



A Comparative Study Of Stillbirth Among Reproductive-Aged Women Delivering At OCH And RSUTH, Port Harcourt

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ABSTRACT

Stillbirth is a condition of public health importance as the rates are still high in most developing countries and in upward trend in Nigeria, adding to infant mortality. Published studies across Nigeria's diverse areas have showed significant rates of stillbirth, ranging from 39.9 per 1000 births to 180 per 1000 births. This comparative study measured and compared the prevalence of stillbirth and types at two hospitals in Port Harcourt. The study adopted a descriptive cross-sectional hospital-based study of all deliveries in an Obio Cottage Hospital (OCH) and Rivers State University Teaching hospital (RSUTH) within a 5-year period. A total population sampling method was adopted using a data extraction tool to obtain data for the study and analyzed using SPSS version 24.0. A total of 1253 stillbirth cases were obtained using a total population study method. The outcome of the study showed the prevalence of stillbirth at OCH, 173 (0.99%) was significantly lower than that of RSUTH 1080 (8.27%) ($p=0.000$). There were significantly more fresh cases in RSUTH compared to OCH, and significantly more macerated case in OCH compared to RSUTH ($\chi^2=15.440$; $p<0.001$). Based on the findings of the study, we infer that the rate of stillbirth in OCH is lower than in RSUTH. Suggesting that the use of community-based health insurance scheme likely increased the utilization and attendance of Ante-natal care (ANC), since antenatal care is a major public health intervention aimed at ensuring safe pregnancy outcomes, meanwhile utilization of health insurance schemes may have promoted attendance to ANC.

Keywords: Prevalence, Stillbirth, OCH, RSUTH, Port Harcourt, Ante-natal care

INTRODUCTION

Stillbirth turns to be one of the numerous unfavourable results of pregnancy. Each mother is delighted to have her infant delivered safely; in any case, a few conditions could prompt the demise of the child before or during delivery. As indicated by the World Health Organization (WHO), there are up to 100 core health conditions, stillbirth rate being among these, making stillbirth a general medical problem since it adds to mortality rates of any country. Stillbirth is viewed as a worldwide health problem, influencing for the most part the non-industrial nations (WHO, 2018). Worldwide as at 2019, about 2.0 million stillbirths happened following 28 weeks of pregnancy (around 1 for each 72 births) (Fowkes et al., 2020). On the African continent, Nigeria has one of the highest rates of stillbirth. It is one of six countries that bear the weight of half of all stillbirths worldwide, along with India, Pakistan, China, the Democratic Republic of the Congo and Ethiopia. These six nations represented portion of the assessed worldwide number of stillbirths and 44 percent of worldwide live births (UNICEF, 2020).

Nigeria, between the years 2000-2019 announced a 15% increment in the number of stillbirths. An examination by Lawn et al. (2016), detailed Nigeria being positioned in the second situation with an expected 313,700 stillbirths (SB) in 2015. As per UNICEF (2020) stated that the complete number of stillbirths in Nigeria in 2019 were 171,428 stillbirths. Stillbirth rates in Nigeria range from 39.9 per 1000 births to 180 per 1000 births, according to surveys conducted across the country (Okonofua et al., 2019). In Rivers State, an investigation completed in the University of Port Harcourt Teaching Hospital, showed the pervasiveness of stillbirths was 45 for each 1000 births (Ugboma & Onyearugha, 2012). Nigeria is confronted with socioeconomic, cultural, behavioural and environmental, impediments to affordable healthcare with a population of almost 178 million people in 2014 (Adedini et al., 2014). More than half of the populace in terms of resource constraints pay out-of-pocket (OOP) for healthcare. As a result of this, a lack of financial capabilities has been recognized as a primary barrier to care (NPC, 2014; World Bank, 2016).

Stillbirth is separated into Fresh and Macerated Stillbirth (Lawn et al., 2010). For fresh stillbirths, the demise-to-delivery stretch is thought to be short and the death likely happened during labour (intrapartum death), while macerated stillbirths are alternatively expected to have happened before labour (prepartum); the death-to-delivery interval is longer and the foetus shows skin and soft tissue changes (skin discoloration or obscuring, redness, stripping, and breakdown), all of which are missing in fresh stillbirths (Lawn et al., 2010; Okeudo et al., 2012). Besides past investigations asserted that the contrast between the two groups goes past actual appearance; fresh stillbirths are believed to be more preventable as they occur during labour, for the most part in term pregnancies and by and large without foetal irregularities (Okeudo et al., 2012).

