to relieve patient of discomfort resulting from pain and improve quality of nursing care.

Conclusion

In conclusion base on the findings of this study, it is clear that awareness of nurses about non pharmacological strategies does not reflect its use probably due to their low knowledge level about the significance and effectiveness of these strategies.

Although, this study provides a broad base knowledge necessary for advancement in the diagnosis, treatment and prevention of pain resulting from many diseases, there are still challenges of acceptance of non-pharmacological use in many of the health institutions in Nigeria particularly in UMTH. Nurses' inabilities to adopt non pharmacological strategies because it is assumed to be time and energy consuming as well as negligence of its application are some of the difficulties to non-pharmacological strategies use. The patients stand to gain more, cut-cost and be free from addiction resulting from the use of pharmacological strategies. Hence, both nurses and the management of hospitals need to encourage the use of non-pharmacological strategies in our various health institutions.

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References

1.Barrett J. Pain management; Available at hp://www.health A to Z/eney/pain- management.html, 2003. Retrieved January17, 2017.

2. Lynch M. Pain as the fifth vital sign. *Journal of Intravenous Nursing,* (2001). 24, 85-93.

3.Yates P, Dewar A, Edwards H, Fentiman B, Najman J, Nash R, Richardson V & Fraser J. The prevalence and perception of pain amongst hospital in-patients, 1998.

4. Bird J. Assessing Pain in older people. Nursing standard, 2005; 19(19) , 45-5.4

5. Lunch M. Pain as the fifth vital signs. Journal of International Nursing 2001; 24. 85-93.

6.Wells N, Pasero C, McCafery M. improving the quality of care through Pain Assessment and Management strategies. Access at http.//www. google.org and Retrieved on May 23rd , 2017.

7.Chou R, Gordon DB, de Leon-Casasola OA, Rosenberg JM, Bickler S, e tal. Management of postoperative pain: A clinical Practice Guide from American Pain Society, American Society Regional Anesthesia and pain. Retrieved from www. google.org on 22nd May, 2017.

8.NCS. Pearson, Inc. *New JCAHO standards require pain assessment protocol,* 2003. Retrieved November 21st, 2016, from http://www. Pearson assessments .com/bridging gap/spring2001pl.htm

9. Manworren R. Pediatric nurses' knowledge and attitudes survey regarding pain. *Pediatric Nursing,* 2000. 26, 610-614.

10. Bicek Erin. "Nurses' Attitudes, Knowledge, and Use of Non pharmacological Pain Management Techniques and Therapies" (2004). *Honors Projects.* Paper available on http://digitalcommons.iwu.edu /nursing_honproj/12

11. Babara AG.A multidisciplinary strategy to non-pharmacological pain management. Journal of American Osteopathic association. 2002. Vol. 102: 9. 1-5.

12. Sharone R, Anderson B, Victoria C. & Tsao JW. Phantom limb pain; theories and therapies; 2010. 16 (5), 277-286 available in www.journals. lww.com/ phantom _limb-theories-and-therapies.1.aspx. Accessed on March 2016.

13. Brolinson P, Price J, Ditmyer M, & Reis D. Nurses' perceptions of complementary and alternative medical therapies. *Journal ofCommunity Health,* 2001. 26(3), 175-189.

14. Sazzad Hossain, Md. Wantanee Wiroonpanich2, Rachtawon orapiriyakul nurses' Knowledge and Attitudes, and Pain Management; Practice of Post-Operative Children in Bangladesh; *the 2nd International Conference on Humanities and Social Sciences. Faculty of Liberal Arts, Prince of Songkla University. Health – Development_010*

15. Wilson B. Journal of Clinical Nursing 16, 1012–1020. 2007. Nurses' knowledge of pain. Retrieved on 13th Nov. 2016, from www. Google.org.

16. Von Roenn. Are we the barrier? *Journal of Clinical Oncology*. 200;19,4273-4274.

17. Cole B & Brunk Q. Holistic interventions for acute pain episodes: An integrative review. *Journal of Holistic Nursing,* 1999. 17,384-396.

Determinants Of Missed Opportunities For Immunization Among Under-five Children In Ilorin Metropolis

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Abstract

Missed opportunities in immunization had been a global public health obstacle to the attainment of the Millennium Development Goal of reducing child mortality by two-thirds by 2015. Studies have also shown that missed opportunities in both routine and supplementary immunization contribute significantly to the low immunization coverage rates in many parts of Nigeria. This study set out to determine the reasons of missed opportunities in routine immunization among under-five year old children in Ilorin metropolis.

This descriptive cross sectional survey was carried out in the second quarter of 2014 among under-five year old children in Ilorin metropolis. A pretested, semi-structured, interviewer-administered questionnaire was used to recruit 500 respondents into the study using multistage sampling method. Data was analyzed using the Statistical Package for Social Sciences (SPSS) version 16.0. Frequency tables and simple percentages were used to present the descriptive statistics generated. Cross tabulation of important variables was also done. Chi-square test was used to determine the statistical significance of differences in variables observed. The level of statistical significance was predetermined at p-value of less than 0.05 at 95% confidence interval.

Majority of the (95.2%) of respondents were aware of immunization even though, 59.0% of them had actual knowledge of it. The prevalence of missed opportunities was 24.4%. Yellow fever and measles vaccines often missed compared to others. Factors responsible for the missed opportunities included the attitude of the health worker, prolonged time of waiting to receive vaccine, immunization clashing with other schedules and transportation problem. Respondents' level of knowledge on immunization and educational background were significantly associated with the prevalence of missed opportunities.

Missed opportunities in immunization are still widespread in the study area. Female education and women empowerment should be given more attention and priority.

Key words: immunization, Ilorin, missed opportunity.

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Introduction

Immunization is said to be the most successful and cost-effective public health intervention of the 20th century in terms of number of deaths averted per year. In the developing world, it does not only prevent about 3 million child deaths per year but also has the potential to avert additional 2 million deaths if immunization programs are expanded and fully implemented. Childhood immunization has been established to indirectly prevent infectious diseases even in adults through herd immunity. Immunization could be routine or supplemental (immunization campaign); routine immunization refers to the nationally scheduled regular administration of vaccine dosages to infants at specified ages. Children are usually taken to the health facility by their parents or care givers to receive age-appropriate doses of antigens. In most developing countries, this is only done on specific days of the week to reduce vaccine wastage since the vaccines are supplied in multi-dose vials to reduce cost. The main aim of routine immunization is to deliver a complete number of doses of potent vaccines in a timely, safe and effective way to all children and women[1], ultimately inducing immunity against targeted diseases[2] .The result is to be a drastic reduction in the burden of childhood vaccine preventable diseases[3].

On the other hand, supplemental immunization - also known as immunization campaign - is organized occasionally by governments for the purposes of catch-up immunization, disease eradication/elimination and to avert epidemics. Immunization campaigns became more frequent in the last two decades when WHO launched the polio eradication program. Immunization campaigns against polio and measles have yielded tremendous results globally and in Nigeria. This has reduced global polio cases from 350,000 in 1988 to 1643 in 2009 (>99% reduction), and measles from 871,000 in 1999 to 454,000 in 2004 (48% reduction).[4] Some mothers/fathers are known to accept routine immunization but reject campaigns while others reject both due to ignorance which is one of the major factors

that cause missed opportunities.[5] Despite the success of expanded programs on immunization (EPI), such as eradication of small pox[2,4] and global lowering of incidence of polio by 99%,[7] many vaccine-preventable diseases remain prevalent especially in developing countries.[2]

Vaccine preventable diseases are known to account for approximately 22% of child deaths in Nigeria, amounting to over 200,000 deaths per year. However, in Nigeria, as in some other third world countries, immunization coverage is low.[6] Nigeria recorded an abysmal national routine immunization coverage of 12% in 2003[7], and 36% in 2006.[8] In 2009, Nigeria accounted for about 3.5 million (14%) of the 23.2 million children worldwide who did not receive 3 doses of DPT vaccine during the first year of life.[4] This not only impedes disease control, but may consequently diminish public support for vaccination, which may lead to a resurgence of vaccine preventable diseases.[3]

In Nigeria, universal childhood routine immunization is provided free of charge as in some countries of the world. This situation of the low immunization coverage has been attributed to missed opportunity which is defined as any contact with health service that does not result in an eligible child or woman receiving the needed vaccine. Missed opportunity is a global public health obstacle to the achievement of the targets of Expanded Program on Immunization and in the long run achievement of Millennium Development Goals (MDG).[8] For example, routine immunization is a key strategy in the polio eradication program, both in Nigeria and globally.[7] Previous studies also established that missed opportunities occur in both routine and supplementary immunization in every part of Nigeria which explains the low coverage in majority of states in the country. For Nigeria to achieve the millennium development goal of reducing child mortality by two-thirds by 2015, routine immunization coverage must be optimal which implies that missed opportunities need to be combatted.[7]

Furthermore, quite a number of studies have identified certain factors associated with missed opportunities in immunization which include failure to administer vaccines simultaneously; false contraindications to immunization; negative health worker attitudes; logistical problems; and refusal by the patient or family. The importance of some of these factors as they influence the occurrence of missed opportunity was measured as the overall prevalence of missed opportunities due to the specific reason. It was proposed that there are potential gains in coverage that could be achieved if that specific missed opportunity was eliminated.[9,10]

This study was set out to assess these determinants of missed opportunities with a view to explaining how they influence and contribute to the prevalence of missed opportunities and propose strategies to combat such determinants which will immensely contribute to the improvement in immunization coverage.

Methodology

Ilorin, the capital city of Kwara State was created in 1967. It is located at the geographical and cultural confluence of the North and South of Nigeria (in the North Central geopolitical zone) with a landmass of 32,500km2. It hosts a projected population of 854,737 based on the 2006 National Census and annual growth rate of 3.2%.

Ilorin is made up of three Local Government Areas (LGAs), namely: Ilorin East LGA, Ilorin West LGA and Ilorin South LGA; with their headquarters at Oke-Oyi, Wara and Fufu respectively. Ilorin East and South LGAs have 11 Wards each, while Ilorin West LGA has 12 Wards. The indigenous people are mainly Yoruba and Hausa-Fulani. The major religions are Islam and Christianity. The occupations of the residents in Ilorin include civil service, commercial driving, trading, farming, artisans, organized private sector and weaving of traditional attires. The town is popularly known for processing of soft cheese called "wara".

The study was a descriptive cross sectional survey carried out in the second quarter of 2014. The subjects for this study were the under-five children in Ilorin metropolis. This population group cannot respond themselves hence their mothers or guardian or care-giver who is in position to give an accurate health details were interviewed.

The sample size was estimated using the Fisher's formular[11] using 33.4% as the prevalence of missed opportunities in childhood immunization in a previous study done in Nigeria[12]. A minimum sample size of 342 was obtained but 500 respondents were recruited into the study. Multistage sampling was used in selecting respondents for the study with proportionate allocation done at each stage. A semi-structured interviewer-administered questionnaire was used to collect information from the subjects. The questionnaire contained relevant information on determinants of missed opportunities. The research instrument was pre-tested in Afon in Asa LGA, a town located about 15 kilometers from Ilorin. This was to ensure validity and reliability of the instrument. Respondents were anonymous and informed consent was obtained from respondents. Research assistants (4) were trained for the purpose of data collection. All the open-ended portions of the questionnaire were reviewed; codes were also developed for all open-ended responses. Data entry and management was carried out using the Statistical Package for Sciences (SPSS) version 16.0. Frequency tables and simple percentages were used to present the descriptive statistics generated. Cross tabulation of important

variables was also done. Chi-square test was used to determine the statistical significance of differences in variables observed. The level of statistical significance was predetermined at p-value of less than 0.05 at 95% confidence interval.

Results

Majority (63.6%) of the respondents (care-givers) were of the age group 20-29 years. About two-thirds (63.0%) of the children in this study were aged 12 months. Three quarters of the households (75.2%) had only one under-five year old as household member. The Yoruba ethnic group was found to be predominant (71.2%). Islam (50.8%) and Christianity (47.7%) were the main religions practiced by respondents. Slightly more than one third (36.4%) of the respondents attained tertiary education while 10.8% had no formal education, (table 1a).

The respondents were also found to be predominantly government employee s (37.2%) and those that engage in trading as the major source of income (38.2%). The place of delivery of child has been implicated to influence the prevalence of missed opportunities and acceptance of immunization. The mothers that delivered their children at health centers where immunization services can be assessed are postulated to be likely to accept and complete their immunization. Most of the mothers in this study delivered their children at the government health center while those that delivered their children at home and religious centers accounted for 12.8% and 5.2% of the respondents (table 1b).

A high proportion (95.2%) of respondents was aware of immunization but this proportion dropped to 59.0% when actual knowledge was assessed. The prevalence of missed opportunities was found to be 24.4% while yellow fever and measles were the vaccines more frequently missed compared to other vaccines. Among several factors implicated to be responsible for the missed opportunities, immunization clashing with other schedules (table2), attitude of the health worker (table 2), prolonged time of waiting to receive vaccine (table 2) and transportation problem were found to be relatively prevalent (as more than 34% of respondents alluded to this).

Discussion

Immunization is not a new intervention and has become popular over the years. The level of awareness found in this study was 95.2%. The high level of awareness and knowledge of immunization observed in this study were in keeping with finding from similar studies.[13, 14, 15, 16, 17]

The media has always been an effective source of passing health messages to the populace. More than half of the respondents (50.8%) in this study heard about immunization through the media; and similar trend had been observed in previous studies.[13,11,18]

Regarding the determinants of knowledge on immunization, this study found that the age of the child, educational level of the mothers, occupation, place of child's delivery, availability of immunization card and immunization card being filled up-to-date will likely influence the level of knowledge of mothers on immunization. It is logical to suggest according to the findings of this study which is in consonance with previous studies[18] that mothers with older babies (12 months and above) have better knowledge on

Table 1a: socio-demographic characteristics of respondents

Variables	Frequency	Percentage (%)
Age of Respondents		
<=19	2	0.4
20-29	318	63.6
30-39	164	32.8
>=40	16	3.2
Age of Child		
<=12 Months	185	37.0
>12 Months	315	63.0
Marital Status		
Single	12	2.4
Married	482	96.4
Separated	4	0.8
Widowed	2	0.4
Religion		
Christianity	237	47.4
Islam	254	50.8
Traditional	7	1.4
Others	2	0.4

Table 1b: socio-demographic characteristics of respondents

Variables	Frequency	% frequency
Tribe		
Hausa	31	6.2
Igbo	43	8.6
Yoruba	356	71.2
Others	70	14.0
Tertiary	182	36.4
Number of under-five in the household		
1	376	75.2
>=2	124	24.8
Occupation		
Housewife	110	22.0
Government Employee	186	37.2
Business	191	38.2
Others	14	2.8
Household size		
<=4	218	43.6
<4	282	56.4
Place of Delivery		
Home	64	12.8
Government Health Centre	320	64.0
Private Health Centre	90	18.0
Religious Centre	26	5.2

Table 2 : Respondents' perceived factors responsible for missed opportunities

Factors (Multiple Response) N=116	Frequency	Percentage (%)
My Religion is against immunization	4	3.5
Immunization dates clash with my other schedules	36	31.0
I was busy during immunization time	18	15.5
Family or spouse is against immunization	4	3.5
Baby was sick during immunization	28	24.1
Vaccine will have adverse effect on my child	6	5.2
Health worker not available	2	1.7
The attitude of health worker is bad	34	29.3
Health worker's poor vaccination skill	18	15.5
Health worker too busy or not ready to vaccinate	16	13.8
Too long waiting	26	22.4
No health facility in the area	10	8.6
Lack of equipments	6	5.2
Required vaccine is out of stock	6	5.2
Vaccine Vial could not be opened due to few clients	8	6.9
No seats or shed at the health facility	4	3.5
Poor state of health facility makes immunization uncomfortable	10	8.6

immunization while those mothers with younger babies (less than 12 Months old) have poor knowledge on immunization. This study also suggests that when mothers have immunization card for their children and such card are filled up-to-date, they are likely to have better knowledge on immunization as the card provide and give better opportunity for getting more than just basic knowledge on immunization.

Missed opportunities were strongly implicated to be responsible for the relatively low level of coverage found in most of the African communities. The prevalence of missed opportunities found among respondents in this study was 24.4% and out of this proportion, the most frequently missed vaccines were yellow fever (77.6%) and measles (53.3%). This prevalence of missed opportunities conforms to previous findings which presented that most states in Nigeria had immunization coverage lower than 50%.[13] Such low coverage can be traced to the relatively higher than expected prevalence of missed opportunities in this part of the world. A Nigerian study found the prevalence of missed opportunities to be 17% and also emphasized that the immunization coverage in most states of the country was lower than 50%.[16]Another study that examined some states in Nigeria found that the prevalence of missed opportunities were 16.9%, 27.6% and 39.1% in three southern states of the country. These are relatively close to the prevalence found in this study and relatively lower compared to the 57.1% found in India.[11,17,19] Another study in Mozambique found a similar prevalence of missed opportunities among similar group of people with a prevalence of 25.7%[17] while another study found a relatively higher prevalence of 33.4%.[18] Missed opportunities are prevalent in most communities though the causes may differ from place to place. Also, a study in the US presented that the prevalence of missed opportunities was 27% and the most frequently missed vaccines were *Heamophilus Inflenzae*, measles, mumps and rubella accounting for a combined proportion of 25% of all missed vaccines.

Several factors have been implicated to predispose to missed opportunities. Immunization date and time clashing with other schedules (31.0%) and baby being sick at the time scheduled for immunization (24.1%) are the prominent factor that arose from the patient which was also found in previous studies reviewed especially those done in similar environment. Studies established that most mothers prefer to wait for a convenient time to take their babies to the health center for immunization giving rise to missed opportunities.[18,19] Other factors that were well identified under the patient factors are the religious and cultural belief (3.5%) and fear of side effects (5.2%). All these factors were presented in other studies to not only predispose to missed opportunities but also influence the acceptance of immunization. Some of the studies reviewed identified religious and cultural belief and fear of side effects as major factors that have long being combated as an obstacle to acceptance of immunization in sub-Saharan Africa.[11,18] Furthermore, a study also revealed that some mothers visit the health center at the wrong day which also contribute to the prevalence of missed opportunities.[17]

Also, factors that generate from health workers as revealed by previous studies include the attitude of health workers, time wasting by the health worker and the busy schedule of the health workers. A similar trend was also observed in this study. Particularly, it was established by a previous study that in the case whereby the health workers in such health facility are too busy, little preference is given to immunization. Mothers in such case either have to wait for a very long time or are asked to come back which affects their already laid down schedule.[11,17,18] The state of the health facilities also plays a significant role in the prevalence of missed opportunities in immunization according to previous studies. These finding were corroborated by this study.

The other factors inferred from this study as regards the health facility were lack of seats during waiting time (3.5%), poor state of the health facility (8.6%) and lack of vaccine (5.2%). The problem of the health facility or worker deciding not to open the vaccine vials due to the low number of children that are to receive the vaccine at that particular time has been identified and found to be common. In most cases, the vaccine vials are not opened to avoid wastage and mothers are rescheduled for another date or are asked to keep coming back until the day they are 'fortunate' to have enough number of children that will exhaust a vial. This problem is particularly prevalent in health facilities with lack or poor storage equipment. These underscores the poor financial and political support from the government in this part of the world.[11,18] It is also significant to note that a previous study identified that most of the occurrence of missed opportunities in immunization were due to problems in the immunization system and they are usually found at the Primary Health Care Centres.[18]

Accessibility factors cannot be ruled out in the list of factors that influence missed opportunities. Some of the respondents (9.5%) complained of health facility being too far as the reason for the missed opportunities while some others (13.9%) claimed that the reason was the total cost of accessing the immunization service. Transportation problem was indicated by 36.2% of the respondents.

Also, the level of knowledge of mothers was found to significantly influence the prevalence of missed opportunities. Among those who had experienced missed opportunities there were more mothers with low level of knowledge on immunization. This conforms with previous studies that also identified the level of knowledge on immunization as part of the major determinants of missed opportunities in immunization.[13,14,17,18]

Conclusion and Recommendation

Immunization has been one of the health intervention that has attain a significant level of effectiveness over years but there are still grounds to cover in order to achieve the set goal of making sure that all eligible children access and utilize immunization services on schedule. Missed opportunities have been one of the major challenges of attaining the goals and target of immunization and the schemes and program formed around it. Missed opportunities in immunization are still significantly prevalent in this part of the world and there is need to intensify strategies to combat them. Such strategies need be directed towards major determinants such as the level of knowledge of mothers on immunization and possession of up-to-date immunization cards by mothers who keep the records of immunization of the child.

Mothers should make immunization priority as it prevents diseases with damaging consequences on the child. Therefore, they are to ensure that their children access immunization services on schedule. Health workers should develop positive attitude to service delivery to patients. Government should improve the health infrastructures in order to make immunization services accessible to every mother regardless of the location. Female education and women empowerment should be given more attention and priority to ensure that their goals are achieved as this will indirectly reduce the prevalence of missed opportunities in immunization.

References

1. Zangeneh TT, Baracco G, Al- Tawfiq JA. Impact of conjugate pneumococcal vaccines on the changing epidemiology of pneumococcal infections. *Expert Rev Vaccines. 2011; 10: 345-353.*

2. Manjunath U, Pareek RP. Maternal Knowledge and Perception about the Routine Immunization Program – a Study in a Semi-urban Area in Rajasthan. Ind J Med Sci 2003; 57: 158-163.

3. Sanford RK. Vaccine Adverse Events: Separating Myth from Reality. *Am Fam Phy 2002; 66: 2110-2113.*

4. WHO/UNICEF Joint news release. Global measles deaths plunge by 48% over past six years. WHO Media center. Available at http://www.who.int/ mediacentre/news/releases/2006/pr11/ en/ accessed 21/02/2014.

5. Department For International Development-Transaid. Nigeria: programme for reviving routine immunization in four northern states, 2007-2011. Available at www.transaid.org/project/ nigeriaprogramme. Accessed 22/02/2014.

6. United States Agency for International Development. Country activities: Nigeria. Immunization basics. Available at http:// www.immunizationbasics.jsi.com/ Country Activities.htm#Nigeria . Accessed 22/02/2012.

7. World Health Organization. Expanded Programme on Immunization. Available at http://www.who.int/ immunization_delivery/en/. Accessed 22/02/2012.

8. Borus P.K. Missed opportunities and inappropriately given vaccines reduce immunisation coverage in facilities that serve slum areas of nairobi. East African Medical Journal, 2004;81(3) :124- 129

9. United States Agency for International Development. Immunization programs for healthy children. Immunization basics. Available at http:// www.immunizationbasics.jsi.com/. Accessed 20/02/2014.

10. Rainey J, Watkins M, Ryman T, Sandhu P, Bo A, Banerjee K. Reasons related to non-vaccination and under-vaccination of children in low and middle income countries: findings from a systematic review of

the published literature, 1999–2009. Vaccine 2011; 29:8215-21.

11. Abdulraheem, I. S., Onajole, A. T., Jimoh A. A. G., Oladipo, A. R. Reasons for incomplete vaccination and factors for missed opportunities among rural Nigerian children. J. Public Health Epidemiol., 2011; 3(4):194-203.

12. World Health Organization, United Nations Children Emergency Fund. Estimates of Immunization Coverage: the Federal Republic of Nigeria 2011. www.who.int/immunization.

13. Hutchins S.S., Jansen H.A.F.M.,. Robertson S.E, Evans P., & Kim-Farley R.J.. Studies of missed opportunities for immunization in developing and industrialized countries. Bulletin of the World Health Organisation, 1993; 71 (5):549-560.

14. Tagbo B N, Onwuasigwe C. Missed Immunization Opportunities among Children in Enugu. Nigerian Journal of Peadiatrics 2005; 32(4) 73-76

15. Lilian Chepkemoi Maina, Simon Karanja, Janeth Kombich. Immunization coverage and its determinants among children aged 12 - 23 months in a peri-urban area of Kenya. Pan African Medical Journal. 2013; 14:3 10.11604

16. Kunle-Olowu, A., Kunle-Olowu, E. O., Ugwu, M. E. Immunization coverage of antenatal and immunization clinics attendees in the Niger Delta University Teaching Hospital. J. Public Health Epidemiol., 2011; 3(3):90-93.

