

Pattern and Outcome of Preterm Neonates Admitted in Asaba Specialist Hospital, Nigeria

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Abstract

Background and Aim: Preterm birth is birth of a baby before 37 completed weeks. This is a major global public health problem due to high morbidity and mortality associated with it hence November 17th each year has been declared a world prematurity day aimed at raising awareness on this important problem. This study is aimed at assessing the prevalence, problem of preterm neonates and outcome among babies admitted into the neonatal unit of Asaba Specialist Hospital, Asaba, Nigeria.

Method: This is a retrospective study of the medical records of all preterm babies admitted into the hospital from January 2024 to December 2024. A structured data collection sheet was used to collect information from the files. Information obtained included independent variables (gestational age at birth, gender, birth weight, hospital complications during admission, treatment received and duration of admission) and dependent variables (dead or discharge). Relationship between dependent and independent variables was tested using Pearson Chi-square.

Result: The result showed that 478 neonates were admitted into the neonatal unit of which 116 were preterm given a preterm prevalence of 24.2%. There were 60 (51.7%) male and 56 (48.3%) females, 56 (48.3%) were delivered via cesarean section, 25 (21.6%) received surfactant, 106 (91.4%) had respiratory support using improvised CPAP. Preterm labour 48 (41.4%) was the commonest indication for deliver, respiratory distress syndrome 86 (35.3%) was the commonest morbidity seen among the preterm. A total of 17 (14.7%) preterm died with most of the death occurring among the extreme preterm and extreme low birth weight preterm.

Conclusion: Prematurity remain a major cause of neonatal morbidity and mortality in our hospital. Interventions aimed at reducing preterm labour and improved care of the preterm will aid in reducing the high burden of preterm death.

Keywords: Prematurity; Morbidity; Mortality; Preterm; Neonates

Introduction

Preterm delivery is defined as any viable birth before 37 completed weeks of gestation or less than 259 days since the first day of a woman's last menstrual period. It is often classified into extreme preterm (less than 28 weeks), very preterm (28 to less than 32 weeks) and moderate to late preterm (32 to less than 37 weeks) [1]. Prematurity is one of the notable causes of neonatal admission and mortality worldwide. It has been reported that about 15 million babies are born preterm every year [2]. Nigeria ranks third after India and China with over 7736600 preterm births yearly [3]. The rate of preterm birth among 184 countries ranges from 5 to 18% of newborn [4].

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Preterm birth account for about one million death each year with about 90% of such deaths occurring in developing countries [5]. About 40 - 60% of neonatal deaths are related to preterm birth in Nigeria [6]. Recent report has shown that Preterm birth related complication has replaced pneumonia as the leading cause of mortality, not just in neonatal period, but also in the global under-5 mortality [7].

Several innovations such as surfactant administration, improvement in respiratory support via continuous positive air war pressure (CPAP), and ventilator support has been developed to reduce the mortality rate of preterm especially in the last two decades. However, how these innovations has impacted on the outcomes of the preterm is yet to be fully evaluated. Are we making progress in the care of our preterm? This remains a question every neonatologist must answer.

Aim of the Study

This study is aimed at evaluating the preterm neonate morbidity and mortality outcome at the neonatal unit of Asaba specialist hospital, Asaba, Nigeria. Data obtained from this study will aid in evaluating the quality of care offered to the preterm babies and also form a basis for advocacy program aimed at improving neonatal care.

Materials and Methods

This is a retrospective study carried out among all preterm babies admitted from January 2024 to December 2024 into the neonatal unit of Asaba specialist hospital. Asaba specialist hospital is a state owned tertiary hospital established in 2021. All preterm babies who were managed in neonatal unit and has complete data were included while those with incomplete or missing data and term babies were excluded from the study.

The case note of all the preterm babies were extracted and relevant information’s like age at presentation, weight, gestational age, gender etc. were extracted. Data was collected with aid of a structured study proforma and analyzed with Statistical Product and Service Solution version 23. Data were arranged in carts and associations were tested for statistical significance using chi-square. The level of significance P was set at <0.05.

Ethical clearance was obtained from the Health Research Ethics Committee of Asaba specialist Hospital, Asaba.

