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Prevalence and Factors Associated with Perinatal Mortality between January 2005 to December 2009 in University of Calabar Teaching Hospital, Calabar

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ABSTRACT

The purpose of the study was to determine the prevalence and factors associated with perinatal mortality between January 2005 to December 2009 in University of Calabar Teaching Hospital, Calabar. **Objectives:** In order to achieve the aim of this study two specific objectives were stated which were to assess the fetal causes of perinatal mortality and to determine the institutional factors associated with perinatal mortality within these periods. Two hypotheses were also formulated to test relationship between fetal causes and perinatal mortality, hypothesis 2 was to test relationship between institutional factors and perinatal mortality. **Methods**: A non-experimental (retrospective) descriptive survey research design was adopted for the study. A total sample of 9571 being the total number of delivery within the period of study as past records of patient (mothers) with perinatal death was used. A self structured checklist was used for data collection. Data was analyzed using simple percentages, tables, bar- chart and chi-square (x^2) at $p < 0.05$. **Results:** The result shows that the prevalence rate of perinatal mortality (49.9/1000) was high majority 60(15.3%) of severe birth asphyxia was the cause of fetal perinatal mortality and uterotoxic drug 8(2.0%) was the major institutional factor causing perinatal mortality. From the two causes, fetal cause was the major factor associated with perinatal mortality. **Conclusion:** It was concluded that hospital should increase awareness on need for regular antenatal visit and proper routine checkup for early detection of associated factors of perinatal mortality and enlightenment should also be given to women on proper age range and number of children that can help to reduce perinatal mortality.

INTRODUCTION

Globally, and in our contemporary Nigerian societies prenatal mortality occur as a result of circumstances such as poor maternal conditions, abnormal pelvic conditions, poor management of labour, pregnancy induced hypertension, socioeconomic status, inadequate care during pregnancy and mother's not taking advice seriously by using the antenatal clinic during their clinics days and as such fall into a circumstances of having fetal death in utero. The term prenatal mortality was first coined by Peller in 1948 to mean stillbirths and neonatal deaths during the first week of life. Later the World Health Organization (WHO) (2006) defined it as the sum of late foetal deaths with gestation of 28 weeks or more and early neonatal deaths until the end of the first week of life. Although historically, stillbirth and early neonatal deaths have been grouped together as perinatal mortality, a shift away from this by perinatal epidemiologist has been observed (Anderson, 2000). Therefore, perinatal mortality includes stillbirth and the death occurring under the first one week of life. Perinatal mortality continues to be a major problem in many developing countries in which Nigeria is non exemption. The prevalence of perinatal mortality globally in 1995, has been estimated to be more than 2.4 million lives, representing 4.4% of all death in the world. (WHO, 2006).

The importance of checking perinatal mortality and its associated factors cannot be overemphasized because it has affected the total population as seen in the statistical analysis. For example, the WHO estimated the number of perinatal deaths recently worldwide to be greater than 7.6 million, with 98% of these deaths occurring in developing countries (Raksha, 2001).

In Africa, perinatal mortality rate is as high as 75 per 1000 birth have been reported and studies carried out in both developed and developing countries have identified several risk factors for perinatal mortality. Perinatal mortality are largely the result of poor maternal health such as pregnancy induce hypertension, infections, adverse socio-economic conditions, inadequate care during pregnancy (ANC) even the parity, the age of the mother including complications during childbirth also included are fetal causes such as asphyxia, prematurity, sepsis, intracranial hemorrhage, aspiration pneumonia, malformation, prematurity and other haemolytic disorders have long been known to increase the risk of perinatal death. In 2002, the national average of Perinatal Mortality Rate (PMR) was found to be 60 per 1000 birth in Nigeria which shows a high rate (Kanaan, 2003). Locally, the report of high prevalence had not yet been established, hence the researchers are interested in finding out the prevalence of

perinatal mortality rate in University of Calabar Teaching Hospital including factors associated with this condition between January 2005 to December 2009 in order to recommend possible solutions to it, otherwise, it will continue to remain a deathly problem.

The research work of Stanton, Lawn Rahman, Wilczynska, & Hill (2006) had clearly shown the estimate of stillbirth rate during delivery in 190 countries due to foetal causes such as abnormal fetal position example breech presentation, birth asphyxia, meconium aspiration syndrome, overlarge babies, pathological jaundice and other conditions. According to them, up to 87% of babies were reported to have died during delivery complicated by abnormal fetal position in Guatemala while 19% accounted for breech delivery, asphyxia led to 40% of early neonatal death.