17. Ubajaka F.C.1, Ukegbu A.U.2*, Okafor N.J.1, Ejiofor O.3 The Prevalence of Missed Opportunities for Immunization among Children Utilizing Immunization Services In NNAMDI AZIKIWE University Teaching Hospital, NNEWI. Journal of Biology, Agriculture and Healthcare, 2012; 2(6): 112-119

18. Adeyinka DA, Oladimeji O, Adeyinka FE, Aimakhu C. Uptake Of childhood immunization among mothers of under-Five in Southwestern Nigeria. *The Internet J Epidemiol. 2009; 7(2): 1540 -2614.*

19. WHO Department of Immunization, Vaccines and Biologicals, data as of January 2014

Awareness and Perception About Pentavalent Vaccine and Its Determinants Among Women of Reproductive Age Group in North Central Nigeria

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Abstract

Introduction of pentavalent vaccine in the year 2012 to Nigerian childhood vaccination programme was adjudged as a major advancement in the field of childhood vaccination. However, efforts made to achieve universal coverage was quite challenging with pockets of outbreak of vaccine-preventable diseases in the country. This was attributed to low awareness, perception and low uptake of vaccination. Therefore, the level of awareness and perception of pentavalent vaccines and its determinants among women of reproductive age group in Ilorin West LGA of Kwara state was studied using a semi-structured interviewer administered questionnaire in January 2013. A community-based descriptive cross-sectional study using multistage sampling technique in Ilorin West local government area of Kwara State was carried out. The Fischer's formula was used to determine the minimum sample size of 400 while the results were analyzed with EPI INFO version 6 software package. Age, marital status, educational level and occupation are significantly associated with individual awareness and perception on pentavalent vaccine, $p< 0.05$. A total of 77% of the subjects were aware of the introduction of the vaccines into the National Programme on Immunization while about 92.8% perceived that the vaccine was beneficial. The level of awareness and perception of pentavalent vaccine was high among the age group of 20-39. It was also higher among those with higher level of education, among civil servants and students. The major source of their awareness was health workers. There is therefore a need for improvement of awareness and perception among all categories of women, especially those in the child bearing age, and health workers involved in immunization activities in order to improve this vaccination uptake.

Keywords: Immunization, awareness, perception, pentavalent vaccine, reproductive age group

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Introduction

Vaccines have been shown to help people to be healthy, particularly childhood immunization.[1] The rapid impact of vaccine on community health can be seen by the effect of immunization on reduction of the number of measles related deaths from 750,000/year in 2000 to 164,000/year in 2008 following the EPI programme in Nigeria, eradication of small pox and near wiping of poliomyelitis globally among others.[1] Vaccination is very safe and effective and immunization can save a child 's life. Immunization saves time and money and capable of protecting future generations from diseases. The first combination vaccine to be introduced was Diphteria-Pertusis-Tetanus (DPT).[2] Other vaccines such as Hemophilus influenza type b (Hib) and Hepatitis B (HBV) vaccines were included to this combination to make the pentavalent vaccine. Pentavalent vaccine was included into the Nigerian immunization schedule in 2012 to reduce the injections burden during routine immunization

Pentavalent vaccine is called the 'easy 5'as it combines five vaccines in one. It protects children from life threatening diseases such as Diphtheria, Tetanus, Pertussis, Hepatitis B and Haemophilus influenza diseases.[3] It is administered to children at 6, 10 and 14 weeks of age to replace the existing DPT and Hepatitis B vaccines which were given separately. Using triple regimen of DPT, about 20% of Nigerian districts are still below 80% coverage as of 2015[4]. Studies have shown that caregivers' knowledge is a major determinant of vaccination uptake.[5]

Recently, there have been resurgences of various vaccine preventable diseases globally, and with immunization coverage rates in Nigeria still remaining very poor in spite of numerous programmes and strategies specifically designed to improve coverage[6]. Different factors have been found to be responsible for the persistently low coverage rates some of which include poor awareness, rumors spread through public media, particularly the internet on low vaccine safety, personal or secondhand experiences from friends and family, as parents who had negative experience with vaccines are more likely to refuse it for their children[7].
This study therefore set out to assess the level of awareness and perception of pentavalent vaccines and its sociocultural determinants among women of reproductive age in Kwara State, North Central Nigeria as they constitute the majority of primary care givers in

this area.

Materials and Methods

Study Location

This study was carried out in January 2013 in Ilorin West Local Government area (LGA), which is one of the 16 LGA of Kwara State, Nigeria. It is made up of 12 political wards and 27 settlements. Women of child bearing age make up about 95,634 (22%) of the total population[8]. There are 22 publicly owned health institutions and 21 privately owned facilities offering Routine Immunization in the area. The study included women of reproductive age group in Ilorin West on routine immunization irrespective of their parity while women of reproductive age group who have not started having children and women who declined participation were excluded.

Sample Size Determination

Fisher's formula[9] was used for sample size determination. A total of 400 respondents were calculated and selected for the study after necessary adjustment for attrition.

Selection of Subjects

The study was a community-based descriptive cross-sectional study using multi-stage sampling technique. Firstly, a simple random selection of four wards from the 12 wards that make up Ilorin west LGA was done by balloting. Households within the selected wards were numbered, and then a systematic sampling method was used to select households from which subjects were selected for interview. The first household was selected by bottle spinning and thereafter every third household was selected based on the sampling interval determined. One respondent was randomly chosen in each selected household irrespective of number of eligible subjects. If a selected household does not have an eligible subject, the next household was considered until the sample size was achieved.

Data was collected using an interviewer administered questionnaire designed for the purpose of this study. Research assistants were trained by the researcher on use of the questionnaire. Questionnaires were semi-structured and majorly closed ended. The perception questions contained Likert-scaled responses. The questionnaire was pretested in a neighboring town of Ijagbo, Oyun local government of Kwara State.

Statistical Analysis

The results were analyzed using EPI INFO version 6 software package. Proportions were calculated for categorical variables. Socio-demographic factors were explored as determinants for awareness and perception. Chi-square was used as test for association and level of significance was set at p-value < 0.05.

Ethical Approval

Study approval was obtained from the Ethical review committee of the University of Ilorin and the Local Government Service Commission. A verbal informed consent was obtained before the interview of respondents. Confidentiality of data was assured at every stage of the study.

Results

About half (48%) of the respondents were between 20-29 years of age, 366 (91%) were married, only 48 (12%) have tertiary education and about a third were artisan 139 (34.7%) as shown in table 1. A summary of the proportion of respondents who were aware of some selected aspect of pentavalent vaccine is shown in table 2.

Table 1: Summary of socio-demographic characteristics of subjects

Variables	Proportion N (%)
Age in years	
<20	16 (4.0)
20 -29	195 (48.7)
30 – 39	124 (31.0)
40 – 49	65 (16.3)
Marital status	
Single	23 (5.8)
Married	366 (91.4)
Widowed	6 (1.5)
Separated/Divorced	5 (1.3)
Highest level of Education	
No formal education	29 (7.3)
Primary	134 (33.5)
Secondary	189 (47.2)
Tertiary	48 (12.0)
Tribe	
Hausa	58 (14.5)
Yoruba	302 (75.5)
Igbo	23 (5.7)
Fulani	17 (4.3)
Occupation	
Trader	152 (38.0)
Student	10 (2.5)
Housewife/unemployed	65 (16.3)
Civil servant	34 (8.5)
Artisan	139 (34.7)
Number of children	
One	104 (26.0)
Two	127 (31.8)
Three	89 (22.3)
Four	34 (8.5)
Five	43 (10.7)
Six	3 (0.7)
Total	**400 (100)**

Table 2: General Awareness of Pentavalent vaccine

Variable	Proportion N (%)
Aware of new introduction to NPI	
Yes	308 (77.0)
No	92 (23)
Aware of commencement of pentavalent vaccine in Kwara	
Yes	296 (96.1)
No	12 (3.9)
Source of information	
Hospitals	233 (72.6)
Neighbours	46 (14.3)
Friends	14 (4.4)
Television	12 (3.7)
Newspaper	9 (2.8)
Radio	7 (2.2)
Awareness of appropriate age of vaccination	
Yes	286 (92.9)
No	22 (7.1)
Awareness of required doses of vaccines	
Yes	58 (18.8)
No	250 (81.2)
Aware of the correct name of the vaccines	
Yes	258 (83.8)
No	50 (16.2)
Aware it has side effects	
Yes	214 (69.5)
No	94 (30.5)
Aware it reduces ARI	
Yes	318 (79.5)
No	82 (20.5)
Aware it reduces HBV infection	
Yes	317 (79.3)
No	83 (20.7)
Aware more illness can be prevented by vaccination	
Yes	334 (83.5)
No	66 (16.5)

Table 3: General Perception of respondents towards Pentavalent vaccine

Variables	Yes (%)	No (%)	Don't Know (%)
Perceived as beneficial	371 (92.8)	7 (1.8)	22 (5.5)
Introduction of pentavalent vaccine is good	347 (86.8)	14 (4.3)	36 (9.0)
Reduces disease burden	333 (83.3)	12 (3.0)	55 (13.8)
Reduces vaccine related hospital visitation	286 (71.5)	32 (8.0)	82 (20.5)
Saves time and cost	299 (74.8)	24 (6.0)	77 (19.3)
It is safe	208 (52.0)	34 (8.4)	158 (39.5)
It leads to severe side effect	92 (23.0)	234 (58.5)	74 (18.5)

A greater proportion of the respondents 308 (77%) were aware of the pentavalent vaccine, 286 (93%) knew the appropriate age to commence the vaccine. However, 250 (81%) did not know the correct number of doses. It was also observed that the media (television, newspapers and radio) contributed only 8.7% of the source of information. Overall awareness and perception of respondents on the beneficial effect of pentavalent vaccine in the tested parameters, except for safety, was above 70%, tables 2 and 3.

Chi-square was done to test statistical association between socio-demographic factors and

Table 4: Determinants of Pentavalent Vaccine Awareness

Socio-demographic variable	Awareness of Pentavalent vaccine					p-value
	Yes (%)	No (%)	Total	X^2	Df	
Age in years						
<20	7 (43.8)	9 (56.3)	16			
20 -29	143 (73.3)	52 (26.7)	195	16.17	3	0.0001*
30 – 39	103 (83.1)	21 (16.9)	124			
40 – 49	55 (84.6)	10 (15.5)	65			
Marital status						
Single	9 (39.1)	14 (60.9)	23			
Married	293 (80.1)	73 (19.9)	366	24.78	3	0.0002*
Widowed	4 (66.7)	2 (33.3)	6			
Divorced/separated	2 (40.0)	3 (60.0)	5			
Level of Education						
No formal education	13 (44.8)	16 (55.2)	29			
Primary	88 (65.7)	46 (34.3)	134	41.14	3	0.0001*
Secondary	164 (86.8)	25 (13.2)	189			
Tertiary	43 (89.6)	5 (10.4)	48			
Occupation						
Traders	130 (85.5)	22 (14.5)	152			
Artisan	103 (74.1)	36 (25.9)	139	12.24	4	0.016*
Housewife	47 (72.3)	18 (27.7)	65			
Civil servants	22 (64.7)	12 (35.3)	34			
Student	6 (60.0)	4 (40.0)	10			

*$P < 0.05$.

Table 5: Assessment of Pentavalent Vaccine perception

Socio-demographic variable	**Perception on Pentavalent vaccine**					**df**	**p-value**
	Good (n= 245)	**Fair (n= 87)**	**Poor (n = 68)**	**Total (n=400)**	X^2		
Age in years							
<20	3 (18.8)	6 (37.4)	7 (43.8)	16			
20 – 29	119 (61.0)	42 (21.5)	34 (17.5)	195	17.94	6	0.0064*
30 – 39	86 (69.4)	24 (19.4)	14 (11.2)	124			
40 – 49	37 (56.9)	15 (23.1)	13 (20.0)	65			
Marital status							
Single	6 (26.1)	6 (26.1)	11 (47.8)	23			
Married	235 (64.1)	77 (21.0)	54 (14.8)	366	24.29	6	0.0005*
Widowed	2 (33.3)	3 (50.0)	1 (16.7)	6			
Divorced/separated	2 (40.0)	1 (20.0)	2 (40.0)	5			
Level of education							
No formal education	14 (48.3)	9 (31.0)	6 (20.7)	29			
Primary	69 (51.5)	36 (26.9)	29 (21.6)	134	17.09	6	0.0089*
Secondary	123 (65.1)	36 (19.0)	30 (15.9)	189			
Tertiary	39 (81.3)	6 (12.5)	3 (6.3)	48			
Occupation							
Trader	99 (65.1)	39 (25.7)	14 (9.2)	152			
Artisan	49 (71.2)	15 (15.1)	13 (13.7)	77			
Housewife/unemployed	44 (44.4)	22 (22.2)	33 (33.3)	99	49.17	8	0.0001*
Civil servants	31 (83.8)	4 (10.8)	2 (5.4)	37			
Students	22 (62.8)	7 (20.0)	6 (17.2)	35			

*$P < 0.05$.

awareness of pentavalent vaccine as shown in table 5. Level of education, marital status and occupation were statistically significant; 0.0001, 0.0002 and 0.016 respectively as stated in table 4. Married women are more aware of pentavalent vaccine 293 (80.1%) compared with single ladies 9 (31.9%). It is of note that more traders 130 (85.5%) were aware of these vaccines than civil servants 22 (64.7%) (X^2= 24.78, p=0.0002), as stated in table 4.

Age, marital status, level of education and occupation are significantly associated with individual perception on pentavalent vaccine as shown in table 5 (X^2= 17.94, *p*= 0.0064, X^2= 24.29, *p*=0.0005, X^2= 17.09, *p*=0.0089 and X^2 49.17 , *p* = 0.0001 respectively).

Discussion

This study assessed the level of awareness, perception, and factors which determine the awareness and perception. Awareness of the introduction of the new vaccine, its commencement in Kwara state and appropriate age for pentavalent vaccines was high among the studied group.

The high awareness of the vaccine, its value, the appropriate age meant to take the vaccines, and its side effects reflected the previous and current vaccine intervention programmes in this community. It also reflected a seeming lower socio-cultural resistance to the awareness which has a direct implication on uptake of the pentavalent vaccine.

However, of the total respondents, more than two-third did not know the correct number of doses. The reason for this low value compared to other awareness variables studied is not known but may not be unconnected with paternalistic relationship between health workers and their patients where the knowledge of the dosage of medication is the exclusive preserve of the health workers. The awareness of the dosage and by extension the components of each dose should serve as a strong selling-point which would further increase and reinforce awareness and boost uptake.

The health institutions were the major source of information. This is similar to the findings of a study done in Ethopia[10] in which 91% of respondents got their information from health care professionals and another study in Ile Ife, Nigeria[11] which reported the hospital as the main source of information. Mass media played a little role in disseminating vaccination information. However, determination of the exact reasons would be subject for further research.

Overall perception was better among the married, and civil servants aged between 30-39 years with tertiary level of education. It is of note that while awareness was higher among traders than civil servants, the perception was good among educated civil servants than any other group. This is in contrast to a study done in Geneva, Switzerland[12] where the intermediate educated women showed more resistant to immunization believing they have certain individual control over the health of the family. The reasons could be that traders have more time to attend health facilities. Another reason may be that they have a greater span of opportunity for social networking to discuss among themselves, thus increasing awareness, information acceptance and utilization than civil servants. And also market places serve as a place for more diverse informal information infusion and have a greater diversity for social interaction.

Various socio-demographic, educational and economic factors influenced the level of awareness among subjects. Awareness was highest among the educated, older and married caregivers than the unmarried, uneducated and younger age group. Educational level was significantly associated with level of awareness as it was highest among those with tertiary education and lowest among those with no formal education. This supports a finding in Tumkur, India[13] where knowledge of immunization was significantly greater among mother with a higher education level and among those who were older at the time of childbirth. By extension, there is a higher tendency of a well-educated mother to vaccinate her child and also to understand changes in vaccination schedule or combination.[14] Therefore, children of educated mother have greater chance of receiving immunization than those of less educated mothers. Higher number of subjects had good perception, some had fair perception and few had poor perception of the vaccines. Like awareness, perception was also significantly associated with educational level, marital status, age and occupation. Therefore, improving female education and engagement of women of reproductive age into civil service can improve vaccine uptake and by extension child survival.

This study generally supports the need for increased female education and financial empowerment which can help improve childhood health indices. Furthermore, immunization programme should reinforce the awareness programmes centered on the health facilities due to their value as found in this study. Emphasizing the dosage of the vaccine and by extension the component of each dose would help compliance and understanding the values accruable from utility of the pentavalent vaccines rather than the previous univalent versions among the targeted population.

The poor value of mass media in this community in creating pentavalent vaccine awareness may not be unconnected with the poor availability or coverage, lower level of educational attainment among mothers of child bearing age groups, and availability of electricity needed to power electronic gadgets in these areas. Overall, the awareness in the community studied is good and portends a possibility of increased uptake

of the pentavalent vaccine.

We recommend that further studies should be carried out to elucidate the reason behind poor influence of mass media in vaccine awareness and the lesser role of social interaction such as neighbors and friends in creating the awareness about this vaccine in the community.

Conclusion

There is a fairly high awareness of pentavalent vaccine among women of reproductive age in the North Central part of the country. Awareness and perception was found to be significantly influenced by age, marital status, educational level and occupation. Among all categories of occupation, best perception is found among the civil servants. It is noted that media houses contributed the least to awareness of pentavalent vaccine, the trend of which could be reversed. Also, since the introduction of the vaccine was new in the country, a study of this nature would help government and policy makers in shaping the future of vaccines use and implementation. As recently observed, the field of vaccination is a constantly changing one with new vaccines being developed daily and changing immunization schedule across countries. Therefore, there is need for more awareness and perception studies, and factors militating against it. A rural and urban spread of awareness and perception of the vaccine may also be studied in further work.

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References

1. World Health Organization. Progress in global measles control and mortality reduction 2000-2007, Weekly Epidemiology Record, Geneva, WHO. 2008; 83:441-448.

2. Skibinski AGD, Baudner BC, Singh M, Hagan DTO. Combination vaccines. J Glob Infect Dis. 2011; 3:63-72.

3. Ado M. Immunization training module for pentavalent vaccines in Nigeria. 2011.

4. World Health Organization, 2016. WHO vaccine-preventable diseases: monitoring system. 2016 global summary. Available on www.who.int/gho/immunization/en/. Accessed on 1/10/2016.

5. Fikiri MM, Jumanne DK, Deodatus CVK. Social determinants of immunization services uptake in developing countries: a systematic review. The Pan African Medical Journal. 2016; 24:197.

6. Kalamawei Itimi, Paul O Dienye, Best Ordinioha. Community participation and childhood immunization coverage: A comparative study of rural and urban communities of Bayelsa State, south-south Nigeria. Nigerian Medical Journal.2012;53(1):21-25

7. Flood EM, Rousculp MD, Ryan KJ. Parents' decision-making regarding vaccinating their children against influenza: a web-based survey. Clin Ther. 2010; 32(8):1448-1467.

8. National Bureau of Statistics, Federal Republic of Nigeria. Annual Abstract of Statistics. 2012

9. Sin-Ho Jung. Stratified Fisher's Exact Test and its Sample Size Calculation. Biom J. Jan. 2014; 56(1).

10. Melkamu BK, Gashaw AB, Alemayehu ST. Level of immunization coverage and associated factors among children aged12–23 months in Lay Armachiho District, North Gondar Zone, Northwest Ethiopia: a community based cross sectional study. BMC res notes. 2015; 8:239.

11. Fatusi AO, Onayade AA, and Ojo OS. Acceptance of Hepatitis b vaccine by workers in a Nigerian Teaching Hospital. East African Medical Journal. 2000; 77:11.

12. Burton JC, Golay M, Sudre P. "Compliance and resistance to child vaccination: A study among Swiss mothers". Rev Epidemol. 2005; 53:341-50.

13. Sowmya KA. A study to assess the knowledge and attitude of mothers of under five children regarding Hib vaccination in selected Hospitals at Tumkur with a view to develop information guide sheets. 2008.

14. Chidiebere ODI, Uchenna E, Kenechi OS. "Maternal sociodemographic factors that influence full child immunisation uptake in Nigeria." South African Journal of Child Health 8. 2014; 4:138-142.

Comparative Assessment of Health Workers Performance and The Performance Factors at Primary, Secondary and Tertiary Hospitals in Kwara State, Nigeria

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Abstract

Performance measurement is a process by which an organization monitors important aspects of its programs, systems, and care processes. Although the logic of looking at workers' overall environment when analysing productivity has been widely documented, there is need for empirical research exploring the relationships between worker performance and the performance factors. Main goal of the study was to determine and compare the factors associated with healthcare provider performance.

A cross sectional study was carried out among eight hundred and sixty-six (866) health care providers randomly selected from primary, secondary and tertiary hospitals. Health workers' age was between 19 to 66 years with mean age of 37.9±9.83, there were more females than males with majority of them are married. All respondents claimed to have received job description. Most of the respondents working at primary healthcare hospitals (PHCHs) 193(75.4), secondary healthcare hospitals (SHCHs) 178(68.5) and tertiary healthcare hospitals (THCHs) 221(63.1) are not well motivated in term of bonuses or praises for good work, while some respondents working at PHCHs 35(13.7%), at SHCHs 48.0(18.5%), and(THCHs) 109(31.1%) received non-monetary incentives from employers. There were opportunities for promotion of healthcare providers at all levels. Few of the healthcare provider's working in PHCHs 61(23.8%), SHCHs 87(33.5%) and THCHs 82(23.4%) respectively had not received training on quality of health care. On the one-to-one relationships, 10 of the 15 variables tested had very high significant effect on performance of health workers which was independent of types of health facilities.

It is recommended that health manager or administrators in the hospital at any level should provide all the composite performance factors and combine monetary and non-monetary incentives with others performance interventions such as training and good feedback to healthcare providers.

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Introductions

Performance measurement is a process by which an organization monitors important aspects of its programs, systems, and care processes. However, performance measures are different and distinct from clinical guidelines. Clinical or medical practice guidelines are systemically-developed statements to assist practitioners and patients in making decisions about appropriate health care for specific clinical circumstances. Attributes of good guidelines include validity, reliability, reproducibility, clinical applicability, clarity, multidisciplinary process, review of evidence and documentation.[1]

Performance measures provide an indication of an organization's performance in relation to a specified process or outcome. Practice guidelines that outline the expectations of care around a specific issue or disease state are created by a group of subject matter or clinical experts[2]. Because performance measures and standards of care each serve a different purpose, they are not always identical. Performance measurement is well established throughout health care in the core areas of finance[3], operations[4], and clinical care services[5]. As information technology is widely integrated into health care settings, support for performance measurement will also expand throughout the organization.[6,7]Some of the typical circumstances why an organization may choose to measure its performance are to provide a reliable process in determining if an organization's current system is working well or not[8], demand for transparency[9] and evidence-based decision on health care delivery systems[10]

Although the logic of looking at workers' overall environment when analysing productivity has been widely documented[11,12], there is need for empirical research exploring the relationships between worker performance and the performance factors.

This study uses a simple framework and assumes that performance of health workers is facilitated and/or hindered by the 'performance factors and hypothesizes that not all factors are equal in their effects on performance. It seeks to determine factors associated with provider performance (See study framework in Figure 1). In order to control for extra-neous factors, all health care providers are working in

same hospital, which is limited only to primary, secondary and tertiary hospitals. Although human performance is comprised of both behavior and its accomplishments[13], for this study only the behavioral component of performance were investigated.

Methodology

A cross sectional study involving randomly selected health care providers in selected hospitals in Kwara State Nigeria**.** The health sector is largely endowed with health care providers of various skills and educational background. These categories of health care practitioners are distributed across the three tiers of the health sector. While the tertiary care level may have all cadres of health care practitioners of varied skills and experience, this however may not be so at the secondary and primary health care hospitals.

Multi-stage sampling approach was used, the first stage involved the selection of one state, due to insurgency, security situation and political tension in the county some geopolitical region and states were excluded for selection process. Thus, North Central Region was purposely selected in Nigeria. Kwara State in the zone was selected using simple random sampling technique by balloting. Health facilities were selected across the three levels of primary, secondary and tertiary health care facilities.

Multi-stage sampling approach was used, in stage one, Kwara State was purposely selected among other States in Nigeria. In stage two, the health facilities in Kwara State were stratified into three namely primary, secondary and tertiary health facilities. The procedure involved a simple random sampling of health facilities in each stratum according to their proportion. Considering the apparent disparities in the number and the level of health care cadres that are available at the three tiers of facilities in the health sector, more facilities were selected at the secondary and primary health care levels. Selection of a tertiary health facility, one tertiary health facility was randomly selected out of three tertiary health facilies within in the state, while selection of secondary health facility was done by listing all the public secondary health facilities within the Kwara State, Nigeria. One public secondary health facilities (SHFs) per LGA was randomly selected within the existing health facilities making a total of 16 (SHFs). In selection of primary health facility, all the 16 LGAs and all the model PHCs within Kwara State were listed. In each LGA two model PHCs centers were randomly selected by balloting, thus making a total of thirty-two model PHCs centers were randomly selected by balloting.

The respondents from the selected health care facilities were sampled using proportionate to sample size calculation by employing the total population for each category as a sampling factor. All the health care providers (HCPs) in each of the selected health facility at all level was done then proportional of 10% allocation was used to determine the number of healthcare workers to be interviewed in each hospital. Therefore, eight hundred and sixty-six health (866) health care providers made up of 256 from primary health care Hospital facilities (PHCHFs), 260 from secondary health care hospital facilities (SHCHFs) and 350 from tertiary health care hospital facilities (THCHFs) who met the inclusion criteria were randomly selected for the study. The inclusion criteria include health consumers who received any service as outpatient, health Consumers who had at least one overnight stay in the hospital, skilled professionals who have had continuous experience in the hospital for a minimum of six months. It is assumed that six months in an establishment is sufficient to provide experience to sufficiently allow for the understanding of the workings of the system and to discern factors that are capable of militating against corporate growth. Health professional such as qualified medical doctors of all grades and skills, Nurses and Midwives, Pharmacists, Radiographers, Dentists, Medical Laboratorians and Medical Record Officers. However, privately owned health facilities, practitioners in privately owned health facilities. Health consumers who have received any service or had at least one overnight stay in the hospital but not willing to participate in the study were excluded.

