

A Prospective Audit of Perinatal Mortality in Federal Medical Centre Asaba

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Abstract

Introduction: Despite several global measures employed to curb the prevalence of perinatal mortality, it is still an unresolved problem. It has continued to be an essential part of the sustainable development goals to end preventable child deaths by 2030.

Objective: To determine the factors influencing perinatal mortality in Federal medical centre Asaba over a period of one year.

Method: A prospective study of all cases of perinatal mortality that occurred at Federal medical centre Asaba from July 1st 2020 to June 30th 2021 was conducted. Data collected with the aid of data entry forms designed for the purpose were analyzed using statistical package SPSS20.

Result: Over the study period, there were 1023 deliveries out of which were 30 perinatal death giving a perinatal mortality ratio of 29 per 1000 live birth with Still birth rate and early neonatal death rate of 3 per 1000 and 26 per 1000 (live birth) respectively. The male to female ratio was 1.5:1. Overall, respiratory distress conditions in preterm babies were the commonest probable cause of perinatal mortality over the study period, this accounted for 20 (60%) of the 30 perinatal deaths.

Conclusion: The study showed low perinatal mortality however, it is high compared to the target in Sustainable Development Goal (SDG) and PMR was largely affected by preterm delivery.

Keywords: Sustainable Development Goal (SDG); Perinatal Mortality; Preterm Delivery

Introduction

Perinatal mortality is defined as the death of a fetus after the age of viability, intrapartum death with early neonatal death occurring in the first seven days of life or the death of foetus weighing 500g or more in utero to the first seven days of life [1-7]. Perinatal mortality is a reflection of the accessibility to quality maternal antenatal and neonatal healthcare, in addition to the co-morbid state, socio-economic status as well the event surrounding labor and delivery of the baby [4]. Perinatal mortality is associated with complex interactions of factors relating to maternal lifestyle, maternal obstetric complications, which could be exacerbated by underlying community-level factors such as clean water supply, proper antenatal and postnatal nutrition for both mother and the newborn and poor environmental sanitation, as well as societal factors relating to political instability and armed conflicts [5]. The distinction between a stillbirth and an early neonatal death may be a fine one, which often depends on observing the faint signs of life post-delivery [3]. Unlike neonatal mortality that only accounts for deaths to live births, perinatal mortality also accounts for stillbirths, making it a comprehensive indicator for estimating

the true level of mortality around the time of delivery [3,4]. The paucity of reliable of both perinatal data and maternal data in Nigeria, has been a challenge to health care advocates, policy makers and programme managers, thereby impedes on progress towards reaching the global targets [5]. In 2015, Nigeria had a neonatal mortality of 38 per 1000 live birth which was second to India and in 2020 the maternal mortality ratio was 814 per 100,000 live birth bearing in mind the global aim targeted at reducing global neonatal mortality rate to less than 12 per 1000 livebirths and maternal mortality to less than 70 per 100,000 or less than 140 per 100,000 nationally by 2030 through the sustainable development agenda [5].

Globally, the average stillbirth rate per 1000 total births declined from 24.7 in 2000 to 18.4 in 2015 [5] and neonatal mortality rate dropped from 37 deaths per 1000 livebirths in 1990 to 19 in 2016 [6]. Consequently, the number of perinatal deaths decreased from 5.7 million in 2000 to 4.1 million in 2015 [7], with 95% of these untimely deaths occurring in South Asia and sub-Saharan Africa (SSA) [6,7]. The fall in perinatal mortality, though slower than that reported in child mortality [6], is a true reflection of the greater attention being given to improving newborn health and preventing stillbirths.

Additional relevant progress is expected with the launch of programmes namely: Every Newborn Action Plan (ENAP); United Nation (UN) Secretary-General's Every Woman Every Child (EWEC) monitoring framework". Every Child Alive" campaign, spearheaded by UNICEF, and the Quality of Care network, by the UN Inter-Agency Group for Mortality Estimation (IGME) 2017, all of which are focused on reducing perinatal mortality in low and middle income (LMIC) countries and achieving the Sustainable Development Goals [7].

Research Methods

Study design

This study was carried out at the neonatal unit, Obstetric theater labour ward unit of Federal Medical Centre Asaba, which serves as a referral center for both urban and rural population within and outside the state.

