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Focus and Scope

The *African Journal of Tropical Medicine and Biomedical Research* is a multidisciplinary and international journal published by the College of Health Sciences, Delta State University of Abraka, Nigeria. It provides a forum for Authors working in Africa to share their research findings on all aspects of Tropical Medicine and Biomedical Sciences and to disseminate innovative, relevant and useful information on tropical medicine and biomedical sciences throughout the continent. The journal will publish original research articles, reviews, editorials, commentaries, short reports, case reports and letters to the editor. Articles are welcome in all branches of medicine and dentistry including basic sciences (anatomy, biochemistry, physiology, pharmacology, psychology, nursing etc) and clinical sciences (internal medicine, surgery, obstetrics and gynaecology, dental surgery, child health, laboratory sciences, radiology, community medicine, etc). Articles are also welcome from social science researchers that document the intermediating and background social factors influencing health in countries of Africa. Priority will be given to publication of articles that describe the application of the principles of primary health care in the prevention and treatment of diseases.

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Editorial

Evidence-Based Medicine – The Way To Go

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Introduction

Evidence based Medicine is an umbrella term for health care practice that is guided by the current best available evidence. It is synonymous with evidence-based health care. The term incorporates all aspects of health care. Several parallel descriptions are also used to distinguish specific components of health care namely evidence-based nursing, evidence-based dentistry to mention a few. Others have used a more generic term, evidence-based practice. These several descriptions underscore the fact that evidence based practice cuts across all branches of health care.

The principle of evidence-based health care promotes application of the current best evidence in decision making to guide the care of the individual patient, organization of health care, policy formulation, health care management and more. In short, evidence based health care implies the application of the current best evidence to guide policy and practice.

Evidence-based health care is therefore applicable at the individual patient level as well as at population level[1]. It also promotes health care delivery that upholds the values of the individual and judicious use of available resources. Given the foregoing, evidence based health care is applicable at all levels of care and by all cadres of personnel involved in health care, providers to health care managers and policy makers.

Discussion

Whereas incorporation of evidence based health care as standard care into the health systems has become the norm in developed countries with the attendant benefits of better health care outcomes, its non-adoption in developing countries accounts for the delay in the application of efficient and cost-effective interventions. This is partly implicated in the poorer and indeed widening disparities in health outcomes in these countries compared with developed countries. Thus there is a compelling and urgent need for wide scale adoption of evidence based health care principles at all levels in the health systems of developing countries.

Embracing evidence-based health care principles in developing countries however poses certain challenges. The evidence does not come easy. The skills and resources required to produce evidence are limited in low-income countries[2]. Generation of evidence involves substantial investment of resources and skills in implementation of primary research, research synthesis and development of guidelines. Randomized controlled trials are the gold standard for primary research when appropriate to address effectiveness of interventions; training in clinical trials is limited in Africa, thus very few clinical trials originate de novo in the region.

Research synthesis, aka systematic reviews combines the results of similar primary studies to generate summary estimates. The Cochrane

Collaboration is the foremost entity that promotes the production and dissemination of systematic reviews; its systematic reviews are published on the Cochrane Library (www.cochrane.org). Research synthesis skills are rather limited in Africa.

The next step in the process of generating the evidence is development of guidelines. It has become standard practice to utilize the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) approach in producing guidelines[3]. The GRADE approach employs explicit and transparent mechanisms to assess quality of the evidence before making recommendations. It is the approach adopted by professional bodies and the World Health Organization (WHO) in the preparation of guidelines. Utilizing the GRADE approach requires even higher level of skills that are still rudimentary in low-income countries.

Protocols, produced at the local level or health unit level should ideally derive from guidelines. Protocols will typically describe what requires to be done, when, where and by whom. They enhance team work and promote effective delivery of health care. The use of protocols ensures adherence to current best evidence; its use must be promoted at all levels. Just like the guidelines from which they derive, protocols require to be updated at least once in every 2 years. While guidelines are more technically challenging to produce, protocols are generally easier to produce and must be adapted to the cadre of health care providers as well as the level of care. It is incumbent on professional bodies to assume responsibility for production of protocols and identify ways of ensuring universal implementation as a matter of urgency. This is the minimum measure to assure positive health outcomes. It is needless to say that compliance with written protocols has the additional advantage of protecting health care providers in the event of medical litigation.

The challenges must however not deter the drive for evidence-based health care in developing countries. Rather, stakeholders must engage policy makers and governments on the urgency of the matter. In the short term, concerted efforts must ensure widespread dissemination in useful formats and uptake of available evidence. Paradoxically, adoption of proven interventions in clinical practice for the benefit of the individual patient requires greater effort. It is not enough to have the evidence; it requires serious commitment to ensure that the intervention is utilized at all levels of care. As apparently simple and effective as the partograph is, its utilization remains low at the very levels where its impact is expected to be most beneficial[4]. Successful uptake of proven interventions therefore requires sustained collaboration of professional bodies and policy makers to identify challenges and proffer solutions. An important measure in this regard is institutionalization of standardized continuous professional development programmes for all cadres of health care providers.

Strategic long term vision should include goal oriented technical capacity building in the African region in all areas of the evidence generation process. Governments and agencies in the sub-Saharan region need to collaborate and pull resources to maximize gains. We must partner with international agencies and professional bodies that have the technical knowhow to build local competencies in this field. Establishing training programmes in clinical trials in designated institutions in sub-Saharan Africa is long overdue. Greater urgency is also required in training of a sufficient critical mass of professionals in research synthesis and GRADE principles.

Above all, the governments of sub-Saharan African countries must demonstrate sustained commitment to the health and well-being of their

populations by investing in capacity building and research in their health systems. This will contribute in no small measure to laying a solid foundation for the health systems in these countries.

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Original Research Articles

A Comparison of Clinical and Ultrasound Estimation of Fetal Weigth at a Secondary Health Care Facility in Nigeria

*Patrick I.Okonta[1] * , Ayo Nwachi[2], Chukwuka Onyemesili [3]*

ABSTRACT

Background: Several methods have been used to estimate fetal birth weight; however two methods seem to be more widely accepted by obstetricians - ultrasound estimation and clinical estimation by palpation

Objective: This study sought to determine the accuracy and correlation of clinical and ultrasound estimation of fetal weight at the Central hospital, Warri, Delta state.

Methods: Sixty pregnant women in latent phase labour, very early first stage labour, or for induction of labour were selected for the study. Clinical estimation of fetal weight and an independent blinded ultrasound assessment of the fetal weight was done. Fetal weigth estimates obtained were compared with the actual weight at birth. Accuracy of estimates and correlation with actual birth weight was calculated.

Results: *The Clinical method had a greater mean absolute error (SD) of estimation of the actual birth weight when compared with the ultrasound scan method (391.08gm vs 63.00 gm). The mean difference between the methods was statistically significant (p = <0.001). The Clinical method also had a greater mean percentage error (SD) of estimation of actual birth weight of when compared to the ultrasound methods (12.50% vs 1.2%). The mean difference between the methods was statistically significant (p = <0.001).* Furthermore, the ultrasound method of birth weight estimation had a greater positive correlation (0.703) with the actual birth weight than the clinical method. This was statistically significant p = <0.001

Conclusion: Ultrasound estimation of fetal birth weight is better than clinical estimation done by residents at the Central hospital, Warri.

Key Words: *Fetal weight estimation, clinical, ultrasound, Nigeria*

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Introduction

Fetal weight at birth is an important obstetric factor that can significantly influence the mode and outcome of delivery. Adverse maternal and neonatal outcomes are closely associated with abnormal fetal birth weights. Normal fetal birth weight is between 2.5 – 4.0 kilogrammes(kg). Birth weights below 2.5kg are termed low birth weights and are associated with prematurity and its complications, respiratory distress, inability to regulate body temperature and metabolic derangements. On the other hand, birth weights

above 4 kg are associated with obstetric complications such as neonatal birth trauma, neonatal birth asphyxia, neonatal hypoglycaemia and electrolyte disorders. Other complications include increased caesarean section rates, shoulder dystocia, maternal genital tract trauma and primary postpartum haemorrhage. Correct estimation of fetal birth weights help in planning appropriate mode of delivery, place of delivery and proper immediate neonatal care.

Several methods have been used to estimate fetal birth weight, however two methods seem to be more widely accepted by obstetricians - ultrasound estimation and clinical estimation by palpation. Maternal estimation of fetal weight has been found to have some accuracy in predicting actual birth weight. These methods of fetal weight estimations have been evaluated mainly in studies conducted in western countries and north American countries. Some studies have been done to establish the correlation of these three methods and their ability to predict fetal weight correctly in developing countries. With the increasingly availability of ultrasound in urban hospitals, fetal weight estimation using the ultrasound is being performed. However, in many maternity centres especially in the rural and semi-urban areas access to ultrasound estimation cannot be guaranteed. Furthermore, in many hospitals with ultrasound scan services, it is not available in the obstetric units and so estimation of fetal weight by ultrasound scan may not be available when needed. Clinical estimation of fetal weight remain an important part of obstetric practice either as an alternative method of fetal weight assessment where ultrasound facilities are not readily available or as a collaborative method of assessing fetal weight even in centres where ultrasound scans are available. Fetal weight estimation by clinical method is an skill that is acquired through repeated performance and comparison against actual birth weight. It has been validated by several studies to be as comparable as ultrasound estimation of fetal weight, however there is a need for centres to continually assess how accurate these methods are in predicting fetal birth weight.

This study sought to determine the accuracy and correlation of clinical and ultrasound estimation of fetal weight at the Central hospital, Warri, Delta state. The Central hospital , Warri is a state owned secondary health care facility that has been accredited for postgraduate training in obstetrics and gynaecology by National Postgraduate Medical College of Nigeria and also the West African Postgraduate Medical College.

Methods

Pregnant women who were receiving antenatal care at the Central hospital, Warri were invited to participate in the study. The study was conducted from September 2012 to January 2013. Only consenting pregnant women were recruited into the study. Pregnant women in latent phase labour, very early first stage labour, or for induction of labour were selected for the study. Other inclusion criteria were:

1. Singleton pregnancy
2. Cephalic presentation
3. Gestational age known either by LMP or early USS
4. Intact membranes.

Pregnant women with the following conditions were excluded from the study.

1. Multiple pregnancies
2. Abnormal lie
3. Presence of fibroids
4. Clinical diagnosis of oligohydramnios or polyhydramnios
5. Advanced first stage labour.

6. Ruptured membranes.

On arrival at the labour ward, a complete history and physical examination including obstetric examination was performed by the senior registrar under the supervision of the Consultant in labour ward. Clinical estimation of fetal weight was performed using the Dare's method.

Dare's formula for estimation of fetal weight

Fetal weight (g) = Symphysio-fundal (cm) x Abdominal girth at the level of the umbilicus (cm)

The estimated fetal weights were recorded in the data proforma and thereafter an ultrasound scan was performed to estimate the fetal weight.

Ultrasound estimation of fetal weight

The third author – a consultant radiologist – performed the ultrasound scan for fetal weight estimation and was blinded to the clinical estimation of fetal weight obtained by the resident. A trans abdominal ultrasound methods scan was performed using EDAN digital ultrasound diagnostic imaging system model DUS 3 shanghai international holding corp.QMB4 (Europe Effestrasse 80.D20557) Hamburg Germany with a 3.5 m Hz probe. Fetal measurement of the biparietal (BPD), abdominal circumference (A.C.), femur length (FL) and head circumference (HC) were obtained and the sonographic estimated fetal weight calculated using the formula by Hadlock *et al.*

Actual birth weight.

At delivery, the fetal birth weight was measured using a Salter's weighing scale.

All data were recorded in a data proforma sheet and inputted into a computer using the Epiinfo statistical software version 3.5.1.

Sample size calculation

The required sample for the study was estimated using the sample size estimation with correlation co-efficient.

$$n = \frac{(Z\alpha + Z_{1-}\beta)^2}{\frac{1}{4}\left[\log e\left(\frac{1+r}{1-r}\right)\right]} + 3$$

Where;

n = required sample size

Zα = standard normal deviate at 95% confidence level = 1.96

Z1-β = standard normal deviate at 80% power (20% type II error) = 0.842

r = correlation estimate between two variables of interest. This was taken from a correlation study done in Southwest Nigeria to estimate the relationship between clinical and sonographic methods and actual birth weight.

$$n = \frac{(1.96 + 0.842)^2}{\frac{1}{4}\left[\log e\left(\frac{1+0.78}{1-0.78}\right)\right]} + 3$$

n = 37.59

making-up for 10% attrition, n ≈ 41.

Minimum required sample size = 41 patients. However a total of 60 patients were recruited into the study.

Data Analysis

Data analysis was done using the Epiinfo statistical software version 3.5.1. The accuracy, mean percentage error, mean absolute error for each method of fetal birth weight estimation was calculated. Test for correlation was done using the Pearson's correlation coefficient. Test for statistical significant was done using the Chi square test, Fisher's exact test and ANOVA test

as appropriate. A p-value less than 0.05 was considered significant.

Ethical approval for the study was obtained from the ethics committee of the Central Hospital, Warri. Informed consent was obtained from the research participants.

Results

A total of 60 women participated in the study. Twenty five (41.7%) of which had tertiary education. The mean weight, height, and Body Mass Index were 86.47 ± 12.70kg, 1.59 ± 0.06 m, and 33.86 ± 4.89 kg/m^2 respectively. The mean parity was 1.28 ± 1.54 and the gestational age at delivery was 40.07 ± 1.69 weeks. Thirty – two female and twenty – eight male babies were delivered by the parturients.

The Clinical method of fetal weight estimation had a higher mean fetal weight estimation of 3985.25 ± 484.30 gm. The mean fetal weight estimation by ultrasound scan was 3531.17 ± 437.18 gm, and this was close to the mean actual fetal birth weight of 3594.17 ± 462.86 gm (Table 1).

The Clinical method had a greater mean absolute error (SD) of estimation of the actual birth weight when compared with the ultrasound scan method (391.08gm vs 63.00 gm). The mean difference between the methods was statistically significant (p = <0.001). The Clinical method also had a greater mean percentage error (SD) of estimation of actual birth weight of when compared to the ultrasound methods (12.50% vs 1.2%). The mean difference between the methods was statistically significant (p = <0.001). The Clinical method tended to overestimate the birth weight while ultrasound can tended to underestimate the birthweight. The ability of ultrasound method to accurately estimate within 10% of actual fetal birth weight was greater than the Clinical method (78.3% vs 53.3%). This difference in accuracy was statistically significant p = <0.001 (Table 2)

Furthermore, the ultrasound method of birth weight estimation had a greater positive correlation (0.703) with the actual birth weight than the Clinical method. This was statistically significant p = <0.001 (Table 3).

In terms of estimating normal birth weight (n=56 babies), the Clinical method had a higher mean absolute error (SD) and the mean percentage error (SD) of 464.15 (600.22) and 15.05 (20.92), which were statistically significantly different from the ultrasound method (p = <0.001;p = <0.001) respectively. The Ultrasound method had the higher accuracy of estimating normal birth weight (75.0%), compared to the Clinical method (52.1%). This findings were statistically significant p = 0.003 (Table 4).

In estimating macrosomia (n=4 babies), the ultrasound method had a higher mean absolute error (SD) and the mean percentage error (SD) of 188.33 (335.30) and 4.02 (7.42) respectively. These were not statistically significantly different from the Clinical methods (p = 0.189; p = 0.265) respectively. However, the Ultrasound method had higher accuracy in predicting macrosomia (91.7%), compared to the Clinical method (58.3%). However, this was not statistically significant p = 0.083 (Table 4).

Figures 1 and 2 show the scatter plot diagram between the fetal weights obtained from the two methods and the actual fetal weights.

TABLE 1: CLINICAL AND ULTRSOUND ESTIMATION OF FETAL WEIGHT WITH ACTUAL BIRTH WEIGH

Estimation methods	*Mean ± SD	Range	CV
Clinical method (g)**	3,985.25 ± 484.30	3,130 – 5,400	12.15
Ultrasound method (g)	3,531.17 ± 437.18	2,500 – 4,600	12.38
Actual Birth Weight (g)	3,594.17 ± 462.86	2,500 – 4,800	12.88

*F(ANOVA) = 17.023, df = 2, 177, p = <0.001, CV= coefficient of variation.
**Post Hoc test (LSD) = statistically significantly different from the other methods,

TABLE 2: CLINICAL AND ULTRASOUND ESTIMATION OF FETAL WEIGHT

Estimation methods	Mean absolute error	Mean percentage error	Estimate within ± 10% of birth
	± SD (g)	± SD (%)	(%)
Clinical method (g)	391.08 ± 582.26	12.50 ± 19.77	53.3
Ultrasound method (g)	-63.00 ± 347.51	-1.20 ± 10.38	78.3
p-value*	<0.001	<0.001	<0.001

Mean absolute error = estimate - actual birth weight. SD = Standard deviation
Mean percentage error = (value of absolute simple error/actual birth weight) x 100.
Estimate within ± 10% of birth (Accuracy).*t-test.

