ORIGINAL ARTICLE

Prevalence and pattern of stillbirths in a tertiary institution in South-East Nigeria

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ABSTRACT

Background: Death of a foetus in-utero is devastating both to the parents and the attending obstetrician. Knowledge of the relative importance of the different causes will help in the prevention or reduction of its occurrence.
Aim: This study evaluated the prevalence and pattern of stillbirths at the Nnamdi Azikiwe University Teaching Hospital Nnewi, Anambra State, South-East Nigeria.
Methodology: This was a retrospective study of 297 stillbirths at the Nnamdi Azikiwe University Teaching Hospital, Nnewi from 1st January, 2007 to 31st December, 2011.
Results: The stillbirth rate was 56.9/1000 deliveries. Majority of the cases 238 (80.1%) were unbooked. One hundred and twenty-nine (43.4%) were nulliparous. There were 180 (60.6%) male stillbirths while 117 (39.4%) were females. The major causes were abruptio placentae 40 (13.5%), prolonged pregnancy 38 (12.8%), uterine rupture 37 (12.5%) and pre-eclampsia 31 (10.4%). Seventy (23.6%) cases were unexplained.
Conclusion: The stillbirth rate is high in our centre. There is need for quality, accessible and affordable antenatal care and delivery services to reduce the rate of stillbirth. Establishment of a subspecialty of prenatal diagnosis and foetal medicine will help in reducing the rate of stillbirths in our environment.

Keywords: *Foetal death, nulliparous, obstetric care, risk factors, unbooked*

INTRODUCTION

Death of a foetus in utero often brings a devastating emotional trauma to the couple and concern to the attending obstetrician. The World Health Organization (WHO) in 1950 loosely defined stillbirth as fetal death prior to the complete expulsion or extraction from its mother of a product of human conception, irrespective of the duration of pregnancy, which is not an induced termination of pregnancy.[1]

In England and Wales, a "still-birth" is defined as "a child which has issued forth from its mother after the twenty-fourth week of pregnancy and which did not at any time after being completely expelled from its mother, breathe or show any other signs of life."[2] In the United States of America, the United National Centre for Health Statistics defined stillbirth as foetal death after 20weeks of gestation.[3] The World Health Organization estimates that worldwide, 3.3million

stillbirths occur each year accounting for over half of all perinatal mortality.[4] It has been noted that about 98% of these deaths take place in low and middle income countries.[4,5] The Nigerian perinatal mortality rate for the 1999-2003 period was 48 deaths per 1000 live births, and in a study in Ibadan, the prevalence rate of still births was 63/1000 total births.[6,7]

In the developed nations of the world about a third of all stillbirths have been shown to be idiopathic; however, in developing nations, stillbirths accounts for over 50% of all perinatal mortalities.[8,9] The incidence of stillbirth in developing countries is about ten times that obtainable in developed countries.[10,11] The still birth rate in any environment can be used to assess the quality of maternal health care services in that environment.[12] It is usually higher in economically disadvantaged communities with poor access to antenatal and emergency obstetric care services compared to economically advanced populations with good access to and high utilization of quality antenatal services.[12,13] The high prevalence rates of stillbirths in developing countries are closely related to poverty, ignorance, low women empowerment as well as negative socio-cultural and faith beliefs.[14,15,16]

Globally, two-thirds to three-quarters of stillbirths occur in the antenatal period, before labour begins.[2,13,17] Stillbirths have been noted to be caused by a variety of factors which include severe maternal, placental or foetal anomalies, intrauterine growth restriction, abruptio placentae, infections and preeclampsia. Intrapartum stillbirths usually follow obstructed labour or foetal distress and it is a reflection of the quality of obstetric care during labour and delivery. It should be noted that some causes of stillbirth are idiopathic.[18]

It would appear that some stillbirths are preventable as they occur when the woman is in labour. Early detection of risk factors during antenatal period, active management of labour and provision of emergency obstetric care services will help in reducing the incidence of stillbirths in our environment. The result obtained from this study will redirect our focus to the preventable causes of stillbirth and thus, enable us to reduce as much as possible the high rate of stillbirths in our environment.

METHODOLOGY

This was a hospital based retrospective analysis of stillbirths. The study was carried out in the Department of Obstetrics and Gynaecology of the Nnamdi Azikiwe University Teaching Hospital (NAUTH), Nnewi which serves as a tertiary health care centre to the densely populated city of Nnewi and its environs.