The reduction in perinatal mortality in Western countries have been to a large extent attributed to the health insurance schemes put in place by the government to reduce out-of-pocket payments which has resulted in more people seeking healthcare services, as seen in the UK, while its` high level in many parts of Nigeria and indeed other developing countries, is worsening owing to several adverse factors which include high out-of-pocket payments as a result of no organized functional national health insurance scheme (Adimora & Odetunde, 2007). This has resulted in most women finding it difficult to seek medical care due to high cost of living and poverty. Stillbirth is a condition of public health importance as the rates are still high and in upward trend in different parts of the country. However, concerted efforts if made at federal, state, local communities` levels and personal efforts could bring down the unacceptable high stillbirth rates generally prevalent in the country (Udoma et al., 2008). More than half of the populace in terms of resource constraints pay out-of-pocket (OOP) for healthcare. As a result of this, a lack of financial capabilities has been recognized as a primary barrier to care (NPC, 2014; WorldBank, 2016).

Most women who fall under the category of reproductive age in Port Harcourt are either farmers, traders, students, employed, self-employed or non-employed and may possess different health seeking behaviours for monitoring and identifying possible risk in pregnancy, which in most cases result in complications such as still birth or even maternal death (WHO, 2018). At the face of these complications and life-threatening situation, the referral health hospitals (which are affordable than the private specialist ones) become the last resort for miracles, as women with complications are referred mostly to secondary and tertiary care facilities which provide comprehensive emergency obstetric care (NPHCDA, 2012). However, effective health insurance scheme are most times not accessible by majority of the population who cannot afford the bills in these referral facilities thereby promoting poor health seeking behaviour among these mothers, as they prefer to patronize cheaper services and health facilities which are easily accessible (WHO, 2018).

In plans to actualizing this reduction of avoidable deaths and improve healthcare in health facilities in Port Harcourt, efforts must be made to understand the prevalence and associated factors in the various levels of healthcare settings so as to be able to do an intervention aimed at reducing the prevalence of stillbirth. Several studies on stillbirth have been done in developed countries and Nigeria, having accessed these healthcare levels individually. However, this study seeks to determine and compare the prevalence

of stillbirth among reproductive aged women delivering at Obio Cottage Hospital (OCH) and Rivers State University Teaching Hospital (RSUTH) in Port Harcourt

MATERIALS AND METHODS

The design of the study was a comparative cross-sectional research design using case files of women aged 15 – 49 who delivered at OCH and RSUTH in Port Harcourt as well as the records of their deliveries (foetuses). A secondary data was extracted from the records of 30588 deliveries (17500 at OCH, 13058 at RSUTH) that occurred over a 5-year period from January 2015 to December 2019. Out of these deliveries, 1,253 stillbirth cases were identified with 173 occurring at OCH and 1,080 at RSUTH

Inclusion criteria included all cases of stillbirth within the period of research from 28 weeks of gestation or a foetal weight of at least 1000g and all case files of women of reproductive age delivering at the health facilities under investigation within period of research. Exclusion criteria included case files with missing information were excluded from the study.

A pre-tested data extraction tool adopted from WHO for stillbirth was used. The tool included questions that assessed socio-demographic characteristics, the outcome variable and main explanatory variables (maternal and foetal). All cases were identified through the admission and labour ward register. The folders of the mothers were retrieved from the medical records and statistics department for extraction of relevant information for the study. Data collected were coded using statistical package for social sciences (SPSS) and analysed using the descriptive statistics of frequency percentages (%) and chi-square.