TABLE 3: CORRELATION BETWEEN THE ESTIMATION METHODS AND ACTUAL BIRTH WEIGHT

Estimation methods	Test statistics	Estimation methods		Actual Birth Weight
		Clinical	Ultrasound	
Clinical method	Pearson correlation	1	0.162	0.243
Ultrasound method	Pearson correlation	0.162	1	0.703
	p-value*	0.216		<0.001

**Statistical test of significance for correlation coefficient.*

TABLE 4: MEAN ABSOLUTE ERROR, MEAN PERCENTAGE ERROR, AND ACCURACY BY FETAL WEIGHT GROUPS

Parameters	Clinical	Ultrasound	p-value*
2,500 - <4,000 (g) (56 babies)			
Mean absolute error (g)	464.15 ± 600.22	32.92 ± 347.36	<0.001
Mean percentage error (g)	15.05 ± 20.92	0.49 ± 10.95	<0.001[a]
Estimates within ± 10% of ABW	52.1	75.0	0.003**
≥4,000 (g) (4 babies)			
Mean absolute error (g)	98.83 ± 403.28	188.33 ± 335.30	0.189[a]
Mean percentage error (g)	2.31 ± 9.22	4.02 ± 7.42	0.265[a]
Estimates within ± 10% of ABW	58.3	91.7	0.083***

***t-test, **Chi-squared test, ***Fisher's exact test**

FIGURE 1: SCATTERPLOT (WITH REGRESSION EQUATION) BETWEEN THE CLINICAL METHOD AND ACTUAL BIRTH WEIGHT

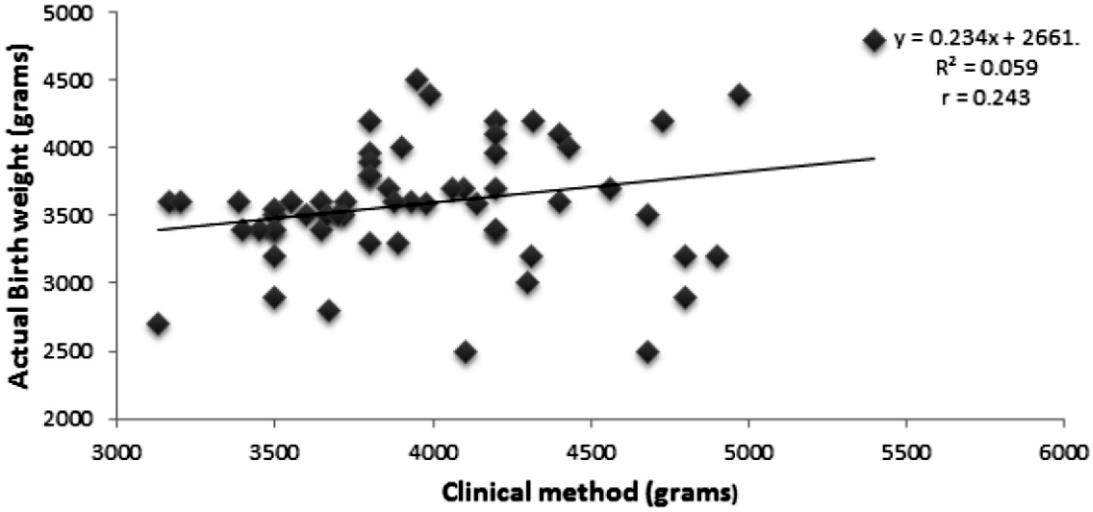
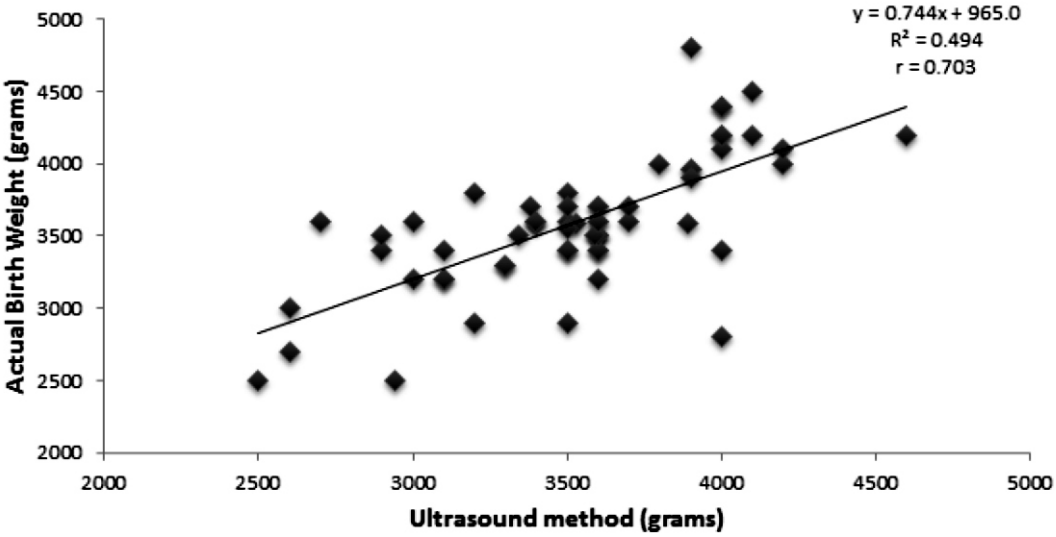


FIGURE 2: SCATTERPLOT (WITH REGRESSION EQUATION) BETWEEN THE ULTRASOUND'S METHOD AND ACTUAL BIRTH WEIGHT



Discussion

In this study, there was a statistically significant difference in the accuracy of fetal weight estimation by clinical method and by ultrasound method. While ultrasound was able to estimate 78.3% of the birth weights within 10% of actually birth weight, clinical method was only able to estimate 53% of the birthweights within 10% of actual birthweigth. Furthermore, the margin of error both in absolute mean error and in percentage error were greater for clinical method than ultrasound method. This is in sharp contrast to findings from other studies, for example the study by Shittu et al did not reveal any significant statistical difference in the accuracy of clinical estimation of fetal weight and the ultrasound estimation of fetal weight. In their study clinical estimation correctly predicted 70% of birthweights within 10% of actual fetal birth weight, while the ultrasound prediction was accurate in 68%. Also in another study, the accuracy of the clinical method to predict within 10% of actual birth weight was 72% while that of ultrasound was 74% , the difference was not statistically significant.

The possible explanation of why there is a significant difference in our study could be seen in the rather poor ability of the clinical method to accurately estimate the fetal weight in our study. Only in 53% of our study sample was there an accurate estimation clinically of fetal weight within 10% of actual birth weight. This is in sharp contrast to findings of other studies where accurate estimation within 10% of actual birthweight was at least 70%. However, some other studies have reported a clinical estimation of fetal weight accuracy of between 55% and 70% within 10% of actual birthweigths. Several factors can affect the accuracy of clinical method of fetal weight estimation. Such factors include, experience of the clinician, maternal BMI, amount of liquor and engagement of fetal head amongst others. In this study clinical fetal weight estimation was done by residents who were at atleast three years into their residency training. Perhaps a better accuracy may have been obtained if it was done by consultants. Baum *et al* found that senior residents could clinically estimate fetal weight better that junior residents. Furthermore Ben-Aroya *et al* documented that accuracy of clinical estimation of fetal weight was not only affected by level of training but also affected by residents' fatigue. The delivery rate at this study hospital is about 4500 per annum which is relatively high especially compared with the few numbers of residents available.

The accuracy of sonographic estimation of fetal weight obtained in this study was quite comparable to other studies. Of note, is that the sonographic estimation of fetal weight in our study was done by a consultant sonologist. The ability to accurately predict fetal weight sonologically is influenced by the competence of the sonologist. Other factors that could influence accuracy include time between scans, fetal age and birth age.

Our study showed that sonographic estimation of fetal weight for macrosomic babies had a greater margin of error compared to clinical estimation although it did not reach statistically significant level. Although this findings collaborates previous studies that showed ultrasound estimation of fetal weight had a larger margin of error , we recognise our limitation of a very small number (four) of macrosomic babies in this subgroup. This may also explains the inconsistency of a 90% prediction within 10% of actual birth weight despite a larger mean absolute error and mean percentage error.

The better performance of ultrasound in estimating fetal weigth compared with clinical estimation was also reflected in the significant difference in the correlation coefficient between ultrasound estimated fetal weigth and actual birth weigth on one hand and the correlation

coefficient between clinically estimated fetal weigth and actual birth weigth on the other hand (0.703 vs 0.243; p value < 0.001). This is also shown in the scatter plot with ultrasound showing a better linear pattern than clinical estimation.

This result of this study is limited in the generalizability as the study was conducted under the usual situation of routine care obtainable in the hospital. The findings may be different in other situations. Furthermore, our sample size was not calculated for fetal weight subgroup analysis and so we did not have adequate numbers for each fetal weight subgroups. Infact, our analysis did not have any birth weights below 2500gms.

Conclusion

Ultrasound estimation of fetal birth weight is better than clinical estimation done by residents at the Central hospital, Warri. Efforts should be made in the training of residents to increase the accuracy of clinical estimation of fetal weight. Furthermore, ultrasound estimation of fetal weight should be the preferred method of fetal weight estimation and obstetricians including residents should develop this competence.

Acknowledgement

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Pattern of Cardiac Diseases and Diagnostic Utility of Transthoracic Echocardiography in Delta State University Teaching Hospital, Oghara, Nigeria

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Abstract

Introduction: Transthoracic echocardiography is a non-invasive tool used to assess cardiac structure and function. Information obtained can guide patient management. This study aim to describe cardiac anomalies encountered and the usefulness of transthoracic echocardiography in Delta State University Teaching Hospital(DELSUTH), Nigeria.

Materials and Methods: This study is retrospective observational in design. Echocardiograms of subjects aged 18years and above performed between August 2011 and April 2014 at the echocardiographic laboratory in DELSUTH using Xario diagnostic ultrasound system (model SSA-660A, Toshiba Medical Systems, Inc.) were reviewed. The data obtained was analyzed for age, sex, clinical indication and echocardiographic findings using Statistical Package for Social Sciences (SPSS) version 16. Results: Five hundred and ninety seven echocardiogram reports were reviewed comprising of 343 males(57.5%). The age range was 18-90years (mean=54.2±16.6years). The commonest indication for echocardiography was hypertension 289(48.4%). Others were non-cardiac pre-operative evaluation 77(12.9%), chest pain 49(8.2%), dilated cardiomyopathy(DCM) 37(6.2%), congestive cardiac failure 33(5.5%), rheumatic heart disease(RHD) 32(5.4%), routine medical examination 28(4.7%) and chronic kidney disease 20(3.4%).

Hypertensive heart disease(HHD) 274(45.9%) was the commonest echocardiographic diagnosis. Others were DCM 48(8.0%), RHD 43(7.2%), cor-pulmonale 18(3.0%), pericardial diseases 4(0.7%) and ischemic heart disease 2(0.3%). Out of the 205(34.3%) subjects with normal study, 75 were hypertensive. The sensitivity and specificity of clinical diagnosis of HHD, DCM and RHD were 76.8%, 33.3% and 44.2% respectively and 71.5%, 96.2% and 97.7% respectively.

Conclusion: This study reaffirms hypertensive heart disease as the commonest cardiac abnormality among adults in Nigeria and the importance of echocardiography as a diagnostic tool in cardiology.

Keywords: *Echocardiography, Cardiovascular Disease, Nigeria*

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Introduction

Cardiovascular disease is a common and important global public health challenge. It accounts for nearly a third of all-cause mortality worldwide[1]. This is particularly worse in developing countries like Nigeria being burdened with communicable diseases and now undergoing epidemiological transition as a result

of the emerging epidemic caused by non-communicable diseases of which cardiovascular diseases are prevalent[2]. A thorough knowledge of the prevalent patterns of heart disease and their presentations cannot be overemphasized as this will go a long way in strategic planning by policy makers and stakeholders to alleviate the burden of cardiovascular diseases.

The role of cardiac imaging cannot be over-stated in the understanding of cardiovascular diseases. Since it was first described by Edler and Hertz in the 1953, echocardiography has rapidly evolved in its clinical utility, revolutionizing diagnosis, and by extension, management in cardiovascular medicine[3]. Transthoracic echocardiography is a safe, relatively inexpensive non-invasive tool for assessing the structure and function of the heart. It has become an integral part of the practice of current clinical cardiology. In 2003, America had a record of over 20 million procedures[4]. Its use is gaining grounds in Africa and indeed Nigeria[5-13] as transthoracic echocardiography can be performed in some government owned and private health facilities across the country, although its availability is still a far cry from what is expected.

This study describes the pattern of cardiac diseases diagnosed by, as well as review the diagnostic utility of, transthoracic echocardiography in a tertiary health institution in Delta State, Nigeria.

Materials and methods

This study was carried out in Delta State University Teaching Hospital (DELSUTH), Oghara, Nigeria, a relatively new centre established in 2009. It is the only tertiary hospital owned by the Delta State government and serves as a main referral hospital within the State. Patients are also referred to DELSUTH from the neighbouring States of Edo and Bayelsa.

This retrospective observational study involved review of transthoracic echocardiographic studies performed in adults aged 18 years and above between August 2011 and April 2014. Transthoracic echocardiography is done in this centre on a twice weekly basis except for emergency situations at the echocardiography laboratory using Xario diagnostic ultrasound system (model SSA-660A, Toshiba Medical Systems, Inc.) equipped with a 3.5MHz linear array transducer. All patients had two-dimensional (2D), M-mode and Doppler (colour, pulsed-wave, continuous-wave and tissue) studies performed according to the recommendations of the American Society of Echocardiography (ASE)[14] by the cardiologists in the centre using standard views and measurements. Repeat echocardiography scans and requests without stated clinical indications were excluded. The age, sex, clinical indication and echocardiographic diagnosis were recorded.

Hypertensive heart disease was diagnosed in the presence of any or combination of the following echocardiographic abnormalities: left ventricular systolic dysfunction (ejection fraction < 50%), left ventricular diastolic dysfunction, left ventricular hypertrophy and dilated left atrium.

Dilated cardiomyopathy was diagnosed when there was dilated heart chambers with normal or decreased wall thickness and diffuse hypokinesia with impaired LV systolic function[15]. Nomenclature was prefixed with indicated known aetiology (for example diabetic dilated cardiomyopathy) while idiopathic dilated cardiomyopathy was reserved for cases with no indicated aetiology. It was described as ischaemic if there was regional wall motion abnormality rather than diffuse hypokinesia.

Valvular heart diseases was diagnosed based on the following: (i) Mitral stenosis: presence of

thickened and calcified mitral valve leaflets, loss of the classic M-shaped pattern of a normal mitral valve, diastolic doming and restriction of the mitral valve leaflet motions. (ii) Mitral Regurgitation: poor coaptation of the mitral valve leaflets in systole, thickened leaflets, dilated and hyperdynamic left ventricle. (iii) Aortic stenosis: presence of calcified aortic valve, reduction in aortic cusp separation, highly echo reflectant aortic valve leaflets. (iv) Aortic regurgitation: poor coaptation of the aortic cusps in diastole, dilated left ventricles and fine fluttering of the anterior mitral valve in diastole[16].

Pericardial effusion was diagnosed when there is echo free space between the visceral and parietal pericardium.

A formal ethical approval was obtained from the Health Research Ethics Committee of DELSUTH before commencement of the study.

Data Analysis: The data obtained were coded and analyzed using Statistical Package for Social Sciences (SPSS) version 16.0 software (SPSS Inc, Chicago, Illinois, USA). Descriptive analysis of the variables was performed and results expressed as frequency tables and percentages and continuous variables expressed as mean (±standard deviation).

The sensitivity, specificity , likelihood ratios, predictive values and accuracy of clinical diagnosis of cardiac disease compared with echocardiography was also determined.

Results

During the period under review, seven hundred and one echocardiography studies were performed but only five hundred and ninety seven echocardiogram reports met the study criteria and were reviewed. The age range was 18-90years (mean=54.2±16.6 years) and comprised of 343 males (57.5%) and 253 females (42.5%). The modal age group was 50-59 years (138 (23.1%)) while the number of persons in the age groups <40years, 40-49 years, 60-69years and ⩾ 70years were 126 (21.1%), 102 (17.1%), 106 (17.8%) and 125(20.9%) respectively.

The commonest indication for echocardiography was hypertension 289(48.4%). Others are as shown in table 1.

Table . Indications for Echocardiography

Indication	Frequency	Percentage (%)
Arrhythmia	6	1.0
Congestive Cardiac Failure	33	5.5
Chronic Kidney Disease	20	3.4
Chronic Obstructive Pulmonary Disease	12	2.0
Connective Tissue Disease	4	0.7
Cerebrovascular Disease	3	0.5
Dilated Cardiomyopathy	37	6.2
Diabetes Mellitus	1	0.2
Hypertrophic Cardiomyopathy	1	0.2
Hypertension	289	48.4
Chest Pain	49	8.2
Comprehensive Medical Check	28	4.7
Pre-operative Cardiac Evaluation	77	12.9
Pulmonary Hypertension	1	0.2
Thyrotoxicosis	3	0.5
Valvular Heart Disease / Cardiac murmurs	32	5.4
Total	597	100.0

Hypertensive heart disease(HHD) 274(45.9%) was the commonest echocardiographic diagnosis. Others were dilated cardiomyopathy (DCM) 48(8.0%), rheumatic heart disease (RHD) 43(7.2%), cor-pulmonale 18(3.0%), pericardial diseases 4(0.7%) and ischemic heart disease 2(0.3%) as shown in table 2. Among the 205 patients with normal study, 75(26.0%) were referred on account of hypertension, 6 (18.8%) for valvular heart disease , 7 (18.9%) for dilated cardiomyopathy, 45 (58.4%) for pre-operative cardiac evaluation, 30(61.2%) for chest pain and 25 (89.3%) for comprehensive health check.

