International Journal of Medicine and Biomedical Research
Volume 5 Issue 3 September – December 2016
www.ijmbr.com

Original Article

Open Access

Prevalence and risk factors for stillbirths in a tertiary hospital in Niger Delta area of Nigeria: a ten year review

Njoku C.O[1], Emechebe C.I[1]*, Eyong E.M[1], Ukaga J.T[1], Anachuna K.C[2]

[1]Department of Obstetrics and Gynaecology [2]Department of Paediatrics, University of Calabar Teaching Hospital (UCTH), Calabar, Nigeria.

*Corresponding author: newlifecj@yahoo.com

Received: 19.07.16; Accepted: 26.09.16; Published: 03.10.16

ABSTRACT

Background: Stillbirth is a silent but major cause of perinatal mortality and source of foetal wastage. **Aim**: To determine the prevalence of stillbirth, demographic characteristics and identify the possible risk factors in our Hospital. **Methods**: This was a ten year cross-sectional retrospective study of stillbirths between 1st January, 2004 and 31st December, 2013. All cases of stillbirths from 28 weeks of gestation or the foetal weight of at least 1000g were included in the study. **Results**: There were a total of 19,347 deliveries with 937 stillbirths, giving a stillbirth rate of 48.4/1,000 total births or 4.8%. Of the 937 stillbirths identified, only 582 (62.1%) case files could be retrieved and was used for analyses. There were 381(65.5%) macerated and 201(34.5%) fresh stillbirths. Stillbirth rate were higher among grand multiparous women, women with primary education and unbooked women. There were 309(53.1%) male stillbirths and 273(46.9%) female stillbirths. Male foetuses were higher among fresh stillbirth (54.9%) while female foetuses had more macerated stillbirths (48.8%) than fresh stillbirths (45.1%). The major causes of stillbirths were hypertensive disorders of pregnancy (18.9%), prolonged/obstructed labour (13.6%), anaemia in pregnancy (12.2%) and abruption placentae (9.3%). A total of 121(20.8%) of the stillbirths were unexplained. **Conclusion**: The prevalence of stillbirth in our environment is high. Identified factors such as grandmultiparity, low education, unbooked pregnancy, anaemia in pregnancy, obstructed labour and ruptured uterus are modifiable. Every effort directed at reducing these factors must be made by all healthcare givers including policy makers to reduce stillbirths.

Key words: Stillbirth, miscarriage, perinatal mortality, anaemia in pregnancy, obstructed labour, uterine rupture

INTRODUCTION

The goal of maternity care is to achieve a safe delivery of a healthy mother and baby. Delivery of a stillbirth foetus is a major source of depression to the mother, her relations and managing obstetrician. The stillbirth rate is a marker of the adequacy of obstetric care and utilization and an important source of medical litigation in some countries.[1,2]

Advances in prenatal, intrapartum and neonatal care in Western countries have led to significant reduction in their perinatal mortality as well as determining causes for so many previously categorized "unexplained stillbirth".[2] However, in developing countries, perinatal mortality is still very high with figures up to 2 to 4 times as high as those reported in developed countries.[3,4] Stillbirths account for between 50 and 88 percent

of overall perinatal mortality in the various regions of the world and it is a close reflection of the perinatal mortality rate of the community.[2,5] "WHO estimates that worldwide 3.3 million stillbirths occur each year, accounting for over half of all perinatal deaths".[6] "The varieties of definitions make comparisons of stillbirth rates difficult. In the United Kingdom (UK), a stillbirth is defined as the delivery of a baby with no signs of life after 24 weeks of pregnancy".[7] The threshold for defining a stillborn in our environment is 28 weeks of gestation. However, for the purpose of statistics for international comparison, the World Health Organization (WHO) noted that inclusion of the extremely low-birth weight group will disrupts the validity of comparison and is not recommended.[8] Stillbirth is thus defined as the "death of a foetus before the complete expulsion or extraction from its mother at term, weighing at least 1000 g and occurring after 28 completed weeks of gestation or having at least 35 cm body length, which is indicated by the fact that after such a separation, the foetus does not show any evidence of life".[8] Reported incidence of stillbirths from Western Countries ranged between 2.0-8.7/1000 deliveries,[9,10] while the rates in South Africa and Nigeria were 38.4/1000[11] and 40.5/1000[12] respectively.