Ethical Consideration

Permission was sought and obtained from the Research and Ethics Review Committee of the University of Port Harcourt. Consent was obtained from the management of the hospitals before the commencement of the study

RESULTS

4.1.2 Socio-Demographic Characteristics of Mothers with Stillbirth Foetus in Obio Cottage Hospital and Rivers State University Teaching Hospital

	OCH (n=173)		RSUTH (n=1080)		χ^2	p-value
	Frequency	Percent	Frequency	Percent		
Religion						
Christianity	171	98.8	1043	96.6	2.548	0.110
Islam	2	1.2	37	3.4		
Place of residence						
Urban	157	90.8	1010	93.5	1.786	0.181
Rural	16	9.2	70	6.5		
Ethnicity						
Hausa	0	0.0	6	0.6	3.167	0.327 [#]
Yoruba	6	3.5	61	5.6		
Igbo	50	28.9	257	23.8		
Others	117	67.6	756	70.0		
Maternal age						
15-19	1	0.6	20	1.9	1.765	0.623
20-29	60	34.7	348	32.2		
30-39	104	60.1	659	61.0		
40-49	8	4.6	53	4.9		
Mean \pm SD (years)	31.58 \pm 5.10		31.69 \pm 5.24		0.255 ^b	0.799 ^v
Mother's education						
None	1	0.6	4	0.4	1.65	0.626 [#]
Primary	10	5.8	46	4.3		
Secondary	83	48	516	47.8		
Tertiary	79	45.7	514	47.6		
Occupation						
Has occupation	123	71.1	783	72.5	0.146	0.702
No occupation	50	28.9	297	27.5		
Household wealth index						
Poor	78	45.1	502	46.5	0.151	0.927 [#]
Middle	93	53.8	563	52.1		
Rich	2	1.2	15	1.4		
BMI status						
Underweight	2	2.2	14	1.3	3.981	0.118 [#]
Normal weight	167	96.5	1051	97.3		
Overweight/Obese	4	2.3	15	1.4		

*Statistical significant (p<0.05); χ^2 =Chi-Square; a=Fishers Exact p

In table 1, the socio-demographic characteristics of mothers with still birth foetus was compared between the 2 health facilities studied. One hundred and seventy-one (98.8%) of the mothers in OCH were Christians as compared against 1043 (96.6%) of the mothers in RSUTH who were Christians, and this difference was not shown to be statistically significant ($\chi^2=2.548$; p=0.110). It was also shown that most

of the mothers of the still birth foetus in OCH (90.8%, n=157) and RSUTH (93.5%; n=1010) were residents of urban centres and this was also not shown to be statistically significantly different ($\chi^2=1.786$; $p=0.181$). The table also showed that mothers from both health facilities were of comparable age (31.58 ± 5.10 and 31.69 ± 5.24 years for OCH and RSUTH respectively; $t=0.255$; $p=0.799$), comparable ethnic groups ($\chi^2=3.993$; $p=0.263$), and comparable education (Fishers Exact Test= 1.650 ; $p=0.626$). One hundred and twenty-three (71.1%) of mothers of still birth foetus in OCH had occupation as against 783 (72.5%) of mothers of still birth foetus in RSUTH, and this was not statistically significantly different ($\chi^2=0.146$; $p=0.702$). Also, 78 (45.1%) of mothers in OCH fell into the lower class of household wealth index, 93 (53.8%) fell into the middle class and 2 (1.2%) fell into the upper class of household index. Similarly, 502 (46.5%) of mothers in RSUTH fell into lower class, 563 (52.1%) fell into middle class and 15 (1.4%) fell into the upper class; and this difference was also not statistically significant ($\chi^2=0.198$; $p=0.906$). Also, 2 (2.2%) were underweight, 167 (96.5%) were normal and 4 (2.3%) were overweight or obese in OCH while 14 (1.3%) of mothers in RSUTH were underweight, 1051 (97.3%) were normal and 15 (1.4%) were overweight or obese. This difference was not found to be significant (Fishers Exact Test= 3.981 ; $p=0.111$). See table 1.