Table . Echocardiographic Diagnoses

Echocardiography Diagnosis	Frequency	Percentage (%)
Hypertensive Heart Disease	274	45.9
Normal	205	34.3
Dilated Cardiomyopathy	48	8.0
• Idiopathic	27	
• Hypertensive	14	
• Diabetic	1	
• Alcoholic	2	
• Peripartal	2	
• Ischaemic	2	
Valvular Heart Disease	43	7.2
• Mitral Stenosis	3	
• Mitral Regurgitation	15	
• Mixed Mitral Disease	5	
• Mixed Mitral and Aortic Disease	9	
• Mixed Aortic Disease	3	
• Aortic Regurgitation	6	
• Aortic Stenosis	2	
Cor Pulmonale	18	3.0
Pericardial Effusion	4	0.7
Congenital Heart Disease	3	0.5
• Cor triatriatum dextrum	1	
• Mitral valve prolapse	2	
Ishcaemic Heart Disease	2	0.3

Assuming echocardiography was the gold standard for detecting cardiac disease, the diagnostic value of clinical diagnosis for hypertensive heart disease, dilated cardiomyopathy and rheumatic heart disease are as shown in table 3.

Table . Comparison of the accuracy of cardiac disease diagnosed by clinical examination with echocardiography

	CARDIAC DISEASE DIAGNOSED BY CLINICAL EXAMINATION		
	Hypertensive Heart Disease	Dilated Cardiomyopathy	Rheumatic Heart Disease
Sensitivity (%)	76.8	33.3	44.2
Specificity (%)	71.5	96.2	97.7
Positive Likelihood Ratio	2.70	8.71	18.8
Negative Likelihood Ratio	0.32	0.69	0.57
Positive Predictive Value (%)	65.4	43.2	59.4
Negative Predictive Value (%)	81.5	94.3	95.8
Accuracy (%)	73.7	91.1	93.8

Discussion

Hypertension and hypertensive heart disease were the commonest clinical indication and echocardiographic diagnosis respectively encountered in this study. These findings are not surprising but similar to previously reported studies across Nigeria[9-11, 17-20] and further buttresses the burden of hypertension in Nigeria. In this study, hypertensive heart disease, dilated cardiomyopathy and valvular heart disease accounted for more than 60% of the diagnoses made at echocardiography, in a decreasing order of frequency. The frequency of dilated cardiomyopathy and rheumatic heart disease were however far less than hypertensive heart disease. Ansa et al[11] and Agomuoh et al[8] also described a similar pattern in their study. The low frequency of echocardiographic diagnosis of valvular heart disease in this study may be a reflection of the decreasing prevalence of rheumatic heart disease as a result of improvements in the primary health care delivery system, with widespread use of appropriate antibiotic therapy for sore throats and other infectious disease conditions resulting in the prevention of rheumatic fever and rheumatic heart disease[21].

A quarter of the patients referred for echocardiography on account of hypertension had a normal study. Compared to earlier reports[11,18,19] the sensitivity and specificity of clinically detecting hypertensive heart disease was fairly moderate. The difference may be attributed to an increasing awareness of and need for prevention and early detection of hypertensive target organ damage among medical practitioners generally, leading to early referrals for echocardiography even when patients have clinically uncomplicated hypertension. The medical economics of this practice is however in question especially when medical bills are paid out of patients' pockets. Howbeit, it may be catastrophic to wait for florid clinical signs of hypertensive heart disease before referring

patients for echocardiography as there are greater benefits when the disease is discovered in its sub-clinical state.

Similar to findings by Ansa et al[11] Kolo et al[18], the sensitivity for detecting rheumatic heart disease was quite low. More patients had rheumatic heart disease than were clinically indicated. This finding corroborates the fact that clinical detection and evaluation of cardiac murmurs, an important clinical sign in RHD, may sometimes be difficult especially for the non-cardiologist. A noisy environment, low intensity murmur and tachycardia, low quality stethoscope as well as the untrained ear are some of the reasons cardiac murmurs may be missed. The specificity was however high. As have been suggested by other studies[11,22] , echocardiography is an important tool to 'rule in' or screen for rheumatic heart disease.

More than a third of the study population in this study had normal findings. This finding is similar to other reports and can be attributed to poor patient selection for echocardiography. Majority of the patients referred for comprehensive medical checks and pre-operative cardiac evaluation were among those with normal study. Cardiac diseases can often be detected clinically if carefully sought.

The frequency of chest pain as a clinical indication for echocardiography as well as ischaemic heart disease diagnosed by echocardiography were both low in this study. This finding corroborates earlier reports from Nigeria[8,9,11,13,17,18,23]. The current incidence of IHD in Nigeria is relatively low but rising and this trend has been highlighted by studies done across the country[23-26]. However, in this study, none of the patients with chest pain had ischaemic heart disease. This may be a pointer to an atypical presentation among the Nigerian population and therefore the need for a high index of suspicion especially as diabetes and obesity are on the increase. Other imaging studies such as stress echocardiography and myocardial perfusion imaging has also been shown to improve diagnostic yield of IHD even among patients with low risk[27].

Conclusion

The burden of hypertension and hypertensive heart disease is much and the role of echocardiography in the detection of heart disease cannot be over-emphasized as its findings influence management strategies. The use of other applications of echocardiography such as stress echocardiography in appropriately selected patients may help to unmask the true state of ischaemic heart disease in Nigeria.

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Pattern And Predictors Of Uptake Of Contraception Among Women In Olufadi Community, Ilorin South Local Government Area, Kwara State, Nigeria

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Abstract

Background: Nigeria is the most populous African country in the world with a population of about 160 million and an annual growth rate of 3.2%. Nigeria is already facing population explosion with the birth rates being higher than the global averages. Worse still, the low contraceptive prevalence rate and 15% unmet needs of contraception is quite worrisome.

Aims and Objectives: The study aimed to determine the prevalence, pattern and predictors of uptake of contraception among women in Olufadi Community, Ilorin South Local Government Area, Kwara State Nigeria.

Methods: This was a descriptive cross-sectional study. Respondents were selected through Systematic sampling of households. Interviewer- administered pre-tested questionnaire was used to collect data. Data was analyzed using SPSS version 15.

Results: The common forms of contraceptive method utilized among the respondents were pills and Intra-uterine Contraceptive Device (IUCD) which constituted 38(19.0%) each. The least utilized methods among the women were male condom, 1(0.5%) and Bilateral Tubal Ligation, 1(0.5%). None of them reported utilizing the female condom.

Duration of marriage was found to have association with the uptake of contraception as respondents with younger marriages utilize contraception more than those with older marriages (OR=2.55, 95% CI= 1.06-6.29, $p<0.05$). However, having formal education and age at marriage among others were found to be significant predictors of uptake of contraception. In addition, of these significant predictors and indeed of all the listed predictor variables, duration of marriage also had the highest regression coefficient ($\beta=0.513$, $p=0.000$).

Conclusion: The cumulative contraceptive prevalence rate (CPR) obtained in this study showed that less than half of the women are using contraception in this community. These findings underscore the need for urgent community mobilization to increase the uptake of contraception.

Key words: *Uptake, Contraception, Nigeria*

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Introduction

Nigeria is the most populous country in Africa with a population of about 160 million and an annual growth rate of 3.2% [1-3]. The annual growth rate of Nigeria's population is higher than the average of 2.8% obtained in other sub-Saharan African countries [4]. With this growth rate, the doubling time for Nigeria's population has been estimated as 22 years.[2] The birth rate in Nigeria is equally higher than the global averages [3, 5, 6]. The total fertility rate (TFR) of 5.7 obtained in Nigeria suggests that an average Nigerian woman is fecund and fertile to give birth to an average of six children in her life time with a high maternal mortality ratio [7].

Maternal deaths are largely avoidable. There are three pathways that can help reduce maternal deaths: planning pregnancy, preventing complications of pregnancy and child birth and preventing death from complications. These pathways rely on a well functioning health system that provides family planning, antenatal care, safe delivery services and postnatal care to all women [8].

Worldwide, about 13% of maternal deaths are due to abortions [9]. It was also documented that family planning services and supplies currently prevent 187 million unintended pregnancies each year including 60 million unplanned births and 105 million abortions [10]. Despite the high maternal mortality ratio in Nigeria, the contraceptive prevalence rate among married women in Nigeria is about 10% which is lower than the average of 17% obtained in other sub-Saharan African countries. Worse still, the 15% unmet needs of contraception in Nigeria is equally worrisome [6, 7].

The use of contraception to delay or stop child bearing allows women to give birth at healthiest times for themselves and their children, thereby lowering maternal and child deaths and disabilities. Therefore investing in family planning is cost effective for government because the supplies and services are relatively inexpensive to all. The benefit extend far beyond family health including reduction of unwanted birth, lowering of national costs for health care and education with decreased pressure on limited natural resources.[11]

Awareness and knowledge of contraception in Nigeria despite high, there is low usage of contraceptives measures as shown by some studies [12-14]. Barrier method, especially use of condom, was found to be the most used contraceptive method in Nigeria and other areas in the world [7, 11, 14, 15]. In another study it was found that pills were the commonest form of contraceptive method used [16]. Of all the methods, however, the female condom is the least utilized in Nigeria. In Nigeria, 35% of unmarried women use the male condom in contrast to the 0.2% who use the female condom [6].

Health seeking behaviour of Nigerians is actually known to be poor [17]. Factors that serves as barriers to use of contraceptives have been seen to include lack of access, socio-cultural and religious factors, partner's opposition and fear of side effects of contraceptives, low literacy level, poor level of training and ineffective conveyance of relevant information to clients by health personnel, lack of knowledge amongst others [3,16,18,19]. This study aims to determine the cumulative contraceptive prevalence rate (CPR), pattern and predictors of uptake of contraception among the women in Olufadi community.

Materials and Methods

Olufadi, the study site, is an urban community located in Oke-Ogun ward of Ilorin South Local Government Area of Kwara State in North Central Nigeria. Certain socio-cultural practices

that are widely practiced among the people of this community include early marriage, polygamy and associated multiple sexual partners. Grand-multiparity with poor child spacing is also a common practice. Housing in this community is overcrowded with concomitant poor sanitation and filthy environment, a reflection of the low socio-economic status of the people.

The design of this study is descriptive cross sectional in nature to determine the cumulative Contraceptive Prevalence Rate (CPR), pattern and predictors of uptake of contraception among women in Olufadi community. The respondents were selected through systematic sampling of households. A sampling frame of the households in the community was prepared through household numbering/enumeration. This revealed a total of 1,112 houses and 1,543 households in the community out of which 200 households were visited.

The households visited were selected through systematic random sampling with a sampling interval of seven. The index household was selected from the first seven households using simple random sampling by balloting. The 4th household was picked by balloting as the index household. Subsequent households were selected systematically using the sampling interval of seven. For households with more than one eligible respondent, simple random sampling by balloting was used to select the respondent.[75] For households where eligible respondents were not willing to participate or where there were no eligible respondent, the next household was visited to recruit subject while maintaining the sampling interval. The research instrument was a pretested semi-structured questionnaire and the pre-test was done in Okelele community, another community located in Ilorin east LGA with a view to validating the research tool and make appropriate corrections. Trained research assistants on data collection using interviewer administered questionnaire were used. Data collation and editing was done manually to detect omission and ensure uniform coding. The analysis was done using SPSS version 15. Written informed consent was obtained from all the respondents.

The minimum sample size was determined using the Fisher's formula ($n=Z^2pq/d^2$) for obtaining sample size when the population is more than 10,000. A total of 200 women participated in the study. The households visited were selected through systematic sampling with a sampling interval of seven. For households with more than one eligible respondent, simple random sampling by balloting was used to select one respondent. For households where eligible respondents were not willing to participate or where there were no eligible respondent, the next household in the sampling frame was visited to recruit subject while maintaining the sampling interval.

Odds ratio was used to identify/measure association between uptake (ever use) of contraception (dependent/response variable) and socio-demographic and reproductive characteristics of the respondents (independent/ explanatory variables). Pearson's Chi square was used to test association in the cross tabulated variables, while multiple/binary logistic regression analysis was done to identify the predictors of uptake of contraception among the respondents. Level of statistical significance was predetermined at a p-value of < 0.05. Ethical approval for the study was obtained from the research and ethical committee of the University of Ilorin Teaching Hospital.

Operational Definition- For the purpose of this study, "ever use" of contraception or family planning methods, will refer to use of a method at anytime, with no distinction between past and

current use.[20]

Results

As shown in Table 1, the respondents' ages ranged from 25-64 years with a mean of approximately 44±12.50 years. While more than three-quarters, 197(98.5%), of the respondents had ever been married, about one-third, 62(31.0%), of them are in polygamous marriage. Majority, 154(77.0%), of them were educated and more than three-quarters, 185(72.5%) attained coitarche after the age of 17 years and above. While about one-third, 62(31.0%) were grand-multiparous, only 9(4.5%) reported having two sexual partners.

Less than half, 86(43.0%), of the respondents had ever used contraception. On the types of contraception, pills and IUCD were the most commonly utilized among the respondents as shown in Table 2. Male condom and bilateral tubal ligation were the two least utilized forms of contraception among the women.

Table 3 showed that respondents that had ever been married utilized contraception more that the unmarried ones. While about half, 85(43.1%), of the ever married respondents are using contraception, only a third, 1(33.3%), of the unmarried ones are using contraception. However, the above difference is not statistically significant(OR=1.52, 95%CI=0.11-43.02, p value=1.000) Also, in Table 3, duration of marriage was found to have association with uptake of contraception as respondents with younger marriages utilize contraception more than those with older marriages. The observed difference was statistically significant (OR=2.55, 95% CI= 1.06-6.29, p=0.035).

However, in Table 4, having formal education, age at marriage, coitarche, duration of marriage, and history of sexually transmitted infections were found to be significant predictors of uptake of contraception. In addition, of these significant predictors and indeed of all the listed predictor variables, duration of marriage also had the highest regression coefficient (β=0.513, p=0.000).

Table 1: *Socio-economic characteristics of respondents*

Age group (Years)	**Frequency (%) n= 200**
25- 34	56(28.0)
35-44	49(24.5)
45-54	40(20.0)
55-64	55(27.5)
Marital Status	
Married	180(90.0)
Single	3(1.5)
Widow	17(8.5)
Religion	
Islam	179(89.5)
Christianity	21(10.5)
Tribe	
Yoruba	188(94.0)
Hausa	1(0.5)
Igbo	2(1.0)
Others	9(4.5)
Level of Education	
No formal education	46(23.0)
Primary	24(12.0)
Secondary	18(9.0)
Tertiary	112(56.0)
Occupation	
Trading	90(45.0)
Civil servant	89(44.5)
Housewife	12(6.0)
Unemployed	7(3.5)
Retired	2(1.0)
Age at marriage(yrs)	
<17	12(6.0)
⩾17	185(92.5)
Coitarche(yrs)	
<17	15(7.5)
⩾17	185(72.5)
Menarche(yrs)	
⩽10	2(1.0)
>10	198(99.0)
Duration of marriage(yrs)	
<40	162(81.0)
⩾40	35(17.5)
Parity	
<5	138(69.0)
⩾5	62(31.0)
No of sexual partners	
1	191(95.5)
2	9(4.5)

Table 2: *Pattern of uptake of contraceptives among the respondents*

Variable	Frequency (%)
Use of contraceptives	
Ever use	86(43.0)
Never use	114(57.0)
Duration of use (yrs)	
⩽5	84(42.0)
>5	2(1.0)
Types of contraception	
Condom	1(0.5)
Pill	38(19.0)
Injectables	15(7.5)
IUCD	38(19.0)
BTL*	1(0.5)

**Bilateral Tubal Ligation*

Table 3: *Socio-demographic and reproductive health profile by use of contraception*

Age (yrs)	Ever use contraception Yes (%)	No (%)	χ^2	OR	95%CI	φ	p value
25-44	43(41.0)	62(59.0)					
45-64	43(45.3)	52(54.7)	0.22	0.84	0.46-1.53	0.03	0.636
Marital status							
Ever married	85(43.1)	112(56.9)					
Not married	1(33.3)	2(66.7)	0.06	1.52	0.11-43.02	0.02	1.000 Fisher's
Type of marriage							
Monogamous	59(43.7)	76(56.3)					
Polygamous	26(41.9)	36(58.1)	0.01	1.07	0.56-2.07	0.01	0.938
Religion							
Islam	74(41.3)	105(58.7)					
Christianity	12(57.1)	9(42.9)	1.32	0.53	0.19-1.43	0.08	0.249
Educational status							
Formal education	72(46.8)	82(53.2)					
No formal education	14(30.4)	32(69.6)	3.21	2.01	0.94-4.31	0.13	0.073
Age at marriage(yrs)							
<17	3(25.0)	9(75.0)					
⩾17	82(44.3)	103(55.7)	1.02	0.42	0.09-1.76	0.07	0.313
Coitarche(yrs)							
<17	5(33.3)	10(66.7)					
⩾17	81(43.8)	104(56.2)	0.27	0.64	0.18-2.15	0.04	0.606
Menarche(yrs)							
⩽10	0(0.0)	2(100.0)					
>10	86(43.4)	112(56.6)	0.27	0.00	0.00-5.42	0.04	0.507 Fisher's
Marriage duration(yrs)							
<40	76(46.9)	86(53.1)					
⩾40	9(25.7)	26(74.3)	4.44	2.55	1.06-6.29	0.15	0.035
Parity							
<5	53(38.4)	85(61.6)					
⩾5	33(53.2)	29(46.8)	3.25	0.55	0.29-1.05	0.13	0.07
No of sexual partners							
1	80(41.9)	111(58.1)					
2	6(58.3)	3(41.7)	1.26	0.36	0.07-1.69	0.08	0.177 Fisher's

OR=Odds Ratio; φ= Phi coefficient

Table 4: *Predictors of uptake of contraception among the respondents*

Variable	Regression coefficients, β	p value
Age	0.286	0.071
Marital status	0.004	0.743
Type of marriage	0.045	0.441
Religion	0.013	0.169
Formal education	0.026	0.048*
Age at marriage	0.209	0.022*
Coitarche	0.242	0.005*
Menarche	0.073	0.267
Duration of marriage	0.513	0.000*
Parity	0.105	0.096
Number of sexual partners	0.022	0.198
History of STI	0.073	0.004*

***significant predictors**

Discussion

In our study, the respondents were women in the reproductive age group, and almost 99% of them had ever been married. This was similar to what was obtained in a similar study by Olugbenga-Bello et al where 86.3% of the respondents were ever married, and also similar to another study by Moronkola *et al* who identified 90.2% of the respondents as being married [3,19]. This might be due to the Yoruba culture, which applauds the institution of marriage and does not particularly encourage single parenting.