Results

Table 1 showed the demographic characteristics of the patients. The table showed that 8 (6.9%) of the neonates were < 28 weeks of gestation, 5 (4.3%) were weighing < 1000g, 17 (14.7%) of the neonate died, 48 (41.4%) were delivered following preterm labour, 48 (21.6%) received surfactant while 106 (91.4%) received respiratory support via improvised burble CPAP.

	Frequency (n)	Percentage (%)
Gestational age (weeks)		
< 28 weeks	8	6.9
28 - < 32	30	25.9
32 - < 34	37	3.1
34 - < 37	41	35.3
Birth weight (g)		
< 1000	5	4.3
1000 - < 1500	36	31.0
1500 - < 2500	70	60.3

> 2500	5	4.3
Outcome		
Discharge	87	75.0
SAMA	12	10.3
Died	17	14.7
Mode of delivery		
Cesarean section	56	48.3
SVD	60	51.7
Location		
Inborn	81	69.8
Outborn	35	30.2
Indication for delivery		
Preterm labour	48	41.4
Pre-eclampsia	21	18.1
PROM	32	27.6
Antepartum hemorrhage	15	12.9
Surfactant		
Yes	25	21.6
No	91	78.4
CPAP		
Yes	106	91.4
No	10	8.6

Table 1: The demographic characteristics of the preterm admitted into the neonatal unit.

SVD: Spontaneous Vertex Delivery; CPAP: Continuous Positive Airway Pressure; SAMA: Sign against Medical Advice; PROM: Premature Rupture of Membrane.

Figure 1 showed the commonest problem the preterm neonates managed in our neonatal unit. Majority 86 (35.8%) had respiratory distress, followed by neonatal sepsis 70 (28.8%) and then birth asphyxia 27 (11.1%).

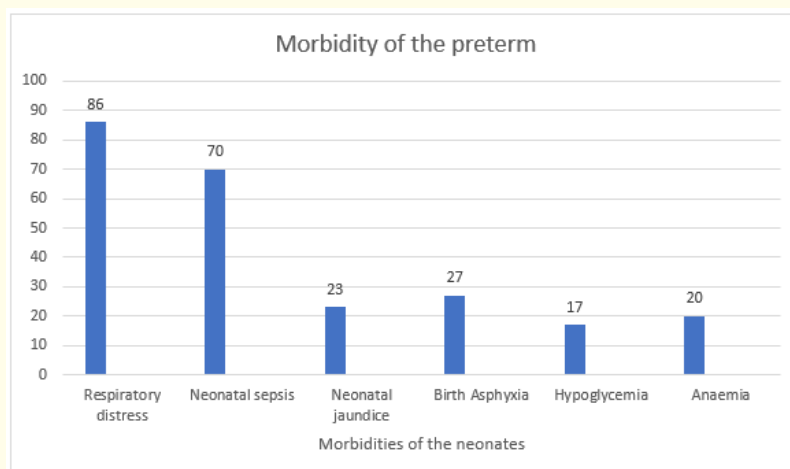


Figure 1: The morbidity of the preterms managed in neonatal unit.

Table 2 showed the relationship between the demographic variables and outcome. The table showed that the mortality rate significantly increased with decreasing gestational age and birth weight. The mode of delivery, surfactant administration and use of respiratory support via CPAP did not significantly influence the outcome.

	Discharge	SAMA	Died	χ^2	P
Gestational age				29.7	0.000*
< 28 weeks	2 (25.0)	0 (0.0)	6 (75.0)		
28 - < 32	21 (70.0)	4 (13.3)	5 (16.7)		
32 - < 34	29 (78.4)	6 (16.2)	2 (5.4)		
34 - < 37	35 (85.4)	2 (4.9)	4 (9.8)		
Birth weight (g)					
< 1000	1 (20.0)	1 (20.0)	3 (60.0)	18.08	0.006*
1000 - < 1500	25 (69.4)	2 (5.6)	9 (25.0)		
1500 - < 2500	56 (80.0)	9 (12.9)	5 (7.1)		
> 2500	5 (100.0)	0 (0.0)	0 (0.0)		
Mode of delivery					
Cesarean section	43 (76.8)	3 (5.4)	10 (17.9)	3.407	0.182
SVD	44 (73.3)	9 (15.0)	7 (11.7)		
Surfactant					
Yes	19 (76.0)	0 (0.0)	6 (24.0)	5.20	0.07
No	68 (74.7)	12 (13.2)	11 (12.1)		
CPAP					
Yes	79 (74.5)	10 (9.4)	17 (16.0)	2.62	0.269
No	8 (80.0)	2 (20.0)	0 (0.0)		

Table 2: The relationship between the demographic variables and outcome.