Both quantitative and qualitative questionnaire was used, in-depth interview (IDI) was carried out to obtain explorative information on reality performance of health care, while pretested and validated questionnaire was used to collect information on performance of care provided. All data were collected and analysed using SPSS with p level set at <0.05 significant level.

Results

From the tables below, respondent's age is between 19 to 66 years with mean age of 37.9±9.83, there are more females than males with majority married. All respondents claimed to have received job description which was statistically significant while only health care providers working in tertiary hospital 295 (84.3%) had standards for performance sets for job. Most of the respondents working at PHC hospitals 193(75.4), SHC Hospital facilities 178(68.5) and THC facilities 221(63.1) are not well motivated in term of bonuses or praises for good work, while some respondents working at PHC level hospital 35(13.7%), at secondary level hospital 48.0(18.5%), and tertiary care hospitals 109(31.1%) received non-monetary incentives from employers. There are opportunities for promotion for health care providers at all levels. However, disincentives at PHC level hospitals 155(60.6%), at secondary care level hospitals 153(58.2%) and tertiary care level hospital 229(65.4%)

for job badly done was not significant.

On feedback, health care providers at tertiary care level hospital 205(58.6%) and PHC hospitals 149(58.2%) received feedback on job performance at significant level pv<0.001. However, majority of the health care providers at PHC hospitals 157(61.3%), SHC hospitals 130(50.0%) and THC level hospital 220(62.9%) said feedback received was in-appropriate. This was statistically significant at (pv<0.001). On health institution support, most of the respondents at PHC hospitals 159(62.1%), secondary health care hospitals 191(73.5%) and health facilities at tertiary level 259(74.0%) were supervised in the last six months. Most of the respondents at PHC hospitals 125(49.2%), secondary care level hospitals 144(55.4%) and tertiary care level hospital 175(50.0%) are well place for job and had necessary equipment's and supplies to carry out the duties and responsibilities. Only respondents at the tertiary care level hospital 210(60.0%) are said to have satisfied with the work organization environment.

On knowledge & skills, all the respondents believed that they have necessary skills to do the job. However, few of the health care provider's respondents 61(23.8%), 87(33.5%) and 82(23.4%) at PHC, SHC and THC respectively had ever received training on quality of health care.

Discussion

One of the important findings of the study was

Table 1 Factors Influencing Performance of Healthcare Providers in Public Hospitals

Variable/Factors	Response	PHC	SHC	THC
Number in the facility type		**256(100)**	**260(100)**	**350(100)**
Worker category	Doctors	5 (2.0)	52 (20.0)	70(20.0) *
	Pharmacists	0 (0.0)	5(1.9)	18 (5.0)
	Pharmacy Tech	32 (12.5)	26 (10.0)	9(2.5)
	Nurses/	32(12.5)	78 (30.0)	105(30.0)
	CHOs	64(25.0)	26 (10.0)	18(5.0)
	Lab Scientists	32(12.5)	26(10.0)	35(10.0)
	Record Officers	32(12.5)	26(10.0)	35(10.0)
	Physiotherapists	0(0.00)	2(1.9)	18(5.0)
	Others	59(23.0)	19(6.2)	42(12.5)
Age	= 40 yrs.	77(30.1)	71(27.3)	210(60.0)*
	>41	179(69.9)	189(72.7)	140(40.0)
Years working in the facility				
	0–10	116 (45.3)	124 (47.8)	195(55.7) *
	>11	140(54.7)	136(52.2)	155(44.3)
	JOB EXPECTATIONS			
Has job description				
	Yes	205 (80.1)	250 (96.2)	314 (89.7) **
	No, DK	51 (19.9)	10 (3.8)	36(10.3)
Whether standards for performance have been set				
	Yes	102 (39.8)	39 (15.0)	295(84.3) **
	No	154(60.2)	221 (85.0)	55(15.7)
	MOTIVATION & INCENTIVES			
Receive bonuses or praises for good work				
	Yes	63(24.6)	82(31.5)	129(36.9)*
	No	193(75.4)	178(68.5)	221(63.1) +
Non-monetary incentives (employer) – 1streply				
	Yes	35(13.7)	48.0(18.5)	109(31.1) **
	No	219(86.3)	21(81.5)	241(68.9+)
Opportunities for promotion				
	Yes	193(75.4)	145(55.8)	267(76.3) **
	No	63(24.6)	115(44.2)	83(23.7)
Disincentives for job badly done				
	Yes	155(60.6)	153(58.2)	229(65.4) +
	No	101(39.4)	107(41.2)	121(34.6) +

OVERALL RESULTS

* p < 0.05; ** p < 0.0001; + p = 0.047; # p = 0.05 *variables significant for levels of care are highlighted

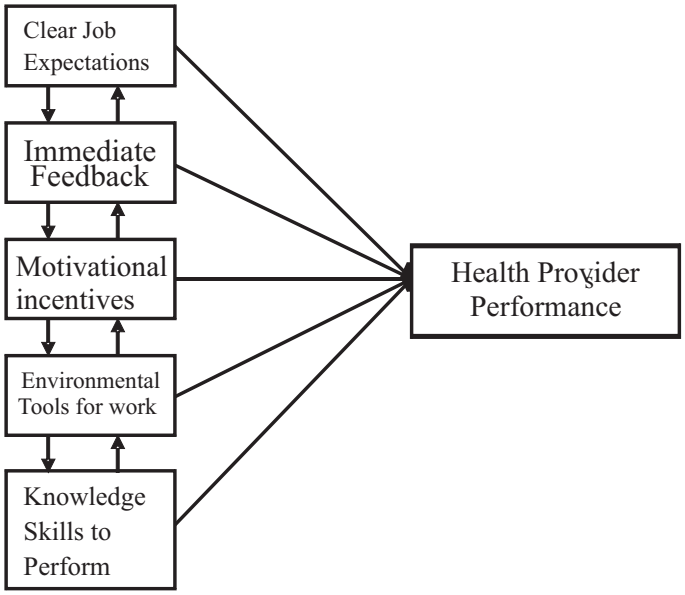


Fig.1; - Framework for the performance factors and provider performance (Significant Control variables: provider and hospital characteristics). Source Author

Table 2 Factors Influencing Performance of Healthcare Providers Hospitals

Variable/Factors	Response	PHC(%)	SHC(%)	THC(%)
FEEDBACK				
Receive feedback about job performance				
	Yes	149(58.2)	125(48.1)	205(58.6) **
	No, DK	107(41.8)	135(51.9)	145(41.4)
Appropriate Feedback (composite)				
	Yes	99(38.7)	130 (50.0)	130(37.1) **
	No, DK	157(61.3)	130(50.0)	220(62.9)
INSTITUTIONAL SUPPORT				
Received supervision in last 6 months				
	Yes	159(62.1)	191(73.5)	259(74.0) +
	No	97(37.9)	69(26.5)	91(26.0)
WORK ORGANIZATION & ENVIRONMENT				
Adequacy of Job place (composite)				
	Yes (= 75%)	183(71.5)	216(83.1)	217(62.0) **
	No (< 75%)	73(28.5)	44(16.9)	133(38.0) **
Has the necessary equipment, and supplies?				
	Yes	125(48.8)	144(55.4)	175(50.0) +
	No	131(51.2)	116(44.6)	175(50.0) +
Satisfied w/organization of work				
	Yes	71(27.7)	79(30.4)	210(60.0) **
	No, DK	182(72.3)	181(69.6)	140(40.0)
KNOWLEDGE & SKILLS				
Believes has necessary skills to do the job				
	Yes	204(79.7)	232(89.2)	317(90.6) **
	No, DK	52(20.3)	28(10.8)	33(9.4)
Whether received training on Quality of care				
	Yes	61(23.8)	87(33.5)	82(23.4) +
	No	195(76.2)	173(66.5)	268(76.6)
Been trained in the use of tools				
	Yes	197(76.9)	200 (76.9)	274(78.3) **
	No	59(23.1)	60 (23.1)	76(21.7)

OVERALL RESULTS

the statistical significance in relationships between performance and the performance factors. On the one-to-one relationships, 10 of the 15 variables tested had very high significant effect on performance of health workers which is independent of types of health facilities, ie PHC hospital, secondary health care hospital (SHCH) and tertiary health care hospital (THCH). As seen in Fig 1.

The findings differ from another study conducted in Armenia on factors affecting the performance of healthcare providers working on maternal health care services, it was found that non-monetary incentive from community and previous training on reproductive health had significant effects on performance of health workers.[14] the difference might be due to the fact the later study was conducted among healthcare providers working in community focused on maternal health care services programme ie non hospital based. However, the study agreed that feedback and working environment had significant effect on performance of health workers.

Another key finding from bivariate and multivariate analyses of this study (See, Table 1). was that, the performance factors have more weight on performance than critical background conditions such as age of the worker or years of working in the health facility with ($pv < 0.001$) which is similar to many other studies[15,16].

Findings obtained from qualitative (FGD, KII and IDI) aspect of this study showed that there was isolated effect of incentive-based payment to individual health workers that was different from increased funding to the health facilities, the findings is contrary to finding from other studies[17].the difference might be due to major methodological flaws that limit the ability to interpret the results as causal effects of pay for performance as noted in review of published literature[17] Evidences from an in-depth interview (IDI) and key informant interview (KII) conducted in this study revealed that health workers' motivation or incentives can be either monetary or nonmonetary. Monetary incentives identified during qualitative study include: pay for performance, cash, payroll or premium contributions, health savings or reimbursement accounts, training, or even paid on sabbaticals and experiential rewards. These and other such incentives have a varying impact on performance and behaviour of health care providers[18]. Also non-monetary incentives identified in this study include: flexible work hours, non-cash gift cards, certificates, merchandise and travel. It also includes, plaques, thank you letters, recognition certificates, stickers, and t-shirts with a logo are used. Other no-cost or low-cost awards include: presentation of a certificate of appreciation for a job well done at a staff meeting; nomination of department employee of the month; allowing employees to take classes and improve skills; sending a handwritten note of thanks for the completion of a challenging task; sending card or flowers to an employee's family thanking them for sharing their loved one with the organisation during the preparation of an important project; end of the year gifts or celebration; making time to stop and chat with your employees; bringing treats for the office; encouraging participation in organisation's activities; sending an employee to a conference, and development of a flexible work schedule this is consistence with other study[19].

The regular promotion and non-monetary incentive recorded in the tertiary hospital seems to be largely due to the fact that health care providers especially doctors, nurses and midwives who work at the tertiary health care facility level provides more clinical services than those at PHC and SHC facilities. They also received better support in supervision and facility maintenance. The same does not hold true for health workers in PHC facilities.

Conclusion

This study identified five major factors classified as job expectation, motivation or incentives, appropriate feedback, good working environment and improving knowledge and skills of health care providers had significant effect on performance of health workers working in any type public hospital in Nigeria.

References

1. Comfort A. P*erformance measurement and pay for performance.* American Academy of Family Physicians 1997. https://www.entnet.org/sites/default/files/MeasurementofHealthcarePerf.pdf accessed May 2017

2. Basinga P, Agnes B, Jennifer S, Christel V. Effect on maternal and child health services in Rwanda of payment to primary health-care providers for performance: an impact evaluation," *The Lancet*, 2011,377: 1421-28.

3. Witter S, Atle F, Kessy K. P*aying for performance to improve the delivery of health interventions in low- and middle-income countries*. *Cochrane Database of Systematic Reviews.* 2012, 2: 7899 -7881.

4. Flodgren G, Martin E, Fiona B. An overview of reviews evaluating the effectiveness of financial incentives in changing healthcare professional behaviours and patient outcomes. Cochrane review In: *Cochrane Database of Systematic Reviews*, Issue 7, 2011. Oxford Update Software:

5. Alshamsan R, Azeem M, Ashworth J, Impact of pay for performance on inequalities in health care: systematic review. *Journal of health services research and policy.* 2010, 15: 178—184.

6. Cheryl L, Melony E. An evaluation of the use

of performance measures in health care. Technical report. RAND Health. National Quality Forum under U.S. Department of Health and Human Services Contract No. HHSM-500-2009-00010C (Task Order: NQF 2010-2).

7. Health Development and Performance (HDP). "Rapport d' Enquête de Contre-Vérificationpar la Communautédans les Districts de Nyamasheke, Nyaruguru et Rulindo," Kigali, Rwanda, available in : http://www.pbfrwanda.org.rw/index.php?option=com_docman&task=cat_view&gid=24&Itemid=29&limitstart=35.

8. Leonard K, Masatu C. Exploring Intrinsic Motivation among Health Workers in Tanzania. *Health Economics.*2010, 19 (12): 1461-1477.

9. Levine R, Rena E. *Performance incentives for global health.* Washington: Brookings Institution Press; 2009.

10. Stevens, K. The Impact of Evidence-Based Practice in Nursing and the Next Big Ideas" *OJIN: The Online Journal of Issues in Nursing.*2013; 18: 2-4.

11. Rummler G, Brache A: *Improving Performance: How to Manage the White Space on the Organizational Chart* San Francisco, CA: Jossey-Bass Inc; 1995.

12. Hwang S. An examination of the relationships among major performance factors and performance. J Tallahassee. 2002, 10: 8-13.

13. Fort A. Measuring provider performance: summary of a technical meeting. *PRIME Best Practices Series.* 2002, 14: 30.

14. Alfredo L, Lauren V. Factors affecting the performance of maternal health care providers in Armenia. J of *human resources for health.*2004, 2:8.

15. Doran T, Fullwood C, Gravelle H. Pay-for-performance programs in family practices in the United Kingdom. N Engl J Med 2006, 355: 375–84.

16. Eldridge C, Palmer N. Performance-based payment: some reflections on the discourse, evidence and unanswered questions. J health policy plan 2009, 24: 160–66.

17. Meessen B, Kashala J, Musango L. Output-based payment to boost staff productivity in public health centres: contracting in Kabutare district, Rwanda. Bull World Health Organ 2007, 85: 108–15.

18. HRH Global Resources Center from: http://www. hrhresourcecenter.org/ Accessed: May 2015

19. Beith, A, Eicher R, Weil D. Do Performance-Based Incentives Improve TB Detection and Treatment Completion? From: http://www.cgdev.org. http://www.cgdev.org/files/13544_file_TB_final.pdf. Accessed: December 2015

Assessment Of Knowledge And Attitude Towards Family Planning Among Selected Religious Leaders In Ogbomoso, Oyo State, Nigeria

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Abstract

The use of modern family planning methods in developing countries is low. Among reasons for low uptake is religious belief on procreation. This study was designed to assess the knowledge and attitude of family planning among religious leaders in Ogbomoso metropolis of Oyo State, Nigeria.

The study is a descriptive cross-sectional study done with the use of interviewer administered semi-structured questionnaire as research tool. Systematic sampling method was used in subject selection. A total of 200 religious leaders (consisting of 100 each from Christian and Islamic religions) were involved in the study. Analysis of the data was done by using SPSS Version 19.

The main findings were adequate level of awareness as all respondents have heard and were aware of family planning and 68% of them had good knowledge of it. There was poor knowledge of permanent methods of family planning, cervical caps/diaphragm and implant. There was no significant difference in knowledge scores of the two religious leaders on family planning p=0.06481. The attitude of the religious leaders were positive towards family planning as 85.5% of them had good (positive) attitude towards it. There was no significant difference in attitude scores of the two religious leaders on family planning p=0.3535.

There is a need to use religious leaders as a change agent by the stakeholders to increase the uptake and use of family planning in our society. This is necessary because they (religious leaders) are respected individuals in the community whom people, especially their followers, listen to and they have influence on their daily life activities, reproductive health inclusive.

Keywords: Knowledge, attitude, family planning, religious leaders, Nigeria

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Introduction

An expert committee of the World Health Organization (WHO) defined family planning as a way of thinking and living that is adopted voluntarily, upon the basis of knowledge, attitude and responsible decisions by individuals and couples in order to promote the health and welfare of the family group and thus contribute effectively to the social development of a country.[1] Despite the wide range of effective contraceptive options available to women in developed and developing countries, unintended pregnancies continue to occur in large numbers, and rates of sexually transmitted infection remain high.[2,3] A number of factors can affect a woman's access to, or effective use of, contraception.

Among these barriers are personal beliefs and values that can be shaped by both culture and religion. When a couple's most fundamental assumptions of a faith are dissimilar to those of the health care provider, medical recommendations may be made that are not in keeping with the couple's religious or cultural values. Health care providers in culturally diverse nations must understand the possible influences of culture and religion on a couple's willingness to use contraception. They should be familiar with a range of contraceptive options in order to address such situation in the most appropriate way.

The Islamic Republic of Iran, for example, has developed a highly successful family planning in the past decade, and much of this success has been attributed to the support and guidance provided by the country's religious leaders.[4] In a related article from Bangladesh, religious leaders opposed contraceptive use in the early 1980s, but that advocacy and orientation workshops led this group to become more favourably disposed to family planning programs.[5] A study of the family planning knowledge, attitudes and practices of Jordanian men and women indicates that many of them are convinced that their religious leaders would not approve of contraceptive use, even while they themselves do so.[6]

Nigeria's total fertility rate has declined only slightly, from 6.3 birth per woman in 1981-1982 to 5.7 births per woman in 2008.[7] Various researchers have suggested several reasons to explain why despite the high fertility rate, acceptance and utilization of modern family planning methods remain low, currently at 11 percent.[7] Today, 63% of women in developing countries use a method of family planning. [8]

The low contraceptive prevalence in Nigeria has been attributed to a number of factors including religious belief[9-17] as well as opposition from religious organizations.[18-20] The attitude of religious leaders to family planning, and particularly their practice or non-practice of it, has some influence on the overall prevalence of family planning practices in a community. [21-23] Some religions are subdivided into denominations, adherents of which may have their own distinct interpretation of religious teachings. These differences complicate the attempt to articulate a single position for a given religion. In addition, individuals may identify with a particular faith, they may not agree at a personal level with official teachings. Whether a particular woman and her partner adhere to these beliefs is a matter for discussion on an individual basis.

In Islam, Muslims believe the Quran is God's word as told to Prophet Muhammad. Secondary to the Quran are the hadiths, a collection of deeds and saying of Prophet Muhammad, generally regarded as illustrations and validations of the teachings from Quran. In order to be a Muslim, one must adhere to these. The way one runs personal life, business and social affairs are all bound by religious laws. All the daily life affairs are explicitly stated in the Quran and buttressed by the sayings and teachings of Prophet Muhammad. To this end, level of uphold of family planning depends on individuals religious perceptions which may affect uptake. Christians believe in biblical injunctions. Christian religion places emphasis on marriage, child rearing and forbids fornication and adultery. It enjoys believing men and women to be dutiful to their families. All the daily affairs of Christians are guided by religious teachings and laws.

Some of the protestant churches permit the use of family planning and also give counselling on its use to the intending couples. On the other hand, catholic teachings forbid the use of artificial family planning as their leaders fervently preach against its use. The adherence to this norms and teachings by their followers depend on the individuals because some couples who belong of catholic denominations still use artificial family planning despite opposition from their leaders. Islamic religion has no definite injunction on the use of family planning but most of the scholars have argued in their sermons and teaching that family planning is only allowed if it is temporary and safe. Some of conservative Muslim faithfuls follow these religious teaching strictly. Consequently, the conflicting information on the family planning has led to low level of uptake especially in the developing counties where religious doctrines are taken dogmatically and religious leaders are held in high esteem.

A number of efforts and interventions had been implemented to increase family planning uptake. One of such is male involvement in family planning practice which has been advocated but all efforts yielded non-significant increase in the level of uptake, multiple approaches are required, and one of the options is the use of religion. However, there is need to establish the position of the religious leaders on the issue especially in a community where the population of the two major religions (Islam and Christianity) is balanced so that integrated intervention can be considered. The objective of this study is to assess the knowledge and attitude of religious leaders in Ogbomoso community in Oyo State, Nigeria to family planning.

Methodology

Ogbomoso is a community in Oyo State, south west of Nigeria. It has two local government areas namely Ogbomoso north and Ogbomoso south. The people of Ogbomoso are predominantly Yoruba, with few Hausa, lgbo, Fulani, Ghanaians and other tribe cohabiting together. Inhabitants of Ogbomoso practice Christianity, Islam and tradition religions. The focus of the study was on leaders of two main religious groups (Islam and Christianity) including Catholic denomination. This is a descriptive cross sectional study to assess knowledge and attitude of religious leaders in Ogbomoso metropolis of Oyo State, Nigeria to family planning.

The list of religious leaders was obtained from the league of Imams and Christian Association of Nigeria which serve as sampling frame. Equal allocation of respondents was done for two major religious groups to pick 200 subjects. Systematic sampling technique was used to pick the respondents from the sampling frame using sampling interval of 3 for each religious group. The detailed address and contacts of religious leaders were obtained from the respective secretariats. This information was used to plan scheduled appointment and interview conducted for the selected respondents. When the selected respondent was not available, the next one on the list was picked. Included in the study were religious leaders who were married and those who belonged to the Catholic denomination. Interviewer administered questionnaire was used to obtain information from the respondents. The research instrument was pretested among religious leaders in Oyo town, about 50 kilometers south of Ogbomoso. This was to ensure validity and reliability of the instrument. The data obtained from pretested instrument was analysed and necessary modification was made.

There was scoring of outcome variables for the knowledge of respondents about family planning. Correct answers scored 1 point and wrong answers scored 0. After adding the scores and finding the mean, respondents who scored up to or above the mean were regarded to have good knowledge and scores below the mean to be of poor knowledge. Similarly for attitude, using the 5 point Likert scale with strongly agree and

agree scoring 1 point and indifferent, disagree and strongly disagree scoring 0 for correct statements and vice versa for incorrectly answered questions. Scores that were up to or more than the mean were regarded as good (positive) attitude and those below the mean as poor (negative) attitude. All collected data were analysed and checked manually for errors and entered for analysis using Statistics Package for Social Sciences version 19 (SPSS 19) software package.

Results

The age of the respondents ranged between 28 to 65 years. The mean age was 43.7 ± 7.72 years and the modal age group was 31-40 years. One hundred and eighty-nine (94.5%) of the respondents were male while 193 (96.5%) were married and 7(3.5%) were single. More than two-thirds 141 (70.5%) were in monogamous relationship while 52 (26.0%) practiced polygamy. The singles were the Catholic priests who practised celibacy. Fifty-three respondents (26.5%) had 3 children while only one respondent (0.5%) had 10 children. Majority of respondents, 190 (95%) were of Yoruba ethnic group and 126 (63%) had tertiary education and only 6 (3%) had non-formal education. Majority of the respondents 131 (65.5%) got family planning information through radio, 90 (45%) through schools, 89 (44.5%) through hospital/clinic, 86 (43%) through television and 83 (41.5%) through newspaper. Ninety-two percent each of the Christian religious leaders knew condom and injectable contraceptive while for the Muslim leaders it was 80% and 63% respectively.

Fifteen (7.5%) respondents knew that people can start use of family planning at age less than 20

Table 1: Family Planning Methods known by the religious leaders*

Family planning methods	Frequency (%)		Total (%)
	Christians	Muslim	
Oral pills	77 (77.0)	78 (78.0)	155 (77.5)
Injectable contraceptive	92 (92.0)	63 (63.0)	155 (77.5)
Lactational amenorrhoea	56 (56.0)	45 (45.0)	101 (50.5)
Calendar monitoring	82 (82.0)	71 (71.0)	153 (76.5)
Abstinence	70 (70.0)	71 (71.0)	141 (70.5)
Coitus interruptus	69 (69.0)	81 (81.0)	150 (75.0)
Vasectomy	59 (59.0)	59 (59.0)	118 (59.0)
Bilateral tubal ligation	62 (62.0)	58 (58.0)	120 (60.0)
Condom	92 (92.0)	80 (80.0)	122 (86.0)
Intrauterine contraceptive device	63 (63.0)	50 (50.0)	199 (59.5)
Implants	55 (55.0)	38 (38.0)	93 (46.5)
Cervical cap/diaphragm	55 (55.0)	36 (22.0)	91 (45.5)
Traditional method	36 (36.0)	68 (67.0)	104 (52.0)

***Multiple Responses**

Table 2: Respondents Knowledge of Side Effects of Barrier of Barrier and Hormonal and Hormonal Methods of Family Planning

Methods and Side Effects	Frequency* n=20	Percentage
Barrier methods e.g. condom		
Abnormal vaginal bleeding	82	41.0
Decreased sexual pleasure	114	57.0
Weight gain	52	26.0
Painful sexual intercourse	87	43.5
Allergic reaction to the genitalia	63	31.5
Hormonal methods e.g. injectable contraceptive		
Weight gain	112	56.0
Increase blood pressure	64	32.0
Painful menstruation	76	38.0
Painful sexual intercourse	49	24.5
Abnormal vaginal discharge	49	24.5
Irregular menstrual bleeding	80	40.0
Decreased sexual pleasure	50	25.0

***Multiple Responses**

Table 3: Respondents Knowledge of Side Effects of Intrauterine Contraceptive Device Permanent Methods and Natural Family Planning.