Less than half of the respondents in our study had ever used any form of contraceptives with a cumulative contraceptive prevalence rate of 43%. This was less than the figures obtained by Olugbenga-Bello *et al* where 66.3% of the respondents were currently on modern contraceptives [3]. A similar study in the eastern part of the country found an 'ever used' rate of 52.6% and an awareness rate of over 90% [21]. From this study however, the percentage of respondents who had ever used any form of contraceptive method was greater than what was obtained in the Northern part of Nigeria where only 4.3% of women in the study communities had ever used any form of contraceptive. Current usage was even lower as only 3.1% of women reported current use of either traditional or modern methods [22]. This may be due to the level of education among the respondents, as the level of education of the Northern study was the lowest.

Even though a good majority of the respondents in our study were educated, (77%), a much lower

percentage (56%) had up to tertiary education, yet this study identified 43% of the respondents as ever having used a form of contraception. A Pakistani study with a 35.5% of the respondents being educated, and 11.5% being educated up to college level, had a utilization rate for contraceptives of 29% [23]. Another study by Avideme *et al* had only 27.1% of their respondents with formal education, and current usage of contraceptives was 3.1% [21]. The study however opined that women who managed to attain a higher level of education exhibited greater awareness and utilization of contraceptive methods. These studies tend to have a similar trend- the better the level of education of the respondents, the better their utilization of contraception. From this study, having formal education was also found to be a significant predictor of uptake of contraception with a significant regression coefficient (β = 0.026, p-value = 0.048). Though, educational exposure does not always transform to better health education, it is nonetheless a recipe for exposure to health information and behavioural change.

Duration of marriage was also found to have association with and also predictive of uptake of contraception. This is so because the younger women are still pre-menopausal and procreating/sexually active. There is therefore the need for birth spacing and prevention of unwanted pregnancies. However, this is unlike the older women who probably are post-menopausal and have completed their family

Commonly utilized contraceptives as found in this study were the pills (oral contraceptives) and the intra uterine devices, with the male condom and bilateral tubal ligation taking the back stage as the least utilized methods. A similar study also opined from its findings, that the most utilized contraceptive method was the pills [16]. This may be due to the fact that most women do not want their husbands to know they are on contraception and the use of the pills may not be obvious to the spouse. This was however at variance with some studies which identified the barrier methods, particularly the male condom, as the most utilized method [7, 14, 15]. The results from a Pakistani study identified the most utilized contraceptive methods as tubal ligation-9.5% followed by condom use [23]. This study however had a low level of uptake of contraception and with about a quarter of respondents having no formal education.

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Factors Influencing Cancellation of Scheduled Elective Paediatric Operations in Benin City

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Abstract:

Background: Cancellation of scheduled elective paediatric cases can be distressing to both parents/caregivers and surgeons. The negative impacts on utilization of operating theatre space and the additional cost of hospitalization have been stressed in many reports.

Aim: The aim of this study is to determine factors influencing the cancellation of schedule elective paediatric cases at the University of Benin Teaching Hospital.

Methods: A one-year (October 2012-September 2013) prospective study was undertaken. Records of all children on scheduled elective list, those cancelled and reasons for the cancellation were documented using a structured pro-forma. Data were entered into Microsoft Office Excel Spreadsheet 2007 and analyzed.

Results: Of a total 469 children booked for elective surgery during the period, 89 (18.9%) comprising 78 males and 11 females with a male/female ratio 7:1 had their operation cancelled. Groin hernias/hydrocele 38 (42.6%), hypospadias/post circumcision urethrocutaneous fistula 21 (23.5%), undescended testis 18 (20.2%) and colostomy closure 3 (3.4%) were the major indications for elective surgeries that were cancelled. Inability of parents/caregivers to pay operation fees in 62 (70%) cases was the major reason for cancellation. This was followed by sudden onset of intercurrent pathologies such as URTI in 8 (8.9%), malaria fever 6 (6.7%) and anaemia/non availability of blood 5 (5.6%) in children who were earlier certified fit. Ten (11.2%) children had their surgery at a later date; one was discharged against medical advice while four were lost to follow-up.

Conclusion: Financial constraint was the major factor influencing cancellation of elective operations. We advocate that NHIS should cover all citizens and government should provide free surgical treatment for indigent children.

Keywords: *Influencing factors, Cancellation, Schedule, Elective, Paediatric operations*

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Introduction:

An elective surgical procedure is said to be cancelled when a patient's name has appeared on the operation list but the operation could not be performed on the scheduled date and time due to unforeseen circumstances [1,2]. Cancellation of scheduled elective paediatric cases can be distressing to both parents/caregivers and surgeons [3]. The negative impacts on utilization of operating theatre space and the additional cost of

hospitalization have been stressed in many reports [1-4]. Cancellation of planned surgical operations reflects inefficiency in human, material and time management especially when the operation is cancelled on the day scheduled for the surgery[3,4].

The cost of healthcare delivery, particularly in Nigeria, is increasing as the financial resources of the patients dwindle due to global economic recession. It has been stressed in an earlier research that the physician who fails to take the economic consequences of his/her practice on patients into consideration does not protect the welfare of the patients [3]. Moreover, cancellation of scheduled elective paediatric operations is a cause of major inconveniences to parents/ caregivers and family members which results in their dissatisfaction with healthcare delivery services as well as a colossal waste of time for the surgeons [3,5-7]. There is, therefore, a very important need for healthcare providers to encourage effectiveness in every aspect of patients' care. Although the negative impacts of cancellation of schedule elective paediatric operations have been stressed in many reports, not many publications have drawn attention to the possible factors influencing it in this African subregion[3,5-7].

This study was conducted to determine the possible factors influencing cancellation of scheduled elective paediatric operations in a Nigerian centre so as to make recommendations to improve efficient healthcare delivery in the subregion.

Materials and Methods:

Study design: This one year prospective study was conducted at the University of Benin Teaching Hospital, Benin City, Nigeria between October 2012 and September 2013.

Inclussion: All children scheduled for elective surgery in the Paediatric Surgery Unit of the hospital were enrolled in the study after ethical approval was granted by Local Ethics Committee of the hospital.

Methods: The Paediatric Surgery Unit which has three elective operating theatre sessions per week (excluding circumcision sessions) was run by three Consultant Paediatric Surgeons and seven Residents Surgeons during the period. Elective operation lists were submitted to the theatre at least a day before the scheduled operation to enable the anaesthetists review and certify the children fit for anaesthesia. Work up for surgery included routine haematogram and blood chemistry and only those booked and certified fit were finally operated on. Also, the parents/ caregivers were asked to pay operation fees and present the invoice or evidence of National Health Insurance Scheme (NHIS) coverage at the theatre waiting room. Similarly, those without evidence of payment were not operated. The age, sex, indication for surgery and reasons for case cancellation were documented at the end of each operation session using a structured pro-forma.

Post booking follow up: The list of children scheduled for surgeries were subject to consultants' heading the unit approval. Thereafter, the parents/caregivers were asked to and given slips for payment for operation and addmission for those who are not enrolled with NHIS. The hospital policy was such that payment of these bills were not prerequisite for inclusion of children in elective operation list during the period. All the children on the list were reassessed three days before the scheduled operation for those booked for daycare and admission for those requiring in-hospital care.

Cancellation of surgery: Those who were unfit and/or unable to pay operation fees on the day of operation had their case cancelled at the close of the theatre session for the scheduled date. The parents/caregivers were then reassured, their children/wards were discharged on pass to

follow up in out patient's clinic and their cases were rescheduled whenever they were certify fit for surgery or the parents/caregivers were financially ready to pay the bills.

Data analysis: The data collated were entered into Microsoft Office Excel Spreadsheet 2007. They were analyzed as counts, frequency and percentages, and are presented in simple tables and figures.

Results

Of a total 469 children booked for elective surgery during the period, 89 (18.9%) comprising 78 males and 11 females with a male: female ratio 7:1 and a mean age 4 ± 2.5 years (range 15 days - 16 years) had their operation cancelled on the day of surgery. As shown in table 1, groin hernias and hydrocele 38 (42.6%), hypospadias repair and post circumcision urethrocutaneous fistula closure 21 (23.5%), undescended testis 18 (20.2%) and colostomy closure 3 (3.4%) were the major indications for elective surgeries among those that were cancelled.

Financial constraint was a major influencing factor of cancellation of scheduled elective paediatric operations during the period as shown in table 2. This occurred only among indigent families who had no NHIS coverage. Consequently, inability of parents/caregivers to pay operation fees in 62 (70%) cases was the major reason for case cancellation. This was followed by sudden onset of intercurrent pathologies such as acute upper respiratory tract infection (URTI) in 8 (8.9%), malaria fever in 6 (6.7%), and anaemia/non availability of blood in 5 (5.6%) children. Other non-patient related factors such as industrial action, bereavement of a family member and non-availability of required surgical facilities resulted in cancellation of three (3.3%) scheduled elective cases. Additional but uncommon contributory factors to scheduled elective cases cancellation during the period are as depicted in table 2.

However, the parents/caregivers of 10 (11.2%) children were able to raise the operation and hospitalization fees over the period of study and their children/wards subsequently had their surgeries at a later date. Children with URTI, malaria fever, anaemia and electrolyte derangement who responded to treatment were rescheduled and operated on subsequent lists. A child (1.1%) was discharged against medical advice on account of financial constraints while four (4.4%) children whose parents/caregiver could not afford operation fees were lost to follow-up. Of the 62 cases cancelled due to financial constraints, 47 (75.8%) of them are still being followed up in surgical outpatient clinic pending when their parents/caregivers are able to raise the treatment fees.

Table 1: Indication for operations that were cancelled

Indication	Number of children	percentage
Hernias/hydrocele	38	42.6
Hypospadias/urethrocutaneous fistula	21	23.5
Undescended testis	18	20.2
Colostomy closure	3	3.3
Pull through	2	2.2
Ventral hernia	1	1.1
Clitoral cyst	1	1.1
Thyroglossal duct cyst	1	1.1
Wilm's tumour	1	1.1
Others	3	3.3
Total	**89**	**100**

Table 2: Reason for scheduled elective paediatric cases cancellation

Indication	Number of children	percentage
Financial constraint	62	69.6
Respiratory tract infection	8	8.9
Malaria fever	6	6.9
Anaemia	4	4.4
Urea/electrolyte derangement	2	2.2
Elapsed operation time	2	2.2
Unavailable blood	1	1.1
Discharge against medical advice	1	1.1
Others	3	3.3
Total	**89**	**100**

Discussion

The associated psychological trauma and socioeconomic impacts of cancelling surgical cases on the day of surgery have been emphasized by many authors [1,3-5]. These are even more so in paediatric surgery where the children are dependent on adults and other family members who may have taken some days off work or school to attend to the child after operation. The high rate of scheduled paediatric surgical case cancellation on the day of surgery recorded in this study tallies with earlier reports from this African sub-region where a similarly high incidences were recorded [8,9]. This was found to be at variance with report [1] from western countries where the incidence recorded was quite low. Also in other similar studies [1,8,10,11], shortage of theatre space was a leading cause of elective case cancellation which was not encountered during this study period. Unavailability of theatre space was not recorded perhaps because the paediatric surgery unit in the study centre has three operating theatre spaces per week. In addition to the minor operation theatre devoted to circumcision and other minor procedures, they were found adequate for the paediatric surgical workload.

In none of the other earlier similar studies [1,2,8,9,13,14] was financial constraints recorded as a main cause of cancellation of scheduled surgeries. Financial constraint was observed to be a leading influencing factor to cancellation of scheduled elective paediatric operations during the period of this study. This was noticed to be a direct consequence of the fact that parents/ caregivers were made to pay for all elective surgeries and present the invoice at the theatre waiting room. Failure to do this resulted in their children/wards not being admitted to operating suites with the case subsequently cancelled if they are unable to pay before closure of the allotted theatre time. This financial constraint occurred only among indigent family who were not covered by NHIS. The NHIS was available only to a few government employees who were not asked to pay operation fees for their children/wards directly before admission into operating suites. Consequently, all cases of inability of parents/caregivers to pay operation fees which contributed 70% to cancellation of scheduled paediatric operations occurred among these indigent families with none recorded among government employees. Other authors [8,9,13] emphasized that payment for operation by none government employees before inclusion of their child's/ward's name in operation list will help to reduce cancellation of cases on the day of surgery. This is however seen as discriminatory against the poor in this setting and will only result in many discharges against medical advice and defaulters from clinic visit if payment before inclusion in the list is enforced. Hence the hospital policy during the period was that all children requiring elective surgery should be included in operation list while the parents/ caregivers are given payment slip and encouraged to pay the required operation bill.

Sudden onset of intercurrent pathologies such as URTI and acute febrile illness as well as non availability of surgeons for scheduled cases and non availability of blood for possible transfusion contributed mainly to case cancelation in earlier studies in other centres [2,8,9,15,16]. URTI and acute febrile illness similarly occurred suddenly on the day of surgery in children who were earlier certified fit for surgery during this study. The endemic malaria fever and adenoviral airway infection in this African subregion were mainly implicated. Reactive airways due to URTI and fever have been reported as major anaesthetic contraindications to general anaesthesia. The affected children in this series consequently had their surgery deferred to a later date when they had responded to antibiotics and antimalaria.

It is concluded from this study that financial constraints which was recorded exclusively

among indigent family who have no NHIS coverage was the leading influencing factor of cancellation of scheduled elective paediatric cases in Benin City. This was followed by URTI, malaria fever and anaemia in descending order. We advocate that NHIS be extended to cover every citizen irrespective of employment status and that free surgical services be made available to children whose parents/caregivers cannot afford the regular routine payment of insurance premium.

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A Review of Pregnancy Outcomes following Intrauterine insemination for Infertile Women at a Public Health Facility in Ilorin, Nigeria.

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Abstract

Introduction: Infertility is a problem of public health importance in Nigeria and many other developing nations because of its high prevalence and its serious social implications on affected couples and families. Of the various treatment options available for the treatment of infertility, intrauterine insemination is a viable option with appreciable success rate. The study aimed to determine pregnancy outcomes following intrauterine insemination.

Materials and Methods: Twenty one (21) clients who underwent the procedure of Intrauterine insemination between 1st January 2012 and 31st December 2013 at the Assisted Reproduction Technology (ART) unit of University of Ilorin Teaching Hospital, Ilorin, Nigeria.

Results: The patients aged 26-40 years with a mean age of 32.1± 3.9 year. Nine (42.9%) had primary infertility while 12 (57.1%) had secondary infertility. Their duration of infertility ranged from 1to 8years (4.3 ± 2 years). Two (9.5%) had Artificial Insemination by donor's semen (AID). Nine clinical pregnancies were recorded giving a cumulative pregnancy rate of 42.9%. However 5(55.6%) resulted in early first trimester miscarriage and of the remaining four pregnancies, one woman successfully delivered, giving a live birth rate of 25%. Pregnancy outcome was not significantly affected by age of the woman, husband age, social class, types and duration of infertility ($p>0.01$).

Conclusion: Intrauterine insemination is one of the mainstays of therapy for couples suffering from various forms of infertility prior to embarking upon the more expensive in vitro fertilization procedures. Thus the need for proper patient selection to increase pregnancy rates from the procedure.