Table 2: Prevalence of Stillbirth in OCH and RSUTH

Variables	OCH (Total births=17500)		RSUTH (Total Births=13058)		χ^2 (p-value)
	Freq (n)	%	Freq (n)	%	
Prevalence of Stillbirth					
Stillbirth	173	9.9	1080	82.7	1008.4967 0.000*

*Statistically significant ($p<0.05$); $\chi^2=Chi-Square$

A total of 30558 deliveries were reported in the 2 health facilities studied in the 5 years of review, 17500 of the deliveries were in Obio Cottage Hospital (OCH) and 13058 in Rivers State University Teaching Hospital (RSUTH). Among the 17500 deliveries reported in OCH in the 5 years reviewed, 173 were still birth, while among the 13058 deliveries reported in RSUTH in the sample period, 1080 were still birth. Thus, still birth rate was 9.9 per 1000 of total deliveries in OCH and 82.7 per 1000 of total deliveries in RSUTH in the 5 years reviewed. There was statistical significant difference in the prevalence of stillbirth in OCH and RSUTH compared ($\chi^2=1008.4967$; $p<0.00001$).

Table 3: Comparing Stillbirth Type in Obio/Cottage Hospital and Rivers State University Teaching Hospital

Type of still birth	OCH (n=173)		RSUTH (n=1080)		χ^2	p-value
	Frequency	Percent	Frequency	Percent		
Fresh	50	28.9	484	44.8	15.44	<0.001*
Macerated	123	71.1	596	55.2		

*=Statistically Significant

Fifty (28.9%) of the still birth cases reported in OCH were classified as fresh and 123 (71.1%) of the cases were classified as macerated, while 484 (44.8%) of still birth cases reported in RSUTH were classified as fresh and 596 (55.2%) of the cases were classified as macerated (figure 1 and 2). There were significantly more fresh cases in RSUTH compared to OCH, and significantly more macerated case in OCH compared to RSUTH ($\chi^2=15.440$; $p<0.001$). See table 3.

DISCUSSION

Stillbirth is a public health issue and adds to infant mortality. The goal of this study was to determine and compare the prevalence of stillbirth among reproductive aged women delivering at hospitals in Port Harcourt (OCH and RSUTH).

The study showed that Obio Cottage Hospital (OCH) had more deliveries and a lower prevalence of stillbirth in the period studied compared to Rivers State University Teaching Hospital. This could easily be attributed to the fact that OCH is closer to being a first point of contact for healthcare compared to RSUTH which is a referral facility. Secondly, the community health insurance scheme which is the key point of comparison in this study obtainable at OCH has increased the attendance of patients and enhanced their easy access to standard healthcare.

The study revealed that the socio-demographic characteristics of mothers with stillbirth foetus showed no statistically significant difference among OCH and RSUTH. This implies that the socio demographic characteristics of the mothers who had stillborn played no significant role in the occurrence of stillbirth in comparing both health facilities. The findings of this study contradicts previous studies as Bhusal *et al.* (2019) which identified maternal socio-demographics such as age, occupation, tobacco use, education and place of residence as associated factors of stillbirth among pregnant women in Nepal. Anyichie *et al.* (2019) South-East Nigeria ; Njoku *et al.* (2016) Niger Delta Area of Nigeria, identified maternal socio-demographics such as low maternal education as an associated factor of stillbirth. Similarly, Dahiru *et al.* (2014) Niger Delta Area of Nigeria revealed increased maternal age (>35years), lack or low maternal education, socio-economic status, use of solid fuels, residence and BMI status as factors associated with stillbirth.

The present study however corroborates the findings of Okonofua *et al.* (2019) in a multi-centre study and Ugboma *et al.* (2014) in a retrospective study, Niger Area of Nigeria.

The results also reveal that mothers from both facilities were of comparable age, education and ethnic groups.

Furthermore, the study showed that the prevalence of stillbirth was lower among mothers who delivered in OCH compared to those who delivered at RSUTH. This difference in prevalence was found to be significant at $p < 0.001$. The study showed more than half stillbirth cases in RSUTH compared to less than half the number of cases in OCH. This implies that there are underlying factors at interplay at OCH contributing to the low prevalence and also at RSUTH contributing to the high prevalence of stillbirth. The report of a low prevalence is consistent with the reports at Karshi General Hospital, Abuja (Okonofua *et al.*, 2019); Central Hospital Warri (Okonofua *et al.*, 2019); Cottage Hospital, south-south Nigeria (Okonta *et al.*, 2020).