Methods and Side Effects	Frequency* n=200	Percentage
Intrauterine Contraceptive Device		
Abdominal Pain	79	39.5
Painful menstruation	57	28.5
Abnormal vaginal discharge	37	18.5
Poor sexual satisfaction	65	32.5
Infertility	39	19.5
Heavy menstrual flow	61	30.5
Weight gain	54	27.0
Increased blood pressure	60	30.0
Increased transmission of sexually transmitted Infections	37	18.5
Permanent methods e.g. Bilateral tubal ligation and vasectomy		
Cause permanent sterility	119	59.5
Are not reversible	98	49.0
Cause menstrual irregularity	56	28.0
Cause poor sexual satisfaction	42	21.0
Cause promiscuity	67	33.5
Cause marital disharmony	63	31.5
Natural family planning		
Have no side effect	97	48.5
Menstrual irregularity	33	16.5
Weight gain	32	16.0
Marital disharmony	43	21.5
Poor sexual satisfaction	79	39.5

***Multiple responses**

Table 4: Knowledge and attitudinal scores of Respondents about Family Planning

Variable	Frequency (%)		Total (%)
	Christians	Muslims	
Knowledge			
Good	63 (63.0)	73 (73.0)	136 (68.0)
Poor	37(37.0)	27(27.0)	64(32.0)
Total	**100 (100.0)**	**100 (100.0)**	**200 (100.0)**
	X^2 = 2.298, df = 1	**P = 0.06481**	
Attitude			
Good (Positive)	90 (90.0)	81 (81.0)	171 (85.5)
Poor (Negative)	10 (10.0)	19 (19.0)	29 (14.5)
Total	**100 (100.0)**	**100 (100.0)**	**100 (100.0)**
	X^2 = 3.267, df = 1	**P = 0.3535**	

years; 97 (48.5%) mentioned it should be between 20-40 years of age while 88 (44%) said it should be above 40 years. Some of the respondents did not have correct knowledge on which gender to use a particular type of family planning. Few 2 (1.3%) mentioned that male can use oral pills while 12 (7.5%) said it can be used by both male and female. Six (3.7%) respondents mentioned that injectable contraceptive can be used by male while 33 (20.6%) said calendar monitoring can be used by male. Inadequate knowledge of family planning methods among the religious leaders was demonstrated when 10 (7.5%) and 12 (8.5%) said vasectomy and bilateral tubal ligation can be used by females and males respectively. Implants and cervical caps were wrongly identified as a form of family planning use by male (6, 5.8% and 5, 4.5% respectively).

One hundred and thirty-six (68%) of the respondents had good knowledge of family planning while 64 (32%) had poor knowledge. One Hundred and twenty-four (62%) strongly agreed that family

planning can help a couple to become responsible, while 126 (63%) strongly agreed that family planning helps mother to regain strength before her next baby. One hundred and twenty (60%) strongly agreed that family planning gives children better opportunities for education and 121 (60.5%) strongly agreed that child spacing helps to protect the health of the mother. Eighty-two (41%) and 61 (30.5%) respectively of the respondents disagreed and strongly disagreed that wives who practice family planning will be abandoned by their husband, 74 (37%) disagreed that family planning will cause a loss of confidence between a husband and a wife while 55 (27.5%) disagreed that having a large family strains a couple's relationship. One hundred and seventy-one (85.5%) of the respondents had good (positive) attitude towards family planning and only 29 (14.5%) had poor (negative) attitude towards family planning.

Likert's scale level was used for the test of attitudinal statements and the Weighted Mean Scores (WMS) calculated and ranked accordingly. Attitudinal statement, "wives who practice family planning will be abandoned by their husband" was ranked first (WMS of 3.69 and 4.24 for Christian and Islamic religious leaders respectively) as the statement was disagreed by both leaders. "Child spacing helps to protect the health of the mother" was ranked 15th (WMS 1.40) by the Christian leaders while the least ranked attitudinal statement for Islamic leaders was "family planning helps a mother to gain strength before her next baby" with WMS of 1.49

Discussion

Majority of the respondents were aged 40 years and above. This is lower than 50 years and above quoted for majority of the respondents in a study by Awoyemi, Osagbemi and Koledade.[24] It is therefore, pertinent to know that it is very uncommon to see very young people as religious leaders. The mean age of the respondents was 43.7 years. This age of the respondents is expected to influence the level of knowledge, guide responsible decisions and should give them ability and instincts to take a rightful decision with respect to type of family planning method to use and adopt. Majority (94.5%) of the respondents were male while 5.5% were female. Those religious leaders who were female were Christians as Islam only allows male to lead the prayers and all member of Leagues of Imams and Alfas are males. One hundred and ninety-three (96.5%) of the respondents were married while 3.5% were single. The latter were catholic priests who practiced celibacy and were religious leaders in various Catholic Churches in Ogbomoso.

Majority of the respondents (70.5%) were monogamous while 26.0% were polygamous. Similarly, majority (95%) of the respondents were Yoruba, 3% were Hausa while 2% were Igbo. This may be due to the fact that Ogbomoso is a Yoruba city with other tribes living with them. All (100%) of the respondents were aware of family planning services. This is similar to a study on religious leaders in Jordan by Carol Underwood[25] and another one on Christian religious leaders in Enugu by Nkwo[26] but greater than 97.1%[24] quoted in a study in Ilorin by Awoyemi, Osagbemi and Koledade. This high level of awareness may be due to high level of educational status of the respondents as 63% of them had tertiary education. The major source of information being radio (65.6%). This is supported in a study by Awoyemi, Osagbemi and Koledade [24] which revealed that major source of information about family planning services among religious leaders in Ilorin being the mass media.

All the participants in the study could identify at least two methods of family planning, condom being most popular (86% could identify it). This is in tandem with 69% of people who knew about condom as quoted in a study by Abiodun and Balogun.[27] Only 14% of the respondents knew about vasectomy, and 30% knew bilateral tubal ligation which are higher than 4.2% and 0% quoted for bilateral tubal ligation and vasectomy respectively in a study by Awoyemi, Osagbemi and Koledade.[24] Generally speaking, 68% of respondents had good knowledge of family planning. This again may be a reflection of their level of educational status. Out of 200 respondents in this study, 48.5% believed that people should start use of family planning at age 20-40 years while 44% said it should be above 40 years and only 7.5% believed that people should start use of family planning when they are below 20 years of age. This result may be due to the fact that most married people would be above age of 20 years as the religious leaders might not be willing to advocate use of family planning to unmarried individuals.

Also 90.5% of the respondents were of the opinion that family planning could be used by both male and female. It is of note that certain family planning methods were misidentified on gender basis as methods used by both male and female: oral pills (8.8%), injectable contraceptive (4.3%); coitus interrupts (7.8%); vasectomy (9%); bilateral tubal ligation (15.5%); intrauterine contraceptive device (11.1%); implants (6.8%) and cervical cap/diaphragm (5.4%). This may be a reflection of their poor knowledge of the methods especially permanent methods such as vasectomy and bilateral tubal ligation. There was no significant difference in the knowledge of family planning among the two religious leaders $p=0.06481$.

However, the respondents were asked to identify side effects attributed to various methods of family planning. The result indicated that 57% believed that barrier methods caused decreased sexual pleasure, 56% were of the opinion that hormonal method caused

weight gain and 40% attributed its side effect to irregular menstrual bleeding. Another 39.5% also attributed side effects to abdominal pain with only 19.5% believed it could lead to infertility. In contrast to the above Ijadunola et al [28] in a study in Ile-Ife, Nigeria reported 20.8% of respondents to have believed that family planning would lead to infidelity. In another study by Ankomah et al [29] 39.5% said family planning makes female promiscuous, 33% attributed its use to infertility. Although, there exist knowledge gaps among the respondents, there is need for research to improve the technology of family planning commodities so that side effects can be minimized.

The attitude of religious leaders in Ogbomoso towards family planning was good as 85.5% of them had good (positive) attitude towards it and 89.5% of them preached and encouraged congregation members to use family planning while 10.5% did not. This study is in contrast to a report of survey of 81 Church leaders and 40 Muslim religious leaders in southwest Nigeria by Orubuloye et al[30] where 12% of the former and 78% of the latter reported having preached against family planning. This study is however similar to a study by Awoyemi, Osagbemi and Koledade[24] among religious and community leaders in Ilorin where 89.1% of them would encourage the use of family planning and 12.9% would discourage it and 55.9% used to speak in favour of it in their churches and mosques while 44% did not. There was no significant difference in the attitude of Christian and Muslim religious leaders towards family planning p= 0.3535.

References

1. WHO. Technical report ser. 1971; No 484

2. Statistics Canada, Induced abortions, by age group, Canada, annual. Available at: http://cansim2.statcan.ca/cgi-win/cnsmcgi.exe?Lang=E&resultTemplate=SRCH4 &CIITpl=CII___&CORCMD=GetRel&CORId=2967 &CORRel=4.Accessed May 17, 2006.

3. Sharing responsibility: women, society and abortion worldwide. Alan Guttmacher Institute; 1999. Available at: http://www.agi-usa.org.Accessed May 17, 2006.

4. Aghajanian A. A New direction in population policy and family planning in the Islamic Republic of Iran, Asia-Pacific Population Journal, 1995; 10(1): 3-20.

5. Neaz A. Converting Bangladesh's influential religious leaders, Planned Parenthood Challenges, 1996; 2:38-40.

6. Underwood C, Family Planning Knowledge, Attitudes and Practices Among Jordanian men and Women, Johns Hopkins University Centre for Communication Programs Baltimore, MD, USA; and Jordanian National Population Commission/General Secretariat, Amman, Jordan: 1997.

7. Isiugo-Abanihe UC. Reproductive motivation and family size preferences among Nigerian Men: Study Family Planning 1994; 25(3):149-61.

8. United Nations (UN). World Contraceptive Use 2007 [wall chart]. UN department of Economic and Social Affairs, Population Division; New York: 2008. Available at:www.un.org/esa/population/publications /contraceptive2007/contraceptive2007.htm

9. National Population Commission (NPC), Federal republic of Nigeria, and ORC Macro International. Nigeria Demographic and Health Survey 2003, Calverton, MD, USA: NPC and ORC Macro International, 2004.

10. Ezechi O.C., Fasuba O.B, Dare F.O. Contraceptive promotion and utilization: solution to problem of illegally induced abortion in countries with restricted abortion law. Nigeria Quarterly Journal of Hospital Medicine, 1999;9: 167-168.

11. Ejembi CL. Sexual behavior, contraceptive practices and reproductive health outcomes among Nigeria University students. Journal of Community Medicine and Primary Health Care. 2004; 16: 8-16.

12. Ebuchi O.M. Ekanem E.E, Ebuchi O.A. Knowledge and practice of Emergency contraceptive among female undergraduates in the University of Lagos, Nigeria. East African Medical Journal.2006; 83: 90-95.

13. Etuk S.K, Ekanem A.D. Knowledge, attitude and practice of family planning among women with unplanned pregnancy in Calabar, Nigeria. Nigerian Journal of Physiological Sciences. 2003; 18: 65-71.

14. Ijadunola K.T, Orji E.O., Ajibade F.O. Contraceptive awareness and use among sexually active breastfeeding mothers in Ile-Ife, Nigeria. East African Medical Journal. 2005; 82: 250-255.

15. Onwuzurike BK, Uzochukwu BS. Knowledge, attitude and practice of family planning among women in a high density, low income urban population of Enugu, Nigeria. African Journal of Reproductive Health. 2001; 5(2): 83-9.

16. Ibrahim M.T. Sadiq A.U. Knowledge, Attitude, Practices and Beliefs about family planning among women attending primary health care clinics in Sokoto, Nigeria. Nigeria Journal of Medicine. 1999; 8: 154-158.

17. Obionu C.N. Family planning knowledge, attitude and practice among males in a Nigerian urban

population. East African Medical Journal. 1998; 75: 131-134.
18. Bankole A. Singh S, Haas T. Reasons why women have induced abortions: Evidence from 27 countries. International family planning perspectives. 1998; 28: 117-127.
19. Westoff C.F., Bankole A. Unmet needs 1990-1994. Calverton Maryland, Macro International. 1995; DHS comparative studies, 1995; 16: 55.
20. Pope Paul VI. Hummae Vitae. Encyclical of Pope VI on regulation of birth. July 25, 1968.
21. Keele J.J., Forste R. Hearing native voices; contraceptive use in Matemwe Village East African Journal of Reproductive Health. 2005; 9: 32-41.
22. JooSook Kim, Seung Hum Yu, II-Soon Kim. Protestant Ministries' knowledge, attitude and practice about family planning, sex education and marriage: Postal survey. Yonsei Medical Journal 1970; 11: 2
23. Oztark A., GazelH, Gan I, Ostark. Opinions of Imams about family planning and their use of methods in Kayseri Turkey. The European Journal of contraceptive Health care. 2002; 7: 144-149.
24. Awoyemi, A. O., Osagbemi G. K., and Koledade I., Knowledge, Attitude and Practice of Family Planning Among Religious and Community Leaders in Ilorin, Nigeria. Niger Med J, 2001; 41(1): 4-8.
25. Carol Underwood. Islamic Percepts ad Family Planning: The Perceptions of Jordanian religious Leaders and Their Constituents. International Family Planning Perspectives. 2000; 26(3): 110-117 & 136.
26. Nkwo PO. Partnering with Christian religious Leaders To Increase Contraceptive Coverage: A viable Option In Enugu, Nigeria. The Internet Journal of Gynecology and Obstetrics. 2011; 14: 2. DOI: 10.5580/42e.
27. Abiodun OM, Balogun OR. Sexual activity and contraceptive use among young female students of tertiary educational institution in Ilorin, Nigeria. *Contraception.* 2009; 79:146-149.
28. Ijadunola MY, Abiona TC, Ijadunola KT, OlaOlorun FM, Afolabi OT, Esimai OA. Male Involvement in Family Planning Decision Making in Ile-Ife, Osun state, Nigeria. African Journal of Reproductive Health. December 2010; 14(4): 46
29. Augustine Ankomah, Jenifer Anyanti, Muyiwa Oladosu. Myths, misinformation and communication about family planning and contraceptive use in Nigeria. Open Access Journal of Contraception 2011; 2: 95-105.
30. Orubuloye I. O. Caldwell JC and Caldwell P, The role of religious leaders in changing sexual behavior in Southwest Nigeria in an era of Aids, Health Transition Review, 1993; 3 (Suppl.): 93-104.

A Survey of Pre-clerkship Medical Students' Perspectives on their Educational Exposure to Operating Theatre in Two Nigerian Universities.

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Abstract

Surgery is an essential part of undergraduate pre-clerkship medical student training. Quality training and exposure will boost the future surgical manpower especially in developing country when there is dearth of manpower and infrastructure. This study is an audit of the impact of traditional theatre sessions as done in two Nigeria university medical schools.

The result shows that there is a need to re-evaluate and re-invigorate the traditional theatre sessions by the undergraduate students with simulations and audiovisuals to have more impact in their training.

Keywords: Survey, pre-clerkship, medical students, perspectives, operating theatre, universities.

Introduction

The quality of the Health care delivery in any nation is largely dependent on the quality of its manpower. A robust and qualitative undergraduate medical training is very critical towards a quality manpower needed to run the health sector.

The traditional undergraduate surgical education in Nigerian medical school requires didactic lecture, ward round, out-patient clinic and theatre session attendance. In the developing world, due to rapid population growth and shortage of manpower, there is the need to increase the doctors: population ratio. The associated job security and social status have led to an increase in enrolment into medical undergraduate without a corresponding increase in manpower and facilities [1]. Neither has there been a review of the medical curriculum of most medical schools since its establishment from colonial powers to meet up with the new health challenges and discoveries

Consequent upon this, one of the critical areas of challenge in undergraduate surgical training is theatre session attendance and its impact on surgical training, amongst others. The average theatre room in our sub region could have in attendance, the residents in surgery and anaesthesia in training, the medical students in surgery and anesthesia rotation, the surgeon and his team, the anaesthetist and his team, the scrub nurse and his team and other teams who may be in training at the time. These crowd usually compromise training and antisepsis, which sometimes leads to disdain in attitude towards the undergraduate students. Most times there is neither an audiovisual nor a public address to aid in the education. Ill-defined syllabus may make it difficult for the students to know the areas of emphasis. This ultimately may lead to a drop in quality of surgical training which can further compromise the standard of health care in the developing world, more importantly in area of emergency care.

Medical school training in Nigeria is a 6year course divided into 1 year of preliminary studies, 2 years of Basic medical sciences and 3 years of clinical sciences. Surgery postings are done in the 1st 2nd and 3rd clinical years as S1, S2and S3 postings. Specialty postings are done at S2.

There has been no available study in Nigeria to audit the impact of traditional undergraduate theatre surgical training in Nigeria amongst the students.

The objective of this study is to assess the medical students perception on the quality of education received from traditional theatre session attendance and their suggestions on better ways to maximizing it. This, we believe, will help the medical educators and curriculum review committees to make appropriate reviews.

Methodology

A cross sectional study was conducted in two randomly selected accredited medical schools in South west and North-central Nigeria in September 2015. All 6th year undergraduate students (3rd and final year clinical students) were recruited for the study. Twenty two open and close ended questionnaires were distributed amongst the students. The names and matriculation numbers were not included to eliminate any coercion and response was made anonymous and participation was voluntary without any reward or repercussion. Pre-testing was done amongst the 2nd year clinical students. The questionnaires were distributed and collected by a volunteer medical student from both institutions. Exclusion is only by lack of consent. Responses were graded as 0-25, 26-50, 51-75, and 76-100%.

All results were collated and analysis done using SPSS, version 15, (SPSS, Inc, Chicago, IL). . Statistical significance was set at p less than 0.05.

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Results

Out of 240 questionnaires that were distributed amongst the participating students, 141 students completed the questionnaire given a response rate of 58.7%. There were 76 males and 64 females Male: female ratio of 1.19: 1. Figure 1, Table 1

Only 55.1% (43) and 43.2% (33) had 76-100% theatre attendance in institution A and B respectively. Table 2

Thirty -one percent of respondents do not attend theatre session because it was not beneficial to them (29%, 30%), or because of too long procedures (15.4%, 35%).

Only 2.6% of respondents from institution A and 8.1% in institution B believed they had maximum benefit attending theatre sessions. Figure 2.

Finding out who the students benefit from most between the Resident doctors or the Consultants, showed that it was more from the consultant in institution A (residents 22.9% vs 64.3% consultants) while it is the reverse in institution B (75.5%, 22.6%). Table 3.

Only 2.6% and 4.9% from each institution consistently checkup the operation list or read around the surgery before the theatre sessions.

More than half of the students have never attended an emergency surgery during the clinical training (55.4%, 57.7%) and more than three quarter have never sutured a wound before (83.3%, 75.4%). Table 4.

Majority of the students prefer to have an audiovisual aid outside the theatre to aid visibility and interactions with the surgeon (66.2%, 61.7%). Figure 3. At least, a third of the students like surgery (34.6%, 33.3%) above other specialty and likes surgeons too (37.2%, 38.9%). About a third of them are aspiring to be surgeons (29.5%, 27.8%).

The most appreciated surgery specialty rotation as at the time of research are ENT (20.5%) and Obstetrics and Gynaecology (46.2%) from the 2 institution respectively and the least appreciated are Urology (1.4%) and Paediatric Surgery/ENT (1.9%) respectively.

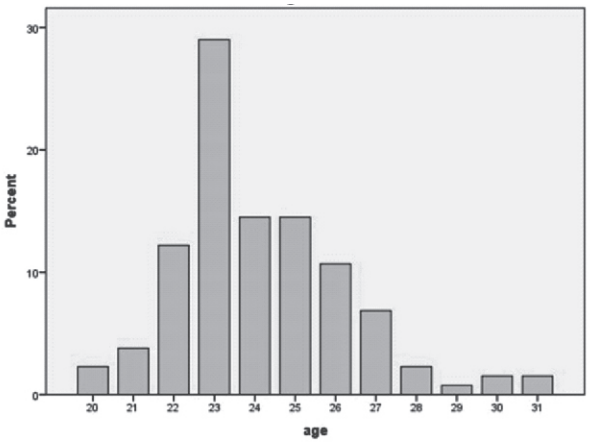


FIGURE 1: AGE DISTRIBUTION OF STUDENTS

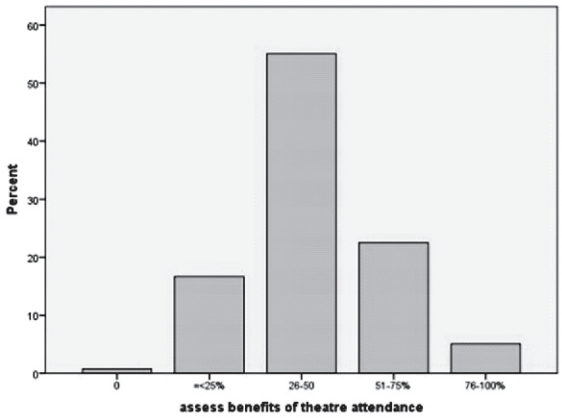


FIGURE 2: STUDENT'S SELFASSESSMENT OF THEATRE ATTENDANCE BENEFIT

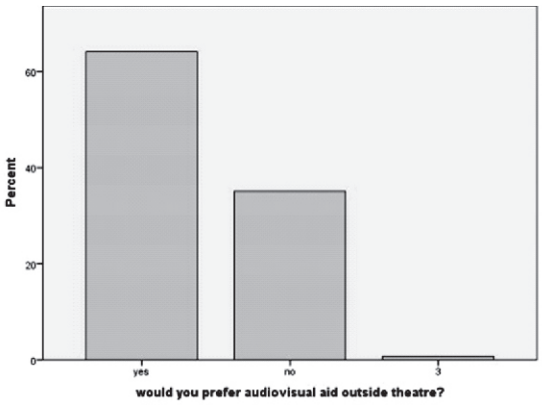


FIGURE 3: STUDENT'S PREFERENCE TO AUDIOVISUAL

Discussion

The quality of the health care a nation has is largely determined by the quality of manpower and management of its resources. The surgical health care is a significant part of these. The WHO predicts an increasing incidence of surgical disease in the developing world by 2030, especially in areas of trauma[3].

To meet the needs of the society, the National University Commission of Nigeria in conjunction with the medical and Dental council of Nigeria are saddled with the responsibility of adjusting the medical curriculum, accreditation of medical schools and quota of students to the be admitted to meet the needs of the country amongst others[1,2].

Presently the health statistics of Nigeria is abysmally low amongst the nations of the world and it can only get worse if the future health care professionals are poorly trained[1,4]. Little wonder a committee was recently established to review the curriculum transmitted by the colonial masters and still retained till date without a major review[2].

Previous review has revealed that there is a world -wide decrease in enrollment into surgical specialty. This has been largely attributed to inadequate

TABLE 1: AGE DISTRIBUTION OF RESPONDENTS

Age	Frequency in Inst A	Frequency in Inst B	Total	Percentage
20	1	2	3	1.9
21	2	3	5	3.2
22	20	6	26	16.7
23	26	12	38	24.4
24	11	8	19	12.2
25	9	10	19	12.2
26	4	10	14	9.0
27	4	5	9	5.7
28	1	2	3	1.9
29	1	-	1	0.6
30	1	1	2	1.3
31	1	1	2	1.3
Not documented	7	18	25	16.0
Total	78	78	156	100

TABLE 2: STUDENT'S ASSESSMENT OF THEATRE ATTENDANCE.

Attendance	Institution A	Percentage	Institution B	Percentage
< 25%	-	-	4	6.5%
26-50%	4	5.1%	7	17.7%
51-75%	30	38.5%	18	23.1%
76-100%	43	55.1%	33	42.3%
No response	1	1.3%	16	20.5%

TABLE 3: WHO DO YOU LEARN MORE FROM?

Category	Frequency	Percentage
Residents	56	40
Consultants	57	40.7
Both	10	7.1
Not recorded	17	21.1
Total	140	100

TABLE 4: HOW MANY TIMES HAVE YOU SUTURED WOUND?

NUMBER	FREQUENCY	PERCENTAGE
0	108	77.1
1	13	9.3
2	10	7.1
More than 2	5	3.5
Missing	5	3.5
Total	140	

exposure to surgical skills and training as undergraduates, compounded with the poor work-life attitude of surgeons as a role model for the budding surgeons [5,6,7,8.]

From our study, the mean age of the responders is 23yr. Young age has been documented to be a good motivator for a carrier in surgery[9]. This study also shows that young age has the tendency to pursue surgical specialty.

Our study shows that the best clinical posting so far has been Obstetrics and Gynecology and Pediatrics from both institutions. Though no reasons were adduced, the result shows that surgery can still be appreciated.

The school curriculum stipulates 75% attendance of all academic programme. However, our study revealed a self-assessment of barely half of the classes in both colleges attained the required attendance. The reasons for nonattendance included that they do not learn from the sessions and too long

operative procedures. Only an abysmally 2.6% and 8.1% from each college believed they benefitted maximally from theatre sessions. There is a need to reduce the total number of students entering the theatre to afford maximum benefit and opportunity of interaction between the students and the surgeon. Others may be allowed to attend other clinical activity while others may be distributed amongst the other available secondary and tertiary health facilities. Depending on the clinical year, theatre sessions can be limited to common surgical conditions and not necessarily specialized surgery that they never benefit from in their carrier. Also, the use of audiovisuals outside the theatre has been suggested and acceptable for use by the students from both colleges to aid in the learning process similar to previous reports[10,11,12,13,14.]