Key words: *Intrauterine insemination, infertility, assisted reproduction technology.*

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Introduction

Intrauterine insemination (IUI), an assisted reproductive technique widely used for infertility treatment all over the world, is a distinguished method which is cheaper and less invasive compared to other assisted reproductive techniques[1]. It is usually selected as a first treatment option for infertile couples with patent tubes, cervical mucus hostility, mild endometriosis, or mild or moderate male factor infertility or as empirical treatment in unexplained infertility[2].

It involves the insertion of sperm into the women's uterus with the aid of a fine plastic tube that is passed through the cervix and into uterus[3]. The procedure is timed to coincide with the release of an egg or eggs (ovulation) in a natural or a stimulated cycle. Ultrasound and hormonal analysis are used to monitor progress throughout the treatment. If successful, fertilization takes place in the uterus[3].

The overall success of IUI varies, with pregnancy rates ranging from 2.7% to 66%[1, 4, 5]. Frequent problems in evaluating success rates of this treatment may be due to variability in bio-social variables of selected subjects, aetiology and duration of infertility, difference in ovarian stimulation protocols[8], timing and frequency of insemination, number of treatment cycles and total number of motile sperm inseminated[1]. Although, the results may appear the same for some of these factors, a lack of consistency is being reported for others, such as gender fertility factor and husband age[1,8].

The objective of this observational study was to determine the bio-social characteristics, pregnancy outcomes and identify the variables that contribute to the success of IUI procedure in our centre.

Materials and Methods

This is a prospective study of patients who underwent IUI procedure at ART unit of the department of Obstetrics and Gynaecology, University of Ilorin Teaching Hospital, Ilorin from 1st of January to 31st December 2013.

Information on biosocial data and other general information of the patients were documented at presentation. All female partners had undergone diagnostic work-up including hysterosalpingography / laparoscopy + dye test, transvaginal ultrasonography and measurement of baseline levels of follicle- stimulating hormone (FSH), leutinizing hormone (LH), oestradiol, thyroid-stimulating hormone (TSH), triiodothyronine (T3), thyroxin (T4), prolactin, and day 21progesterone. Male factor evaluation included uro-andrologic examination, measurement of baseline levels of FSH, LH, testosterone, TSH, T3 and T4. Male infertility was diagnosed when sperm abnormalities according to World Health Organization (WHO) criteria[6] were seen in at least 2 semen samples.

Semen samples were obtained from male partner of couples who were undergoing IUI treatment for infertility through masturbation after 3-7days of sexual abstinence. After liquefaction at room temperature for 30minutes, the semen samples were examined under a microscope to define their characteristics regarding concentration, motility and morphology. Then, semen was washed with an Earle's Balanced Salt Solution (EBSS) - containing medium (Ferticult, Beernem, Belgium) at 350 x g for 10minutes. The pellet underwent centrifugation on a mini-Percoll gradient (40% to80%) at 200 x g for 20 minutes. Ninety-five percent of the fraction was recovered and washed again with EBSS-containing medium at 350 x g for 5minutes. The pellet was resuspended to 1mL, and then post wash motility and motile sperm count were reassessed. Finally, the sample was centrifuged again, and the pellet resuspended to 0.3mL and was left for incubation at 37°C. The final volume for insemination was 0.5mL.

All women in the study underwent ovarian stimulation using clomiphene citrate (Clomifen; Leiras, Tampere, Finland) and /or human menopausal gonadotrophin (HMG)/human chorionic gonadotrophin (HCG) (Pergonal; Serono, Aubonne, Switzerland). For clomiphene citrate –stimulated cycles, 100mg clomiphene citrate was given between days 2 and 6. For clomiphene citrate plus gonadotrophin stimulation, 100mg clomiphene citrate was given between days 2 and 6, followed by 150IU of gonadotrophins added on days 6, 9 and 12.

Follicular maturation, ovarian and endometrial responses were monitored by serial transvaginal ultrasonography on cycle days 9 to13 and 5000-10000IU of HCG (Pregnyl; Organon or Profasi; Serono) was administered when at least one follicle was > 16mm in mean diameter and standard IUI was scheduled 36 h after administration of HCG[7,8].

Intrauterine insemination was performed using intrauterine catheter (Kremer Delafontaine; Prodimed, Neuilly-en-Thelle, France) with a 1ml syringe. The catheter was gently passed through the cervical canal and the sperm suspension expelled into the uterine cavity. All techniques were carried out using sterile procedure. The IUI was performed with the patient in the dorsal lithotomy position. The women remained supine for 30 minutes after IUI. After insemination, each patient received progesterone (400mg vaginal suppository twice daily and 100mg intramuscularly twice weekly), followed as the same dosage after pregnancy confirmation for 14 weeks.

Pregnancy confirmation was done on the 2nd and 3rdweeks after IUI using serum β-hCG level. In pregnant women, luteal phase support was continued until 14 weeks of gestation while those with negative findings luteal support was stopped for menses to return. Clinical pregnancy was defined as transvaginal ultrasonographic visualization of intrauterine gestational sac (s).

Data entry was done with the help of structured codes in Microsoft Excel. Data validation was done to check for errors in data entry. Descriptive statistical analysis was carried using a commercial statistical package (SPSS/PC version 16.0, SPSS Inc., Chicago, III, USA). A p-value of < 0.05 was considered as statistically significant.

Results

Out of 132 patients who had infertility consultation at the ART clinic, 21 (15.9%) underwent successful intrauterine insemination procedures. The patients aged 26-40 years with a mean age of 32.1 ± 3.9 year. Seventeen (81%) out of twenty one were nulliparous and majority (71.4%) belong to middle social class. The mean age of their husband was (37.4 ± 4.3). Nine (42.9%) had primary infertility while 12 (57.1%) had secondary infertility. Their duration of infertility ranged from 1to 8years (4.3 ± 2 years). About one-third (33.3%) had Polycystic Ovarian Syndrome (PCOS)

Table 1: *Socio-demographic characteristics* *N=21*

Variable	Frequency	Percentage (%)	p value
Age wife (years)			
26-30	9	42.9	
31-35	8	38.1	
35-39	2	9.5	
⩾40	2	9.5	
Range-26-40 years,		mean=32.1±3.9	
Parity			
0	17	80.9	
1	2	19.1	
mean= 0.191±0.402; median= 0.00			
Age husband (years)			
31-35	10	47.6	
36-40	6	28.6	0.003
41-45	4	19.0	
>45	1	4.8	
Range-31-47 years		mean=37.4±4.3	
Social Class			
Low	6	28.6	
Middle	15	71.4	
Type of infertility			
Primary	9	42.9	
Secondary	12	57.1	
Duration of infertility (years)			
1-3	9	42.9	
4-6	9	42.9	
7-9	3	14.2	
Range= 1-8 years	mean=4.3±2.0		

Table 2: *Gender infertility/Tubal factors/Semen Analysis/Hormonal profile/IUI Procedure/Outcome*

Variables	Frequency	Percentage (%) N=21
Gender-Infertility factor		
Male factor	2	9.5
Female factor	7	33.3
Unexplained	12	57.1
Tubal factors		
Bilateral patent tube	21	100
Sperm counts		
Normospermia	19	90.5
Severe oligospermia	1	9.5
Hormonal profile		
Hypergonadism	2	9.5
Hypogonadism	5	23.8
Normogonadism	14	66.7
Prolactin		
Normoprolactinaemia	17	81.0
Hyperprolactinaemia	4	19.0
Types of IUI Procedure		
IUI-H	19	90.5
AID	2	9.5
Pregnancy outcomes		
Outcome (21)		
None	12	57.1
Pregnancy	9	42.9
Miscarriages (n=9)		
Yes	5	55.6
No	4	44.4

Table 2 showed gender infertility factors, investigation results, types of IUI procedures and pregnancy outcomes. Male alone factor and female alone factors accounted for 2(9.5%) and 7 (33.3%) of cases respectively. More than half (51.7%) had unexplained infertility. All female alone factors were as a result of ovulatory disturbances secondary to PCOS. All had bilateral patent tubes. Majority (90.5%) of their spouse had normozoospermia except for 2 (9.5%) that had severe oligospermia . Most women (66.7%) had normogonadotrophic normogonadism with less than one-third (19.0%) having hyperprolactinaemia. Majority (90.5%) had Homologous intrauterine insemination (IUI-H), while 2 (9.5%) had Artificial insemination Donor (AID).

Table 3 showed pregnancy outcomes following

IUI procedures. Out of 21 patients that underwent IUI, nine (9) clinical pregnancies were achieved giving a cumulative pregnancy rate of 42.9%. However 5(55.6%) resulted in early first trimester miscarriage and of the remaining four pregnancies, one woman successfully delivered, giving a live birth rate of 25%, while others are on-going. Pregnancy outcome was not significantly affected by age of the woman, husband age, social class, types and duration of infertility (p>0.01)

Table 3: *Socio-demographic variables and pregnancy outcome*

Variables	Pregnancy outcome					
	Yes (%)	No (%)	χ^2	OR	95%CI	p value
Age wife (years)						
26-35	5(29.4)	12(70.6)				
>35	2(50.0)	2(50.0)	0.62	0.42	0.03-5.93	0.574*
Age husband (years)						
31-40	4(25.0)	12(75.0)				
>40	3(60.0)	2(40.0)	2.10	0.22	0.02-2.64	0.280*
Parity						
0	5(29.4)	12(70.6)				
1	2(50.0)	2(50.0)	0.62	0.42	0.03-5.93	0.574*
Social Class						
Low	3(50.0)	3(50.0)				
Middle	4(26.7)	11(73.3)	1.05	2.75	0.27-31.37	0.354*
Duration infertility (years)						
⩽3	4(44.4)	5(55.6)				
>3	3(25.0)	9(75.0)	0.88	2.40	0.27-23.27	0.397*
Type of infertility						
Primary	0(0.0)	9(100.0)				
Secondary	7(58.3)	5(41.7)	7.88	0.00	0.00-0.68	0.007*

*Fisher exact

Discussion

The cumulative pregnancy rate in this study was 42.9%. This is far higher than the lowest rate of 2.7%; but slightly lower than the highest rate of 66% reported in previous studies[1, 4, 5]. This may be attributed to the fact that majority of the patients recruited for this study were below 40 years of age as fecundity and fecund ability are age dependent[9].

Also, the rate of evolutive pregnancy of 44.4% (pregnancies which did not miscarry) obtained in this study is comparable to 50%[10], 54%[11] and 68%[12] respectively obtained from several studies. However, it is lower than 88% reported by

Shahrzad et al[1]. These differences may be due to variations in ovarian stimulation protocols, methods of semen preparation and sample size of these studies. In this study low-cost ovarian stimulation (use of clomiphene citrate and HMG) and density gradient semen preparation were adopted.

We found that the majority of pregnancies 8 (88.9%) recorded from this study were from women age < 40years though the difference was not statistically significant. The age related decline in female fecundity has been well documented in every aspect of natural and artificial reproduction and probably results from a combination of progressive follicular depletion, decline in granulose function, poor oocyte quality and reduced endometrial receptivity[1].

Multiple pregnancies with its attendant medical and socio-economic sequel is an important aspect that needs to be considered when ART is evaluated with a reported incidence of 6.5-25%[13, 14]. However, multiple gestations seem to be less frequent following IUI compared with generally reported in in vitro fertilization and intracytoplasmic sperm injection (ICSI) (25-30%)[14]. In our study all the pregnancies recorded were singletons.

In conclusion, our results suggest low- cost ovarian stimulation using clomphene citrate and HMG for intrauterine insemination is a useful treatment for infertile couple younger than 35 years of age most especially in the developing countries like ours. Thus, we believe that our results may be helpful for better counseling and selection of couples undergoing infertility treatment, thereby increasing the success of IUI therapy before opting for much more expensive invasive assisted reproductive treatments.

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Extragonadal Germ Cell Tumours in Males

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Abstract

Introduction: Extragonadal germ cell tumours are germ cell neoplasms located in extragonadal sites. These tumours have arisen from primordial germ cells misplaced during their migration to the gonads. The aim of this study was to determine the patterns of extragonadal germ cell tumours in University of Benin Teaching Hospital (UBTH) over a period of twenty years.

Materials and Method: This retrospective review involved all male cases of extragonadal germ cell tumours diagnosed during consultation in the Department of Morbid Anatomy, University of Benin Teaching Hospital from January 1, 1990 to December 31, 2010. The location, type and age were used to determine the patterns of extragonadal germ cell tumours in males. Permission for this study was obtained from the University of Benin Teaching Hospital (UBTH) ethics committee (protocol number ADM/E 22/A/VOL. VII/928).

Results: A total number of nine lesions were recorded during the period under review. Benign cystic teratoma constituted about 67%, immature teratoma 11%, poorly differentiated carcinoma 11% and embryonal carcinoma 11% of the entire diagnosis made. The observed lesions were distributed to the sacro-coccygeal region with majority occurring in young age.

Conclusion: Extragonadal germ cell tumours have been shown to be rare. Benign cyst teratomas were demonstrated to occur mostly in young males especially in the sacro-coccygeal region.

Key words: *extragonadal germ cell tumours, males, sacro-coccygeal, benign cystic teratoma.*

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Introduction

This entity which was first documented in the 19th century includes all germ cell tumours located in extragonadal sites.[1-3] Extragonadal germ cell tumours have been described as relatively uncommon and said to represent about 1-5% of all germ cell tumours.[4] The most widely accepted theory suggested that extragonadal germ cell tumours arose from primordial germ cells misplaced during their migration to the gonads.[5] Opponents of this theory have however argued that extragonadal germ cell tumours arose from germ cells with an aberrant path of migration from the yolk sac.[6] These tumours have been documented to occur in multiple midline locations particularly the retroperitoneum, anterior mediastinum, sacrococcyx, and the pineal gland.[7]The mediastinum has however been shown to be the most common anatomic site for extragonadal

germ cell tumour in adults with a male predominance.[4, 8] Since lesions occurring in some of these sites may not be available for surgical repair, only chemotherapeutic treatment may therefore be utilized in management of these cases.[9, 10] Fortunately, many extragonadal germ cell tumours have been shown to respond to treatment with common anticancer agents.[10, 11] Knowledge of the patterns of these lesions is important for adequate management.

Scanty studies have been conducted in our environment and these lesions have been recorded to respond well to appropriate chemotherapeutic agents and surgery.[12,13] This twenty year retrospective study was therefore aimed at determining the patterns of extragonadal germ cell tumours in the University of Benin Teaching Hospital in other to demonstrate the prevalence, types, site and age distribution of these tumours. This empirical study will no doubt prove very useful in managing patients with demonstrable germ cell tumours.

Materials and Method

Study design

This study was a retrospective review of all cases of histopathologically diagnosed extragonadal germ cell tumours reported in the department of Morbid Anatomy, University of Benin Teaching Hospital during a 20-year period commencing January 1, 1990 and ending December 31, 2010. Available sample slides were reassessed in most cases with exception of few cases were the slides were faded in which the tissue block had to be reprocessed for proper review. Parameters obtained included age, the location and tumour types which were used to determine the pattern of extragonadal germ cell tumour.[14]

Inclusion Criteria

Only extragonadal germ cell tissue samples with available and complete patient records, analysed in the pathology unit of the hospital were included.

Exclusion Criteria

Cases where tissue blocks could not be located in the departmental records unit for processing and analysis were excluded from this study.

Ethical Clearance

Approval for this study was obtained from University of Benin Teaching Hospital ethics committee PROTOCOL NUMBER ADM/E 22/A/VOL. VII/928 in accordance with Helsinki Declaration in 1995 (revised in Edinburgh 2000).[15]

Methods

Formalin fixed, paraffin embedded tissue samples, sectioned at 3-4μm and stained with haematoxylin-eosin, were carefully analysed for histopathologic features to further confirm initially documented patient results.[16] Their corresponding biodata was obtained from the patient records. Digital compound microscope (Brunel SP35 Digital, model: DN-107T, No: 000026 www.brunelmicroscopes.cp.uk, www.digital-microscopes.co.uk) was used to view and capture the slides.

Analysis of result

The percentage frequencies of the observed lesions of sites, types, age and behaviour were determined. The statistical package for the social sciences (SPSS) version 16 and Microsoft excel was used to analyse the data.[17] Tables and figures were used in this study.

Limitation of study

Cases where adequate clinical data could not be obtained or where original tissues blocks could not be found was excluded from this study

Results

A total of nine (9) extragonadal germ cell tumours were recorded during the period of study. Majority [6(67%)] of the cases were benign and they were all benign cystic teratomas (table 1). This tumour occurred in the first four decades of life especially in males below 10 years (table 2). The tumour was distributed in the following locations: omentum (1[11%]), periorbital regionList these in order of frequencies and include the absolute numbers and percentages. (2[23%]), sacrococcygeal (4[44%]), chest (1[11%]) and colon (1 [11%]). The lesion shown in figure A was composed of a cystic lesion lined by stratified epithelium whose lumen was filled with fluid and cell debris. In the wall was a loose connective tissues in which were clusters of sebaceous gland. are reactive fibroblast with large variably-sized vesicular nuclei.

APPENDIX 1

Table 1; Age distribution of extragonadal germ cell tumours in males.