Despite the advancement in diagnostic tools and autopsy, the cause of a large proportion of stillbirths is not known. Globally two-thirds to three-quarters of stillbirths may occur during the antenatal period before labour begins, which are often associated with insults that occur in-utero during the antenatal period.[13] These stillbirths are due to a variety of factors including bacterial infection, birth defects especially pulmonary hypoplasia, maternal diabetes, hypertensive diseases in pregnancy, maternal alcohol consumption, cigarette smoking, post term pregnancy, abruption placentae, radiation poison, physical trauma, rhesus disease, umbilical cord accidents and intra uterine growth restriction.[13] Other associated factors are extreme of maternal age, low socio-economic status, poor maternal education, nulliparity or grand multiparity and previous stillbirth.[13] Intra partum stillbirths are usually the result of foetal distress and or obstructed labour and often reflect poor quality of clinical care during labour and at delivery.[13] The potential contribution of antenatal care and good partographic monitoring during labour will largely help in detecting these risk factors and prevent stillbirth.

Stillbirths account for a major component of perinatal mortality. Hence, the aim of this study is to determine the prevalence, demographic characteristics and identify the possible risk factors to stillbirth at the University of Calabar Teaching Hospital, Calabar. An audit of stillbirth is important to find out the aetiology and risk factors to this major contributor to perinatal mortality in Nigeria. The knowledge of these predisposing factors to this foetal wastage will help in designing preventive measures to reduce its incidence.

METHODOLOGY

This was a ten year cross-sectional retrospective study carried out to review the cases of stillbirths over a ten year period between 1st January, 2004 and 31st December, 2013 in our centre. "Stillbirth in this study was defined, in accordance with the World Health Organization's International Classification of Disease (ICD-10) recommendation for international comparison, as the death of a foetus weighing at least 1000g occurring after 28 weeks of gestation".[8]

Inclusion criteria were all cases of stillbirths from 28 weeks of gestation or the foetal weight of at least 1000g. All stillbirths whose case files could not be traced were excluded from the analysis of the risk factors. "A fresh stillbirth was defined as the intrauterine death of a foetus during labour or delivery where the foetus showed no signs of degenerative changes, and a macerated stillbirth was defined as the intrauterine death of a foetus sometime before the onset of labour, where the foetus showed signs of degenerative changes".[14]

"Unbooked woman is defined as a pregnant woman who has not attended any antenatal clinic session throughout the pregnancy with a skilled attendant (trained medical personnel) before presentation in labour".[15] "Booked pregnant woman is one who attended at least one antenatal clinic section during pregnancy by trained personnel".[15] Data were extracted from the birth register in labour ward, central records office and Obstetric theatre. The data collected included the information on patient's age, educational status, parity, booking status, types of stillbirth, foetal sex and previous history of stillbirth. Others were complications of pregnancy, presence of maternal disease, prolonged pregnancy.

Statistical analysis

Statistical analysis was done using Epi-info version 3.5.1 software. Data were analysed and presented simple percentages in tables and pie chart. The difference in mean maternal age and parity between fresh and macerated stillbirth were compared using student t-test. Chi-square test was also used to determine the difference in foetal sex, birth weights and mode of delivery between fresh and macerated stillborn. The level

of significance in the observed difference was set at $p < 0.05$.

RESULTS

There were 19,347 deliveries during the study period, out of which 937 were stillbirths giving the prevalence of 4.8 percent or 48.4/1000 of total deliveries. Of the 937 cases of stillbirth identified, only 582 (62.1%) case files could be retrieved for data extraction. Data were thus extracted for 582 cases of stillbirth for analyses.

Table 1 shows the yearly distribution of stillbirth and total deliveries over the study period. Stillbirth rate was highest in 2008 with 54/1000 deliveries. There was slight increase in the number of stillbirths with accompanying increase in number of total deliveries from 2009 to 2012. The incidence of stillbirth was in direct proportion with the total number of delivery.

