



Original Article

Neonatal morbidity and mortality: A 5-year analysis at federal medical centre, Gusau, Zamfara State, Northwest Nigeria

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ABSTRACT

Objectives: Neonatal morbidity and mortality have remained embarrassingly high in Nigeria compared to some countries in Sub-Saharan Africa. Nigeria ranked first in the burden of neonatal deaths in Africa. Therefore, there is need to know causes of newborn diseases and deaths in our neonatal unit. The objective of the study was to describe the morbidity and mortality of newborns admitted into Special Care Baby Unit of Federal Medical Centre, Gusau, Nigeria over a 5-year period.

Material and Methods: This is a retrospective study covering January 2012 to December 2016. The case folders of all newborns admitted during this period were retrieved and the following information were extracted: Sex of babies, diagnoses, outcome in terms of discharges, deaths, referrals, and discharge against medical advice (DAMA).

Results: A total of 3,553 neonates were admitted during the period under review. The sex ratio for males and females was 1.4:1, respectively. The major diagnoses were neonatal sepsis (NNS) 36.5%, birth asphyxia 25.6%, and prematurity 16.1%. Mortality rate was 6.6% with major contributions from birth asphyxia (35.6%), prematurity (28.1%), and NNS (12.0%). DAMA rate was 1.7%.

Conclusion: This study has shown that NNS, birth asphyxia, and prematurity are the dominant causes of morbidity and mortality. These are largely preventable.

Keywords: Neonatal, Morbidity, Mortality, Nigeria

INTRODUCTION

The survival rate of newborns correlates positively with high standard of obstetric care, neonatal care, and high socioeconomic development of nations. Neonatal mortality in Nigeria is second to India globally and the highest in sub-Saharan Africa.^[1,2]

Neonatal mortality is still a significant public health problem in Nigeria as it accounts for 30% of the under-five mortality rate in Nigeria.^[3]

There has been steady decline in neonatal mortality rate (NMR) worldwide and even in sub-Saharan African countries like Ghana and Uganda. However, such cannot be said of Nigeria as the decline is very minimal. Nigeria had a NMR of 40/1,000 live births in 2008 and it only

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declined to 36/1,000 live births in 2018.^[4-6] There is need therefore to accelerate progress to reach the Sustainable Development Goal (SDG) target of NMR of 12/1000 live births in 2030.^[7]

The study was, therefore, conducted to describe the morbidity, mortality and outcome of babies admitted into the Special Care Baby Unit (SCBU) of Federal Medical Centre, Gusau, Nigeria.

MATERIAL AND METHODS

A 5-year retrospective analysis of all the newborns admitted into the SCBU from January 1, 2012, to December 31, 2016. The SCBU has two units, the in-born unit and the out-born unit. In both units, there are 19 baby cots, 11 incubators, nine phototherapy units, and one ventilator.

The SCBU serves newborn babies in Zamfara State, neighboring Sokoto, and Katsina States. The case folders of all the newborns admitted into SCBU during the 5-year period were retrieved. The following information were extracted from each folder: sex of babies, diagnoses, outcome in terms of discharges, deaths, referrals, and discharge against medical advice (DAMA). The data were entered into SPSS version 23 (IBM Armonk NY, USA) and analyzed. The result was presented in frequency tables and figures.

Ethical approval was obtained from FMC Gusau Ethical Committee before commencement of the study.

RESULTS

A total of 3553 neonates were admitted and managed in SCBU during the period under review with 2073 (58%) being males while 1480 (42%) were females, giving a male to female ratio of 1.4:1. Neonatal sepsis (NNS) was the most common disease of the newborn while the least frequent disease in this study was neonatal burns. This is shown in Table 1.

A total of 3221 (91%) of neonates that were admitted were successfully managed and discharged home. The distribution of cases discharged is as shown in Table 2.

A total of 236 out of 3553 neonates managed during the period under review died, this brings the mortality rate to 6.6%. The distribution of the mortality by disease is shown in Table 3.

Out of the total 3553 neonates managed, 61 (1.7%) of them were DAMA. The distribution of DAMA by diseases is shown in Figure 1.

The neonates that were referred out for further management were 31 (0.9%) of the 3553 that were managed in the unit. Congenital malformations were the highest cases referred out. The distribution of cases referred out is as depicted in Figure 2.