Depending on the accessibility, the Residents in training have been a veritable tool in the training of the undergraduate students. Due to the fact that the Residents are more on ground than the Consultants, they can be very useful in training of basic skills like urethral catheterization, setting an intravenous line, suturing of wounds, digital rectal examinations amongst others. In fact, one of the college assessed that they benefit more from the Resident surgeons. This is consistent with published series[15,16,17].

Reading around the surgical procedure before the theatre day will definitely make theatre attendance more educative and will stimulate both the teacher and the students. The abysmally low number of students (2.6%, 4.9%) checking the operation list and reading around it before surgery will make learning and theatre attendance less fruitful.

Towards stimulating undergraduate students in surgery as a carrier, a lot of programmes have been devised on early mentorship by allowing students to scrub up in Surgical procedures, weekend surgical programmes by simulation suturing on the bench with chicken and pig skins. Some have also simulated with the use of robotic endoscopic procedures. The recorded outcomes have been positive. [8,10,20] Some of these might be introduce to obviate the seemingly high number of students who has never scrubbed in theatre (66.2%, 73.8%), sutured wounds (83.8%, 75.4%) nor attended emergency surgery (55.4%, 57.7%) from both institutions. Some medical schools and NGOs actually introduced outreach programmes to aid the students and the community[18,19,20].

Despite the situation above, and work life imbalance of surgeons, a third of the students still likes surgeons (37.2%, 38.9%), like surgery (34.6%, 33.3%), and hopes to specialized in surgery (29.5%, 27.8%). There are no enough data available to determine the burden and distribution of disease illnesses to tailor the appropriate ratio to specialization. The general global trend is a decrease in both enrolment and interest in surgery subspecialty. This ranges from 8.9% in Germany to 21% in Canada. There are also difference in choice of career and starting the career[5,6,7,9,13,21].

The inherited syllabus is based on the presumption of inadequate number of practitioners and so geared towards only general practice. So, a fresh graduate can set up hospital and commence a full fleshed medical practice without legal limitation. There is a need to encourage specialization, backed by legislation, in order to improve the quality of care. The content of the curriculum needs to be defined in objectives like suturing, intubation, rectal examination and strictly followed as such[2, 22, and 23].

There are no correlation between theatre attendance and sex but there is correlation between gender and interest in surgery. This is also in conformity with other studies, since female tend to factor home care into her career [9, 24].

Quality of health in a nation is largely dependent on the quality of its manpower. Inadequate surgical training and exposure may be a disincentive to specialization in surgery and for those who pick interest, may result in a low standard of care. There is a need to review the present inherited syllabus and make the theatre attendance, the peak of surgery, more focused to meet the needs of the trainees and ultimately the society

References

1. Ossai EN, Uwakwe KA, Anyanwagu UC, Ibiok NC, Azuogu BN, Ekeke N. Specialty preferences among final year medical students in medical schools of southeast Nigeria: need for career guidance. BMC Med Educ. 2016;16(1):259

2. Malu AO; universities and medical education in Nigeria. Nigeria medical journal; 2010 vol 51, no 2, 84-88.

3. Katrina B. Mitchell, MD, Geofrey Giiti, MD and Japhet Gilyoma, MD, Canadian Journal of Surgery Surgical education at Weill Bugando Medical Centre: supplementing surgical training and investing in local health care providers. Can J Surg 2013;56(3)199-203

4. Anekoson, J I. "A Comparative Analysis of Health Indicators of Nigeria and Rwanda: A Nigerian Volunteer's Perspective." American Journal of Public Health Research 2013. 1.7: 177-182.

5. Ladak A, Hanson J, de Gara CJ. What procedures are students doing during undergraduate surgical clerkship? Can J Surg. 2006; 49(5): 329–334.

6. Busemann A, Patrzyk M, Busemann C, Heidecke CD. Principles of Teaching in Surgery - State of the Art. Zentralbl Chir 2013, 141(3):277-284

7. Ganschow P. Attitude of medical students towards a surgical career - a global phenomenon? Zentralbl Chir 2012 ;137(2):113-7.

8. Gawad N, Moussa F, Christakis GT, Rutka JT.

Planting the 'SEAD': early comprehensive exposure to surgery for medical students. J Surg Educ. 2013;70(4):487-94.
9. Scott IM, Matejcek AN, Gowans MC, Wright BJ, Brenneis FR. Choosing a career in surgery: factors that influence Canadian medical students' interest in pursuing a surgical career. Can J Surg. 2008;51(5):371-7.
10. Leeds IL, Creighton FX, Wheatley MA, JB, Srinivasan J, Chery MP, Master VA. Intensive medical student involvement in short-term surgical trips provides safe and effective patient care: a case review. BMC Res Notes. 2011; 4: 317.
11. Landes CA, Hoefer S, Schuebel F, Ballon A, Teiler A, Tran A, Weber R, Walcher F, Sader R. Long-term prospective teaching effectivity of practical skills training and a first OSCE in Cranio Maxillofacial Surgery for dental students. J Craniomaxillofac Surg. xxx 2013, 1-8.
12. Cloyd J, Holtzman D, O'Sullivan P, Sammann A, Tendick F, Ascher N. Operating room assist: surgical mentorship and operating room experience for preclerkship medical students. J Surg Educ. 2008 65(4):275-82.
13. Bernholt DL, Garzon-Muvdi J, Laporte DM, Yang SC, McFarland EG. A survey of current policy and practice of surgical exposure for preclerkship medical students at American medical institutions. Am J Surg. 2013 ;206(3):433-8.
14. Sweeney WB. Teaching Surgery to Medical Students. Clin Colon Rectal Surg. 2012 ; 25(3): 127–133
15. Busari JO, Scherpbier AJJA. Why residents should teach: A literature review. J postgrad med, 2004, 50:3
16. Seely AJ, Pelletier MP, Snell LS, Trudy JL. Do residents rated as better teachers perform better on in-training examinations? Am J Surg 1999, 177:33-7
17. Xu G, wolfson P, Robeson M, Veloski JJ, Brigham TB. Students' satisfaction and perception of attending physicians' and residents' teaching role. Am j surg, 1998, 176:46-8
18. Purim KS, dos Santos LD, Murara GT, Maluf EM, Fernandes JW, Skinovsky J. Evaluation of surgical training in medical school. Rev Col Bras Cir. 2013 ;40(2):152-6.
19. Denadai R, Saad-Hossne R, Martinhão Souto LR. Simulation-based cutaneous surgical-skill training on a chicken-skin bench model in a medical undergraduate program. Indian J Dermatol. 2013 ;58(3):200-7.
20. Tergas AI, Sheth SB, Green IC, Giuntoli RL 2nd, Winder AD, Fader AN. A pilot study of surgical training using a virtual robotic surgery simulator. JSLS. 2013; 17(2):219-26.
21. Mahoney R, Katona C, McParland M, Noble L, Livingston G. Shortage specialties: changes in career intentions from medical student to newly qualified doctor. Med Teach. 2004 Nov;26(7):650-4.
22. Lind DS, Deladisma AM, Cue JI, Thomas AM, MacFadyen BV, Nesbit RR. Survey of student education in surgery. J Am Coll Surg. 2007 May;204(5):969-74;
23. Forbes SS, Fitzgerald PG, Birch DW. Undergraduate surgical training: variations in program objectives and curriculum implementation across Canada. Can J Surg. 2006 February; 49(1): 46–5
24. Riska E. Gender and medical careers. Maturitas. 2011 Mar; 68(3):264-7

Prevalence Of Anaemia Among Pregnant Women At Antenatal Care Booking In Ilorin, North Central Nigeria

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Abstract

Anaemia is a global health problem which commonly affects women and children most especially in the developing countries. Anaemia in pregnancy is the most common haematological condition encountered among pregnant women in most developing countries including Nigeria. This prospective study was carried out to determine the red blood cell indices (PCV, Hb, RBC, MCH, MCV, MCHC) and the prevalence of anaemia among pregnant women attending the University of Ilorin Teaching Hospital, Ilorin.

A total of 298 women who presented for booking at the antenatal clinic at different trimesters of pregnancy were enrolled in the study. There were 64 (21.5%) women in first trimester, 146 (49.0%) women in second trimester and 88 (29.5%) in third trimester. The mean age of the women was 25.8±3.2 years, and their ages ranged between 18-42 years. One hundred and eighty pregnant women had haemoglobin concentration < 11.0g/dl giving a prevalence rate of anaemia of 60.4%. Mild anaemia was found in 105 (58.3%), moderate anaemia in 72 (40.0%) and severe anaemia in 3(1.7%) of the pregnant women. There was significant correlation between anaemia and gestational age, parity and level of education at booking. This study indicated presence of high prevalence of anaemia in pregnancy and there is need for appropriate interventional strategies to be put in place so as to reduce prevalence of anaemia and improve pregnancy outcome in our environment.

Keywords: Prevalence, Anaemia, Pregnancy, Booking, Antenatal

Introduction

Anaemia is the reduction in the haemoglobin concentration of blood below the normal reference values for the age, sex, race and place of residence of an individual[1]. It remains a major global health issue more especially in women and children[2,3]. The low haemoglobin concentration is accompanied by a decrease in the total number of red blood cells as well as other red blood cell indices such as packed cell volume, mean haemoglobin concentration, mean corpuscular volume and mean corpuscular haemoglobin concentration. Consequently, there is impaired ability of the blood to transport adequate amount of oxygen to the various organs and tissues in the body thereby leading to grievous consequences [4,5].

During pregnancy, there is increased demand for iron and other vitamins by the mother and the growing foetus and as a result pregnant women often become anaemic due to inability to meet the required levels of these substances either due to inadequate dietary intake or infections such as malaria [6]. Also, the increased plasma volume and the haemodilution which is observed in pregnancy may contribute to the anaemia of pregnancy [7].

Anaemia in pregnancy constitutes a major health problem worldwide, and the magnitude of this was reflected by the estimation of World Health Organization (WHO) that more than half of the women in the world have haemoglobin values that are indicative of anaemia i.e. haemoglobin concentration < 11.0g/dl, and more than 70% of these women are found in the developing and low income countries including Nigeria[2,7]. Pregnancy therefore places an additional burden on the already compromised haemoglobin concentration which may result in severe anaemia if supplementation with oral iron is not given early in pregnancy.

Reduction in haemoglobin concentration during pregnancy has been reported to have significant impact on the health status of both the mother and her growing foetus. Anaemia in pregnancy has been associated with adverse pregnancy outcomes such as prematurity, low birth weight, intrauterine growth retardation, intrauterine foetal death, increased maternal morbidity and mortality among others [8,9]. Recent studies within and outside Nigeriahave estimated the prevalence of anaemia in pregnancy in developing countries to vary from 33% -75% of which about 7% may be severely anaemic[7,10,11,12,13,14]. The WHO has categorized anaemia in pregnancy as mild (haemoglobin concentration is 10.0 – 10.9 g/dl), moderate (haemoglobin concentration 7.0 – 9.9 g/dl) and severe(haemoglobin concentration < 7.0 g/dl)[2,7]. Primigravidae living in areas of malaria endemicity

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have been reported to have a high tendency to developsevereanaemia[10], [12]. Ina study 62.7% of pregnant women were anaemic at the time of booking for antenatal care [13]. Also in India, a high prevalence of 75.2% was reported among pregnant women during booking for antenatal care [14]. Surveys from different parts of Nigeria have reported the prevalence of anaemia in pregnancy to be between 27.6% and 76.5% [15,16,17,18,19,20,21]

Iron deficiency has been reported as the most common cause of anaemia in pregnancy worldwide [2] and predisposing factors include low socioeconomic status, grand multiparity, inadequate child spacing, late antenatal booking, malaria and HIV infection among others[18,20,21]. Low haemoglobin concentration and reduced red cell mass in the blood have been identified as the major haematological abnormalities that are associated with unfavourable pregnancy outcomes [20] and their assessment in pregnant women during the first antenatal clinic visit may help to identify those with significant anaemia to justify timely intervention thereby reducing the risks associated with anaemia of pregnancy.

The main aim of this study, therefore, was to determine thered blood cell indices –packed cell volume (PCV), haemoglobin concentration (Hb), red blood cell count (RBC), mean haemoglobin concentration (MCH), mean corpuscular volume (MCV), mean corpuscular haemoglobin concentration (MCHC) and the prevalence of anaemia among the pregnant women during the booking visit for antenatal care at the University of Ilorin Teaching Hospital, Ilorin, North central Nigeria. The study was also carried out to demonstrate the magnitude of anaemia in pregnancy in this part of the country which can subsequently assist in the planning of strategies for the prevention as well as effective management of anaemia in pregnancy so as to reduce the risks and adverse outcomes in pregnant women.

Materials And Methods

This was a cross-sectional study that was carried out at the Antenatal Clinic of Department of Obstetrics and Gynaecology, and the Department of Haematology and Blood Transfusion of the University of Ilorin Teaching Hospital, Ilorin, North Central Nigeria, between September and November, 2012. The University of Ilorin Teaching Hospital (U.I.T.H.) is a 650 bedded tertiary health facility which serves the population of Ilorin metropolis and the surrounding towns and villages. It also serves as a referral centre for primary and secondary healthcare facilities in the neighbouring states (Oyo, Osun, Ekiti,Ondo and Niger) of Nigeria. Ilorin, the capital city of Kwara state, Nigeria, is located on the latitude 8.5^0North and longitude 4.55^0 East with a total populationof 908,490 and an annual growth rate of 2.3%. It is an area of stable malaria transmission all year round[22, 23].

Using the serial recruitment method, all consecutive apparently healthy pregnant women who presented for booking at the Antenatal Clinic of the U.I.T.H., Ilorin, and consented to the study were enlisted for the study period. A pretested structured questionnaire was administered on each subject prior to venous blood sampling for the haematological tests. The socio-demographic data (name, age, educational status, parity etc), history of fever and or treatment for any febrile illness within the last two weeks of presentation were recorded. The pregnant women with fever (body temperature $\geq 37^0$C) at presentation, those that were receiving treatment or had received treatment for a febrile illness within two weeks of presentation, and those with underlying medical conditions such as hypertension (BP$\geq$140/90 mmHg), diabetes, sickle cell disorders (Hb SS, SC and CC), bleeding disorders, Hepatitis B virus (HBV) and Human immunodeficiency virus (HIV) infections and history of recent blood transfusion etc were excluded from the study. Ethical approval for the research was sought and obtained from the Ethical Review Committee (ERC) of the U.I.T.H., Ilorin.

The height, weight and vital signs of the participants were also measured in addition to complete medical and obstetric examinations.

Five milliliters (5ml) of venous blood sample was collected from each participant by a trained phlebotomist during booking into vacutainer specimen bottles containing K^+- ethylene diamine tetraacetic acid (EDTA) as anticoagulant by venepuncture using aseptic techniques. The blood samples were transported to the laboratory and analyzed within two hours of collection. The following parameters – PCV, Hb, RBC, MCH, MCV, MCHC were determined using the Sysmex KX-21 N Automated cell counter (Sysmex Corporation, Kobe, Japan). Standardization, instrument calibration and sample processing were carried out according to the manufacturer's instructions[24].

The data obtained were entered into a Microsoft Excel data sheet. Statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) software version 19. Association between variables was tested using the Chi-square test for discrete variables and the Student t-test for continuous variables. Analysis of variance (ANOVA) test was used to compare the means of haematological parameters, and the level of statistical significance of data was taken as p value equal to or less than 0.05 ($p \leq 0.05$).

Results

Two hundred and ninety eight pregnant women were recruited for the study over the study period. The

Table 1: showing the socio-demographic characteristics of the pregnant women at booking and association with anaemia in the study population

Variables	N= 298 Frequency (%)	Anaemia Present Frequency (%)	Anaemia Absent Frequency (%)	P value
Age (years)				0.025
18-22	23	12(52.2)	11(47.8)	
23-27	44	30(68.2)	14(31.8)	
28-32	144	90(62.5)	54(37.5)	
33-37	70	36(51.4)	34(48.6)	
38-42	17	12(70.6)	5(29.4)	
Parity				0.046
Nulliparous	60	30(50.0)	30(50.0)	
Para 1	196	128(65.3)	68(34.7)	
Para 2	32	14(43.7)	18(56.3)	
=Para 3	10	8(80.0)	2(20.0)	
Educational Level				0.023
None	19	9(47.4)	10(52.6)	
Primary	42	24(57.1)	18(42.9)	
Secondary	115	55(47.8)	50(52.2)	
Tertiary	122	92(75.4)	30(24.6)	
Occupation				0.035
Civil Servant	148	86(58.1)	62(41.9)	
Housewife	56	36(64.3)	20(35.7)	
Self Employed	40	23(57.5)	17(42.5)	
Petty Trading	54	35(64.8)	19(35.2)	
Marital Status				0.038
Single	48	22(45.8)	26(54.2)	
Married	250	158(63.2)	92(36.8)	
Gestational Age				0.040
First Trimester	64	42(65.6)	22(34.4)	
Second Trimester	146	86(58.9)	60(41.1)	
Third Trimester	88	52(59.1)	36(40.9)	

mean age of the women was 25.8±3.2 years, and their ages ranged between 18-42 years. There were 64 (21.5%) women in their first trimester of pregnancy, 146 (49.0%) women were in the second trimester and 88(29.5%) women were in the third trimester. The socio-demographic characteristics of the pregnant women in relation to the presence or absence of anaemia at booking are presented in Table 1.

One hundred and eighty pregnant women (60.4%) of the study population were anaemic with haemoglobin concentration lower than 11.0g/dl at booking. One hundred and five (58.3%) of the anaemic pregnant women had mild anaemia (Hb conc. 10.0-10.9g/dl), 72(40.0%) women had moderate anaemia (Hb conc. 7.0-9.9g/dl) and severe anaemia (Hb conc. <7.0g/dl) was found in 3 (1.7%) of the anaemic pregnant women (Table 2). The highest proportion of anaemia was found in pregnant women in the age group 23-27 years (68.2%) while the lowest cases of anaemia was found in the 33-37 years age group (51.4%). The correlation between the age of the pregnant women and presence of anaemia was statistically significant (p = 0.025) Table 1.

The mean values of the haematological indices were: PCV (29.98±2.52%), Hb (9.83±0.82 g/dl), RBC (3.52±0.38 x 10^9/L), MCH (28.11±2.41 pg), MCV (85.69±6.66 fl) and MCHC (32.80±1.04 g/dl) PCV, Hb and RBC were found to be significantly reduced in the anaemic pregnant women when compared with their non anaemic counterparts (p=0.002, 0.022, 0.037 respectively) but no significant difference was observed in the mean values of MCH, MCV and MCHC (Tables 3 and 4). Fourty two (65.6%) of the pregnant women that presented for booking in the first trimester were found to be anaemic, 86(58.9%) of women in second trimester were anaemic while 52(59.1%) in the third trimester were anaemic (Table 5).

Significant association was found between the gestational age of the women at booking and the

Table 2: showing the distribution of anaemic pregnant women according to the degree of anaemia

Classification of Anaemia	Mean HbConcentration±SD	Frequency	Percentage
Mild	10.44±0.28	105	58.3
Moderate	9.09±0.60	72	40.0
Severe	6.32±0.52	3	1.7
Total		180	100.0

Table 3: showing the mean values of the haematological parameters in the pregnant women compared with normal reference values

Parameter	Anaemia Present Mean±SD	Anaemia Absent Mean±SD	Reference Values
PCV %	29.98±2.52	35.53±1.84	38.0 – 48.0
Haemoglobin g/dl	9.83±0.82	12.80±0.72	11.5 – 16.5
RBC $x10^{12}$/L	3.52±0.38	4.23±0.32	3.8 – 5.8
MCH pg	28.11±2.41	28.14±1.70	27.0 32.0
MCV fl	85.69±6.66	84.47±5.08	76.0 – 96.0
MCHC g/dl	32.80±1.04	33.21±1.04	32.0 – 36.0

Table 4: showing the mean values of haematological parameters in the anaemic and non-anaemic pregnant women

Parameter	Anaemia Present Mean±SD	Anaemia Absent Mean±SD	P- value
PCV %	29.98±2.52	35.53±1.84	0.002
Haemoglobin g/dl	9.83±0.82	12.80±0.72	0.022
RBC $x10^{12}$/L	3.52±0.38	4.23±0.32	0.037
MCH pg	28.11±2.41	28.14±1.70	0.618
MCV fl	85.69±6.66	84.47±5.08	0.073
MCHC g/dl	32.80±1.04	33.21±1.04	0.125

Table 5: showing the distribution of pregnant women according to their gestational age at booking

Gestational Age	Anaemia Present (%)	Anaemia Absent (%)	Total number (%)
First Trimester	42(65.62)	22(34.38)	64(100)
Second Trimester	86(58.9)	60(41.1)	146(100)
Third Trimester	52(59.09)	36(40.91)	88(100)
Total	180(60.4)	118(39.6)	298(100)

occurrence of anaemia in the different trimesters (p = 0.025). Also, statistically significant relationship was found between anaemia and the marital status, occupation, educational level and parity of the subjects at booking(Table1).

Discussion

Anaemia in pregnancy constitutes a global health problem and more especially in the developing countries where the incidence has been reported to be very high and may be associated with increased maternal and perinatal morbidity and mortality [8, 9]. Previous studies from Nigeria [7,11,12,15,16,17,18], Ethiopia[13,25], Ghana[26] and India[14] on the prevalence of anaemia in pregnancy have reportedprevalence rates from 33% to 75%. The prevalence of anaemia in our study was 60.4%, and this result was found to fall within the prevalence rates that have been reported by other researchers within and outside Nigeria [13, 14, 16,17,19,21,,26].

However, the prevalence of anaemia in this study was lower than 40.8% reported from Enugu, Nigeria [15,] 20.7% in Benin City, Nigeria[27], and 27.6% in Lagos, Nigeria[12]. The lower percentage of anaemia which was recorded in a study was attributed to early attendance recorded at the booking clinic in majority of the pregnant women enrolled during the study period[12]. In the present study, majority of the pregnant women were enrolled for antenatal care in the second and third trimesters which could have been responsible for the high prevalence of anaemia recorded in our study, since early booking would have identified the anaemic pregnant women early enough for better monitoring and correction of anaemia by appropriate oral supplementation with haematinics[28].

Anaemia was found to be more prevalent in the second and third trimesters in our study. This finding is in agreement with previous findings[5,7,12,15]. It is generally recommended that booking for antenatal

clinic should take place within the first 12 weeks of pregnancy for early detection and treatment of pregnancy related problems[29]. The increased anaemia observed in women during the second and third trimesters may have been as a result of late booking for antenatal careby the women in our study. The anaemia may also have been aggravated by the physiological haemodilution of pregnancy which has been reported to be more pronounced in the last two trimesters of pregnancy [7]. Majority of the anaemic pregnant women in this study were found to have mild to moderate anaemia (58.3% and 40.0% respectively) while severe anaemia was recorded in only 3(1.7%) pregnant women. While some previous studies have reported no case of severe anaemia[15,29] or very low prevalence rates from 0.3% to 0.8%[7,14], studies in Gombe, Nigeria[18] and in Ethiopia[13]reported severe anaemia of 2.1% and 3.1% respectively in their studies.

The mean packed cell volume (PCV) of the anaemic pregnant women in this study was 29.98% which by the WHO definition is indicative of anaemia[2,6]. Although, it had been reported that a large number of pregnant women in Nigeria with PCV of 30% to 33% go through pregnancy without any apparent compromise to the pregnant mothers and their babies [16], low PCV levels below 30% definitely qualifies for further investigation and treatment of affected women so as to prevent the adverse consequences of maternal anaemia in both the mothers and their unborn babies. Early booking for antenatal care, assessment of haematological parameters and enlightenment programmes during antenatal clinic visits may help to reduce the effects of anaemia on pregnancy outcomes.

It is generally believed that parity is a risk factor for anaemia in pregnancy. Anaemia tends to increase with increasing parity because repeated pregnancies could lead to depletion of iron stores especially when there is no iron supplementation during pregnancy[17,21]. In our study, majority of anaemia cases encountered were in the multiparous women (80%).This finding is in agreement with previous studies which had reported increased anaemia in the multigravidae pregnant women[7,19,21]. The age of the women at booking was also found to be significantly associated with the incidence of anaemia in our study, with majority of the anaemia cases being found in the 23 – 27 and 38 - 42 years age groups. This finding is in agreement with the finding of Olatubosun et al in Uyo, Nigeria, which also found increased percentage of anaemia in the 20 – 24 and 35-39 years age groups[7].

Marital status, level of educational and occupation of the women at booking were also found to have significant correlation with anaemia in our study. This finding is in agreement with reports of Olatunbosun et al[7], Bukar et al [18], and Lamina and Sorunmu[30] which reported high prevalence of anaemia among unemployed pregnant women and those with none or only primary school education. In our study we found high prevalence of anaemia among the petty traders and housewives which supported previous studies where anaemia was found to be prevalent in low income and less educated women.The high cases of anaemia observed in the married women and those with tertiary education in our study could be rather apparent than real as majority of the women that booked for antenatal care were in the married and tertiary education categories which could have resulted in the higher percentage of anaemia observed in them.