Khurana, Warey, & Dave (2001) also attest to the fact that perinatal mortality is related to fetal causes such as Meconium aspiration syndrome and septicemia and asphyxia as the major determinant of perinatal mortality. Asphyxia which is difficulty in breathing has been traced to be due to lack of sufficient surfactant in the fetal lungs causing collapse of the lungs that lead to impaired breathing pattern.

McDermott, Steketee, & Wlrima (2006) explained that overlarge babies lead to cephalopelvic disproporation a condition in which the baby cannot pass through the pelvic brim which can lead to suffocation and death of the baby. But Onah, Ibeziako, & Umezulike, (2005) contradicted the view that perinatal mortality is due to fetal factors, instead, he said that perinatal mortality is due to maternal causes such as poor mothers condition which directly and indirectly affect the child leading to perinatal mortality.

Many researches carried out by different researchers had shown the relationship between institutional factor and perinatal mortality in both rural and urban settings these institutional factors include poor management of labour, early rupture of membrane due to utilization of uterotoxic drugs such as oxytocin, forceps delivery and vacuum extraction delivery including trauma and many others.

Harrison, Lister, Rossiter & Chony (2005) posit that the type of care given during labour and delivery can either reduce or increase perinatal mortality as well as maternal mortality. According to him, one of the major causes of perinatal mortality is attributed to poor management of labour he noted that poor management of labour, for example, wrong

utilization of uterotoxic drugs like oxytocin greatly affected the fetal heart rate leading to fetal hypoxia and death which accounted for about 16% of the total perinatal mortality.

Khurana *et al* (2001) clearly affirms the contribution of institutional factors to perinatal mortality when he said that trauma during childbirth directly or indirectly affects the baby which can lead to the child's death. After conducting a research work on related factors to perinatal mortality, it was found out that delay in referrals and poor knowledge about complicated pregnancies and deliveries in both rural and urban settings has a major bearing on perinatal mortality thereby affecting the total population (Stanton *et al*, 2006).

Specific Objective:

I. To determine the Fetal causes of perinatal mortality between January 2005 to December 2009 in UCTH, Calabar.

II. To determine the Institutional causes of perinatal mortality between January 2005 to December 2009 in UCTH, Calabar.

Research Methods

This section will sought the following research design, research population, research setting, sampling technique, procedure for data collection.

Research Design

A non-experimental (retrospective) descriptive research design was adopted for this study by the researchers to determine the prevalence and factors associated with perinatal mortality between January 2005 to December 2009 in University of Calabar Teaching Hospital Calabar.

Research Setting

The research setting was the maternity annex and permanent site of the University of Calabar Teaching Hospital (UCTH) Calabar. The hospital is a tertiary health institution established in 1980. It serves as a training center for medical, nursing and paramedical students as well as personnel and health professionals and also a research centre. The hospital took over the facilities of the then St. Margaret's Hospital Calabar which was the first public Hospital in Nigeria established in 1897.

UCTH has four (4) annexes/sections namely: the St. Margaret's and Maternity annex both located at Moore Road of Calabar South, the permanent site located behind the University of Calabar in Calabar Municipality while the fourth section is located at Okoyong, the outskirt of Calabar to serve people in that area. Okoyong can be accessible from the Calabar Itu Road while coming or going to Uyo, Akwa Ibom State, the hospital has a good network.

The site for this study is maternity annex (antenatal ward, labour ward and postnatal ward) and the permanent site (antenatal clinic) of the hospital. The maternity annex is bounded by state high court in the North, Bayside Marina in the East and Moore Road Police Station and Barracks by the west. There are four major wards: labour ward, antenatal ward, postnatal ward and upper block. Others include special care baby unit (SCBC), sick baby unit (SBU), theatre, family planning unit, antenatal clinic and immunization (Primary Health Centre).

The permanent site which is the new site is quite a complex structure situated behind the college of medical sciences and there are approximately 100 doctors and nurses working there. The antenatal (ANC) section of the site was also used by the researchers these two sites are selected because it is easily accessible to the researchers since it is the area of their clinical experience.

Research Population

The research population is made up of target population and accessible population, the population of people of interest to be studied by the researcher. The population for this study included records of all women who had attended antenatal clinic at permanent site and had delivery in the maternity annex section of UCTH Calabar between January 2005 and December 2009 (they made up a total of 9571). It also included available past records of women that had stillbirth, intrauterine death after 28weeks of gestation and after one week of delivery between January 2005 to December 2009 (they made up a total of 393).

Sample and Sampling Technique

The researchers used 100% of the accessible population. Thus, a total population sampling technique of all women that had stillbirth and lost their babies during the first one week of delivery was assessed to determine the prevalence and factors associated with perinatal mortality.