Method

This was a one-year prospective study of all cases of perinatal mortality that presented in Federal medical centre between July 1, 2020 to June 30, 2021. The data were retrieved from the mother of the babies and entered into a proforma created for the study.

The total number of deliveries during the period under review was also obtained from annual reports from the neonatal unit and labour ward, the proforma were checked for completion before it was entered into the spread sheet, Data collated were entered into the SPSS (IBM version 20) computer software statistical analysis.

The statistical package SPSS was used for data analysis. The results were demonstrated in frequencies, means, percentages tables and figures.

Ethical considerations

Ethical clearance was obtained from research and ethics committee of the federal medical centre Asaba.

Results

Over the study period, there were 1023 deliveries out of which were 30 perinatal death giving a perinatal mortality ratio of 29 per 1000 live birth with still birth and early neonatal death rate of 3 and 26 per 1000 respectively. The male to female ratio was 1.5:1.

The maternal age as shown in table 2 ranged between 15 - 42 years with a mean age of 31.9 +/- 6.8 years. Majority of the perinatal deaths occurred among women within the age group of 20 - 35 years.

Time of death	Frequency	Percentage
Still birth	3	10
Early Neonatal death	27	90
Total	30	100

Table 1

Age distribution	Frequency	Percentage
15-19	1	3.3
20-24	5	16.7
25-29	5	16.7
30-34	6	20
35-39	8	26.7
40 and above	5	16.7
Total	30	100
Educational Status		
No formal Education	1	3.3
Primary	3	10
Secondary	8	26.7
Tertiary	18	60
Total	30	100
Antenatal Booking Status		
Booked	8	26.7
Unbooked	22	73.3
Total	30	100
Partner's occupation		
Trader/Business	18	60
Public/Civil Servant	3	10
Artisan	4	13.3
Banker	1	3.3
Clergy	1	3.3
No Partner	1	3.3
Unemployed	2	6.7
Total	30	100

Table 2: Socio-demographic data.

Overall, respiratory distress syndrome conditions were the most common probable cause of perinatal mortality over the study period, this accounted for 20 (60%) of the 30 perinatal deaths. Other causes were severe birth asphyxia accounting for 5 (16%), early neonatal infection 3 (10%) and a macerated still birth without congenital anomaly (3%) and one early neonatal death with multiple congenital anomalies (3%).

Heart rate @ delivery	Frequency	Percentage
Persistently below 100b/m	17	56.7
Increased above 100b/m	10	33.3
Nil (still birth)	3	10
Total	30	100
Active resuscitation given		
Yes	23	76.7
No	4	13.3
Nil	3	10
Total	30	100

Table 3: Indicators of perinatal mortality.

The gestational age ranged between 26 weeks to 41 weeks with mean gestational age of 28 +/- 1.5 weeks, babies within the gestational age range of 26 to 37 weeks were most affected accounting for 60% of the total.

Gestational age a delivery	Frequency	Percentage
26-27 ⁺⁶	2	6.7
28-29 ⁺⁶	5	16.7
30-31 ⁺⁶	3	10
32-33 ⁺⁶	Nil	Nil
34-36 ⁺⁶	8	26.7
37-40	9	30
40 ⁺¹ and above	3	10
Total	30	100
Birth weight at delivery		
0.5-0.99	7	23.3
1-1.49	5	16.7
1.5- 2.49	7	23.3
2.5- 3.99	10	33.3
4 kg and above	1	3.3
Total	30	100

Table 4: Factors affecting perinatal mortality.

The modes of delivery were spontaneous vertex delivery with a percent of 60%, caesarean delivery 37% and ventouse delivery was 3%. Among the cases of vaginal delivery, 70% were of spontaneous onset of labor.

The birth weights of the babies were between 0.6 to 4.2 kg with a mean birth weight of 2.01 +/- 1.12 kg.

Approximately 86.6% of the pregnant women were unbooked and 70% had previous pregnancy experiences. Sixty-three percent of mother with perinatal death has had previous pregnancies greater than 24 weeks with only two (6.7%) having pregnancy problem which was preeclampsia.