Conclusion

The prevalence of anaemia in pregnancy in this study is high, hence the need for intensified education and advocacy in women, pregnant and non pregnant,on the need for early booking for antenatal care in our environment.Early assessment and diagnosis of anaemia in the pregnant woman during booking at Antenatal Clinics especially during the first trimester could lead to prompt intervention and commencement of oral supplementation with iron and other routine drugs such as folic acid and malaria prophylaxis as well as screening for other conditions like human immunodeficiency virus (HIV), hookworm infestation, sickle cell disease etc which could contribute to anaemia of pregnancy. This will ultimately lead to a reduction in the prevalence of anaemia in pregnancy in our environment thereby improving pregnancy outcome. The findings in this study may also form the basis of a larger study in the future.

References

1. Hoffbrand AV, Moss PAH, Pettit JE. Erythropoiesis and general aspects of anaemia. In: Essential Haematology, 5th ed.: Blackwell Publishing; 2006, p. 20.

2. WHO. Centers for Disease Control and Prevention. Worldwide Prevalence of Anemia. Geneva, Switzerland: World HealthOrganization; 2008.

3. Milman N. Anaemia -still a major health problem in many parts of the world. Ann Hematol 2011;90:369–377

4. Lone FW, Qureshi RN, Emmanuel F. Maternal anaemia and its impact on perinatal outcome in a tertiary care hospital in Pakistan. East Mediterr Health J 2004;10:801-7.

5. Brabin BJ, Hakimi M, Pelletier D. An analysis of anemia and pregnancy related
maternal mortality. J Nutr 2001; 131:604-614.

6. WHO. Haemoglobin Concentrations For the Diagnosis of Anaemia and Assessment of Severity, Vitamin and Mineral Nutrition Information System.

Geneva, Switzerland: WHO; 2011.

7. Olatunbosun OA, Abasiattai AM, Bassey EA, James RS, Ibanga G, Morgan A. Prevalence of Anaemia among Pregnant Women at Booking in the University of Uyo Teaching Hospital, Uyo, Nigeria. BioMed Research Internat. Volume 2014 (2014), Article ID 849080, 8 pages http://dx.doi.org/10.1155/2014/849080

8. Ujah IAO, Aisien OA, Mutihir JT, Vanderjagt DT, Glew RH, Uguru VE. Factors contributing to maternal mortality in North- Central Nigeria: A seven-year review. AJRH 2005; 9(3):27–40. http://dx.doi.org/10.2307/3583409, PMid:16623187

9. Ariba AJ, Inem AV, Ayankogbe OO, Biersack G, Adetoro OO. Pattern of Obstetric Mortality in a voluntary agency hospital in Abeokuta South West Nigerian. Nig Med Pract. 2004;45(5):83–90.

10. Ameh S, Adeleye OA, Kabiru CW, Agan T, Duke R, Mkpanam N, et al. Predictors of Poor Pregnancy Outcomes Among Antenatal Care Attendees in Primary Health Care Facilities in Cross River State, Nigeria: A Multilevel Model. Matern Child Health J. 2016; 20(8): 1662. doi:10.1007/s10995-016-1965-5.

11. Esike CO, Anozie OB, Onoh RC, Sunday UC, Nwokpor OS, Umeora OU. The prevalence of anemia in pregnancy at booking in Abakaliki, Nigeria. Trop J Obstet Gynaecol 2016;33:332-6.

12. Okunade KS, Adegbesan-Omilabu MA. Anaemia among pregnant women at the booking clinic of a teaching hospital in South-Western Nigeria. Int J Med Biomed Res 2014; 3:114-20.

13. Melku M, AgmaA.Maternal anemia during pregnancy in Bahirdar Town, Northwestern Ethiopia: A facility-based retrospective study App. Med Res. 1(1); 2015: 2-6.

14. Raj PBU, Mangasuli V. Retrospective study on prevalence of anaemia among pregnant women at booking in a health care centre in Yadwad, Dharwad, Karnataka, India. *Int. J Community Med Public Health. 2016 Oct; 3(10):2762-2765.*

15. Dim CC, Onah HE. The prevalence of anemia among pregnant women at booking in Enugu, South Eastern Nigeria. Med Gen Med 2007;9:11.

16. Komolafe JO, Kuti O, Oni O, Egbewale BE. Socio-demographic characteristics of anaemic gravidae at booking: a preliminary study at Ilesha, Western Nigeria. Niger J Med. 2005;14(2):151–154. PMid: 1608323.

17. Ndukwu GU, Dienye PO. Prevalence and socio-demographic factors associated with anaemia in pregnancy in a primary health centre in Rivers State, Nigeria. Afr J Prim Health Care Fam Med 2012; 4:1.

18. Bukar M, Audu BM, Yahaya UR, Melah GS. Anaemia in pregnancy at booking in Gombe, North-eastern Nigeria. J Obstet Gynaecol 2008;28:775-8.

19. Olubukola A, Odunayo A, Adesina O. Anemia in pregnancy at two levels of health care in Ibadan, south west Nigeria. Ann. Afr. Med. 2011; 10:2727. http://www.annalsafrmed.org/text.asp?2011/10/4/272/87042.

20. Hassan AA, Mamman AI, Adaji S, Musa B, Kene S. Anemia and iron deficiency in pregnant women in Zaria, Nigeria. Sub-Saharan Afr J Med. 2014;1:369.http://www.ssajm.org/text.asp?2014/1/1/36/129311.

21. Idowu OA, Mafiana CF, Sotiloye D. Anaemia in pregnancy: a survey of pregnant women in Abeokuta, Nigeria. Afr Health Sci. 2005; 5(4): 295-299.

22. National Population Commission. 2006 Population and Housing Census of the Federal Republic of Nigeria, National and State Population and Housing Tables; *Priority Tables* (Vol. I),2006.

23. Ahmed YA.Urban Traffic Dilemma and Potential Remedy: Example from Ilorin City, Nigeria. Afr Resear Rev. 2013; 7(1) serial 28:261-270.

24. Sysmex Corporation. Sysmex KX-21 N. Operator's Manual; 2006. Available from: https://www.sysmex.com/us/en/Brochures/Brochure_KX-21N_MKT-10-1023.pdf

25. Obse N, Mossie A, Gobena T. Magnitude of anemia and associated risk factors among pregnant women attending antenatal care in Shalla Woreda, West Arsi Zone, Oromia Region, Ethiopia. Ethiop J Health Sci. 2013; 23:165-73.

26. Glover-Amengor M, Owusu WB, Akanmori B. Determinants of anaemia in pregnancy in sekyere West District, Ghana. Ghana Med J 2005;39:102-7.

27. Ogbeide O, Wagbatsoma V, Orhue A. Anaemia in pregnancy. East Afr Med J 1994; 71:671-3.

28. Omigbodun AO. Recent Trends in the management of Anaemia in Pregnancy. Trop J Obstet Gynaecol. 2004; 21:1-3.

29. Adekanle, DA, Isawumi, AI. Late antenatal care booking and its predictors among women in south western Nigeria.*Online J Health and Allied Sci., 2008; 7*(1): 1-6.

30. Lamina MA, Sorunmu TO. Prevalence of anaemia in pregnant women attending the antenatal clinic in a Nigerian university teaching hospital. Nigerian Med. Pract. 2003; 44:39–42.

Obstetric Performance of Mothers with Fetal Macrosomia in Bida, North Central Nigeria.

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Abstract

Fetal macrosomia remains an important determinant of perinatal outcome and a contributor to neonatal morbidity and mortality due to its possible attendant complications. The aim of the study was to determine the maternal characteristics, as well as neonatal and maternal outcome following delivery of macrosomic babies.

A descriptive study of deliveries that resulted in the delivery of macrosomic babies at the Federal Medical Centre, Bida, Nigeria was conducted over a five year period. The list of eligible parturient was compiled from the delivery registers, the case files were retrieved and relevant information extracted. Statistical analysis was with SPSS version 20.0 and $p<0.05$ was significant.

Out of 8141 deliveries, macrosomia occurred in 500 (6.1%); among the 480 cases analyzed, 345(71.9%) mothers of macrosomic babies were <35 years of age, the mean maternal weight at term was 89.42kg±2.50 while 297(61.9%) mothers had previous delivery of macrosomic babies. Also, 337(70.2%) women had vaginal delivery while maternal risk factors for fetal macrosomia were not statistically significant relative to the mode of delivery (p0.857). Maternal complications included perineal lacerations [90(18.8%)] and primary postpartum haemorrhage [82(17.1%)]. Maternal booking status (p0.001), male fetal gender (p0.001) and birth weight less than 4500g (p0.002) were significant predictors of vaginal delivery while maternal complications were significantly higher following vaginal delivery (p0.001). Low APGAR scores were higher following vaginal deliveries (p0.732); the perinatal mortality rate was 31/1,000 live birth (15/480) but there was no maternal death. This study revealed a high incidence of fetal macrosomia and vaginal delivery was associated with a high maternal and perinatal morbidity.

Key words: Obstetric Performance; Pregnancy outcome; Fetal macrosomia; Mode of Delivery.

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Introduction

Generally, fetal macrosomia is defined as birth weight of 4,000g or greater, or ultrasound estimated fetal weight of 4500g or more [1,2]. The American College of Obstetricians and Gynecologists (ACOG) defined macrosomia as neonates with an absolute birth weight greater than 4500g irrespective of gestational age or other demographic variables [3]. Despite the controversy, it is generally accepted that infants with birth weight above the 90th percentile on the population specific curves or above two standard deviations are large for gestational age (GA) or macrosomic [2,3]. However, there is an established association between fetal macrosomia and increased risk of fetal, neonatal or maternal morbidities and possible neonatal mortality.

Risk factors for fetal macrosomia include genetic, environmental and constitutional factors; pre-gestational high body mass index (BMI), excessive weight gain in pregnancy and gestational or pre-gestational diabetes [4]. Although clinical physical examination, maternal risk factor assessment and radiological evaluation may predict fetal macrosomia, the diagnosis is confirmed only by weighing the newborn after delivery.

Controversies on the best management modality of fetuses with macrosomia have remained unresolved on the diagnosis and mode of delivery. Diagnosis is a challenge because prenatal diagnostic methods based on clinical estimation and ultrasound scan (USS) are imprecise while obesity, co-existing uterine fibroid, multiple pregnancy and amniotic fluid volume affects clinical estimation. Antenatal accuracy of antenatal prediction of fetal macrosomia (>4000g) has sensitivity and specificity of 41.2% and 94.1% as well as positive and negative predictive values of 57.5% and 89.1% respectively [5]. Therefore, it has been suggested that a high index of suspicion should be exercised in women with previous macrosomia, high maternal pre-pregnancy weight, increased weight gain in pregnancy, multiparity, male fetus, postdated pregnancy as well as pre-gestational or gestational diabetes [6]. In addition, the mode of delivery remained controversial in medical literature, the options include expectant management with subsequent vaginal delivery, induction of labour (IOL) and elective caesarean section (CS). However, the role of elective CS has been questioned and a study estimated that 3,657 CS would be required to prevent one permanent brachial plexus injury [7].

This study aimed at determining the pregnancy outcome (neonatal and maternal) following delivery of macrosomic babies among parturient in Bida, Nigeria.

Methodology

The study was a retrospective descriptive study conducted at the Federal Medical Centre, Bida, Nigeria over a five year period. The inclusion criteria were delivery at the study centre of a singleton neonate with birth weight of 4000g or more. Parturient with babies whose birth weights were less than 4000g or birth at other facilities were excluded from the study.

For this study, macrosomia was defined as a birth weight of 4000g or more measured after separation of the placenta from the newborn[1,2]. A list of macrosomic singleton newborns during the study period was compiled from the delivery record book and the maternal and neonatal case files were retrieved from the medical records department. Thereafter, relevant information including maternal demographic and obstetric characteristics, labour and delivery record as well as maternal and neonatal outcome were retrieved using a data collection sheet. The results were analyzed using SPSS (IBM, USA) version 20.0. The study was conducted in accordance with institutional guideline on ethics and research and the data collected was used solely for the purpose of the research.

Results

During the period under review, there were 8,141 deliveries while 500 infants had macrosomia giving a prevalence of 6.1%; the retrieval rate for the study was 96% (480 out of 500 case files). The mean maternal age was 32.21±4.13years (range 17 - 40years), mean parity 3.0±2.0 and mean maternal weight at term 89.42±2.50kg. Also, 77(16.0%) were unbooked, 96(20%) were grand multipara, while 182(37.9%) had previous delivery of macrosomic babies. The commonest identified risk factors for fetal macrosomia was male fetal gender [422(87.9%)] as shown in table 1.

The commonest mode of delivery was spontaneous vertex delivery [314(65.4%)] while caesarean delivery rate was 29.8% (elective 11.9%, emergency 17.9%). The male infants were slightly bigger than the females (mean birth weight 4.30±0.08 vs. 4.05±0.07), babies delivered per abdomen were bigger than those delivered through the vaginal route (4.40±0.10 vs. 4.20±0.05) while perineal laceration was the commonest maternal complication occurring in 90 (18.8%) (Table 2).

In table 3, maternal booking status (p0.001), male fetal gender (p0.001) and birth weight less than 4500g (p0.002) were significant predictors of vaginal delivery among parturient with fetal macrosomia. Significantly more babies weighing 4000 to 4499g were delivered per vaginal while those weighing 5000g and above were delivered through the abdominal route (p0.002). Maternal complications were found to be significantly higher following vaginal delivery of macrosomic babies (p0.001). The neonatal mortality rate was 31/1000 deliveries (15/480) but there was no maternal death recorded among the study population.

Discussion

The prevalence of macrosomia in this study was higher than reports of 2.6 to 4.5% from older studies among Africans [1,2,] but similar to 8.1% from a recent study in Nigeria [8] but the incidence is 10-20% in Europe and North America [9]. This may be supportive of recent reports of the trend in African communities toward western diet, a relative improvement in social

Table 1: Maternal socio-demography and risk factors for fetal macrosomia

Parameter	Frequency	Percentage (%)
Maternal age (years)		
<35	345	71.9
=35	135	28.1
Mean age(years)	32.21±4.13	
Parity		
2 to 4	384	80.0
=5	96	20.0
Mean parity	2.84±1.93	
Mean maternal height (m)	1.58±0.70	
Mean weight at term (kg)	89.42±2.50	
Risk factors		
Postdated pregnancy	19	4.0
Obesity	22	4.6
Diabetes mellitus	36	7.5
Hypertension	41	8.5
Previous macrosomic baby	182	37.9
Male fetal gender	422	87.9

Table 2: Pregnancy outcome and complications

Parameter	Frequency	Percentage (%)
Mode of delivery		
Vaginal		
Spontaneous vertex delivery	314	65.4
Vacuum	19	4.0
Assisted breech	4	0.8
Caesarean		
Elective	57	11.9
Emergency	86	17.9
Fetal gender		
Female	58	12.1
Male	422	87.9
Mean birth weight		
Female	4.05±0.07	
Male	4.30±0.08	
Babies delivered per vaginam	4.20±0.05	
Babies delivered by caesarean delivery	4.40±0.10	
Low APGAR scores (=6)		
1st minute	43	9.0
5th minute	23	4.8
Maternal complications		
Cervical laceration	3	0.6
Shoulder dystocia	20	4.2
Vaginal laceration	27	5.6
Primary postpartum haemorrhage	82	17.1
Perineal laceration	90	18.8

Table 3: Modes of delivery and pregnancy outcome in women with fetal macrosomia

Parameter	Mode of delivery		χ^2	*p* value
	Abdominal	Vaginal		
Maternal Age				
<35	127	218	1.550	0.213
=35	58	77		
Booking status				
Booked	129	240	10.730	0.001
Unbooked	58	53		
Birth weight				
4.0-4.49	120	229		
4.5-4.99	57	54	31.144	0.002
=5.0	18	2		
Fetal gender				
Female	33	25	10.341	0.001
Male	148	274		
Maternal risk factors				
Postdatism	12	7		
Obesity	10	12		
Diabetes mellitus	20	16	1.325	0.857
Hypertension	22	19		
Previous macrosomic baby	99	83		
Low APGAR score (=6)				
1st minute	15	28	0.117	0.732
5th minute	9	14		
Maternal Complication				
Cervical laceration	0	3		
Shoulder dystocia	0	20		
Vaginal laceration	0	27	^{Y}69.755	<0.001
Perineal laceration	0	90		
Primary PPH	37	45		

χ^2: Chi square
Y: Yates corrected chi square

status and obesity with associated increasing mean birth weights and large for gestational age babies [10]. The rising maternal age at delivery in African communities and grandmultiparity (20% in this study) may also be relevant contributing factors [2]. However, the comparable recurrence rate of fetal macrosomia in this study (37.9%) and 39.5% from a similar study in Nigeria [8] suggest possible influence of environmental factors. A comparative study in Nigeria reported that fetal macrosomia is significantly associated with higher maternal age and parity, male fetal gender, birth asphyxia and caesarean delivery [8] which is comparable to the results in this study.

Male fetal gender preponderance among macrosomic babies in this study also corroborates a previous report from Nigeria [8]. The relatively higher birth weights of male babies have been attributed to a poorly defined influence of chromosome Y which establishes the antigenic dissimilarity that enhances trophoblastic invasion and its consequent promotion of fetal growth [11]. It also includes the speculation that the male fetus tend to have greater lean body mass and less body fat than the female probably due to the effect of fetal testosterone production [11].

Majority of macrosomic fetuses in this study were delivered per vaginam similar to other reports [8,10] but as the weight increased, there was a higher recourse to CS. This suggests that expectant management and attempt at vaginal delivery with recourse to abdominal delivery rather than elective abdominal delivery for all cases is a reasonable management option in fetal macrosomia [8]. This approach will no doubt reduce the increasing CS rate and its attendant risks in subsequent pregnancies and deliveries especially in low resource countries. Induction of labour (IOL) was theoretically considered as an option because it prevents ongoing fetal growth estimated at about 280g per week at term [8]. However, a systematic review and meta-analysis comparing expectant management and IOL concluded that IOL increased CS rate without improving perinatal outcomes [12]. Thus, in uncomplicated pregnancies, there is insufficient evidence for fetal macrosomia as an indication for IOL, however, elective CS has been suggested for weight >5000g in non-diabetics and 4500g in diabetes [3].

For an attempt at vaginal delivery of a macrosomic baby, an experienced obstetrician with skills in operative delivery and management of shoulder dystocia as well as a neonatologist should be in attendance. The risk for shoulder dystocia was observed to increase rapidly at birthweight above 400g while risk for third or fourth degree perineal lacerations did not change significantly [13]. This seem to suggest 4000g as the limit for safe vaginal delivery; however genital laceration remains a common maternal complication at vaginal delivery of macrosomic fetuses [6,8].

Studies have reported an association between fetal macrosomia and maternal obesity, higher BMI at the onset and increased weight gain during pregnancy. However, the early determination of BMI at onset or early in pregnancy is impracticable in most low resource countries due to the prevalent late or none antenatal booking status among parturient [1,2]. A population-based study in China reported that maternal overweight, increased weight gain in pregnancy and high fasting plasma glucose were associated with fetal macrosomia independent of maternal age and gestational age at delivery [14].

While the precise birth weight can only be confirmed at delivery, clinical and radiological (ultrasonography) methods used in predicting birth weight have been reported as imprecise in the third trimester [8]. The role of ultrasonography in predicting fetal macrosomia is further questioned because 2D machines have a low accuracy and high false positive rate; higher resolution (3D or 4D) machines are better [6] but not readily available in many low resource countries. In addition, clinical estimation is hindered by maternal, fetal and observer related factors. Therefore, the search for an ideal antenatal predictor of fetal weight remains elusive.

It has been suggested that primary prevention of fetal macrosomia could target nutritional control to modify the BMI, encourage physical activity and adequate attention to family and individual history of pre-gestational or gestational diabetes. During pregnancy, because the use of metformin has been associated with less gestational weight gain, its use has been suggested to prevent insulin resistance and fetal macrosomia. However, clinical trials involving women without diabetes but BMI >30kg/m^2 concluded that daily administration of metformin from 12^{th} to 18^{th} week till delivery did not reduce the median birth weight and incidence of LGA babies [15].

In conclusion, fetal macrosomia is prevalent in this study; while management should be individualized, this study suggest vaginal delivery when fetal weight is less than 4500g and abdominal delivery for 4500g or more. Also, vaginal delivery is associated with statistically higher maternal morbidity, therefore we recommend clinical and ultrasound estimation of fetal weight as a guide in determining the mode of delivery.

Disclosure

There was no conflict of interest in the conduct of the study.

References

1. Adetoro OO, Adedoyin MA. Maternal mortality and prenatal outcome for big babies. Trop J Obstet Gynaecol 1991:9(1):41-43.
2. Adesina OA, Olayemi O. Fetal macrosomia at the University College Hospital Ibadan: A 3-year reviews. J Obstet Gynaecol 2003:23(1):30-33.
3. American College of Obstetrician and Gynecologists. ACOG Practice bulletin clinical management guidelines for Obstetrician-Gynecologist. ACOG practice bulletin No 40, 2002. Obstet Gynecol 2002;100:1045-1050.
4. Jolly MC, Sebire NJ, Harris JP, Regan L, Robinson S. Risk factors for macrosomia and its clinical consequences: a study of 350,311 pregnancies. Eur J Obstet Gynecol Reprod Biol 2003;111:9e14.
5. Galvin DM, Burke N, Burke G, Breathnach F, McAuliffe F, Morrison J, et al. accuracy of prenatal detection of macrosomia >4000g and outcome in the absence of intervention: results of the prospective multicenter genesis study. Am J Obstet Gynecol 2017;216(Supp 1): S68.
6. Araujo EJ, Peixoto AB, Zamarian ACP, Elito JJ, Tonni G. Macrosomia. Best Pract Research Clin Obstet Gynaecol 2017;38:83-96.
7. Herbst MA. Treatment of suspected fetal macrosomia: a cost-effectiveness analysis. Am J Obstet Gynecol 2005;193:1035e9.
8. Ezegwui HU, Ikeako LC, Egbuji C. Fetal macrosomia: Obstetric outcome of 311 cases in UNTH, Enugu, Nigeria. Niger J Clin Pract 2011;14(3):322-6.
9. Cheng YK, Lao TT. Fetal and maternal complications in macrosomic pregnancies. Research Reports Neonatol 2014;4:65-70.
10. Onyiriuka AN. Trends in birthweights of babies born in Benin City, Nigeria. Ann Biomed Sci 2002;1(2):148-152.
11. Ounsted M, Ounsted C. The fetal growth rate. Clin Develop Med 1973;46:72-77.
12. Sanchez-Ramos L, Bernstein S, Kaunitz AM. Expectant management versus labour induction for suspected fetal macrosomia: a systematic review. Obstet Gynecol 2002;100:997-1002.
13. Froehlich R, Simhan H, Larkin J. An outcome-based approach to defining macrosomia. Am J Obstet Gynecol 2017;216(Supp 1): S77
14. Shi P, Yang W, Yu Q, Zhao Q, Li C, Ma X, et al. Overweight, Gestational Weight Gain and Elevated Fasting Plasma Glucose and Their Association with Macrosomia in Chinese Pregnant Women. Matern Child Health J 2014;18:10e5.
15. Chiswick C, Reynolds RM, Denison F, Drake AJ, Forbes S, Newby DE, et al. Effect of metformin on maternal and fetal outcomes in obese pregnant women (EMPOWaR): a randomised, double-blind, placebo-controlled trial. Lancet Diabetes Endocrinol 2015;3:778e86.

Knowledge And Experience Of Work-Related Hazards And Utilization Of Safety Practices Among Solid Waste Scavengers In Ilorin Metropolis, Kwara State, Nigeria

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Abstract

Waste collection is considered one of the most dangerous job in the world since it exposes the workers to hazards as well as to certain occupation related morbidities. Health status of scavengers is therefore a public health concern, as they could be potential pathways for the transmission of various communicable diseases to the general public. This study assessed the awareness of work-related hazards and utilization of safety practices among Solid waste scavengers in Ilorin Metropolis.

The study was a descriptive cross-sectional by design involving solid wastes Scavengers in Ilorin metropolis, North-central Nigeria. A total of 410 solid waste scavengers were recruited following a multi stage sampling method from all the 20 clusters of Scrap dealers. Data was obtained through the use of interviewer administered semi-structured questionnaire. Data was analyzed using SPSS Version 20. P-value of <0.05 at 95% confidence limits were considered statistically significant.

More than half (57.3%) of the respondents had awareness of work-related hazards. Similarly, more than half of the respondents have good knowledge of safety boots and hand gloves as ways of preventing work hazards with 58.3% and 56.8% respectively while poor knowledge was recorded for nose guard, face mask and overall/apron with 43.2%, 39.3% and 9.3% respectively. About two-thirds of the respondents, 65.1% have hand gloves however, only 33.2% were making use of it, 52.7% were willing to use it, 57.3% used it always, 74.2% used it for protection while 42.3% were not using it because they felt it was not important. Despite having fair knowledge on the importance of practicing safety measures, only few of the respondents practice these measures. The waste scavengers should be educated on the utilization of PPE and safety measure.