Data Collection

The instrument used for data collection was reviewed of past records using checklist/women who had perinatal mortality in UCTH between January 2005 and December 2009. A checklist consisting of the month/year of delivery and total number of delivery, socio-demographic data (age, religion, sex, marital status, period of antenatal booking, parity), maternal, fetal and institutional factors including prevalence of perinatal mortality was used to obtain data.

Results and discussion

This section shall be focused on demographic data of patients and research objectives are presented using simple percentage, tables and bar chart while hypotheses were presented using chi-square statistic model. Nine thousand, five hundred and seventy one *(9571)* babies were delivered between January 2005 to December 2009, three hundred and sixty (360) were stillbirth while thirty-three were neonatal death.

Table 1. Socio-Demographic Data of patients past records (n9571) in UCTH

Variables	Frequency	Percentage (%)
Age in years		
15-24	1902	22.3
25- 34	3658	41.8
35-44	3125	30.3
45 and above	886	5.6
Total	9571	100.0
Religion		
Christianity	8271	86.8
Islam	1098	10.4
Traditional religion	202	2.8
Total	9571	100.0
Sex:		
Female	9571	100.0
Total	9571	100.0
Marital Status		
Single	1682	17.4

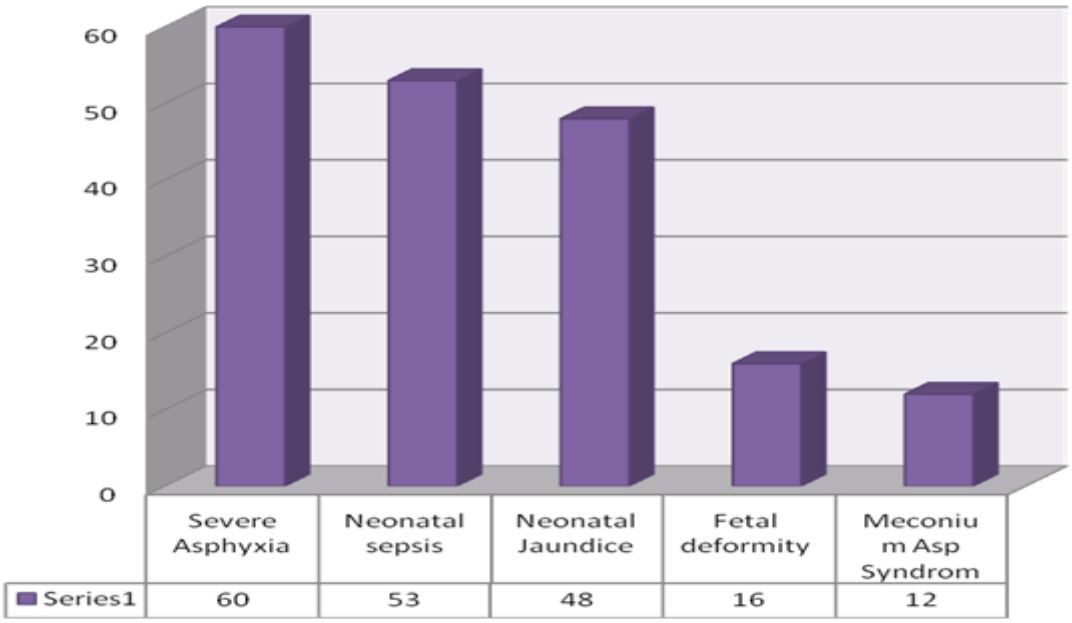
Married	7624	80.0
Divorce	32	0.3
Separated	219	2.1
Widow	14	0.2
Total	9571	100.0
Period of Antenatal booking		
First Trimester	1435	15.0
Second Trimester	4389	46.0
Third Trimester	3747	39.0
Total	9571	100.0
Parity		
1 -2 children	2132	22.3
3 -4 children	4001	42.0
5 - 6 children	2891	30.0
7 children and above	547	5.7
Total	9571	100.0

This shows that, the demographic data among the 9571 used for the study 1902 (22.3%) were within the age group 15- 24years, 3658 (41.8 %) women were within the age group 25 -34 years, 3125(30.3%) women were within the age group, while 886 (5.6%) women were within the age group 45 and above. Majority 8271 (86.8 %) were Christians, 1098 (10.4 %) were Islam while 202 (2.8%) were traditional worshippers. All were female. 1682(17.4 %) women were single, Majority 7624 (80.0%) were married, 32 (0.3%) were divorced, 219 (2.1%) were separated while 14 (0.2 %) were widowed. 1435 (15.0 %) women booked during their first trimester, the majority 4389 (46.0 %) booked during their second trimester, while 3747(39.0) women booked during their third trimester. Among the 9571 women 2132 (22.3 %) had 1- 2 children, 4001 (42.0 %) had 3- 4 children, 2891 (30.0 %) had 5 -6children, while 547 (5.7 %) women had 7 children and above.