However, the higher prevalence reported at RSUTH in the present study was consistent with the studies at Jos University Teaching Hospital (Mutahir & Eka 2011); University of Port Harcourt Teaching Hospital (UPTH) Port Harcourt, south-south Nigeria (Ugboma *et al.*, 2012); Federal Teaching Hospital, Abakaliki (FETHA), Ebonyi State, southeast Nigeria (Agbata *et al.*, 2015); Felegehiwot comprehensive specialized hospital, northwest Ethiopia (Mengistie & Andualem, 2019). However, reports of previous studies of stillbirth rates of 180/1000, 175/1000, and 170/1000 which were reported at Imo State University Teaching Hospital (Okeudo *et al.*, 2016), Madonna University Teaching Hospital, Elele (Mbachu *et al.*, 2018), and Federal Medical Centre, North West Nigeria (Ugwa & Ashimi, 2015) respectively contradicted the present results as they were outstandingly higher than that of the present study.

Possible insinuations could be drawn as to explaining the reason for the prevalence differences. Rivers State University Teaching Hospital (RSUTH) is a referral hospital where majority of the cases are likely based on referral from other health facilities located in various areas and locations, which could include referral cases involving moms' ongoing ailments and antenatal complications. Despite the fact that most referral hospitals are presumed to be well or better equipped with facilities and medical expertise, cases as that of stillbirth is difficult as there is no particular treatment to be offered than to seek to know the cause of death. Since it is believed that most stillbirth cases are preventable. This implies that most stillbirth

cases are likely to be recorded at the referral hospitals as they are believed to be a better place for emergency cases compared to facilities like that of OCH, hence the notable difference in prevalence.

Secondly, studies have shown that Nigeria is confronted with socioeconomic, cultural, behavioural and environmental, impediments to affordable healthcare with a population of almost 178 million people in 2014 (Adedini, 2014). More than half of the populace in terms of resource constraints, pay out-of-pocket (OOP) for healthcare. As a result of this, a lack of financial capabilities has been recognized as a primary barrier to care (WHO, 2016; WORLDBANK, 2016). The community health insurance scheme provided by OCH which offers pooling funds for scheme members could possibly be the reason for the low prevalence compared to RSUTH which despite the presumed medical expertise and better equipment obtainable at RSUTH, the out of pocket payment in most cases may have been a limiting factor to seeking early and immediate medical attention by patients when necessary compared to OCH. The community health insurance scheme obtainable at OCH possibly increased the attendance of patients and enhanced their easy access to standard healthcare as the study revealed more ANC bookings and visits at OCH compared to RSUTH. This possibly may have been the reason for less complicated cases since the pregnancies are monitored closely during the ANC visits. According to Okonta *et al.* (2020), maternal population consisting up largely of booked patients who are registered early for ANC are likely going to have high-risk pregnancies diagnosed early and appropriate steps taken as critical cases are likely to be identified and given required attention which includes referral if needed.

The description of stillbirth between the health facilities showed that stillbirth type was statistically significant at $p < 0.001$. This finding revealed that the macerated type of stillbirth was higher in OCH compared to RSUTH as two-third of the dead foetuses were classified a macerated in OCH compare to less than half reported at RSUTH of their respective stillbirth sum total as shown in table 3. This implies that the difference in the frequencies and percentages of stillbirth types is as a result of underlying factors. The recent findings corroborate with the findings of Ntuli *et al.* (2012), South Africa and Njoku *et al.* (2016) in a tertiary hospital in Niger Delta area of Nigeria. In contradiction, Okonofua *et al.* (2019) in a multicentre study in Nigeria, showed that a higher percentage of intrapartum deaths (fresh stillbirth) occurred during the intrapartum period and further revealed that following delays in the hospital during delivery, the timings and procedure of birth may not have followed established obstetric procedures.