SVD: Spontaneous Vertex Delivery; CPAP: Continuous Positive Airway Pressure; SAMA: Sign against Medical Advice.

*P value < 0.005.

Discussion

Our study showed that the prevalence of preterm managed in the neonatal unit of our hospital is 24.2%. This finding is high compared to other hospital based studied; 16.8% was reported by Butali, *et al.* [8] at Lagos University Teaching Hospital, 11.8% was reported by Mokuolu, *et al.* [9] at Ilorin while Ayele and Moyehodie [10] in Ethiopia reported a prevalence of 13.2%. However, Mustapha, *et al.* [11] reported a higher prevalence of 32.9% at Maiduguri Teaching Hospital. The observed variation could be attributed to factors such as ethno-geographical differences, study setting and study duration. There are higher rate of preterm in tertiary hospital because these hospitals tend to receive referrals from the primary and secondary health facilities. The high prevalence rate in our study could be attribute to the free neonatal care been offered to the babies in the first 14 days of live as this has increase the referrals rate to our hospital. To reduce the incidence of preterm birth, effort must be put in place to identify women who are at risk of spontaneous preterm labour and adequately managed them during the antenatal period. However, been a retrospective study that reviews only the preterm managed in the neonatal unit, this will not be a true reflection as some preterm (especially the late preterm) without any problem are often not admitted into the neonatal unit.

Several factors ranging from health conditions, socio-economical-demographic variables and family stressors has been implicated in the rising incidence of preterm labour. The commonest risk factor for preterm birth in our study is spontaneous preterm labour, followed by premature rupture of membrane and pre-eclampsia. While some studies has reported premature rupture of membrane as the leading cause preterm delivery in their review, other studies has also documented pre-eclampsia as the leading cause of preterm birth in their study [12,13]. From multiple studies it has been observed that preterm labour, premature rupture of membrane and pre-eclampsia are the leading factors contributing to the high preterm birth rate [14,15].

The commonest morbidity noted in our study among the preterm is respiratory distress syndrome (RDS), followed by neonatal sepsis then perinatal asphyxia. Respiratory distress syndrome is primary caused by surfactant deficiency leading to reduce lung compliance, alveolar collapse and impaired gas exchange. The immaturity of the lungs predisposes this preterm to RDS. While some study reported neonatal sepsis as the leading cause of morbidity others has reported neonatal jaundice as the leading cause of morbidity in their study [12,13].

The mortality rate of 14.7 recorded in this study is low compared to 18.7% recorded in Jos [16], 28.4% in Markudi [17] and 30.0% reported in Sokoto [18] all in Nigeria. A lot of factors might account for these findings such as the sample size, the gestational ages, birth weights, maternal and the preterm co-morbidities. Our study showed that most of the preterm death were among extreme low birth weight and extreme preterm. This is because these preterm are vulnerable to a wide range of complications due to organ immaturity. Birth weight and gestational age were found to be significantly predictors of survival in preterm newborns.

The commonest causes of death in our study is respiratory distress syndrome due to the premature lungs. A small percentage (21%) of the preterm were able to get surfactant admiration. The respiratory support was mostly with improvised burble CPAP as Paediatric ventilators were not available. The non-availability and high cost of surfactant with non-availability of adequate respiratory support puts these preterm babies at a great danger.

Conclusion

Prematurity remains a major cause of morbidity and mortality. Preterm labour, PROM and pre-eclampsia were the three leading causes of preterm delivery. Respiratory distress syndrome, sepsis and asphyxia are the commonest morbidity among the preterm while respiratory distress was the commonest cause of death. Interventions aimed at reducing preterm labour and improved care of the preterm (respiratory support) will aid in reducing the high burden of preterm death.

Recommendation

1. More effort at identifying mothers with risk of spontaneous preterm labour and manage them appropriately.
2. Respiratory support with surfactant, burble CPAP and ventilators need to be made available as it impacts on the outcome.

Limitation of the Study

The study was retrospective and there were some missing data.

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Conflict of Interest

No conflict of interest to declare.

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