Specific Objective 1

To determine the Fetal causes of perinatal mortality between January 2005 to December 2009 in UCTH, Calabar.

A bar chart showing fetal causes of perinatal mortality

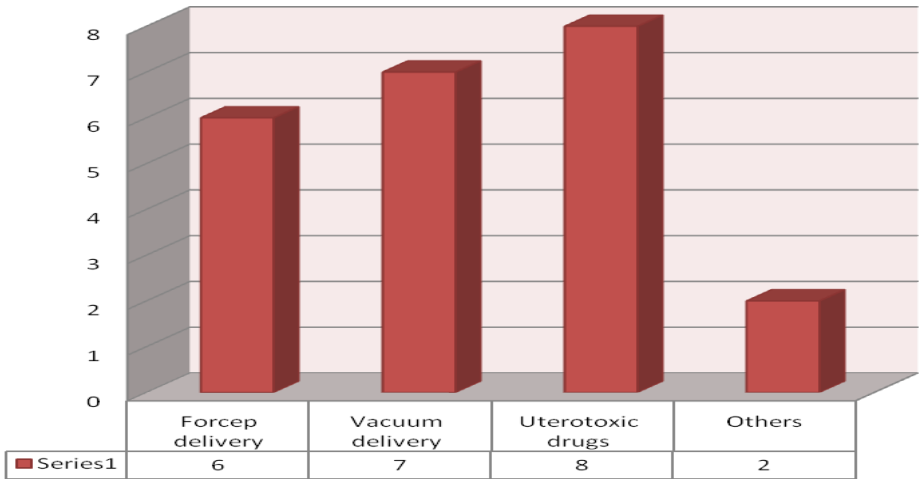


Fetal factor contributed to 189 perinatal mortality, during the period of study namely; Severe birth asphyxia 60 (15.3%) Neonatal sepsis 53 (13.5%) Neonatal Jaundice 48 (12.2 %) Fetal deformity 16 (4.1 %) Meconium aspiration syndrome 12 (3.1 %).

Specific Objective 2

To determine the Institutional causes of perinatal mortality between January 2005 to December 2009 in UCTH, Calabar.

A bar chart showing institutional factors associated with perinatal mortality



Among the various causes of perinatal mortality, Institutional factors were responsible for 23 mortality during the period of study namely; forceps delivery 6 (1.5%) Vacuum delivery 7 (1.8%) Uterotoxic drugs 8 (2.0 %) others unknown causes of mortality was 2 (0.5%).

RESULTS FOR HYPOTHESIS

Hypothesis 1

There is no significant relationship between fetal causes and perinatal mortality in University of Calabar Teaching Hospital between January 2005 to December 2009.

Table 2

Fetal causes	**Perinatal mortality**	**No perinatal mortality**	**Total**
1-2 children	62(87.5)	2070 (2044.5)	2132
3-4 children	128(164.3)	3873 (3836.7)	4001
5-6 children	105 (118.7)	2786(2772.3)	2891
7 children and above	98 (22.5)	449(524.5)	547
Total	393	9178	9571

Figure in brackets are expected frequencies.

Chi-square cal. = 281.9, Df =3, Chi-square Tab = 9.488, P < 0.05.

Among 2132 women with 1 -2 children, 2070 had no perinatal mortality while 62 had perinatal mortality. 4001 women with 3 -4 children, 3873 had no perinatal mortality while 128 had perinatal mortality.2891 women with 5 -6 children, 2786 had no perinatal mortality while 105 had perinatal mortality. 547 women with 7 children and above, 449 had no perinatal mortality while 98 had perinatal mortality.

A chi-square value of 281.9 was obtained at p <0.05 Showing a significant relationship between maternal parity and perinatal mortality in UCTH Calabar. This undoubtedly shows a negative influence of parity of prenatal death.

Hypothesis 2

There is no significant relationship between institutional factors and perinatal mortality in University of Calabar Teaching Hospital between January 2005 to December 2009.