Age Interval	BCT	IT	PD	EMB	TOTAL	%*f*
0-10	2	1	1		4	45
11-20	1				1	11
21-30	1				1	11
31-40	1				1	11
41-50						
51-60						
61-70						
71-80				1		11
81-90						
Unspecified	1					11
TOTAL	6	1	1	1	9	100

BCT: Benign cystic teratoma, IT: Immature teratoma, PD: Poorly differentiated teratoma, EMB: Embryonal carcinoma.

A case of embryonal carcinoma was recorded in the eighth decade of life (table 1). It accounted for 11% of the entire extragonadal germ cell tumours investigated and was localized to sacrococcygeal region. As shown in figure B and C, the lesion was composed of tubule-like structures disposed in a fibromyxoid connective tissue stroma. The tubules were lined by stratified columnar epithelium with the cells having an overlapping basophilic nuclei appearance with indistinct cell boundaries.

Similarly, a case of poorly differentiated carcinoma was seen in this study and it accounted for approximately 11% of the entire germ cell tumours investigated (table1). This lesion was seen in a 2 year old male and occurred in the sacrococcygeal region. (table2).

APPENDIX 2

Table 2; Site distribution of extragonadal germ cell tumours in males.

Sites	BCT	EMB	IT	PD	TOTAL	*%f*
Sacrococcygeal	1	1	1	1	4	44
Colon	1				1	11
Omentum	1				1	11
Chest	1				1	11
Periorbital	2				2	23
TOTAL	6	1	1	1	9	100

BCT: Benign cystic teratoma, IT: Immature teratoma, PD: Poorly differentiated teratoma, EMB: Embryonal carcinoma.

Only one case of immature teratoma was recorded (table 1) and it constituted 11% of the entire germ cell tumours investigated. This lesion was localized to the sacrococcygeum (table2) and the lesion, a section of the skin (figure D and E) showed a cystic region lined by cells with variable shapes. These cells had hyperchromatic round to oval nuclei and scant cytoplasm with indistinct cell membrane. The cells were invading the underlying stroma of the dermis. Also present are reactive fibroblast with large variably-sized vesicular nuclei.

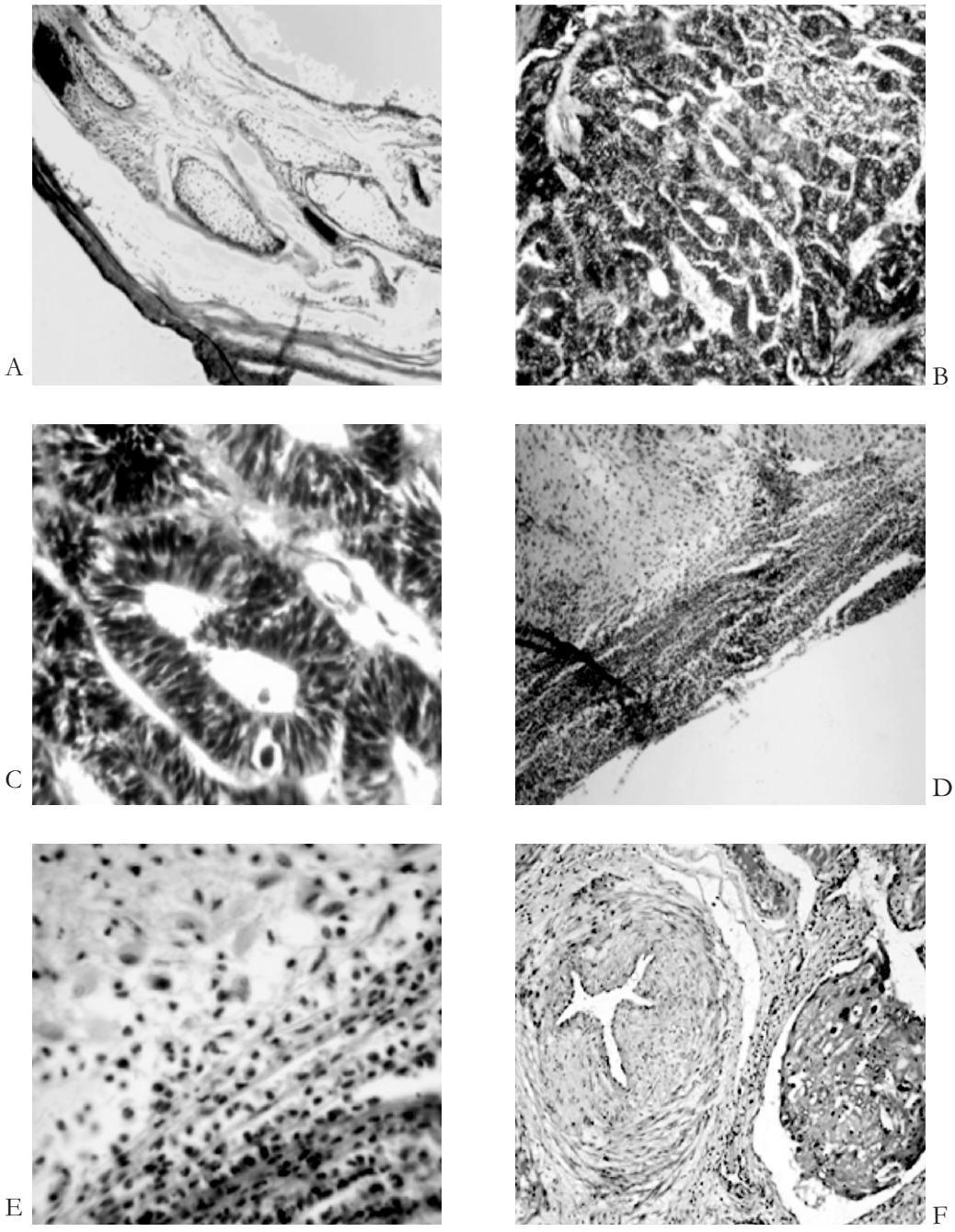

Figure 1; showing benign cystic teratoma (A), Embryonal carcinoma at 40 and 100 magnifications (B and C), Immature teratoma at magnification 40 and 100 (D and E), Choriocarcinoma in the uterus F (x 100).Figure A showing benign cystic teratoma with H &E x 100. Figure B showing embryonal carcinoma with H&E x 100. Figure C showing embryonal carcinoma with H&E x400. Figure D showing immature teratoma with H & E x 100. Figure E showing immature teratoma with H&E x 400.

Discussion

The study revealed that benign cystic teratomas were the most common extragonadal germ cell tumour in males. The observations in this report were also similar to the findings in India where benign cystic teratoma was recorded to constitute over half of the cases.[18] Another review in Zaria, Nigeria showed that a vast majority of the extragonadal germ cell tumours were benign cystic teratomas with immature teratoma responsible for the remaining few.[19] In the Indian and Zaria studies however, the findings were not separated into male and female groups which was the possible reason for their observations. The index study also showed that embryonal carcinoma, immature teratoma and poorly differentiated carcinoma accounted for the remaining extragonadal germ cell tumour.

The sacrococcygeal region was the most common site for extragonadal germ cell tumours in this study. These findings were similar to the observations in Zaria where the sacrococcygeal region was the most common anatomic site in males.[19] However in England, Arora et al. demonstrated that the central nervous system was the most common site for extragonadal germ cell tumours in males.[20] The English survey was however different from the review by Dehner, in 1990 and Stang et al.2007 in the United States of America who showed that the mediastinum was the most frequent site for extragonadal germ cell tumours in males.[21,22]

This study recorded age predominance within the first decade of life was however different from an American report where extragonadal germ cell tumours were seen to primarily affect men within the third to fourth decade of life.[23] Similarly in an American study, most of the extragonadal germ cell tumours occurred in the fourth decade.[24] The predominant affected age group in another research was within the first three decades of life.[21]

Conclusion

Extragonadal germ cell tumours have been shown to be rare. Benign cyst teratomas were demonstrated to occur mostly in young males especially in the sacrococcygeal region.

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A Twenty Year Retrospective Histopathological Analysis of Vascular Tumours in University of Benin Teaching Hospital

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Abstract

Introduction: Vascular tumours are a heterogeneous group of soft tissue lesions arising from blood vessels. These lesions range from benign borderline to malignant forms (WHO). These behavioral features are very essential especially as this may strongly influence the choice of treatment of cases. The aim of this study was to determine the histopathologic pattern of the vascular tumours in the body to demonstrate the prevalence of these groups of lesion.

Materials and method: The records of 123 histopathology consultations in the Department of Morbid Anatomy, University of Benin Teaching Hospital over a 20 year period which commenced January 1, 1990 - December 31, 2010 were retrieved and used. The lesions were individually reviewed and standardized in accordance with the standard classification system (World Health Organization classification of soft tissue tumours; 2013).

Results: The mean age involvement was 46±27 years and the prevalence, 3.44%. Haemangiomas were the most predominant of the tumours recorded in this study accounting for 59% (72) of the entire vascular tumours. The male female ratio was 1:1 and the lesions were distributed from the second to 6th decades of life. These tumours were predominantly 30(41%) localized to the head. Eight (8) cases of lymphangiomas were observed in this study and they constituted 7% of the entire vascular tumours and 10% of benign vascular tumours. Only two (2) cases of haemangioendotheliomas were recorded during the entire study period accounting for 2% of vascular tumours with both lesions located in the gluteal aspects of the lower extremities and axilla respectively and both responsible for 2% of vascular lesions. Kaposi sarcoma accounted for 31% (38) of the vascular tumours recorded in the index study with more of the tumours occurring in females (ratio 6:5).Only two cases of angiosarcomas were recorded constituting approximately 2% of the vascular tumours.

Conclusion: This analysis of vascular tumours showed that these lesions were relatively uncommon and demonstrated a wide anatomic and age distribution.

Key words: *age; gender; site; tumours; vascular*

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Introduction

Vascular tumours are a heterogeneous group of soft tissue lesions arising from blood vessels.[1] These lesions range from benign borderline to malignant forms (WHO).[2] These behavioural features are very essential especially as this may strongly influence the choice of treatment of cases.[3] Vascular tumours have been extensively studied by several groups especially with the observed relationship with human

immunodeficiency virus and Kaposi sarcoma.[4] Coffin and Dehner in their study categorized these tumours as constituting a quarter of soft tissue tumours (STT) in the USA.[5] Few studies on the distribution of vascular tumours have been conducted in Nigeria.[6-8] The aim of this study was to determine the histopathological patterns of the vascular tumours in University of Benin Teaching Hospital (UBTH) and to demonstrate the prevalence of these lesion. The spread of these tumours will be outlined which will influence desired budgetary and financial provisions for the management of patients with these lesions.[9]

Materials and Method

The records of 123 histopathology consultations in the Department of Morbid Anatomy, University of Benin Teaching Hospital were used during the 20 year period which commenced January 1, 1990 and ended December 31, 2010. Approval for this study was obtained from University of Benin Teaching Hospital ethics committee (protocol number ADM/E 22/A/VOL. VII/742) in accordance with the declaration of Helsinki in 1995 (revised in Edinburgh 2000).[9] Relevant clinical information were obtained from available surgical pathology records.

Inclusion criteria

Only mesenchymal lesions originating from somatopleuric mesoderm, intra-abdominal and retroperitoneal lesions arising in the chest, abdominal walls and paraspinal region were included in this study.[9]

Exclusion criteria

Cases where adequate clinical data could not be obtained or where original tissue blocks could not be found were excluded from this study. **Mesenchymal soft tissue arising from splanchnopleuric mesoderm including visceral adnexa and bone (except gastrointestinal stromal tumours) were not described in this study.**

Methodology

Tissues for analysis were processed using standard techniques which involved formalin fixed, paraffin embedded tissue specimen sectioned at 3μm. The obtained sections were then stained with haematoxylin-eosin and investigated with microscopes.[10,11] The lesions were individually reviewed and standardized in accordance with the most recent classification system by the World Health Organization.[2] The lesions were placed in one of the 10 anatomical categories listed thereof: hand wrist, upper extremity, proximal limb, girdle (axilla and shoulder), foot and ankle, lower extremity, hip and buttocks region, head and neck, trunk, retroperitoneum, and other lesions.[12]

Result analysis

A detailed description of the observed types was noted and the respective descriptive statistics especially mean, standard deviation, range, percentage frequency of age, gender and site distribution obtained with Statistical Package for the Social Science (SPSS) with which the data was analysed and then presented in tables.

Results

The mean age for all the vascular tumours was 46 ±27 years, with median/age range of 46/5.5-8.5 years and prevalence of 3.44 per 100,000. The haemangiomas were the most predominant of the tumours and accounted for 59% (72) of the entire vascular tumours. The most frequent type of haemangioma was the capillary type which accounted for 59% of the cases while cavernous

and pyogenic granuloma forms constituted the remaining 43% (22%, 21% respectively). The male female ratio was 1:1 and the lesions were distributed from the second to 6th decades of life. Specifically, most haemangiomas occurred in the first few decades of life (table 3) and they were predominantly localized 30(41%) to the head with capillary haemangioma constituting most of the vascular tumours in the face. Pyogenic haemangiomas were also observed to occur in the fingers while cavernous haemangiomas were permanently localized to the forearm.

Eight cases of lymphangiomas were observed in this study and they constituted 7% of the entire vascular tumours and 10% of benign vascular tumours. The lesions were observed in individuals in the first three decades of life especially in males. Majority 3(38%) of the lesions were observed to occur in the head and a few others in the extremities (table 3).

Two (2) cases of haemangioendotheliomas were recorded in the index study and this accounted for 2% of vascular tumours. The observed variety was the epitheliod type and only 1% each was observed to occur in a male (in the fourth decade of life) and female (in the 6th decade) respectively. The lesion was observed to occur in the gluteal aspect of the lower extremities and in the axilla.

Kaposi sarcoma accounted for 31% (38) of the vascular tumours recorded in the index study with more of the tumours occurring in females (ratio 6:5). The lesions were observed to occur in several age groups especially the third and fourth. The predominant site of involvement included the lower extremities specifically the foot.

Only two cases of angiosarcomas were recorded constituting approximately 2% of the vascular tumours. Both lesions were observed in males in their 4th and 6th decades of life and it involved the scalp and face.

Table 1: Soft Tissue Tumour and Gender Distribution

Diagnosis	Male	Female	Frequency	Percentage
Capillary Haemangioma	21	21	42	**34.15**
Pyogenic Granuloma	6	9	15	**12.20**
Carvernous Haemangioma	9	7	16	**13.00**
Haemangioendothelioma	1	1	2	**1.63**
Lymphangioma	5	3	8	**6.50**
Angiosarcoma	2		2	**1.63**
Kaposi Sarcoma	17	21	38	**30.89**
Total	**61**	**62**	**123**	**100**

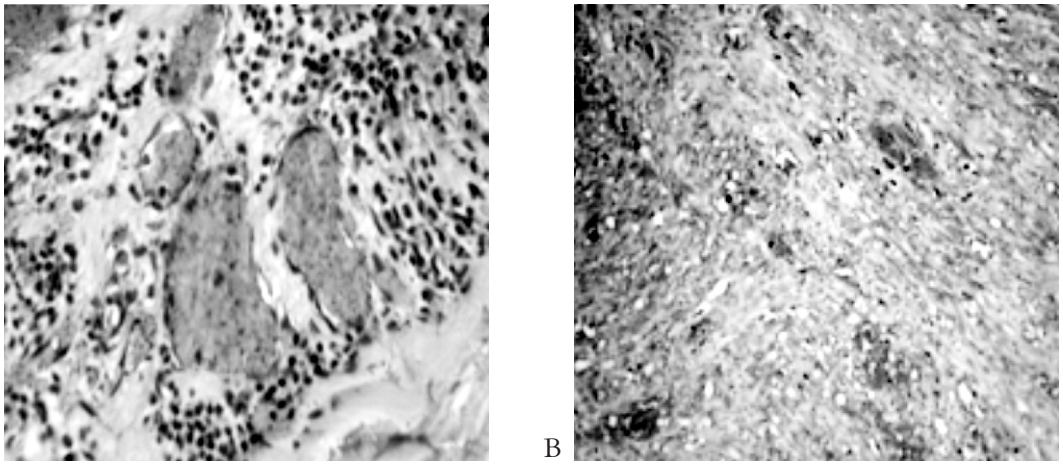
Table 2. Site Distribution of Vascular Tumours

SITE/TYPES		CH	AS	PG	CrH	H	L	KS	TOTAL (%)
Head	Scalp	5	1	1	2		1	1	**11**
	Face	15	1	4	3		2	1	**26**
	Neck	2	-	-	2		1	-	**5**
Trunk	Chest	-	-	-	1		-	-	**1**
	Abdomen	2	-	-	1		-	-	**3**
	Back	-	-	-	-		-	-	**-**
Upper extremity	Forearm	-	-	-	3	-	-	-	**3**
	Arm	2	-	-	1	-	-	-	**3**
	Finger	1	-	4	-	-	-	-	**5**
	Shoulder	-	-	-	-	-	-	-	**-**
	Hand	-	-	-	1	-	-	-	**1**
	Axilla	-	-	-	-	1	1	-	**2**
	Wrist	-	-	-	-	-	-	-	**-**
Lower extremity	Gluteal	1	-	1	-	1	-	1	**4**
	Leg	3	-	1	1	-	1	1	**7**
	Thigh	-	-	-	1	-	-	2	**3**
	Foot	-	-	-	-	-	-	7	**7**
Others		**11**		**4**			**2**	**25**	**42**
Sum TOTAL (%)		**42**	**2**	**15**	**16**	**2**	**8**	**38**	**123**

CH:carvenous haemangioma, AS:angiosarcoma, PG:pyogenic granuloma, CrH:carpillary haemangioma, H:haemangioendothelioma, L:lymphangioma, KS: Kaposi sarcoma

Table 3; Ten year interval gender distribution of vascular tumour types

DIAGNOSIS	0-10			11-20			21-30			31-40			41-50			51-60			61-70			71-80			81-90			M	F	Total
	M	F	Σ	M	F	Σ	M	F	Σ	M	F	Σ	M	F	Σ	M	F	Σ	M	F	Σ	M	F	Σ	M	F	Σ			
Capillary Haemangioma	4	4	8	4	4	8	5	4	9	3	4	7	2	1	3	-	3	3	2	-	2	1	-	1	-	-	-	21	21	42
Angiosarcoma	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	1	1	2	-	-	-				2		2
Pyogenic granuloma	-	-	-	-	3	3	2	2	4	2		2	2	1	3		1	1		2	2							6	9	15
Cavernous haemangioma	3	3	6		2	2	4	1	5				2		2		1	1										9	7	16
Haemangioendothelioma							1		1		1	1				1	1	2										1	1	2
Lymphangioma	1	1	2	1	1	2	3		3				1		1													5	3	8
Kaposi sarcoma		2	2		1	1	2	8	10	8	9	17	4		4	1	1	2	1		1				1		1	17	21	38
Total	8	10	18	5	11	16	16	15	31	15	13	28	11	2	13	1	7	8	4	2	6	1		1	1		1	61	62	123



Slide 1(A);a section of Cavernous haemangioma showing several variously sized blood vessels with thin walls and lumina filled with blood. The vessels are disposed in a loose connective tissue background in which are lypmhoplasmacytic cell infiltrates. Slide 2(B); Kaposi sarcoma; Section shows several thin walled vascular spaces lined by atypical spindle cells. The nuclei of these cells are round to oval and there is marked extravasation of red blood cells into the intervening loose connective tissue stroma.