Table 1: Yearly distribution of stillbirth and total deliveries

Year	No. of stillbirths	Total deliveries	Stillbirth rate/1000 total deliveries
2005	44	1,237	36
2006	39	1,027	38
2007	60	1,349	44
2008	89	1,651	54
2009	93	2,078	45
2010	102	2,170	47
2011	132	2,586	51
2012	155	2,996	52
2013	146	2,749	53
2014	77	1,504	51
Total	937	19,347	48

Table 2 shows the demographic characteristics of patients with stillbirth. The age range of the women was 15-45 years, while the age group of 30-34 had the highest stillbirth prevalence of 196 (33.7%), while age group of 40 years or more contributed the least prevalence of 17 (2.9%). Parity 5 and above contributed the highest number 106 (18.2%) of the total number of stillbirths. Stillbirth was also higher among unbooked women (34.9%), primary education (43.2%) and male foetus (53.1%). There were 309 (53.1%) male stillbirths and 273 (46.9%) female stillbirths.

Figure 1 shows the type of stillbirth of the women. Two hundred and one (34.5%) of the stillbirths were fresh, while 381 (65.5%) were macerated stillbirths.

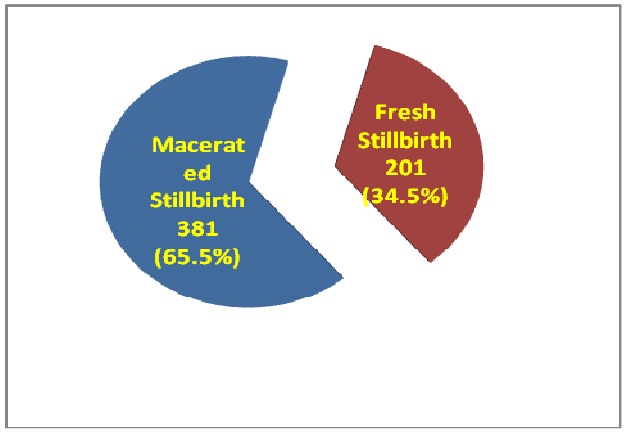

Figure 1: Types of stillbirth among the women (n=582)

Table 4 shows the maternal and foetal characteristics of parturient with fresh and macerated stillborn. The mean age of women who had fresh stillbirths (27.5±6.4years) was significantly lower than those women who had macerated stillbirths (30.2±7.1 years) (p<0.001). Additionally, the mean parity of the mothers with macerated stillbirths (2.32±1.9) was significantly higher than those with fresh stillbirths (1.14±1.2) (p<0.001). Fresh stillbirth occurred more (44.8%) among the foetal birth weight of 1.0-2.49 than the macerated stillbirth (40.7%), while majority of macerated stillbirth (42.0%) were observed among the birth weight of 2.5-3.99kg. However, no significance difference was observed with regard to the birth weight of the stillbirth and the type of stillbirth (X^2 =1.49; p=0.475). Male foetuses were higher among fresh stillbirth (54.9%) than macerated stillbirth (51.2%) while female foetuses had more macerated stillbirths (48.8%) than fresh stillbirths (45.1%). However, the difference was not statistically significant (X^2= 0.66; p= 0.415). Cesarean section was higher among women with fresh stillbirth (29.9%) than macerated stillbirth (21.5%) while vaginal delivery was recorded more among the women with macerated stillbirth (78.5%). The difference was statistically significant (X^2= 4.95; p= 0.026).

Table 4 shows the risk factors associated with stillbirths. The leading causes of stillbirth were hypertensive disorders of pregnancy (18.9%), prolonged/obstructed labour (13.6%), anaemia in pregnancy (12.2%), abruptio placentae (9.3%), uterine rupture 8.8%, prolonged PROM (5.8%) and cord accidents (2.9%). A total of 121(20.8%) of the stillbirths were unexplained. Foetal anomaly accounted for 6 (1.0%). However, the complete lack of perinatal autopsy during the study period may have underestimated the contribution of congenital anomaly to stillbirth as only eight autopsies were done on stillbirth over the study period.