Table 3

Institutional factors	Perinatal mortality	No Perinatal mortality	Total
15-24 years	75(78.1)	1827(1823.9)	1902
25 -34 years	110(150.2)	3548(3507.8)	3658
35-44 years	129(128.3)	2996 (2996.7)	3125
45 years and above	79(36.4)	807 (849.6)	886
Total	393	9178	9571

Figure in brackets are expected frequencies

Chi-square cal. = 63.4, DF=3, Chi-square Tab = 9.488, $P < 0.05$.

Among 1902 women within age group 15 -24 years, 1827 had no perinatal mortality while 75 had perinatal mortality. 3658 women within age group 25 -34years, 3548 had no perinatal mortality while 110 had perinatal mortality. 3125 women within age group 35-44years, 2996 had no perinatal mortality while 129 had perinatal mortality. 886 women within age group 45years and above, 807 had no perinatal mortality while 79 had perinatal mortality. A chi-square value of 63.4 was obtained at $p < 0.05$ Showing a significant relationship between maternal age and perinatal mortality in UCTH Calabar. This, therefore, confirms the fact that maternal age has a bearing in perinatal mortality and can greatly affect the fetus negatively causing stillbirth.

DISCUSSION

From the findings, the study revealed that the fetal causes of perinatal mortality between 2005 to December 2009 in University of Calabar Teaching Hospital was severe birth Asphyxia, Neonatal sepsis, Neonatal jaundice, fetal deformity and meconium aspiration syndrome. Severe birth asphyxia was the major cause of perinatal mortality this may be due to lack of sufficient surfactant in the fetal lungs causing collapse of the lungs that leads to

impaired breathing pattern. This is similar to Khurana *et al* (2001) who in their study attested to the fact that perinatal mortality is related to fetal causes such as severe Asphyxia and meconium aspiration. But severe asphyxia being the major determinant of perinatal mortality. But this is contrary to Onah, *et al* (2005) who asserts that perinatal mortality is due to poor mothers condition that directly and indirectly affects the child leading to perinatal mortality rather than fetal factor.

The major institutional factors that cause perinatal mortality between the study periods in University of Calabar Teaching Hospital, Calabar was uterotoxic drugs, this may be due to poor management of labour during utilization of uterotoxic drugs such as oxytocin which may affect the fetal heart rate. This is similar to Harrison *et al* (2005) who posited that the type of care given during labour and delivery can either reduce or increase perinatal mortality as well as maternal mortality. According to him, one of the major causes of perinatal mortality is attributed to poor management of labour, he noted that poor management of labour for example wrong utilization of uterotoxic drugs like oxytocin greatly affects the fetal heart rate leading to death. But this is contrary to Khurana *et al* (2001) who clearly affirm that trauma during childbirth directly or indirectly affects baby which lead to the child's death.

Summary of the study

A retrospective research carried out to determine the prevalence and factors associated with perinatal mortality between January 2005 to December 2009 in UCTH Calabar. This study was elicited due to increased rate of perinatal mortality and associated factors that resulted in this condition. The specific objectives were to determine the prevalence of perinatal mortality between January 2005 to December 2009 in UCTH, the fetal causes of perinatal mortality and the institution's causes of perinatal mortality within this year.

A total of 393 past records was used for the study. Data was extracted through the use of checklist. Total sampling technique was used which shows all women that had stillbirth or perinatal mortality. The instrument was validated by the supervisors who checked for the face and content validity. The reliability of the instrument was not ascertained due to the type of instrument that was used. Two null hypothesis was stated and tested at 0.05 level of significance. Data was collected by reviewing past records of all women that had delivery in UCTH while folders of all women that had perinatal mortality was reviewed. At the end of the test, hypothesis was tested using chi-square (x^2) statistical method. Hypothesis 1 revealed

that calculated x^2 which was 281.9 was greater than the critical or table value of x^2 which is 9.488. Based on the decision rule, calculated x^2 is greater than the table value of chi-square which means that the null hypothesis is rejected showing that there is a significant relationship between maternal parity and perinatal mortality.

Hypothesis II reveals that calculated x^2 which was 63.4 is greater than the critical or table value of x^2 which was 9.488. Based on the decision rule, calculated x^2 is greater than the table value of chi-square which means that the null hypothesis is rejected showing that there is significant relationship between maternal age and perinatal mortality.

CONCLUSION

1) From the finding, it can be concluded that the major factors associated with perinatal mortality among the two related factors was fetal causes in UCTH.

2) Increase awareness should be given during antenatal care on clinic days about hypertension, eclampsia, diabetes severe asphyxia and other conditions causing perinatal mortality to help in reducing morbidity and mortality associated with pregnancy.

3) Further studies should be carried out to identify other causes of perinatal mortality.

4) This study should be extended to other general and teaching hospitals in Nigeria in other to compare findings.

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