Discussion

Benign vascular tumours;

The index study revealed that benign vascular tumours were the most abundant of the vascular tumours constituting over half of the entire vascular soft tissue tumours recorded. This finding was not new as several authors have demonstrated that benign vascular tumours were more common than borderline/ intermediate and malignant vascular tumours.[6,7,8] The observations in some previous Nigerian studies were however much higher than was outlined in this study.[6,7] A twelve year retrospective study in Benin however included perivascular tumours which have currently been categorized into a separate entity of soft tissue tumours in the most recent WHO classification of soft tissue tumours.[6] Similarly, the study in Lagos only involved the paediatric age group in whom intermediate tumours such as Kaposi sarcoma (KS) are rather rare.[7]

Haemangioma's were the most abundant benign vascular tumours closely followed by pyogenic granuloma's while lymphangiomas constituted the least of the benign types. This observation was not different from recent finding in a Cameroon study though reasons for these presentations are still unknown.[12] Importantly also, most of the tumours were observed in the first three decades of life as had been previously described.[13-15] The reason for this age distribution could be attributed to the age of presentation of patients affected with these lesions. Individuals affected by the benign vascular tumours had a tendency of presenting early for possible treatment especially as majority of the lesions occurred in the face. It is likely that parents, guardians or adults would attempt treatment early especially for cosmesis.

The gender distribution of the benign tumours revealed a slight male predominance over their female counterparts. The previous study by Banjo and Malami in Lagos described a gender

ratio of 3:1 (male female ratio) unlike the slight male predominance reported elsewhere.[7,16] Unlike in the Lagos study where males displayed a higher percentage for both pyogenic granuloma and cavernous haemangiomas, no gender differences for cavernous haemangioma's was observed in the index study though a higher female disposition for pyogenic granuloma was recorded as was emphasized previously in Benin.[7,8]

Intermediate vascular tumours;

These tumours constituted over a third of the vascular tumours recorded in the index study with KS constituting the only type in the group. Several studies have associated KS caused by HHV8 with several haematologic malignancies and more specifically, AIDS (AIDS associated/related KS).[12-13] It was not therefore surprising that this lesion was demonstrated in the 3rd ,4th and 5th decades of life as had been earlier reported.[17] The few cases recorded at the extremes of life were not entirely new either as several studies have recorded that KS had presented in infancy.[18] The reason for the dominant age distribution may not be unrelated to the heightened sexual activity common within early and mid adulthood.[19] Early education, attitudinal and cultural adjustment may improve exposure to this lesion for which treatment modalities are currently unavailable.

Though several reports have demonstrated strong gender dimorphism of Kaposi sarcoma (KS) in favour of males, this study demonstrated a higher frequency in females. This presentation was not however surprising as demonstrated in recent investigations on vascular tumours,[6,20] further affirming the gender reversal in presentation of KS as discussed previously.[8] In a study, the female susceptibility to KS was attributed to the higher transmission rates from males infected with HIV to their female counterparts than would occur in the reverse (female to male).[21,22]

Malignant vascular tumours;

Epitheliod haemangioendothelioma's have been described as low grade malignant endothelial vascular neoplasms which could occur in all ages but was rare in children.[22] The observations in the current study showed that the lesion occurred equally in the 4th and 6th decades in both sexes. Superficial, deep tissue and multi-organ involvement have been reported to occur. Though the cases described in this study were located mainly in the skin of the extremities.[13,22]

Angiosarcoma's were the only frankly malignant tumours recorded in this study. They constituted only a small percentage of the entire vascular tumours and this was not surprising as they have been recorded to be very rare tumours.[19,23-25] All the lesions documented in the index study presented only in males. This finding was not new as most recent reports in some parts of Africa recorded similar observations. Though cases of Juvenile angiosarcoma's had been recorded previously, most lesions have been demonstrated to present in the elderly as was displayed in the index study.[12] Similarly, most cases of this lesion had been previously documented to occur in deep (intramuscular) sites, especially in the lower extremities were majority occurred on the skin of the head (specifically, the face/scalp) as was documented in the index study.

Conclusion

This analysis of vascular tumours showed that these lesions were relatively uncommon and demonstrated a wide area of anatomic and age distribution. With regards to gender, females displayed only a slight predominance over their male counterparts while benign tumours contributed the highest type followed by intermediate and finally, the malignant, the least.

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Prevalence of Overweight and Obesity in Selected Semiurban Communities in Delta State Nigeria

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Abstract

Introduction: There is an on-going epidemiological transition in present-day developing countries, like Nigeria, with the adoption of western civilization and lifestyle. This has been implicated as a contributory factor to the rising scourge of obesity and overweight.

Materials & Methods: This was a cross-sectional survey of 886 adult participants drawn from six selected semi-urban communities in Delta State at the free health promotion program organized by Seplat Petroleum Development Company Nigeria Limited in collaboration with the Medical Women's Association of Nigeria (MWAN), Delta State branch between March and April 2012. Secondary data obtained from participants which included their age, sex, weight, height and the calculated body mass index (BMI, obtained by dividing the weight (kg) by the square of the height in metres^2) were analysed.

Results: A total of 886 participants were recruited with their age ranging between 18 - 100 years. There were 293 (33.1%) males and 593 (66.9%) females. The mean (± standard error of mean) age and body mass index was 48.9 (±0.50) years and 25.8 (±0.20)kg/m^2 respectively. The prevalence of obesity and overweight were 23.1% and 26.1% respectively. The prevalence of obesity was statistically significantly higher among females (χ^2= 37.554, p <0.001) and this peaked in those within the age-group of 45-54years (χ^2= 84.388, df = 18, p <0.001).

Conclusion: Obesity and overweight are common with about half of the study population having a BMI >25.0kg/m^2. Concerted efforts should be made to promote healthy lifestyle in these communities.

Key words: *Obesity, overweight, semi-urban, adults*

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Introduction

Obesity and overweight represents a state of excess storage of body fat that presents a risk to health commonly due to an imbalance between calories in-take and expenditure[1]. A widely used method of assessing body fat is by calculating the body mass index (BMI) which is a measure of weight relative to height, or the Quetelet index[2]. Although BMI does not measure body fat directly it has been shown to correlate to direct measures of body fat such as underwater weighing and dual energy x-ray absorptiometry

(DXA)[3]. The World Health Organization (WHO), defines obesity and overweight as BMI of $\geqslant 30kg/m^2$ and 25.0 -29.9kg/m^2 respectively[4].

Obesity and overweight are increasingly becoming a global public health challenge. The worldwide prevalence of obesity has nearly doubled between 1980 and 2008[5]. In 2008, 10% of men and 14% of women in the world were obese (BMI $\geqslant$ 30 kg/m2), compared with 5% for men and 8% for women in 1980. An estimated 205 million men and 297 million women over the age of 20 were obese – a total of more than half a billion adults worldwide[6].

Raised body mass index ($\geqslant 25kg/m^2$) is **associated with multiple adverse health conditions with increased morbidity and mortality.** Worldwide, at least 2.8 million people die each year as a result of being overweight or obese, and an estimated 35.8 million (2.3%) of global disability-adjusted life-years (DALYs), which is the sum of years of life lost from premature deaths and years lived with disability are caused by overweight or obesity[7]. Overweight and obesity lead to adverse metabolic effects on blood pressure, cholesterol, triglycerides and insulin resistance. It is a modifiable risk factor for cardiovascular diseases and diabetes mellitus. It also increases the risk of cancer of the breast, colon, prostate, endometrium, kidney and gall bladder. Mortality rates increase with increasing degrees of overweight, as measured by body mass index.

As with other forms of non-communicable disease, obesity has been described as a lifestyle disease, being predominant when a western lifestyle is adopted. Once considered a problem only in high income countries, overweight and obesity are now dramatically on the rise in low- and middle-income countries. Yet there is paucity of reports in the literature on obesity and its correlates in our setting in Delta State, especially the risk factors for its occurrence. As a first step towards filling this gap, we decided to embark on this study to determine the prevalence of obesity and overweight among free-living adults in selected semi-urban communities in Delta State, Nigeria. We believe that this report has the potential to stimulate further studies to document the critical socio-epidemiological risk factors for obesity and overweight with a view to using them to design appropriate interventions that will mitigate the burden of obesity in Nigeria.

Materials and method

In this cross-sectional study, secondary data were obtained from records of adults aged 18years and above who participated in a free health promotion program organized by Seplat Petroleum Development Company, Nigeria Limited in collaboration with Medical Women's Association of Nigeria (MWAN), Delta State branch in selected semi-urban communities in Delta State (Amukpe, Okirigwe, Ovo (Jetty), Jesse, Mosogar and Ugboren) between March and April 2012 as part of their corporate social responsibility. Pregnant women were not included in this screening program as a separate exercise tagged 'Safe Motherhood' had been organized to cater for this category of inhabitants in these selected communities. As part of the program, participants had their weight and height measured and recorded to the nearest 0.1kg and 0.01m respectively.

Participants with complete secondary data which included age, sex, weight and height were recruited into the study, while those with incomplete data or with any one of the above listed parameters missing were excluded.

The BMI was calculated as weight in kilograms divided by the square of the height in metres[2].

Definitions- BMI Category based on WHO definition[4]:

1. $<18.5 kg/m^2$ = Underweight
2. $18.5 - 24.9 kg/m^2$ = Normal
3. $25.0 - 29.9 kg/m^2$ = Overweight
4. $\geqslant 30.0 kg/m^2$ = Obese

The data obtained was checked for completeness before entering into Microsoft Excel (97-2003) spreadsheet from where it was exported to the Statistical Package for Social Sciences (SPSS) version 16 software for analysis and calculation of the prevalence of overweight and obesity.

The chi square test was used to test the association between categorical variables. Percentages, means and standard deviation was used to summarize numerical variables.

The level of statistical significance is set at $p < 0.05$.

Results

Data from eight hundred and eighty six (886) subjects met the study criteria and were included in this study. There were 293 (33.1%) males and 593 (66.9%) females, with a male to female ratio of 1:2. The age range of the study population was 18 to 100 years, with a median age of 50 years. There was no statistically significant difference between the age groups and sex of participants ($\chi^2 = 6.195$, df = 6, p= 0.402) as shown in figure 1.

The difference in the means of the clinical characteristics of the study population are presented in table 1. The difference in the BMI between male and female subjects was statistically significant (t-value = -4.581 at CI of -2.75 to -1.10).

The overall prevalence of obesity and overweight was 23.1% and 26.1% respectively. The difference between the prevalence of obesity by sex was statistically significant ($\chi^2 = 37.554$ p <0.001) as shown in table 2.

The prevalence of obesity and overweight was highest in those in the age bracket of 45-54 years being 38.0% and 26.8% respectively. This was closely followed by those in the age group of 55-64 years with the prevalence being 21.2% and 24.9% respectively; and, 25.1% and 22.0% respectively in those in the age bracket of 35-44 years. The difference between age group and BMI category was statistically significant (p <0.001) as shown in table 3.

Figure 1: Distribution of study population by age group and sex

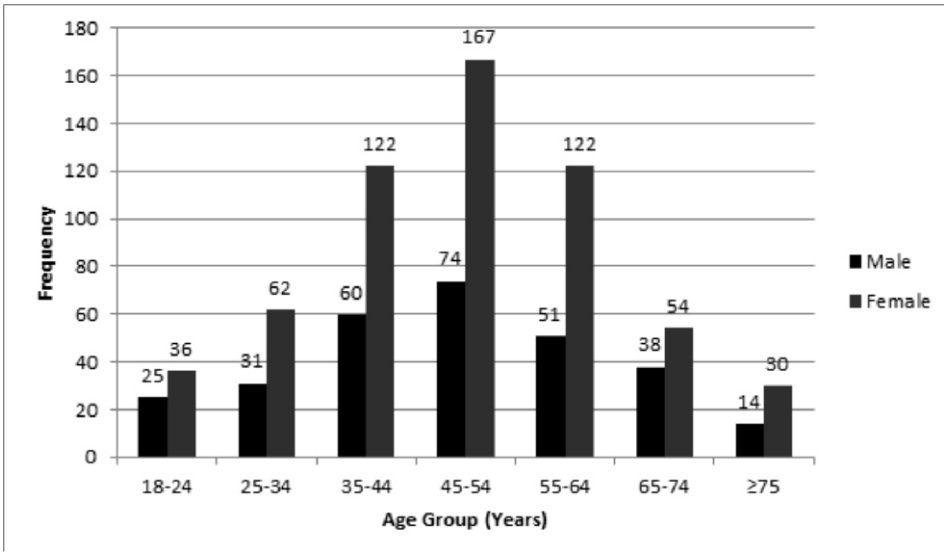

Table: 1 Clinical Characteristics of Study Population

Mean Variable ± SEM	Total (n=886)	Male (n=293)	Female (n=593)	t-value	95% CI	p-value
Age (years)	48.9 ± 0.50	48.7 ± 0.92	49.0 ±0.60	0.206	-1.883 to 2.324	0.837
BMI (kg/m^2)	25.8 ± 0.20	24.5 ± 0.26	26.5 ± 0.27	4.581	1.101 to 1.192	<0.001*
SBP (mmHg)	133.5 ± 0.83	135.5 ± 1.37	132.5 ± 1.04	-1.702	-6.506 to 0.463	0.089
DBP (mmHg)	81.5 ± 0.47	82.5 ± 0.83	81.1 ± 0.58	-1.404	-3.401 to 0.565	0.161

Table 2: *Prevalence of obesity and overweight by sex*

SEX	Frequency	BMI CATEGORY			
		Underweight	Normal Weight	Overweight	Obesity
Male	293 (33.1%)	17 (5.8%)	155 (52.9 %)	89 (30.4%)	32 (10.9%)
Female	593 (66.9%)	35 (5.9%)	243 (41.0%)	142 (23.9%)	173 (29.2%)

χ^2= 37.554 p <0.001

Table Prevalence of obesity and overweight by age group

Age Group (Years)	Frequency	BMI CATEGORY			
		Underweight	Normal Weight	Overweight	Obesity
18-24	61 (6.9%)	5 (9.6%)	47 11.8%)	9 (3.9%)	0 (0.0%)
25-34	93 (10.5%)	4 (7.7%)	50 (12.6%)	28 (12.1%)	11 (5.4%)
35-44	182 (20.5%)	10 (19.2%)	69 (17.3%)	58 (25.1%)`	45 (22.0%)
45-54	241 (27.2%)	12 (23.1%)	89 (22.4%)	62 (26.8%)	78 (30.8%)
55-64	173 (19.5%)	9 (17.3%)	64 (16.1%)	49 (21.2%)	51 (24.9%)
65-74	92 (10.4%)	5 (9.6%)	53 (13.3%)	17 (7.4%)	17 (8.3%)
⩾75	44 (5.0%)	7 (13.5%)	26 (6.5%)	8 (3.5%)	3 (1.5%)

χ^2= 84.388, df = 18, p <0.001

Discussion

The prevalence of obesity and overweight is high in this study. About half of the study population (49.2%) have a raised BMI being either overweight or obese. Chukwuonye et al[8] in a systematic review of adult Nigerians using BMI as the tool for assessing body fat, showed that the prevalence of obesity and overweight ranged between 8.1% -22.2% and 20.3% - 35.1% respectively. Although, the prevalence of obesity of 22.2% obtained in that review[9] is similar to the 23.1% in this study, the settings were

different: urban setting (Lagos) compared with the semi-urban setting in these communities. On the other hand, the prevalence of obesity was 8.1% in a study of suburban population in Northern Nigeria (Markafi and Giwa) by Bakari et al[10]. These differences may be attributed to dissimilar socio-cultural background. Varying degrees/rate of urbanization of rural and sub-urban communities may also be contributory. A study[11] of indigenous residents of Kalabari kingdom in South-South Nigeria revealed a high prevalence of obesity (49.34%) and the influence of occupation, diet and socio-cultural lifestyle were suggested as contributory factors. Although this study did not assess socio-cultural and economic status, eating energy-dense food such as those prepared from processed cassava (*Eba, Starch*) and palm-oil based soup (*Oghwo, Banga soup*), adoption of sedentary lifestyle and less physically active jobs as well as reduced physical activity enhanced by the frequent use of modern means of transportation such as motor-bikes and tricycles readily available in these localities are hypothesized as contributory factors to the high prevalence of obesity and overweight.