Table 2: Demographic characteristics of patients with stillborn babies

Characteristics	Stillbirth	Percentage	Cumulative percentage
Age (years)			
15-19	19	3.3	3.3
20-24	104	17.9	21.2
25-29	139	23.8	54.9
30-34	196	33.7	78.7
35-39	107	18.4	97.1
≥40	17	2.9	100.0
Parity			
0	104	17.9	17.9
1	101	17.4	35.3
2	98	16.8	52.1
3	89	15.3	67.4
4	84	14.4	81.8
5 and above	106	18.2	100.0
Booking status			
Booked in UCTH	183	31.4	31.4
Booked elsewhere	196	33.7	65.1
Unbooked	203	34.9	100.0
Educational Status			
No formal education	26	4.5	4.5
Primary education	252	43.2	47.7
Secondary education	239	41.0	88.7
Tertiary education	65	11.3	100.0
Foetal Sex			
Male	309	53.1	53.1
Female	273	46.9	100.0

Table 3: Maternal and foetal characteristics of parturients with fresh and macerated stillborn

Characteristics	Fresh Stillbirth n=201	Macerated stillbirth n=381	Test statistics	p-value
Maternal age, mean ±SD	27.5±6.4 years	30.2±7.1 years	-4.5104*	<0.001
Parity, mean ±SD	1.14±1.2	2.32±1.9	-8.0014*	<0.001
Foetal Sex				
Male	110(54.9)	195(51.2)	0.66**	0.415
Female	91(45.1)	186(48.8)		
Birth weight (kg)				
1.0-2.49	90(44.8)	155(40.7)	1.49**	0.475
2.5-3.9	74(36.8)	160(42.0)		
4 and above	37(18.4)	66(17.3)		
Mode of Delivery				
Vaginal Delivery	141(70.1)	299(78.5)	4.95**	0.026
Cesarean section	60(29.9)	82(21.5)		

* Student t-test; ** Chi-square test; SD—standard deviation

Table 4: The risk factors associated with stillbirths

Risk factors	Stillbirth (%) n=582	Percentage
Prenatal risks factor		
Hypertensive Disorders	110	18.9
Anaemia in pregnancy (Pcv<30%)	71	12.2
Abruptio placenta	54	9.3
Prolonged PROM	34	5.8
Placenta previa	13	2.2
HIV in pregnancy	11	1.9
Multiple pregnancy	7	1.2
Obvious foetal anomaly	6	1.0
Sickle cell Disease	5	0.9
Diabetes	3	0.5
Intra-partum Risks		
Prolonged/Obstructed labour	79	13.6
Ruptured uterus	51	8.8
Cord prolapse/Cord accidents	17	2.9
No obvious identifiable risk	121	20.8

PROM – Premature rupture of membranes; PCV—Packed cell volume; HIV—human immunodeficiency virus

DISCUSSION

The stillbirth is an important component of perinatal mortality. Foetal mortality is a major but often overlooked public health issue.[16] The incidence of still birth in any community is a reflection of the level of obstetric care available and its utilization.[1] The prevalence of stillbirths from this study was 48.4/1000 births or 4.8% of toal delivery. This is comparable to 46.9/1000 deliveries in Katsina, northern Nigeria[3] and 40.5/1000 in Jos,[12] Nigeria. However, it is lower than 63/1000[17] in Ibadan, Nigeria and 180/1000 reported in South eastern Nigeria.[10] In comparison with some Nigerian studies, it was shown that no particular pattern with significant variation. This is possibly due to significant variation in health care indices in different regions. The high prevalence of stillbirths observed in the present study could be attributed to poor antenatal care services, poor referral system, poor transport facilities and long distance to referral hospitals, unbooked pregnancy, and inadequate emergency obstetric care at referral centres. This rate was much higher in comparison to rates reported from developed countries. Stillbirth rates of Sweden and the USA range from 5.8 to 6.6 per 1,000 births.[12,18] The possible explanation to this marked disparity in the results from developed countries might be the differences in antepartum and intrapartum care in pregnancy. This study was conducted in a tertiary center which serves as a referral center to peripheral hospitals and many maternity homes and churches manned by untrained birth attendants. In addition, some of the patients admitted are usually high risk obstetric patients who have been in labour for a prolonged period of time and ran into difficulties at a peripheral facility before being referred; hence, the situation is probably not a true reflection of the obstetric care in the referral centre. The yearly stillbirth rates in this study varied directly with total number of deliveries. The total number of delivery is directly proportional to the stillbirth rate. This is likely due to a decreased ratio of skilled healthcare attendants to women in labour when yearly delivery rate increases.