Macerated stillborn foetus shows skin and soft-tissue changes (darkening or discoloration of skin, peeling, redness, and breakdown) suggesting death was well before delivery (prepartum) (Lawn *et al.*, 2010). Despite the pooled insurance program that removed the cost burden of seeking medical care and easy enrolment for focused ANC, the percentage gap of higher macerated cases in OCH as compared to RSUTH with a lower percentage suggested that most stillbirths occurred 24 hours before delivery. This could be related to childbirth problems, malaria in pregnancy, syphilis, obstetric hemorrhage, preeclampsia, maternal diseases or congenital anomalies (Shrestha *et al.*, 2010; Okonofua *et al.*, 2019), which may have gone undetected or left unattended during the antenatal period prior to delivery. Secondly, RSUTH as a referral health facility is likely well equipped with facilities and medical expertise, as a result, may be able to reduce the chances of macerated stillborn compared to OCH due to the presence of specialists. Thirdly, it could also be as a result of persons undermining free services, as some persons who even when registered for ANC are likely not to be consistent with the visits as they pay little or nothing for standard healthcare services. It could also be as a result of the patients not seeking for appropriate medical attention when supposed or inconsistency in seeking healthcare, as some would seek prayer houses, traditional birth attendants for massage and repositioning of womb in a bid to secure their pregnancies (Anyichie *et al.*, 2019). In some cases due to cultural beliefs, when most women are booked for an operation they go out seeking for spiritual alternatives which could lead to the death of the baby before the time of delivery. This is because they consider being operated on to be against their faith or unwarranted as the health professionals initially told them that their case was normal (Zakar *et al.*, 2018). Similarly, the low proportions of fresh stillbirths compared to macerated stillbirths show that less cases of stillbirth happen during birth in the hospitals under investigation. This could be attributed to promptness in attending to obstetric emergency cases by the hospitals understudied.

CONCLUSION

In accordance to the findings of the present study, it was deduced that the prevalence of stillbirth at OCH was lower than that of RSUTH and this was statistically significant. So the difference in prevalence can be attributed to the benefit of the health insurance scheme in OCH (which has made health care accessible to a majority of patients) thereby recording a lower prevalence as compared to RSUTH despite the quality of expertise and quality of care offered. Therefore, there is need for the government to adopt an emergency approach in improving maternal and child healthcare services and health facilities infrastructure. This can be achieved by introducing an effective national health insurance scheme to reduce the burden of out-of-pocket expenses. Additionally, there is critical need for increased sensitization among women on pregnancy danger signs and importance of timely ante-natal care at a standard healthcare facility.

Furthermore, healthcare facilities management should be put in place measures to ensure prompt delivery, as major cases of stillbirth especially during childbirth (intrapartum) are preventable if adequate measures are taken. In this case, training and re-training of health care personnel, including Traditional Birth Attendants (TBAs) are required.

Conflict of interest

The authors have no conflict of interest to declare for this study

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REFERENCES

- Adedini, S. A. (2014). *Contextual determinants of infant and child mortality in Nigeria* (Doctoral dissertation, University of the Witwatersrand, Faculty of Humanities).
- Adimora, G. N., & Odetunde, I. O. (2007). Perinatal mortality in University of Nigeria Teaching Hospital, Enugu at the end of the last millennium. *Niger Journal Clinical Practice*, 10(1), 19-23.
- Anyichie, N. E., & Nwagu, E. N. (2019). Prevalence and maternal socio-demographic factors associated with stillbirth in health facilities in Anambra, South-East Nigeria. *African health sciences*, 19(4), 3055-3062.
- Dahiru, T., & Aliyu, A. A. (2016). Stillbirth in Nigeria: Rates and risk factors based on 2013 Nigeria DHS. *Open Access Library Journal*, 3, e2747.
- Fowkes, F. J., Davidson, E., Moore, K. A., McGready, R., & Simpson, J. A. (2020). The invisible burden of malaria-attributable stillbirths. *The Lancet*, 395(10220), 268.
- Lawn, J. E., Gravett, M. G., Nunes, T. M., Rubens, C. E., & Stanton, C. (2010). Global report on preterm birth and stillbirth (1 of 7): Definitions, description of the burden and opportunities to improve data. *BMC Pregnancy Childbirth*, 10(2010), S1.
- Lawn, J. E., Blencowe, H., Waiswa, P., Amouzou, A., Mathers, C., & Hogan, D., et al. (2016). For the lancet ending preventable stillbirths series study group with the lancet ending preventable stillbirths series advisory group (2016) still-births: Ending preventable deaths by 2030. *Lancet*, 387, 587-603.
- Mbachu, I. I., Achigbu, K. I., Odinaka, K. K., Eleje, G. U., Osuagwu, I. K., & Osim, V. O. (2018). Tracking stillbirths by referral pattern and causes in a rural tertiary hospital in Southern Nigeria. *Nigerian Postgraduate Medical Journal*, 25(2), 87.
- Mengistie, A., & Andualem, M. (2019). Prevalence of stillbirth and associated factors among immediate post-partum mothers at Felegehiwot comprehensive specialized hospital, northwest Ethiopia: An institution based cross-sectional study.
- Mutihir, J. T., & Eka, P. O. (2011). Stillbirths at the Jos University Teaching Hospital: incidence, risk, and etiological factors. *Nigerian journal of clinical practice*, 14(1).