Discussion

This study found a low perinatal mortality rate of 29 per 1000 births when compared to 129.5 per 1000 from a study done in Abuja [5], the national rate of 72.4 per 1000 in 2011 [6] and 67.7 per 1000 in 2021 [4]. Perinatal mortality rate has important implications because it is regarded as a key tool to the maternal and child health status of any population as well as a major contributor to overall under-five mortality. Though low in this study, hospital-based data potentially underestimate the true rates of perinatal mortality because newborns are not followed up after discharge from the hospital and only 36% of births in Nigeria are delivered in health facilities [3] and hospital deliveries are likely to be associated with better outcomes because of the availability of good neonatology personnel and services in the tertiary health facility. Federal medical center Asaba offer specialist, comprehensive as well as emergency obstetrics and newborn care and this might have accounted for the low perinatal mortality rate observed in this study. The low perinatal death rate found in this study is similar to the low rates reported from developed countries [2,13]. However, it is in contrast to reports from several facility-based studies in Nigeria which have reported high rates [6-9,11,14,15].

Prematurity, respiratory distress syndrome and birth asphyxia were the main probable causes of perinatal mortality in this study. The results from these study are similar to reports from several studies which have reported these as the leading cause of perinatal deaths [7,11,16,17]. The death rate due to asphyxia may be due to delayed or poor early neonatal resuscitation at the referral facilities and possibly due to the late referral of intra-uterine hypoxia cases to these hospitals. Globally, the main direct causes of newborn deaths are reported to be preterm birth, severe infections and asphyxia [18,19] with prematurity playing a prominent role in developing countries [20]. However, being unbooked was found to be associated with increased risk of perinatal mortality compared to being a booked case. This might have been because booked women are more likely to attend antenatal and intrapartum care services at the health facilities. Some studies in Nigeria [9,11,16] and worldwide [27,28] have reported unbooked status and lack of prenatal care to increase the risk of perinatal death. We found that newborns of mothers who were unbooked for antenatal care had about four times the risk of perinatal death compared to newborns of mothers who booked for antenatal care. This is because antepartum complications in women who are unbooked for antenatal care services are less likely to be detected on time and thus resulting in poor perinatal outcomes in this group of women. Mothers aged 35 years and below had an increased rate of perinatal mortality compared to those aged above 35 years which was in contrast with the findings of the study by Fawole., *et al.* in Nigeria and another study in low and middle income countries [11,23] as well as the findings of systematic reviews on the association between perinatal mortality and advanced maternal age in high income countries [24-26]. Women 35 years and older have been reported to be more likely to experience a term stillbirth than women aged below 35 years with stillbirths in this group of women reported to be more likely due to major congenital anomalies, maternal disorders, mechanical causes or associated obstetric factors compared to women younger than 35 years [25]. We found newborns with extremely low birth weight and low birth weight neonate to have significantly increased risk of perinatal death compared to normal birth weight newborns. Low birth weight and fetal macrosomia have been reported to be significant determinants of perinatal death [11]. Mairami., *et al.* and Fawole., *et al.* which were studies done in Abuja Municipal Area Council have found no significant association between birth weight and perinatal mortality [9,11], other studies have found strong associations between low birth weight and perinatal death in Nigeria [16] as well as in other countries [29,33]. Also, fetal macrosomia has been reported to be associated with increased risk of intrapartum stillbirths [14,16]. As documented by Fawole., *et al.* unbooked antenatal care status with the attendant lack of prenatal care as well as poor intrapartum and neonatal care services may have statistical interactions in the contributions of not only low birth weight but also fetal macrosomia to perinatal mortality in our setting [11]. An Apgar score of at least seven at five minutes after birth was found to be protective against perinatal death. The low risk of perinatal death suggests an improved early neonatal care services in our setting, which is in contrast to the findings of other studies in Nigeria, which have reported birth asphyxia and low Apgar scores at five minutes to be independent predictors of perinatal death [7-11,16]. Basic neonatal resuscitation has been reported to have a great impact in reducing intrapartum-related neonatal deaths in sub-Saharan Africa [27].

Conclusion

Perinatal mortality rate as recorded in this study is relatively low compared to other studies done in Nigeria and other part of Africa, it is still higher compared to the target according to sustainable development goal and this is majorly caused by the booking status of the affected individual as well as high rate of preterm birth and late referral resulting to high rate of perinatal asphyxia.

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