The effect of socio-demographic characteristics on the risk of stillbirths has been elucidated by various authors.[1,2,12] Stillbirths were higher in the age range of 30-34 year age group. This is similar to the findings by some workers.[12,13] The results also, show that low maternal educational status is

associated with increased risk of stillbirth as most of the mothers had primary education. Harrison *et al.* stated that "the illiterate women are more likely to have had a deprived childhood with malnutrition, will have married or become pregnant while still young and her pregnancy because of her background will be managed by inadequately trained attendants and when serious complications develop, professional help will be sought late if at all".[19] The booking status was a direct correlate of educational attainment. Those with tertiary school education had low stillbirth rate since they were more likely to book for and access available good quality antenatal care services. This is because education reduces the twin problems of low socioeconomic status and ignorance amongst our women, thereby increasing their bargaining power and their awareness.

The stillbirth rate was high among grand multiparae. This finding is not in consonance with the study of Kuti *et al.* who did not show an association between stillbirths and parity.[20] The poorer foetal outcome noted among grand multiparous women may be due to higher incidence of complications in pregnancy, maternal disease and labour complications among grand multiparous women. The grand multiparous woman is liable to complications such as anaemia, foetal malposition, malpresentation, uterine rupture and medical diseases in pregnancy.[21]

Lack of antenatal care is significantly associated with high rate of still birth. This is in agreement with some studies in Lagos,[4,22] which observed that most women were unbooked. These unbooked women cannot fully utilize antenatal care services, which should help to detect high risk women and provide individualized care ensuring a safe delivery. Antenatal care is known to positively affect the outcome of pregnancy.[2,3] Unsupervised pregnancy is associated with greater frequency of complications, which may be unrecognized and untreated or inappropriately treated. They are also at a higher risk for intrapartum complications such as prolonged labour, obstructed labour, cord accidents, and uterine rupture, which may lead to stillbirth as seen in this study. Many of the deliveries that ended with stillbirth babies in this study were unbooked (34.9%), and possibly presented due to attendant complications.

Foetal sex among stillbirths was more in male foetuses than females in this study, although the difference was not significant. This is similar to the study by Engel *et al*.[23] The reason for the male preponderance is unclear but may be linked to the difference in male and female development which begins very early in life.[24] Male embryos have faster development and higher metabolic rates than the females embryos and this potentially leave the male fetuses more vulnerable to distress or death from a range of stressors, including endocrine fluctuation, oxidative stress and faster nutritional depletion when they encountered stressful conditions.[24]

The proportion of macerated stillbirths in this study (65.5%) suggests the presence of insults the foetus and the importance of timely screening and prompt management of chronic clinical conditions including infections. Most of the stillbirths in the present study were macerated. This is at variance with a previous study in Lagos[20] which documented that most stillbirths were fresh. This suggests that majority of the stillbirths in the present study occurred over 24 hours before delivery. Such deaths are attributed mostly to factors outside labour. These underscore the need for good antenatal care, early detection of the problems, and prompt referral. This is slightly lower than (71%) of macerated stillbirths reported in South Africa.[11] Fresh stillbirth in this study accounted for 34.5% of the stillbirths and this was lower than 47.5% reported in Maiduguri, Nigeria.[14] This is a reflection of foetal death during labour, usually an outcome of poor intra-partum care. These findings suggest the need for improved obstetric care and availability of adequate emergency services during labour and delivery period.