In this study the prevalence of obesity in females subjects was three times more than males. Other studies in Nigeria[10-14] and around the world[6] also show that the prevalence of obesity in females was more than males.

Majority of subjects who were obese or overweight were middle-aged (45-64 years). It is however worrisome that 25.1% and 22.0% of subjects aged between 35-44 years were overweight and obese respectively. This high prevalence rate would imply clinical manifestations viz-a-viz premature mortality and morbidity as commonly seen even among the young adult population, further bringing to fore the enormity of the public health challenge posed by overweight and obesity.

Conclusion

This study showed that the prevalence of obesity and overweight is high in the sub-urban communities studied, especially among women. Although middle-aged subjects were most affected, the young adult subjects were not spared of this scourge. We recommend that there is a compelling need for further studies that will clearly document the socio-epidemiological risk factors for obesity and overweight in these communities. However it is suggested that Government and non-governmental organizations should make concerted efforts aimed at reversing the high prevalence and encourage individuals to adopt a more appropriate healthy lifestyle choices.

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Review Articles

The Use of Chaperones in Clinics: Ethical Needs for Protection of the Patients and Health Care Providers

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Abstract

Introduction: Chaperone is a third person in a clinical office who serves as a witness for both the patient who is being examined and the physician, acting as a safeguard for both parties during a medical examination or procedure. This ensures that the relationship with the patient is well managed and remains purely professional. Their presence also protects the physician against accusation of misconduct especially sexual assault by the patient, as well as guarding the physicians against being physically assaulted by patients. Despite these significant benefits of the use of chaperones some physicians do not practice the act and some patients also object to the presence of a third party when being seen by a physician, as this serves as impedance to their free communication with the attending physician, and that their confidentiality is compromised. In this article, a review is therefore made to assess the usefulness and ethical challenges of the practice or non-practice of the use of chaperones in our clinics.

Materials and methods: This review involved an extensive search of databases that included Medline, Elsevier, Medscape, Medicine and PubMed. Literature on the subject was also researched using manual library searches of cited textbooks and articles in journals. The search covered a period of 1990 to 2013, but the literature included was from 1999 till 2013.

Results: Despite established guidelines and recommendations, the use of chaperones by clinicians is not consistent or universal, as both practice and consumer opinion regarding their use varies widely within and across continents.

Conclusion: The role of the chaperone in several clinical contexts is important and critical. Therefore, there should be a deliberate policy for the use of chaperones in every health facility, and efforts must be made to counsel and educate patients and clients as well as attending physicians as to the ethical implications and imperatives of the use of chaperones.

Keywords: *Chaperone, Clinical Examination, Patient's views, Ethics*

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Introduction

A chaperone is expected to support a patient emotionally, with a reassurance during an examination or procedure that may be embarrassing or uncomfortable to that patient. The chaperone should be trained to be able to provide some quality assistance to the physician during such examination or procedure[1]. The

presence of a chaperone provides the assurance that the physician recognizes the potential vulnerability of doctor-patient interactions, and demonstrates the professional character of the procedure being done. The presence of this "extra pair of eyes" also provides a source of legal protection for the physician in case of being accused falsely of improper conduct by a patient. In cases of false accusations, a chaperone, if present, will be a witness to testify regarding the conduct during the examination[2].

The chaperones therefore serve a two-fold function. The primary purpose is to protect, comfort and assist the patients being examined by a physician[1]. The second function is to protect the physician against claims of inappropriate sexual behaviour[1-3]. It is therefore expected as enshrined in the working documents of several regulatory councils that physicians deploy the services of chaperones when seeing patients. The General Medical Council of the United Kingdom, in December 2001, produced a guideline for physicians performing intimate examinations. They recommended that a chaperone should be present during the examination of the breast, genitals and rectum[3]. Similarly, the Royal College of Obstetricians and Gynecologists recommended that a chaperone should be offered to all patients having intimate examination in gynecology and obstetrics, irrespective of the gender of the gynecologist, and that if they decline, such should be fully documented[4]. This is absolutely important as it is medico-legally expedient that a chaperone should always be present during genital examinations[5]. But in cases where the patient declines the use of a chaperone, it is at the discretion of the attending physician to carry on with the procedure if he feels comfortable enough with it in that situation provided he has clearly documented in the patients notes as stipulated above.

Cases of sexual misconduct are on the increase even though most go unreported[3]. Several physicians have been accused of unprofessional conducts and sexual assault after clinical examination on patients without the services of a chaperone. In a survey of the use of chaperones in clinics, several allegations of improprieties were identified[4]. Half of such reports could have been prevented if there were chaperones in attendance. The authors therefore recommended that chaperones should be more widely offered to patients and be used during genito-urinary examination[4]. Another study reported that eight percent of the women sampled gave instances where physicians had conducted gynecological examination in a "*less than professional manners*"[5]. There is also a particular incidence where a general practitioner had practice restrictions and sanctions placed on him after he was found to have engaged in professional misconducts[6]. He was reported to have said to a female patient that he was conducting intimate examination on, "that he could do this all day". The woman reported that she went to have her breast checked and had to pull down her shorts and underwear down to her knees. She reported that the doctor was feeling her groin for lump and then said "I could do this all day". Just for those comments that he made, he was sanctioned. He had since brought in the services of a chaperone into his practice and his sanctions have been lifted by the board[6].

Genital area examination is one area where the gender of the patient and the physician do have a strong influence on patients' preferences. Assistance is rarely needed in the examination of male patients irrespective of the gender of the physician, but female nurses are routinely present during the examination of female patients so as to provide support to the patient and assistance to the physician[5].

However, the use of chaperones in our clinical setting seems to be poorly emphasized and there

is paucity of reports in the literature on the place of the practice of its use or non-use. Yet there also seem to be rising litigations against physicians in this environment. We conjecture that there may be urgent need to recommend policy guidelines that may make the use of chaperones necessary in our practice. But first there is the need to review available evidence from different settings to guide such recommendations. It is against this backdrop that this review was conceptualized.

Methodology

This was a review of published articles on the use of chaperones by clinicians over a 15-year period from 1999 to 2015. Overall 89 articles were searched out, however only 24 full articles reporting on quantitative or qualitative studies of patients' views on the use of chaperones by physicians in all practice settings were used for this review. Those that did not fit into the scope of this review, or their full articles not retrievable were excluded. This review involved an extensive search of databases that included Medline, Elsevier, Medscape, Medicine and PubMed. Literature on the subject was also researched using manual library searches of cited textbooks and articles in journals. The search covered a period of 1990 to 2015, but the literature included was from 1999 till date. This literature search was done using the following keyword as a guide: Chaperone, Clinical Examination, Patient's views, Ethics.

Discussion

The need for a chaperone (Who does the chaperone protect?)

The reality is that there always has been, and always will be, healthcare providers or professionals who will abuse their position of trust. There are also cases of false accusations of physicians by patients of sexual abuses and assaults especially when a chaperone was not in attendance [8]. The absence of a chaperone makes it difficult to say who the victim is or who the assailant is in such circumstances.

The policy of the General Medical Council (GMC) UK, on chaperone was developed following legal cases of healthcare providers who got involved in inappropriate behavior and sexual assault of their patients[8]. The council stated that a chaperone is essentially there to protect the patients. But then, the physician also needs to be protected from the patients. The end-result of a false accusation if no chaperone was present can be damaging, can destroy the physicians reputation that was built over the years, can lead to suspension and removal of name from the Medical Register of the nation, loss of livelihood and possible criminal proceeding and conviction [8].

Therefore, the role of a chaperone should be for the protection of both the patients and physicians alike.

Patients' preferences (Do patients want chaperones?)

A study done in Ireland found that most women (65%) did not feel a chaperone was necessary during pelvic examination by a male doctor[9]. However, up to 20% of patients would want a chaperone irrespective of the examiners gender which highlights the fact that gynaecological examination by a female clinician does not necessarily exclude the need for a chaperone[9].

Similarly, in a postal survey of 451 patients in primary case setting in the UK, involving both men and women, 59% of responders stated that they will fill uncomfortable if a chaperone were present when they have not asked for it.[10] On further analysis, there were as many patients who resent the presence of a chaperone as there were those who would always want a chaperone to be

present. Women were more likely than men to prefer a chaperone to be present. It was also shown that patients are less likely to prefer a chaperone to be present with their usual doctor (17%) than with a new doctor (41%)[10]. This suggests that trust is an important factor for the patient in an intimate examination.

Similar findings of low request or desire for chaperones among genito-urinary patients have re-echoed in several other studies across the globe,[11-14] just as most women (75.5%) attending a urology clinic in Manchester, UK did not wish to have a chaperone present[15]. Of those who wished to have a chaperone present more than half want a family member or friend to fill this role.[15]

On the contrary, a study of women's opinions, attitude and preferences regarding the presence of chaperones during pelvic examinations in south- eastern Nigeria showed that 53.9% would like to have chaperones present during such examinations if the examining physician is a male,[16] while 51.7% of the women studied preferred female physicians for pelvic examinations. Family members and friends were the least preferred persons to serve as chaperones.[16] However, further studies in African populations are needed to fully establish our orientation towards the issue of chaperones.

Criteria for recruiting individuals as chaperones

A chaperone should be a real professional, most probably a female or male nurse. The American Medical Association (AMA) recommends that an authorized health professional should serve as a chaperone whenever possible[2,8].

The General Medical Council (GMC), (UK) advices that a chaperon must be a third eye of the same gender as the patient and with nothing to gain for interpreting the facts [3]. The GMC recommends that a family member or a friend is appropriate but this is satisfactory only if the role is to protect the patient only. This role will not protect the physician as he will be less able to defend himself in the face of an accusation[8].

Due to this, the Royal College of Obstetricians and Gynecologists do not recommend family members or friends alone[8].

Due to the poor economic resources available, and the fact that the use of a trained nurse as a chaperone is viewed as an expensive use of resources, the use of health care assistants, even medical students can be allowed. A properly trained receptionist can even be allowed[8].

Ultimately, whoever the chaperone maybe, the 2004 committee of inquiry that looked into the role and use of chaperones recommended that all chaperones need to receive proper training[17].

But the keyword that should be maintained is confidentiality and respect for patient's privacy, to which the "chaperone must adhere"[8].

Physicians' practice and perspectives

A survey of Australian sexual health practitioners' attitude and practice showed that only a minority (19%) routinely provide chaperones for female genital examinations while 9% only did for male genital examinations[18]. Others randomly offered chaperones for female examinations only 19% of the time. However, majority of the practitioners feel chaperones are important for medico-legal reasons and as support for the patient[18]. But ironically, only 39% of male practitioners and 36% of female practitioners in that survey believed that resources spent on chaperones were justified by the benefits they provided.

Similarly, a postal survey of 20 genitourinary medicine clinics in the North Thames Region in the UK showed that only two (10%) had a written policy on the provision of chaperones and only one has surveyed patients views about chaperone

use. None had carried out a survey of staff views about chaperoning.[19] Interestingly, there was a significant difference in the provision of chaperones for female patients being examined by female doctors (60%) compared to female patients being examined by a female nurse (5%) as well as male patients being examined by male doctors (10%). Several clinics reported that they were more likely to offer chaperones to those patients with past history of aggressive behavior towards staff or those with psychiatric problems[19].

In another study, chaperones were especially used when the patient was anxious and uncomfortable, young, or mentally retarded as well as when the patient behaved seductively or is one who had a history of sexual abuse or rape[20]. While in this survey of 59 attending obstetrician-gynaecologists, patient preference was cited the most common reason for chaperone use, physician's age and era of training impacted on their use of chaperones as physicians older than 40 years were more likely to have been taught to use chaperones, and they indeed used them more often than younger physicians[20].

On the other hand, majority of consultant breast surgeons in the UK use chaperones although documentation of the offer and identity of the chaperone was very poor[21]. Similarly, a study in Nigeria showed that most Nigerian gynecologists use chaperones at least some of the time and also support a policy of routinely offering chaperones during intimate gynecologic examination while respecting patients' right to decline this offer[22]. The main obstacles to the use of chaperones were scarcity of personnel to serve in the capacity (87.6%) and patients' refusal to be examined in the presence of a third party (12.4%).[22]

Arguments against the use of Chaperone

Against the seemingly good intentions of the proponents of chaperoning principle and policy, there are several arguments against their presence.

One factor standing against this concept is the concern for confidentiality and patients' privacy which may be compromised by the presence of a chaperone[2]. This third person may not have sworn the Hippocratic Oath of Secrecy administered on newly qualified doctors. This core principle of medical ethics is very essential and the attending physician must find ways of ensuring that the chaperones do not abuse the privileges of their position dictated by duty. Second, the presence of the extra person watching intimate examination increases the embarrassment factor for many patients. It is more difficult to discuss intimate problems in the presence of a third party[11,23].

The use of chaperone seems to erode the trust that patients may have on physicians because of the rapport previously established between them. The introduction of chaperone makes the patient think that the physician do not trust them anymore[2], and vice versa.

Furthermore, the introduction of chaperone means extra funding, extra staffing, coordination and office space allocation. This will put more burden on already over-stretched funds available for healthcare, and of course, this will have greater implications for resource poor countries.

Are there alternatives to having chaperones present during clinical examinations?

It has been suggested that the door of the examination room be kept open [2]. But this exposes the probably undressed patients to public view. Also an intercom can be connected to the reception and kept open[2]. Again, this may inadvertently transmit private discussion to the public domain. Also, the use of video cameras

could be employed to record all discussions and activities in the examination room[3]. However the use of cameras has obvious demerits. Not only will such practice erode patients' confidentiality, it is also a relatively expensive technology to deploy to this purpose.

Summary

Intimate examination can be embarrassing and even distressing for patients. But this should not stop the clinician from conducting an examination when it becomes necessary. Examinations should be conducted in an atmosphere that demonstrates sensitivity to patients' feeling, care, support, and respect for privacy, dignity and patients' choice. Most female patients welcome and expect the presence of a female nurse. Health care providers must therefore treat patients as individuals and respect their dignity and privacy[5].

Therefore, before conducting an intimate examination, they must explain to the patient the need for the examination and obtain her consent for it. Then, they should offer the patient the option of having a chaperone as an impartial observer to be present. This applies whether or not the clinician is of the same gender as the patient[7].

A relative or a friend of the patient is not an impartial observer and therefore cannot play the role of a chaperone during an examination. Both the physician and the patient must agree on the choice of a chaperone. The patient may decline the use of a chaperone. If this happens, the clinician should document the patient's decision, explaining in clear terms his/her preference for a chaperone to be present. If a chaperone is used his/her identity should be noted for future reference if situation warrants.

Conclusion:

Despite popular guidelines and recommendations, evidence abound, as shown in this review, that the use of chaperones by clinicians is not consistent or universal, as both practice and consumer opinion regarding their use varies widely within and across continents.

While it is in the very nature of health care provision that it is often necessary to touch patients, often intimately, in order to examine them and provide care for them[24], the legal requirements that must be followed in performing such intimate examinations must be well defined to guide all care givers and safeguard against sexual boundary violations. Therefore, a clear chaperone policy should be in place in all health facilities. In addition, documentation of physician's offer of a chaperone, identity of the chaperone used and patient's preference are currently best practices.

The role of the chaperone in several clinical contexts is not only important but critical and physicians everywhere should appreciate that. It may look expensive to fund but the cost maybe lower than the cost of facing litigation in court or being made to face disciplinary committees of medical councils.

Recommendation

The need for a chaperon policy cannot be over emphasized. Regardless of the difficulties that may be encountered, a policy for the use of chaperon should be in place in every health facility, making it clear that chaperons are available. A policy that patients are free to make a request for a chaperon should be established in every health care facility[17]. This policy should be communicated to patients either by a prominent notice or by conversation initiated by the intake nurse or the physician[2,17].

The presence of a chaperon acknowledges a patient's vulnerability and provides emotional

comfort and reassurance. From the standpoint of ethics and prudence, the general protocol of having a chaperon available on a consistent basis is advised [2].

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