The study population included 5220 women who delivered singleton babies at NAUTH over a 5-year period, from January 1st, 2007 to December 31st, 2011. In this study, stillbirths were considered as *foetal demise* after 28weeks of gestation. The cases with incomplete data were excluded. Antenatal, obstetric and social data were extracted from the delivery registers in the labour ward and theatre as well as maternal case notes retrieved from the Medical Records Department of the hospital. The information obtained included maternal age, gravidity, parity, gestational age, sex of the foetus, birth weight, marital status, ethnic group, booking status, educational status of the mother, occupation of the husband and the cause of foetal demise. A booked patient in this study was defined as a woman who had attended our facility with a viable foetus in the previous visit(s), while preterm labour was defined as labour occurring before the completion of 37weeks of gestation.

The findings were recorded on a pre-formed format sheet designed for the study. Data were coded and analyzed using SPSS statistical package version 16 (*SPSS 16 Inc, Illinois*). Chi square was used to test for significance between the concerned variables at 95% confidence interval. A p-value <0.05 was considered as significant.

RESULTS

There were a total of 304 stillbirths during the study period but only 297 case notes were retrieved and analyzed**.** They were 181 (60.9%) males and 116 (39.1%) females. The total number of deliveries within this 5-year period was 5220, giving an institutional prevalence of 56.9 stillbirths per 1000 births. Table 1 shows the socio-demographic characteristics of the patients studied. The age range was 16-47years with a mean of 30±6.0 years. The highest age specific stillbirth rate of 26.9% (80/297) occurred in the age group 25-29years, while those in the age range <20 and ≥40years had the lowest prevalence of 3.0% (9/297) and 1.7% (5/297), respectively.

Table 1. Selected socio-demographic characteristics of the patients

Age	**Frequency** (*n 297*)	%
<20	9	3.0
20-24	68	22.9
25-29	80	26.9
30-34	73	24.9
35-39	62	20.9
≥40	5	1.7
Parity	**Frequency** *(n 297)*	%
0	129	43.4
1-2	73	24.6
3-4	57	19.2
>4	38	12.8
Booking Status	**Frequency** (*n 297*)	%
Booked	59	19.9
Unbooked	238	80.1
Gender of Babies	**Frequency** (*n 297*)	%
Male	181	60.9
Female	116	39.2

The stillbirth rate of 80.1% (238/297) in the unbooked patients was much higher than the rate in the booked patients 19.9% (59/297). This value was statistically significant (x^2= *397.1*, *p-value 0.0000*).

The stillbirth rate tended to decrease with increasing educational qualification. Mothers with no formal education had higher prevalence 46.5% (138/297), while the lowest prevalence occurred among women with post-secondary qualification, 4.0% (12/297).

Table 2. Associated risk factors

Diagnosis	**Frequency**	**Percentage**
Abruptio Placentae	40	13.5
Uterine Rupture	37	12.5
Pre-eclampsia	31	10.4
Eclampsia	12	4.0
Chorioamnionitis	18	6.1
Congenital Anomaly	7	2.4
Cord Prolapse	7	2.4
Severe Anaemia	10	3.4
Placenta Praevia	9	3.0
Obstructed Labour	16	5.4
Shoulder Dystocia	2	0.7
Prolonged Pregnancy	38	12.8
Idiopathic	70	23.6
Total	**297**	**100**

Table 2 shows the risk factors associated with the stillbirths. Abruptio placentae was found to be the leading risk factor with a prevalence rate of 13.5% (40/297), followed by uterine rupture 12.5% (37/297). Shoulder dystocia 0.7% (2/297) was the least factor associated with the stillbirths. Seventy (23.6%) of the cases had no obvious associated risk factor.

Table 3 shows the nature of the stillbirths with 47.8% (142/297) fresh, and 52.2% (155/297) macerated.

Table 3. Status of the babies at birth

	Frequency	%
Fresh Still birth	142	47.8
Macerated Still Birth	155	52.2
Total	**297**	**100**

DISCUSSION

The still birth rate of 56.9 per 1000 obtained in this study was slightly lower than the 63 per 1000 births reported from Ibadan, 65 per 1000 births obtained from Port Harcourt and 63

per 1000 reported from Enugu, respectively.[7,19,20] It is, however, more closely comparable to the 56 per 1000 and 59.6 per 1000 births reported from Zimbabwe and Owerri, respectively.[8,21] It is, nonetheless, higher than the 42.2 per 1000 obtained in 2007 from our centre.[22] All these values were in sharp contrast to the figures obtained from advanced countries where mothers had easy access to quality obstetric care. Stillbirth rates of 2.5, 4.2 and 5 per 1000 have been obtained in the developed world.[23,24,25] The relatively high prevalence obtained in this study is partly due to the fact that the study was a hospital based study and the centre is a tertiary referral centre receiving and managing complicated obstetric cases.