The major risk factors for the stillbirths in this study include hypertensive disorders of pregnancy (18.9%), prolonged/obstructed labour (13.6%), anaemia in pregnancy (12.2%), abruptio placentae (9.3%), uterine rupture (8.8%), prolonged PROM (5.8%) and cord accidents (2.9%). This is similar to the findings by some authors.[10,20] Hypertensive disorders of pregnancy are the commonest causes of stillbirth in this study. This was at variance with reports of other studies in which abruptio placentae was found as the commonest cause of stillbirth.[12,20] Hypertensive disorders of pregnancy is a major risk factor for stillbirth.[1,3] It causes stillbirths by chronic foetal insufficiency with retarded foetal growth and placental abruption.

The complications of labour found to be highly associated with stillbirth included prolonged obstructed labour and uterine rupture, which is known to be associated with higher foetal wastage in our environment.[1,3] Uterine rupture increased the rate of stillbirth.[10] Some deliveries 51(8.8%) were complicated with uterine rupture. The outcome of all the cases of uterine rupture

was stillborn. The poor outcome seen in developing countries is likely due to delayed presentation to the health facility, delayed diagnosis and poor emergency preparedness and response.

Premature rupture of foetal membrane is another risk factor of foetal death. This is due to the increased rate of infection and/or preterm delivery associated with premature rupture of foetal membrane.[1,3]

Nearly 121(20.8%) of the stillbirths had no identifiable cause. This compared favorably with the findings of previous authors, even in centers using more sophisticated labouratory facilities for the identification of the causes of stillbirth.[12,20]

In conclusion, stillbirths remain an important component of perinatal mortality. The prevalence of 48.4/1000 deliveries from this study is relatively high. The identified leading risk factors for stillbirths include lack of antenatal care, grand multiparity, low education, hypertensive disorders of pregnancy, prolonged/obstructed labour, anaemia in pregnancy, abruptio placentae and uterine rupture. Others are prolonged premature rupture of membranes and cord accidents.

The main limitation of the study was the failure to conduct perinatal autopsies on the stillbirths and being a hospital based retrospective study. In the present study, the causes of stillbirth were not based on autopsy but on clinical assessment. Post-mortem could provide better assessment and possible cause of death. Also, stillbirth in a tertiary institution may differ from those from lower centres like primary and some secondary health centres. Despite these limitations, the review assisted in providing data that are based on our clinical practice that can be used for further studies and in training of healthcare providers in prevention of stillbirth.

With adequate antenatal and intrapartum care, stillbirths are preventable. Therefore, the authors recommend that the quality of antenatal and intrapartum care including referral systems in the country should be improved. This will significantly reduce the incidence of stillbirth delivery in our society.