Key words: waste scavengers, hazards, PPE, solid waste, Ilorin.

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Introduction

Solid Waste is an unavoidable by-product of human activities. Economic development, urbanization and improved living standards in cities contribute to increase in the quantity and complexity of generated solid waste. If accumulated, it leads to degradation of urban environment, stresses natural resources and leads to health problems. Waste collection is considered one of the most dangerous job in the world since it exposes the workers involved to physical, chemical and biological hazards as well as predisposes them to certain occupation related morbidities.

Despite the attendant health risks inherent in waste dumpsites, waste scavengers make their living by foraging the waste for survival. These individuals are generally known as 'waste collectors', 'waste pickers', 'Scavengers' or 'rag pickers' in English-speaking areas, but they also receive different names, depending on the local language, on the place they work, and on the material(s) they collect.[3]

Scavengers carry sacks and sticks while they roam garbage dumps and any hidden treasure beneath trashes are carted away in their sacks, no matter the dirt. Apart from taking the recoverable wastes, they also carry the pathogens that degrade the wastes and inhale offensive odour. In addition, scavenging also contributes to environmental management through waste identification, exploitation and recovery by which waste products can again become a usable resource by means of recycling. This in essence, made scavenging a valuable practice for it does not only provide livelihood to the scavengers but also assist in waste recovery. However, scavenging as an occupation poses environmental hazards and health risk to the scavengers and to the community at large.[4]

Over 5 million people are estimated to die every year in the South Indian from diseases related to the inadequate disposal of waste.[5] Scavengers make a living by selling materials they collect from dumpsites, bins and roadsides. Typically, this waste comes from domestic, industrial and commercial sources.[6] Apart from the social atrocities that these workers face; they are also exposed to certain health problems by virtue of their occupation. These health hazards include exposure to harmful gases, musculoskeletal disorders, infections, skin problems and respiratory system problems.[7]

The solid waste Scavengers constitute disadvantaged and vulnerable segments of the

population. Due to their daily contact with garbage, solid waste scavengers are usually associated with dirt, disease and perceived as a nuisance, a symbol of backwardness, and even as criminals. They are often marginalized by the rest of society, and survive in a hostile physical and social environment.[8] Waste scavengers are constantly in touch with the wider public during the course of their daily jobs. Health status of scavengers is therefore a public health concern, as they could be potential pathways for the transmission of various communicable diseases to the general public.[8]

In addition, scavengers are also exposed to occupational health and safety risks as a result of unsafe handling of waste materials and lack of protective equipment.[8] The World Bank has estimated that about 1% of the urban population in the developing world survives by scavenging.[9] It is however known that scavengers in Nigeria suffer from health consequences of their occupation such as frequent fever and malaria from mosquito bites, cuts and bruises, body aches and general weakness.[9] Waste recovery activities of scavengers in Nigeria could retard achievement of the health and sanitation-related sustainable development goals if nothing is done to make it more sustainable by imbibing globally accepted best practices.[9]

In a research done in Lagos, hazardous wastes are not separated from municipal solid waste disposed at the Olusosun dumpsite in Lagos.[10] According to a study in Mexico City dumpsite, solid waste Scavengers has a life expectancy of 39 years, while the general population's is 67 years.[8] In Manila, more than 35 diseases have been identified in waste Scavengers' communities and areas that lack refuse collection and sanitation, including diarrhea, typhoid fever, cholera, dysentery, tuberculosis, anthrax, poliomyelitis, skin disorders, pneumonia and malaria.[3]

It was reported that more than 200 waste-scavengers lost their lives in Payatas, in year 2000 when a huge section of the garbage refuse mountain collapsed after strong rains.[11] The abundance of fleas and offensive oduor in waste disposal sites, along with the lack of proper protective devices, make working conditions even more unhygienic. Solid waste Scavengers collect plastics, paper, glass bottles, rubber materials, and ferrous and non-ferrous metals from dump sites, which can be risky as they are exposed to various infectious agents and toxic substances that may cause illness.[12] Little attention has been given to the human health risks to which solid waste scavengers are exposed. Scavengers work with little or no protection against health hazards while scavengers are self – employed and do not have any consideration at all for the health risks involved.[13] Therefore, scavengers are not likely to be aware of the risk of their job thereby not make effort to protect themselves, their families and the community from the hazards of the job.

Due to paucity of research in Nigeria concerning work-related hazards as well as safety practices of Scavengers, it is evident that most of the literature survey and citing of examples come from foreign authors. Despite their large numbers and presence in most African, Asian, and Latin American cities, waste pickers have largely been ignored by scholars. Hence, this study assessed the knowledge and experience of work-related hazards and practice of safety measures among solid waste scavengers in Ilorin Metropolis.

Methodology

The study was done in Ilorin, the capital of Kwara State which is strategically located within the North Central geopolitical zone of Nigeria. Scavengers can be reached through their various scrap dealers whose shops are located in different area (Cluster) in Ilorin metropolis Scrap dealers are the people who buy waste materials directly from the Scavengers and they have a registered association named as "NationalAssociation of Scrap and Waste dealers Employers of Nigeria (NASWADEN)". There were 20 clusters of the scrap dealers shop with total of 720 solid waste Scavengers in all the three local government in Ilorin metropolis as obtained from NASWADEN.

The study was descriptive cross-sectional by design. The study populations were solid waste Scavengers in Ilorin metropolis (Ilorin West, Ilorin East, and Ilorin South). The entire solid waste scavengers that come into direct contact with the solid wastes and refuses dumpsites were used for this study. However, solid waste Scavengers who were absent during the study were excluded from the study.

A sample of 410 solid waste scavengers were recruited using a multi stage sampling method to gather information from the respondents. From all the 20 clusters with 720 workers, proportional allocation was used to determine the number of respondents to be used in each cluster. The participants were selected from each cluster of Scrap dealers by systematic sampling method. The first respondent was selected by simple random sampling by balloting while subsequent respondents were selected by adding the calculated sampling interval until the final respondent was reached.

Data was obtained through the use of interviewer administered semi-structured questionnaire.

Data was analyzed using SPSS Version 20. Data were presented in frequencies, tables and percentages. Chi-square statistics was used to test for association between categorical variables. P-value of <0.05 at 95% confidence interval was considered statistically significant.

Results

About one-third of the respondents 38.8% fall between the age range 21 to 25 years, all the respondents were male, about two-thirds of the respondents 67.8% were married, 63.7% of the respondents were Hausa by tribe, Islam is the major religion that has 67.8% and 63.4% of the respondents has no formal education. Also 49.8% of the respondents have worked between 4-6 years and 55.6% worked for 2-4 hours in a day. (Table 1).

A little more than half (57.3%) of the respondents had awareness of work-related hazards. About a third of the respondents (37.3%) got information on awareness of hazards from colleagues at work. About half of the respondents had awareness of musculoskeletal pains, wounds sustained from sharp object, exposure to foul odour, bites form reptiles on the dumpsites with 56.8%, 55.9%, 51.5%, and 48.8% respectively. About a third of the respondents were not aware of Chemical burns and fall from height with 36.6% and 39.8% respectively (Table 2). Based on the experience level of hazards, 56.8% had experience musculoskeletal pains follow by 52.0% that had experience wound sustained from sharp objects (Table 2). More than half of the respondents have good knowledge of safety boots and hand gloves as ways of preventing work hazards with 58.3% and 56.8% respectively while poor knowledge was recorded for nose guard, face mask and overall/apron with 43.2%, 39.3% and 9.3% respectively.

With regards to safety practices of the respondents, 90.7% believed having a working cloth as well as hand washing before and after handling food while working were good safety measures to prevent work hazards. Just few (9.7%) of the respondent go for medical checkup (Table 3). Majority of the respondents, 65.1% have hand gloves but 33.2% were currently using it, 52.7% were willing to use it, 57.3% used it always, 74.2% used it for protection while 42.3% were not using it because they felt it was not important. Despite the high awareness of safety boot by the respondent, only 24.6% said it was available, 13.2% were currently using it while 65.1% were willing to use it. Furthermore 53.7% were using it always and also felt it was mandatory for them to use, 35.6% felt it was not important for them to use (Table 4).

There was statistically significant association between awareness of work-related hazards among the

Table 1: Socio-demographic distribution of respondents

Respondents variables (N=410)	Frequency (%)
Age range (Years)	
15-20	80 (19.5)
21-25	159 (38.8)
26-30	101 (24.6)
31-35	60 (14.6)
36-40	10 (2.4)
Mean±SD	24.171±0.5 (17-40)
Sex	
Male	410 (100)
Marital status	
Married	132 (32.2)
Not married	278 (67.8)
Religion	
Islam	278 (67.8)
Christianity	102 (24.9)
Traditional	30 (7.3)
Tribe	
Hausa	261 (63.7)
Yoruba	89 (21.7)
Igbo	40 (9.8)
Others (Nupe)	20 (4.9)
Level of Education	
No formal	260 (63.4)
Primary	114 (27.8)
Secondary	36 (8.8)
Length of Years on the job	
1 – 3 years	110 (26.8)
4 – 6 years	204 (49.8)
7 – 9 years	65 (15.9)
10 years and above	31 (7.6)
Mean±SD	102.5(25.0)
Working hours per day	
2 – 4 hours	228 (55.6)
5 – 7 hours	169 (41.2)
Above 7 hours	13 (3.2)
Mean±SD	136.7(33.4)
Total	410 (100.0)

Table 2: Respondents awareness and experience level of occupational hazards

Variables	Frequency (%)
Awareness(410)	
Aware	273 (57.3)
Occupational Hazards (273)*	
Exposure to foul odour	211 (51.5)
Bites from reptiles on the dump sites e.g Snake	200 (48.8)
Wounds sustained from sharp objects	229 (55.9)
Chemical burns on direct contact with hazardous waste	150 (36.6)
Musculoskeletal pains	233 (56.8)
Fall from height	163 (39.8)
Source of information on awareness (N=273)	
From colleagues at work	153 (37.3)
Friends	31 (7.6)
Family members	19 (4.6)
School	7 (1.7)
During training	9 (2.2)
Health workers	10 (2.4)
Newspapers	2 (0.5)
Health programme on TV	2 (0.5)
Health programme on Radio	2 (0.5)
Experience level of hazards (N =410)	
Wounds sustained from sharp objects	213 (52.0)
Musculoskeletal pains	233 (56.8)
Exposure to foul odour	209 (51.0)
Bite from reptile on the dumpsites	96 (23.4)
Fall from height	89 (21.7)
Chemical burns on direct contact with hazardous waste	82 (20.0)

Table 3: Respondents Knowledge of certain PPEs and some safety measures adopted.

Knowledge (N =410)	Frequency (%)
PPEs	
Safety boots	239 (58.3)
Hand gloves	233 (56.8)
Nose guard	177 (43.2)
Face mask	161 (39.3)
Overall/Apron	38 (9.3)
Eye google	60 (14.3)
Safety practices	
Washing hand before/after food prevent hazards	372 (90.7)
Working cloth is good to prevent hazards	372 (90.7)
Bathing after work prevent disease contamination	356 (86.8)
Applying antiseptics while washing working cloth	42 (10.2)
Gone for medical checkup before	38 (9.3)
Washing working cloth with other cloth	38 (9.3)

Table 4: Respondents Responses on Utilization of Personal Protective Equipments (PPEs)

PPE	Availability(%) N=410	Current use(%) N=410	Willingness to use(%) N=410	Periodicity of use(%) +	Reason for use(%) ++	Reason for non use(%) +++
Face mask	50(12.2)	46(11.2)	103(25.1)	A-7(15.2) S-39 (84.7)	PR-39 (84.7) M- 7(15.2)	NI-171(45.9) NM- 90(24.7) EP- 103(28.2)
Eye goggle	30(7.3)	27(6.6)	27(6.6)	A-9(33.3) S-18 (66.6)	PR-27 (100)	NI-130(33.9) NM126(32.8) EP- 127(33.1)
Nose guard	146(35.6)	126(30.7)	238(58.0)	A-60 (47.6) S-66 (52.3)	PR-66 (52.3) M-60 (47.6)	NI-93(32.7) NM-90(31.6) EP- 101(35.5)
Hand Gloves	267(65.1)	136(33.2)	216 (52.7)	A-78 (57.3) S-58 (42.7)	PR-101 (74.2) M-35 (25.7)	NI-116(42.3) NM-57(20.8) EP- 101(36.8)
Overall	29(7.1)	19(4.6)	31 (7.6)	A-11 (57.8) S-8(42.1)	PR-17 (89.4) M-2(10.5)	NI-135(34.5) NM-116(29.6) EP-140(35.8)
Safety boots	101(24.6)	54(13.2)	267(65.1)	A-29 (53.7) S-25(46.2)	PR-25 (46.2) M-29 (53.7)	NI-127(35.6) NM108(30.3) EP-121(33.9)

KEY:

+ **: A-** Always
S- Sometimes

++ : **PR-** Protection
M- Mandatory

+++ : NI- Not Important
NM- Not Mandatory
EP- Expensive

Table 5: Association between awareness of work-related hazards of the respondents and socio-demographic factors of the respondent

Respondents variables (N=410)	Awareness of Hazards		X^2	P-value
	YES (%)	NO (%)		
Age range (Years)				
15-20	45 (56.2)	35(43.8)		
21-25	93 (58.5)	66(41.5)		
26-30	56 (55.4)	45(44.6)		
31-35	35 (58.3)	25(41.7)		
36-40	6 (60.0)	4(40.0)	0.326	0.988
Marital status				
Married	103 (37.1)	175(62.9)		
Not married	132 (100.0)	0(0.0)	144.972	**0.000**
Religion				
Islam	133 (47.8)	145(52.2)		
Christianity	102 (100.0)	0(0.0)		
Traditional	0 (0.0)	30(100.0)	126.445	**0.000**
Level of Education				
No formal	235 (90.4)	25(9.6)		
Primary	0 (0.0)	114(100.0)		
Secondary	0 (0.0)	36(100.0)	317.637	**0.000**
Level of Experience				
1 – 3 years	110 (100.0)	0(0.0)		
4 – 6 years	125 (61.3)	79(38.7)		
7 – 9 years	0(0.0)	65(100.0)		
10 years and above	0(0.0)	31(100.0)	212.135	**0.000**

respondents and their level of education, (those with no formal education significantly reported higher level of awareness) same was observed for those not married $p<0.05$(Table 5). It was also observed that respondents with no formal education, not married and with lesser years of experience showed statistically significant higher level of knowledge of PPEs $p<0.05$ (Table 6).

Discussion

On Occupational hazard awareness, it was revealed that 57.3% had awareness on the hazards associated to their work which is similar to the findings in a research done in Philippine which had 56.9% awareness among the solid waste scavenger[15] but different from 88.4% awareness obtained in a study done in Owerri among 836 respondents on adverse Health and Environmental impacts of improper solid waste management.[16] The difference could be due to difference in the study population.

In this study, 51.0% of the respondents were exposed to foul odour, this could be compared to (though lower) than 62.7% of what was reported in Philippine. [15] About 48.8% of the studied respondents were aware of bites from reptile e.g snake, this higher than 11% reported among similar population in Thailand. [15] This wide gap could be due to different methods of waste disposal, as open dumping is widely practiced in this study setting; this probably explained why more than half 55.9% of the respondents reported hazards such as wound sustained from sharp objects while lower level 38% reported same inThailand.[15]

It was revealed from the findings that the levels of education of solid waste scavenger influence their awareness of work related hazards as also shown in a study done in 2004.[12] However, in this study, high level of education was not found to influence positively neither the awareness nor the knowledge of PPEs, as those with no formal education, respondents not married and those with lesser years of experience were found to be statistically more aware and have more knowledge of PPEs with significance of $p<0.05$. Though this could be due to the composition of the study population as scavenging is largely practiced by those without formal education.

Generally, awareness of use of personal protective equipment among scavengers in countries

Table 6: Association between knowledge of PPEs of the respondent and socio-demographic factors.

Respondents variables (N=410)	Knowledge of PPEs		X^2	P-value
	Good (%)	Poor (%)		
Age range (Years)				
15-20	45 (56.2)	35(43.8)		
21-25	96 (60.4)	63(39.6)		
26-30	57 (56.4)	44(43.6)		
31-35	35 (58.3)	25(41.7)		
36-40	6 (60.0)	4(40.0)	0.577	0.966
Marital status				
Married	107 (38.5)	171(61.5)		
Not married	132 (100.0)	0(0.0)	139.287	**0.000**
Religion				
Islam	137 (49.3)	141(50.7)		
Christianity	102 (100.0)	0(0.0)		
Traditional	0 (0.0)	30(100.0)	124.196	**0.000**
Level of Education				
No formal	235 (90.4)	25(9.6)		
Primary	0 (0.0)	114(100.0)		
Secondary	0 (0.0)	36(100.0)	317.637	**0.000**
Level of Experience				
1 – 3 years	110 (100.0)	0(0.0)		
4 – 6 years	129 (63.2)	75(36.8)		
7 – 9 years	0(0.0)	65(100.0)		
10 years and above	0(0.0)	31(100.0)	214.928	**0.000**

like Thailand and India was higher than what was found in this study setting. In a research done in Thailand 76%, 64% and 39% mentioned hand gloves, safety boot and face mask respectively.[12] Also in a research done in Kerela in Indian, it was revealed that 50%, 70%, 73%, 88% of the solid waste handlers were aware of goggles, face mask, hand gloves and safety boot respectively.[2] while lesser proportion of respondents in this study were aware of PPEs that can prevent work-related hazards such that 58.3%, 56.8%, 43.2% of the respondents were aware of safety boot, hand gloves and hand nose guard respectively.

On the utilization of personal protective equipment, majority of the respondents did not use PPEs as very low percentages was recorded in this study which means the solid waste scavengers do not adopt the use of personal protective equipment as also stated in a research done in Indian that 90% of waste collectors did not adopt any precautionary measures and lack of precautionary measures might produce health hazards to them.[10] Respondents making use of PPEs in this setting were 33.2%, 11.2% and 4.6% for hand gloves, face mask and overall clothing respectively.

The reasons for non usage of the PPEs according to this study was probably due to among other reasons; inadequate awareness and education on the use of PPEs, lack of availability PPEs, and low socio-economic status as some felt that PPEs are too expensive for them.

It is obvious that practice of safety measures among scavengers is poor in this setting despite fair knowledge of associated hazards.

The waste scavengers should be educated on the utilization of PPE and safety measure.

References

1. Wachukwu C K, Mbata C A, Nyenke C U. The Health profile and impact assessment of waste scavengers (Rag Pickers) in Port Harcourt, Nigeria. Journal of Applied Sciences. 2010;10(17):1968-72

2. Sanjay S D. occupational health problems among door to door solid waste handlers in surat city, gujarat. Kerela: Achutha Menon Centre for Health Sciences Studies Sree Chitra Tirunal Institute for Medical

Sciences and Technology Thiruvananthapuram, Kerela; 2009.
3. Nguyen HTL, Chalin C G, Lam T M, V.W M. Health and Social Needs of Waste Pickers in Vietnam 7th July, 2014.
4. Tiwari R R. Occupational health hazards in sewage and sanitary workers. Indian Journal of Occupational and Environmental Medicine 2008;12(3):112 - 5.
5. Kansal A. Solid waste management strategies for India. *Indian Journal of Environmental Protection.* 2002;22:444–448.
6. Gonzales M N. From Wastes to Assets: The Scavengers of Payatas2003; 7:[1-25 pp.].
7. Caroline H. Child waste pickers in India: the occupation and its health risks1996 2/7/2014; 8:[1-9 pp.].
8. Reginald D G, Olusegun A, Eagilwe S. Respiratory and Occupational Health problems of Scavengers and Landfill Employees in a Municipal Landfill site in Lobatse, Botswana. Journal of Sustainable Development in Africa. 2014;16(2):37-55.
9. Ezeah C, Roberts C L, Nzeadibe T C, Phillips P S, Mbeng L O. Evaluation of Public Health Impacts of Waste Scavenging in Abuja Nigeria, Using Q Methodology 2008:[1-10 pp.].
10. Oyelola O T, Babatunde A I, Odunlade A K. Health implications of solid waste disposal: case study of Olusosun dumpsite, Lagos, Nigeria. *Int J Pure Appl Sci*. 2008;3(2):1–8.
11. Ramos N F, de Castilhos Jr A B, Forcellini F A, Graciolli O D. Profile survey of waste pickers in Brazil: Requirements for the development of a collection vehicle and optimized routing Journal of Urban and Environmental Engineering. 2013;7 (2):231-46.
12. Thirarattanasunthon P, Siriwong W, Robson M G. Health Risk Protection Behaviors among Scavengers in Municipality Dump Sites, Nakhon Ratchasima Province, Thailand. Asia Pacific Conference on Environmental Science and Technology Advances in Biomedical Engineering. 2012;6:415-20.
13. Devi K S, Swamy AVVS, Krishna R H. Studies on the Solid Waste Collection by Rag Pickers at Greater Hyderabad Municipal Corporation, India. International Research Journal of Environment Sciences. 2014; 3(1):13-22..
14. Thirarattanasunthon P, Siriwong W, Robson W, Borjan M. Health risk reduction behaviors model for scavengers exposed to solid waste in municipal dump sites in Nakhon Ratchasima Province, Thailand. Dove Press Journal. 2012;5:97-104.
15. Ejares J A, Paler K O, Aguilar E L. Socio-Demographic Profile of Scavenging Households in Umapad Dumpsite, Mandaue City Cebu, Philippines. Journal of Sustainable Development Studies. 2014;6:175-92.
16. Felicia E. U, Solid Waste Management in Owerri Municipality and its Immediate Environs. Academic Journal of Interdisciplinary Studies, 2013;2(5):141:147

Difficult Airway Management In A Patient With A Huge Mandibular Tumour For Excision In A Low Resourse Setting: A Case Report.

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Abstract

We report the perioperative management of a 30year old man with a recurrent progressive left jaw swelling of two year duration associated with oro-facial discomfort and significant weight loss. There was associated fever and body aches at presentation. No associated loss of dentition. The mass was non tender, measured about 20X18 centimeters in diameter with area of hard and soft consistency located in the mandible displacing the teeth posteriorly. Difficult mask ventilation and intubation were anticipated because of marked distortion of the mandibular and airway anatomy. All relevant equipment were made available to manage difficult intubation. First intubation was unsuccessful. Successful nasotracheal intubation was achieved after the second attempt with the application of external laryngeal manipulation by an experienced assistant. First surgery was uneventful. Patient came back for reoperation on account of wound infection and dislocated prosthesis (Mandibular plate). Intubation was made difficult during anaesthesia for second surgery because dislocated prosthesis obstructed the view of the larynx. This was quickly dislodged with Magil's forceps. We concluded that airway management remains central to the successful perioperative care in patients with mandibular tumours. Careful preparation and good expertise is required to ensure a good outcome. The challenges encountered in the management of the airway in this patient are highlighted and discussed.

Keywords: Difficult Airway management; huge mandibular tumour; distortion; low resource

Introduction

Ameloblastomas are ectodermal, ondotogenic tumors that constitute about 32.7% of tumours and cysts of the jaw. [1] It has no racial predilection. Report of study done in Lagos by Ajayi et al [2] puts the incidence at 48.9%, while Adebayo et al [3] in Kaduna reported a higher incidence of 54% of Odontogenic tumours. The size and location of the tumour creates greater challenges to the anaesthetists. Airway management remains central to the successful perioperative care in patients with mandibular tumours. The American Society of Anesthesiologists has conducted a closed claim study of anaesthetic disasters and malpractice awards arising from airway management. [4] Over one quarter of these were related to respiratory events, most occurring during the induction of anaesthesia with failed intubation. [4] Careful preparation and good expertise is required to ensure a good outcome. We report the perioperative management of a patient with a huge mandibular tumour in a low resource setting.

Case Presentation:

A.M., a 30 year-old self-employed roadside automobile mechanic presented with a two year history of recurrent lower jaw swelling and a week history of fever and generalised body aches.

The jaw swelling started two years prior to presentation. Initially, it was described to be a small mass but later became progressively increased in size. There was associated history of Oro-facial discomfort, anorexia and significant weight loss. The patient also had a history of body weakness and dizziness with an episode of fainting 2 days prior to presentation. There was no antecedent history of trauma.

There was no associated loss of dentition but the patient had problems closing his mouth with consequent drooling of saliva. He had no headache, dysphagia, cough, chest or bone pain and no associated difficulty in breathing.

There was a positive history of postprandial, projectile vomiting. Patient had no known intercurrent medical illnesses. The patient neither smoked cigarettes nor drank alcohol.

Patient had a surgical operation for removal of a similar mass at the same site under an uneventful general anaesthesia about eight years prior to presentation.

Physical examination on admission revealed a young man, conscious and alert, cachectic weighing 55kg, moderately pale but anicteric and afebrile. Examination of the head and neck revealed a non-tender swelling in the lower jaw, measuring about 20 × 18 centimetres in diameter, involving the whole of the mandible and floor of the mouth, with areas of hard and soft consistencies and displacing the teeth posteriorly (figs. 1&2). There was no peripheral lymph node enlargement. Cardiovascular system (CVS) examination revealed a pulse rate (PR) of 100 beats

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Fig. 1 Pre-operative



Fig 2: Preoperative lateral view.