The study revealed that majority of mothers who had stillbirths were not booked. Previous studies had shown that unbooked patients contributed significantly to the rate of stillbirths.[26,27] This is due to the fact these women first patronize unskilled birth attendants and are only brought to the hospital when pregnancy or labour becomes problematic.[28,29]

Most stillbirths were recorded among the nullipara in this study. This conforms with previous report from Ile-Ife and Nnewi in Nigeria.[18,29] This may be explained by the increased susceptibility of primigravidas to malaria making them more vulnerable to anaemia.[30] This group also has higher incidence of pre-eclampsia, eclampsia and obstructed labour which are associated with foetal death.[31]

The results of the study also revealed that the highest incidence of stillbirths occurred in mothers aged 26-30years and this is in keeping with a previous report from the our centre.[22] However, this is at variance with reports from Ibadan where teenage and advanced maternal age (>34years old) mothers were associated with the highest incidence of stillbirths.[7] This difference cannot be easily explained although the study from Ibadan included results from a secondary health facility.

The study also showed that a higher educational attainment was associated with a lower stillbirth rate. Lack of formal education was associated with a higher stillbirth rate while tertiary school education was associated with the lowest rate. An educated woman is more likely to be empowered with information on the benefits of supervised antenatal and delivery periods.

The proportion of macerated stillbirths (52.2%) was higher than in developed countries, suggesting the presence of undetected insults to the developing foetus during the antenatal period. A considerable proportion (47.8%) was fresh stillbirth. This was similar to results from other centres.[11,15] This finding suggests the need for improved obstetric care and availability of emergency obstetric services during labour and delivery. It is also important to note that almost two-thirds of the stillbirths were males. Could this be in keeping with anecdotal reports that males are more likely to succumb to the stress of labour, and are also more prone to congenital abnormalities?

Abruptio placentae was the risk factor most commonly associated with stillbirth in this study. This was in agreement with the findings of several other authors, though different from the finding from another study where eclampsia had the highest contribution and a WHO study on prevention of eclampsia.[18,26,32,33] The WHO calcium supplementation trial for the prevention of preeclampsia had demonstrated that hypertensive disorders of pregnancy were the most common obstetric event leading to stillbirths in 23.6% of the cases.[33] This vasoconstrictive disorder causes hypoxia, intrauterine growth restriction, prematurity and low birth weight, which may all lead to stillbirth.

The triad of abruptio placentae, preeclampsia and eclampsia accounted for 27.9% of all the risk factors for stillbirth in this study, correlating with the finding from a previous studies in another centre and our own centre in which these factors accounted for 33.1% of

all stillbirths.[21,22] Foetal deaths from these conditions can largely be prevented by close surveillance and prompt intervention.

Prolonged pregnancy was implicated in 12.8% of stillbirth in this study, and its contribution could be reduced by foetal surveillance, induction and active management of labour. Continuous electronic foetal monitoring should be used for high risk pregnancies to reduce the chances of stillbirth. Uterine rupture which was responsible for 12.5% of the stillbirths is largely neglected risk factor in the antenatal period and labour. Identification of patients at risk in the antenatal period, proper selection of patients for induction of labour, close monitoring of labour by a skilled birth attendant and early referrals to centres with facilities for emergency obstetric care including caesarean section can go a long way in solving this problem.

Congenital abnormalities which contribute about 18% to the risk of stillbirths in developed countries accounted for 2% of cases in this study.[34] The lack of post-mortem examination may have contributed to the low proportion of congenital abnormalities in this study. The findings from this study showed that in 19.6% of the stillbirths, there was no identifiable risk factor. This unacceptably high figure may be due to the non-enforcement of autopsy regulations, especially in coroner cases.

The study shows that most risk factors of stillbirth can be explained and possibly prevented. The prevalence of stillbirths in our setting may be reduced by educating women on the benefits of antenatal care, improving their socioeconomic status, training and re-training of health personnel and delivery in appropriate health facility. A reduction in the incidence of hypertension through antenatal surveillance will invariably reduce the incidence of abruptio placentae. Provision of good roads, electricity and functional health care facilities will also go a long way in reducing stillbirth rates.

CONCLUSION

The still birth rate in our environment remains unacceptably high. The identified risk factors are mostly related to intrapartum events. As a preventive measure, efforts should be made to improve maternal and obstetric services especially emergency obstetric services. Regular review of incidents of stillbirth would help to identify prevailing risk factors and help in formulating policies and strategies that would lead to significant improvement. Establishment of a subspecialty of prenatal diagnosis and foetal medicine will help in reducing the rate of stillbirths in our environment.

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