- Njoku, C. O., Emechebe, C. I., Eyong, E. M., Ukaga, J. T., & Anachuna, K. C. (2016). Prevalence and risk factors for stillbirths in a tertiary hospital in Niger Delta area of Nigeria: a ten year review. *International journal of Medicine and Biomedical research*, 5(3), 106-113.
- National Primary Health Care Development Agency (NPHCDA) (2012). *Minimum standards for primary health care in Nigeria*. Abuja. Department of Planning, Research and Statistics, National Primary Health Care Development Agency. Available from: www.nphcda.gov.ng.
- Ntuli, S. T., & Malangu, N. (2012). An investigation of the stillbirths at a tertiary hospital in Limpopo province of South Africa. *Global journal of health science*, 4(6), 141.
- Okeudo. C., Ezem, B., & Ojiyi, E. (2012). Stillbirth rate in a teaching hospital in South-eastern Nigeria: a silent tragedy. *Ann Med Health Sci Res*, 2(2), 176-9.
- Okonofua, F. E., Ntoimo, L. F. C., Ogu, R., Galadanci, H., Mohammed, G., Adetoye, D., ... & Randawa, A. (2019). Prevalence and determinants of stillbirth in Nigerian referral hospitals: A multicentre study. *BMC pregnancy and childbirth*, 19(1), 1-9.
- Okonta, P. I., Orimadegun, A. E., Umejiego, C., & Fajola, A. (2020). An Analysis of Still-births from a Busy Cottage Hospital using the Re-Code Classification. *Tropical Journal of Obstetrics and Gynaecology*, 37(2), 233-242.
- Udoma, E. J., Ekanem, A. D., Abasiattai, A. M., & Bassey, E. A. (2008). Reasons for preference of delivery in spiritual church-based clinics by women of South-South Nigeria. *Nigerian Journal of Clinical Practice*, 11(2), 100-103.
- Ugboma, H. A. A., & Onyearugha, C. N. (2012). Still births in a tertiary hospital, Niger delta area of Nigeria; less than a decade to the millennium developmental goals. *International Journal of Tropical Disease & Health*, 16-23.
- Ugwa, E. A., & Ashimi, A. (2015). An assessment of stillbirths in a tertiary hospital in northern Nigeria. *The Journal of Maternal-Fetal & Neonatal Medicine*, 28(13), 1585-1588.
- UNICEF (2020). *Statistics on women: The state of the world's children*. New York: UNICEF, 2020.
- World Health Organization (WHO) (2014). *International statistical classification of diseases and related health problems, 10th revision*. 2nd ed. Geneva, Switzerland. World Health Organization.
- World Health Organization (WHO) (2016). *Technical consultation on newborn health indicators*. http://www.who.int/maternal_child_adolescent/documents/newborn-health-indicators/en/ (accessed Oct 23, 2016).
- World Health Organization (WHO) (2018). *Technical consultation on newborn health indicators*. http://www.who.int/maternal_child_adolescent/documents/newborn-health-indicators/en/ (accessed June 14, 2018).
- Zakar, M. Z., Zakar, R., Mustafa, M., Jalil, A., & Fischer, F. (2018). Underreporting of stillbirths in Pakistan: perspectives of the parents, community and healthcare providers. *BMC pregnancy and childbirth*, 18(1), 1-9.