Fig 3 axial CT scan of the mandible showing the discontinuity of the mandibular outline with associated loss of dentition in this region. An oval soft tissue density is seen at the anterior region of the mandible



Fig. 4 After recovery picture showing left mandibulectomy

min^{-1} regular, and of good volume; blood pressure (BP) was 90/45mmHg with normal apex beat. The 1st and 2nd heart sounds were heard and normal. There were no murmurs. The respiratory rate (RR) was 24cycles.min^{-1} and the chest was clinically clear with good air entry in both lung fields. No abnormality was detected in any other organ-system.

The initial packed cell volume (PCV) was 20% and patient was transfused with 3 units of whole blood. The post transfusion PCV was 29%. Serum electrolytes and urea results were within normal limits. However, serum protein estimation revealed hypoalbuminaemia (28g/l, normal range 35-50g/l) and hypoproteinaemia (57g/l, normal range 60-80g/l). Coagulation screening did not reveal any abnormality. Radiological examinations of the chest, showed normal findings. The head and neck X-ray showed a wide radiolucent lesion (soap bubble appearance) involving almost the entire mandible but sparing the two condylar heads. While the computerize tomography scan showed discontinuity of the mandibular outline with associated loss of dentition in this region and an oval soft tissue density is seen at the anterior region of the mandible [figure 3].

A provisional diagnosis of ameloblastoma of the mandible was made and the patient was worked-up

for subtotal mandibulectomy and insertion of a prosthesis.

Preoperative assessment on the night before the surgery, revealed a young man with significant muscle wasting, drooling of saliva and a mildly tender huge lower jaw swelling. Other physical findings were essentially normal. Oxygen saturation by pulse oximetry was 95% on room air. The patient was classified as American Society of Anesthesiologists'(ASA) physical status class III. Airway assessment, using the Mallampati classification, was class III. Both nasal airway were still patent. Informed consent was obtained and the patient was fasted overnight for the intended procedure. Four (4) units of appropriately grouped fresh whole blood were made available for surgery. The following intubating aids were made available: laryngeal mask airway, gum elastic bougie, different sizes of Macintosh laryngoscope blades and wide bore cannula. The presence of Otorhinolaryngologist at the operation in view of the anticipated difficult airway management was made for emergency tracheostomy.

In the operating suite, baseline vital signs were normal and recorded. After preoxygenation with 100% oxygen for about 5minutes using a closed circuit breathing system at a fresh gas flow (FGF) rate of 8litres.min^{-1}, inhalational induction of anaesthesia with halothane was commenced. After confirming ability to ventilate with facemask, 100mg of sodium thiopentone was administered intravenously to hasten hypnosis followed by intravenous succinylcholine 100mg to facilitate endotracheal intubation.

The first laryngoscopic attempt failed as the larynx could not be adequately exposed despite using a size 5 Macintosh laryngoscope blade, due to marked distortion of the upper airway anatomy by the tumour [figure 1]. However, with application of optimal external laryngeal manipulation by an assistant, a size 6.5mm internal diameter (ID) polyvinylchloride (PVC) cuffed tracheal tube was successfully passed nasotracheally after 2minutes. The patient was then connected to a closed circuit breathing system. Manual ventilation was commenced and correct tube placement was confirmed using equal air entry on bilateral chest auscultation and normal capnograph tracing. The patient was commenced on intermittent positive pressure ventilation (IPPV) using a mechanical ventilator. The oropharynx was packed with a wet gauze to protect the spillage of blood and secretions into the airway. Anaesthesia was maintained using isoflurane 0.5 – 0.8% in a total fresh gas flow of 6 litres min^{-1}, consisting of oxygen/air mixture at a ratio of 50:50. Muscle paralysis was maintained using 6mg pancuronium administered intravenously. Analgesia was provided using an intravenous bolus of 30mg pentazocine, intramuscular diclofenac 75mg and an infusion of 900mg paracetamol added into the intravenous fluid.

A mandibular mass weighing 810gm was excised and a mandibular plate prosthesis was inserted. The estimated blood loss at surgery was 1200ml. Patient received 4 litres of 0.9% saline infusion and 3 units of fresh whole blood. There were no adverse events intra-operatively.

At the end of the surgery, residual neuromuscular paralysis was reversed with a combination of atropine 0.02mg.kg^{-1} and neostigmine 0.05mg.kg^{-1}. The nasotracheal tube was left insitu at the end of the surgery. Surgery lasted 2hours while anaesthesia lasted 2hours 55minutes.

The patient was transferred to the Intensive Care Unit (ICU) for postoperative care and monitoring of vital signs till full recovery from anaesthesia and regaining of consciousness. He was electively ventilated using synchronous intermittent mandatory ventilation (SIMV) mode for about 2 hours after which the mechanical ventilation was discontinued but endotracheal tube was left insitu and supplemental oxygen via catheter dropped into endotrcheal tube at the rate of 4litres/min administered. Vital signs at admission into the ICU revealed a PR of 90beats.min^{-1}, BP of 107/59mmHg and oxygen saturation was 100% with supplemental oxygen. Analgesia was maintained with intravenous paracetamol 600mg 6hourly, tramadol 100mg 6hourly and intramuscular diclofenac sodium 75mg 12hourly. He was successful extubated 4hours after discontinuation of mechanical ventilation. The patient was kept in the ICU for 16 hours postoperatively with stable vital signs and oxygen saturation of 99-100% on room air. Further monitoring was continued for 4 hours before patient was discharged to the ward on the second post operative day.

Histological report of the excised tumour revealed ameloblastic carcinoma.

The patient developed septicaemia post operatively with wound dehiscence. He then developed oro-cutaneous fistula with complete exposure of the prosthesis, drooling of saliva, speech defect and bilateral dislocation of the temporomandibular joints. There was an associated bilateral ankylosis of dislocation of the temporomandibular joints. Secondary surgery was carried out two weeks later for repair of the defect and bilateral condylectomy to relieve bilateral ankylosed dislocated temporomandibular joints.

The only anaesthesia challenge on the second occasion was at intubation. The prosthesis was found blocking the larynx at laryngoscopy due to the dislocated prosthesis, thus making visualization of the larynx difficult. A Magill's forceps was used to displace the prosthesis for better view of the larynx and intubation

was accomplished successfully. The patient was maintained on Oxygen/air/isoflurane (50:50:1.5) mixture, and muscle paralysis was provided with pancuronium and the lungs ventilated mechanically. He again was successfully reversed, awakened and breathing spontaneously with the endotracheal tube left in situ. He was then transferred to ICU. The patient was successfully extubated on the second post operative day and transferred to the ward.

Discussion

Ameloblastomas, representing 32.7% of all jaw tumours, are considered to be benign, but locally aggressive odontogenic epithelial neoplasms. [1] It has no age predilection but majority occur in the 3rd to 5th decades. [5]

Generally, ameloblastoma is a painless slow growing tumour without significant functional impairment in the early stages of its development. [5] It is therefore not surprising that this patient presented with a very huge Mandibular tumour because of delayed presentation. Gigantic ameloblastoma of the mandible is the usual presentation in Nigeria as reported by Akinosi and Williams in Ibadan due to late presentation. [6] With this presentation, the attending anaesthesiologist may face challenges during the perioperative period. Large ameloblastomas cause severe grotesque disfigurement and make mask ventilation difficult during induction. [7] Another airway difficulty the tumour may pose is difficulty in endotracheal intubation. In the above patient intubation was a challenge because of the anatomic abnormality with pathological prognatism. One way of assessing the ease of lifting the mandible during intubation is the ability to protrude the lower incisors to meet (or extend beyond) the upper incisors. This was not possible in this patient because of the huge mandibular tumour which filled the lower jaw. Difficulty in intubation in patients with mandibular tumours is usually associated with difficulty in exposing the glottis by direct laryngoscopy. Laryngoscopy involves a series of manoeuvres, including extension of the head, opening of the mouth, displacement and compression of the tongue into the submandibular space as well as lifting of the mandible forward. In the above patient, it was difficult to achieve adequate jaw thrust because of huge tumour with intraoral extension preventing the tongue to be pushed forward to allow exposure of the vocal cords.

The American Association of Anesthesiologists (ASA) guidelines for the management of the difficult airway focus on strategies for intubation as well as alternative airway techniques in patients with difficult airway. [8,9] This provides a systematic approach for airway management in these patients to prevent morbidity and mortality from hypoxic brain injury should there be difficulty in intubation. Experience and proper planning play a key role in the management of difficult airway. Noninvasive interventions intended to manage a difficult airway include awake intubation, video-assisted laryngoscopy, intubating stylets, laryngeal mask airway (LMA), and fiberoptic-guided intubation. [8,9] Awake fibreoptic intubation with a flexible laryngoscopy would have been gold standard but the one available was for paediatric patients it was too short, also expertise for its use was not available at the time of this report. The intubation aids available were gum elastic bougie, intubating stylet and LMA.

Studies have shown that awake fiberoptic intubation is successful in 88-100% of difficult airway patients. [10,11] Also, a meta-analyses of randomized control trials comparing video-assisted laryngoscopy with direct laryngoscopy in patients with predicted difficult airways report improved vocal cords views, a higher frequency of successful intubation with video-assisted laryngoscopy. Though, airway trauma, lip/gum trauma, dental trauma, or sore throat was reported. [12,13,14] Observational studies report successful intubation in 78-100% of difficult airway patients when intubating stylets were used. Reported complications include lung laceration and gastric perforation. [15,16] Although, overall incidence of difficult intubation in patients with ameloblastoma could not be accessed but there were case reports. Also, Formete et al [5] in Zaria, reported various modalities of airway management in these patients as follows: endotracheal (80.88%), fibreoptic (11.76%) and tracheostomy (4.41%) and blind intubation (2.94%).

In an observational study, LMA provide successful rescue ventilation in 94.1% of patients who cannot be mask ventilated or intubated. Complications of LMA reported include bronchospasm, difficulty in swallowing, laryngeal nerve injury and hypoglossal nerve paralysis. [17,18] Fiberoptic intubation can be used when the patient's neck cannot be manipulated, and when it is not possible to visualize the cords because a straight line view cannot be established from the mouth to the larynx. Studies have shown about 87-100% success rate with use of fiberoptic guided intubation for difficult intubation. [19,20] However there is evidence that in some patients even this method may prove unsuccessful. [21]. Though, we had a flexible fibreoptic laryngoscope in our centre at the time of management of this patient, expertise for its use for awake intubation was still lacking. Most of the time the technique of inhalation induction using halothane augmented with a very small dose of intravenous induction agent (Sodium thiopentone) while keeping the patient breathing spontaneously, as done in this patient, is the usual practice. A quick direct rigid laryngoscopy is then carried out to assess ease of intubation before a depolarizing muscle relaxant is given to facilitate endotracheal intubation. If this fails, an appropriate sized LMA is always on hand to be inserted for oxygen

administration while allowing the patient to wake up. A contingency plan for surgical airway with tracheostomy by the attending otorhinolaryngologist is always provided as a rescue measure, as was the case with this patient, in case there is a life threatening compromise of the airway.

Elective surgical airway such as tracheostomy under local anaesthetic was a possible option in this patient but the morbidity associated with this procedure is enormous and therefore rarely an option.[5,22]

Conclusion:

In conclusion, it is prudent to anticipate and accept the airway challenges posed by huge mandibular ameloblastomas. A preplanned preinduction strategy should be put in place before engaging in anaesthesia of these patients to avoid morbidity and mortality. Identification of primary or preferred approach by the anaesthetist is of utmost importance in a resource poor country like ours where various equipment designed to facilitate endotracheal intubation are usually not available and where available skills are lacking to readily utilise them.

References

1. Lawal AO, Adisa AO, Popoola BO. Odontogenic Tumours In Children and Adolescents: A review of Forty-eight Cases. Ann Ibadan Posgrad Med 2013; 11:7-11.

2. Ajayi OF, Ladeinde AL, Adeyemo WL, Ogunlewe MO. Odontogenic tumour in Nigerian children and adolescents- a retrospective study of 92 cases. World J Surg Oncol. 2004; 2:39.

3. Adebayo ET, Ajike SO, Adekeye EO. Odontogenic tumour in children and adolescents: a study of 78 Nigerian cases. J craniomaxillofacial Surg. 200; 30:267-272.

4. Ferguson K, Young J, Panagopoulos P, Khoury P, McKelvey GM, Fuleihan SF, Osta WA. Anesthesia Related Closed Claims and Litigations at the Detroit Medical Center: Analysis, Lesson learned and conclusions. Open J Anesthesiol, 2014, 4, 88-98.

5. Formete B, Adebayo ET, Ogbeifun JO. Ameloblastoma: Our clinical experience with 68 cases. Journal of Orofacial Sciences 2014;6(1)17-24.

6. Akinosi JO, Williams AO. Ameloblastoma in Ibadan, Nigeria. Oral Surg Oral Med Oral Pathol 1969; 27: 257-265

7. Savva D. Prediction of difficult tracheal intubation. Br J Anaesth 1994; 73:149-153.

8. Butler PJ, Dhara SS. Prediction of difficult laryngoscopy: an assessment of the thyromental distance and Mallampati predictive tests. *Anaesth Intensive Care* 1992; 20:139-142.

9. Practice Guidelines for Management of the Difficult Airway: An updated report by the American Society of Anesthesiologists Task Force on Management of the Difficult Airway. *Anesthesiology*; 2013; 118:251-270.

10. Reasoner DK, Warner DS, Todd MM, Hunt SW, Kirchner J: A comparison of anaesthetic techniques for awake intubation in neurosurgical patients. J Neurosurg Anesthesiol 1995; 7: 94-99.

11. Ovassapian A, Krejcie TC, Yelich SJ, Dykes MH: Awake fiberoptic intubation in the patient at high risk of aspiration. Br J Anaesth 1989; 62: 13-16.

12. Malik MA, Subramaniam R, Maharaj CH, Harte BH, Laffey JG: Randomized controlled trial of the Pentax AWS, Glidescope and Macintosh laryngoscopes in predicted difficult intubation. Br J Anaesth 2009; 103: 761-768.

13. Aziz MF, Dillman D, Fu R, Brambrink AM: Comparative effectiveness of the C-MAC video laryngoscope versus direct laryngoscope in the setting of the predicted difficult airway. Anesthesiology 2012; 116:629-636.

14. Serocki G, Bein B, Scholz J, Dorges V: Management of predicted difficult airway: A comparison of conventional blade laryngoscopy with video-assissted blade laryngoscopy and the GlideScope. Eur J Anaesthesiol 2010; 27:24-30.

15. Aro L, Takki S, Aromaa U: Technique for difficult intubation. Br J Anaesth 1971; 43:1081-1083.

16. Carr RJ, Belani KG: Clinical assessment of the Augustine Guide for endotracheal intubation. Anesth Analg 1994; 78:983-987.

17. Allen JG, flower EA: The Brain laryngeal mask. An alternative to difficult intubation. Br Dent J 1990; 168:202-204.

18. Nagai K, Sakuramonto C, Goto F: Unilateral hypoglossal nerve paralysis following the use of the laryngeal mask airway. Anaesthesia 1994; 49:603-604.

19. Rogers SN, Benumof JL: New and easy techniques for fiberoptic endoscopy aided tracheal intubation. Anesthesiology 1983; 59:569-572.

20. Sidhu V, Whitehead E, Ainsworth Q, Smith M, Calder I: a technique of awake fiberoptic intubation: Experience in patients with cervical spine disease. Anaesthesia 1993; 48:910-913.

21. Baddoo HK, and Parkins GE. Failed Fibreoptic Intubation in a Patient with a Large Mandibular Fibreosseous Lesion. Ghana Med J. 2008; 42 162–164.

Chukwuneke FN, Ajuzieogu O, Chukwuka A, Okwuowulu T, Nnodi P, Oji C. Surgical challenges in the treatment of advanced cases of ameloblastoma in the developing world: The authors' experience. Int J Oral Maxillofac Surg 2010;39:150-155.

Penetrating Maxillary Sinus Injury With Loss Of Vision Caused By An Impacted Dane Gun Burner: A Case Report

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Abstract

Good visual outcome following ocular emergencies will depend on prompt presentation, recognition and assessment as well as initial management. Penetrating injury of the orbit involving paranasal sinuses with retained foreign body in the orbito-maxillary region are uncommon.Thirty to fifty percent of all ocular traumas are due to orbital trauma. Ocular trauma is one of the leading causes of monocular blindness and can even lead to the death of the patient. Removal of retained intraocular/orbital foreign bodies (IOFB) requires team approach.

We report an unusual case of transorbital penetration of a Dane gun burner thatgot impacted in the maxillary sinus in a 40year old hunter who presentedfour days after the accident. This was radiologically located and surgically removed by combined approach of oculoplastic and maxillo-facial surgeons under general anaesthesia.

Successful removal was achieved but blindness could not be prevented due to the degree of damage. The need to establish fast and efficient referral services from primary eye centre to prevent avoidable blindness is key.

Key Words: Blindness,dane gun burner, orbito-maxillary sinus, eye injury

Introduction

Eye injuries resulting from accidental gunshot are usually severe. They are usually associated with extensive intraocular tissue damage[1] and retained intraocular/orbital foreign bodies (IOFB).It often results in significant visual impairment or blindness in some instances for which enucleation may occasionally be an unavoidable procedure if the eye is traumatized beyond a state to reconstruct a useful functional eye. [2,3] Although penetrating injury of the orbit involving paranasal sinuses with retained foreign body in the orbito-maxillary region are uncommon,[4]it is one of the leading causes of monocular blindness and death.[5] Ocular emergencies are conditions that require urgent medical attention to avert permanent visual impairment.[6]We report an unusual case of trans-orbital penetration of a dane gun burner that got impacted in the maxillary sinus which was presented in the tertiary centre 4 days after the accident This was radiologically localised and surgically removed by combined team of oculoplastic and maxillo-facial surgeons under general anaesthesia.

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Case Report

A 40 year old subsistent hunter presented with 4 days history of injury to the right eye while trying to shoot a bat in his farm, the dane gun burner recoiled to hit the eye which was claimed to be previously normal seeing eye. He presented in a nearby primary health centre where he was managed before referral. He got to the teaching hospital 4 days after the injury. Examination revealed no light perception in the eye with ragged upper and lower lid laceration, chemosed conjunctiva and corneo-sclera laceration with prolapsed uveal tissue which precluded further view of the ocular media. The left eye was essentially normal. An assessment of right ruptured globe to rule out retained intra- orbital foreign body was made. X-ray of the orbit and paranasal sinuses showed a metallic foreign body lodged in the infero-medial portion of the right maxillary sinus (Figure 1 and 2).Computed tomography scan was not done by the patient because it was neither available in the hospital nor in the town. The patient was placed on intravenous Ciprofloxacin 200mg 12hourly and Metronidazole 500mg 8 hourly was subsequently scheduled for surgery.

At surgery, the maxillary anthrum was approached by the maxillo-facial surgeon through an upper buccal sulcus incision extending from the apex of lateral incisor tooth to an area of mucosa corresponding to the posterior part of first maxillary molar. A Caldwell-Luc anthrostomy was carried out. After exposing the maxillary anthrum, the lining was removed and the tip of the impacted bullet was located at the postero-medial part of the sinus. The rod-like metallic bullet measuring 4cm by 1cm by 0.5cm was dis-impacted and retrieved from the nasopharynx with the aid of a long curved Howarth elevator. The eye was then cleaned, exposed and the extent of rupture was assessed by the ophthalmic plastic surgeon. One hundred and eighty degree conjunctival peritomy was done, haemostasis was achieved after which the prolapsed uveal tissue was abscised and anterior



Figure 1:Lateral view of the skull x-ray showing foreign body in the right maxillary sinus

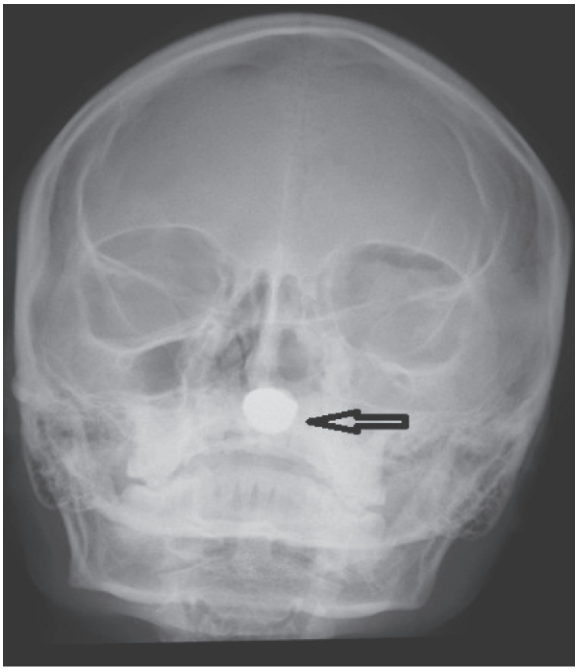


Figure2: Antero-posterior view of the skull x-ray with the arrow showing the metallic foreign body within the maxillary sinus.

chamber irrigated. The sclera tear and exit point of the bullet from the globe were repaired. The cornea laceration was also repaired with 10/0 nylon. Laceration of eyelids were repaired with 6/0vicryl.Patient was discharged one week after surgery.

Discussion

Ocular injuries from low velocity bullets of locally manufactured dane guns are usually massive with resultant visual impairment and possibly blindness. However, the sophisticated high velocity guns like AK 47, usually result in perforating eye injuries with involvement of several other organs of the body. [7]The post-operative visual outcome is usually a reflection of the extent of damage, presenting visual acuity and ocular anatomical disruption and damage to the macular and or the optic nerve. [8]Localization of the foreign body was done using digital plain X-ray of the orbit and paranasal sinuses due to the fact that computed tomography scan was not available in the centre although this is the most recommended for ocular foreign bodies.[9]

Foreign bodies that traverse the orbit and the maxillary sinus can be removed transorbitally or through the maxillary sinus, either endoscopically or by opening the sinus[4] Our patient presented four days after the injury with no light perception but the retained foreign body in the maxillary sinus was successfully removed by a team approach. The no light perception (NPL) at presentation by this patient could be due to extensive corneo-scleral laceration with uveal prolapse, damage to optic nerve and retina according to du Toit et al who reported that delay in presentation of more than 24 hours usually affect the outcomes of corneal injuries unlike posterior injuries.[10]

Due to the usual resultant irreversible loss of vision from the accidental injury from the locally manufactured guns, it has been recommended that manufacturing, acquisition and education in the use and maintenance of such in the community should be ensured. [7] It has been reported that successful patient outcomes in the setting of ocular emergencies depends on correct recognition and assessment as well as appropriate initial management and referral.[11]Ninety six hours is unusually too long for any remaining useful vision to be salvaged.

In conclusion, successful removal of impacted foreign body in the maxillary sinus was achieved but blindness could not be prevented due to the degree of damage. The need to establish fast and efficient referral services from primary eye centres to prevent avoidable blindness is key.

References

1 Adeoye, A.O. Eye injuries caused by locally manufactureddane gun. Nigerian J. Ophthalmol. 1996; 4: 27-30.

2 Burstein ES, Lazzaro DR. Traumatic ruptured globe eye injuries in a large urban center.ClinOphthalmol. 2013; 7: 485–488

3 Lundin AM, Azari AA, Kanavi MR, Potter HD, Lucarelli MJ, Burkat CN et al.Ocular Trauma Resulting in Enucleation: A 12-year Experience From a Large Regional Institution. WMJ 2014;113:99-101

4 Simha A, John M, Albert RR, KuriakoseT.Orbito-sinal foreignbody. Indian J Ophthalmol. 2010;58:530-2

5 Rezae L, NajafiF, Moradinazar M,Ahmadijouybari T.Case report on the successful removal of anorganic penetrating object into the orbit. J Inj Violence Res. 2014; 6: 50–52.

6 Omotoye Olusola Joseph, Ajayi Iyiade Adeseye, Ajite Kayode Olumide, Adeleke Funmilayo O. Profile of Ocular Emergencies in a Tertiary Health Centre. IOSR 2016;15:75-79

7 Ademola-Popoola D.S. Owoeye J.F.A. Gunshot Related Binocular Injuries. *World J. Med. Sci. 2006; 1: 65-68*

8 Groessl S, Nanda S.K, Mieler W.F. Assault related penetrating ocular injury. American J. Ophthalmol. 1993; 116: 26-33.

9 Ajayi IA, Ajayi EA, Omotoye OJ, Ajite KO, Alegbeleye TT. Impacted foreign body to the anterior orbit. A case report. *Global Journal of Medical Research* 14(4):5-9

10 du Toit N, Mustak H, Levetan C, Cook C.Visual Outcomes as a Result of Time Delays from Trauma to Surgery in Cases of Open Globe Injury at Groote Schuur Hospital. JSM Ophthalmol 2014 2(1): 1012)

11 Christopher H,Michael L .Ocular emergency. Australian Family Physician2008;37(7): 506-509

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