REFERENCES

1. Onadeko MO and Lawoyin TO. Pattern of stillbirth in secondary and tertiary hospital, Ibadan. African journal of Medicine and Medical sciences 2003;32:349-352.
2. Adimora GN, Odetunde IO. Perinatal Mortality in University of Nigeria Teaching Hospital, Enugu at the end of the last millennium. Nigerian Journal of Clinical Practice 2007;10:19-23.
3. Bello MS, Ibrahim HM, Abdulkarim N. Determinants of stillbirths in Katsina, Nigeria: a hospital-based study. Pediatric Reports 2015;7:5615.
4. Olusanya BO, Solanke OA. Predictors of term stillbirths in an inner-city maternity hospital in Lagos, Nigeria. Acta Obstet Gynecol Scand 2009; 88:1243‑51.
5. Idrisa A., Airede EI, and Agida ET. A study of Perinatal Mortality. Nigerian Journal of Surgical Science 1992; 2: 82-84.
6. World Health Organization. Neonatal and perinatal mortality. Country, regional and global estimates. Geneva, Switzerland: WHO; 2006. http://whqlibdoc.who.int/publications/2006/9241563206_eng.pdf
7. Kean L. Intrauterine foetal death. In: Leusley DM, Baker PN, editors. Obstetrics and gynaecology: An evidence‑based text for MRCOG. Oxford: Arnold; 2004. p. 317‑24.
8. World Health Organization. International Statistical Classification of Diseases and Related Health Problems, 10th revision. 2nd ed. Geneva, Switzerland: World Health Organization; 2004.
9. Steenhuysen J. Stillbirth: A silent tragedy haunts the world's poor. Reuters Health. Available from: http://in.reuters.com/article/2011/04/14/us-stillbirth-idINTRE73C85120110414. [Last accessed on 2011].
10. Okeudo C, Ezem BU, Ojiyi EE. Stillbirth rate in a teaching hospital in South-eastern Nigeria: A silent tragedy. Ann Med Health Sci Res 2012;2:176-9.
11. Ntuli ST, Malangu N. An investigation of the stillbirths at a tertiary hospital in Limpopo Province of South Africa. Global Journal of Health Science 2012;4:141-7.
12. Mutihir JT, Eka PO. Stillbirths at the Jos University Teaching Hospital: Incidence, risk, and etiological factors. Nigerian Journal of Clinical Practice 2011; 14:14-18.
13. Goldenberg RL, McClure EM, Bann CM. The relationship of intrapartum and antepartum stillbirths rates to measures of obstetric care in developed and developing countries. Acta Obstet Gynecol Scand 2007;86:13031309.
14. Audu BM, Alhaji MA, Takai UI, Bukar M. Risk factors for stillbirths at University of Maiduguri Teaching Hospital, Maiduguri, Nigeria. Nig Med J 2009;50:42-46.
15. Iklaki CU, Emechebe CI, Ago BU, Njoku CO. Sero-prevalence of Hepatitis B Infection and its risk Factors among women

Admitted for delivery in UCTH, Calabar, Nigeria. British Journal of Medicine and Medical Research 2015;8:324-333.
16. Ukaegbe U, Nwogu-Ikojo E, Ezegwui HU. Stillbirths at a tertiary medical centre in Enugu, Nigeria. Trop J Med Res 2012; 15:1-4.
17. Onadeko MO, Avokey F, Lawoyin TO. Observation of Still births birth weight and maternal haemoglobin in teenage pregnancy in Ibadan. Afr J Med Med Sci 1996;25:81-86.
18. McClure EM, Nalubamba-Phiri M, Goldenberg RL. Stillbirth in developing countries. Int J Gynecol Obstet 2006;94:82-90.
19. Harrison KA, Rossiter CE, Chong H. Antenatal care, formal education and child bearing in: child bearing, health and social priorities: A survey of 22,774 consecutive Hospital in Zaria, Nigeria. Br J Obstet Gynecol 1985;5:14-22.
20. Kuti O, Owolabi AT, Orji EO, Ogunlola IO. Antepartum foetal death in a Nigerian Teaching Hospital: aetiology and risk factors. Trop J Obstet Gynaecol 2003;20:134-6.
21. Fakeye O. Pregnancies too young too old, too many and too frequent in Nigeria: Prevalence and the effect on birth weight and perinatal mortality. Trop Geogr Med 1992;44:174-177.
22. Njokanma OF, Sule-Odu AO, Akesode FA. Perinatal mortality at the Ogun State University Teaching Hospital, Sagamu, Nigeria. J Trop Pediatr 1994;40:78‑81.
23. Engel PJ, Smith R, Brinsmead MW, Bowel SJ, Clifton VL. Male sex and pre-existing diabetes are independent risk factors for stillbirth. Aust N Z J Obstet Gynaecol 2008;48:375-83.
24. Mondel D, Galloway TS, Bailey T, Mathew F. Elevated risk of stillbirth in males: systematic review and meta-analysis of more than 30 million births. BMC Medicine 2014;12:220.

doi: http://dx.doi.org/10.14194/ijmbr.5.3.1
How to cite this article: Njoku C.O, Emechebe C.I, Eyong E.M, Ukaga J.T, Anachuna K.C. Prevalence and risk factors for stillbirths in a tertiary hospital in Niger Delta area of Nigeria: a ten year review. Int J Med Biomed Res 2016;5(3):106-113
Conflict of Interest: None declared