Table 1: Distribution of newborn diseases.

S. NO.	Disease	Number	Percentage
1.	Neonatal Sepsis	1,298	36.53
2.	Birth Asphyxia	912	25.67
3.	Prematurity	572	16.10
4.	Neonatal Jaundice	418	11.77
5.	Congenital Malformation	84	02.36
6.	Macrosomia	80	02.25
7.	Meconium Aspiration Syndrome	64	01.80
8.	Neonatal Meningitis	38	01.07
9.	Neonatal Tetanus	22	0.62
10.	Birth Trauma	17	0.48
11.	Necrotizing Fasciitis	13	0.36
12.	Hemorrhage	09	0.25
13.	Respiratory Distress Syndrome	09	0.25
14.	Neonatal Malaria	08	0.23
15.	Failure to Thrive	04	0.12
16.	HIV-exposed Infant	03	0.08
17.	Neonatal Burns	02	0.06
	Total	3,553	100

Table 2: Distribution of cases discharged home.

S. No.	Cases	Number	Percentage
1.	Neonatal Sepsis	1,251	38.93
2.	Birth Asphyxia	811	25.18
3.	Prematurity	477	14.80
4.	Neonatal Jaundice	408	12.67
5.	Congenital Malformation	80	2.50
6.	Macrosomia	50	1.55
7.	Meconium Aspiration Syndrome	42	1.30
8.	Neonatal Meningitis	26	0.82
9.	Neonatal Tetanus	16	0.50
10.	Birth Trauma	16	0.50
11.	Necrotizing Fasciitis	11	0.34
12.	Haemorrhage	09	0.27
13.	Respiratory Distress Syndrome	08	0.25
14.	Neonatal Malaria	06	0.18
15.	Failure to Thrive	03	0.09
16.	HIV-exposed Infant	02	0.06
17.	Neonatal Burns	02	0.06
	Total	3,221	100

DISCUSSION

The study recorded male's preponderance over females. This finding is similar to what were reported by Ekwochi, *et al.* in Enugu,^[7] also and Gwarzo in Dutse^[8] and Garba *et al.* in Specialist Hospital, Gusau.^[9] However, our findings were different from what were reported from Kano^[10] and Lagos.^[11] The reasons for the male preponderance may be due to cultural preference for male children as such increase tendency to bring them to hospital when they are sick.

Table 3: Distribution of mortality by disease.

S. No.	Disease	Number of deaths	Percentage	Case fatality
1.	Birth Asphyxia	84	35.6	9.2
2.	Prematurity	68	28.14	11.9
3.	Neonatal Sepsis	28	12.0	2.2
4.	Congenital Malformation	15	6.50	7.9
5.	Meconium Aspiration Syndrome	14	6.00	21.8
6.	Neonatal Meningitis	10	4.24	26.3
7.	Neonatal Tetanus	06	2.7	27.3
8.	Neonatal Jaundice	05	2.12	1.2
9.	Neonatal Malaria	02	0.9	25
10.	Birth Trauma	01	0.45	5.8
11.	Haemorrhage	01	0.45	11.1
12.	Failure to Thrive	01	0.45	25
13.	Necrotizing Fasciitis	01	0.45	7.7
	Total	236	100	-

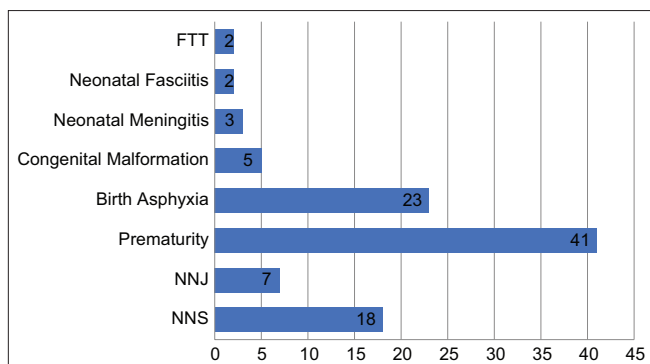


Figure 1: Distribution of discharge against medical advice by disease. FTT: Failure to Thrive, NNJ: Neonatal Jaundice, NNS: Neonatal sepsis

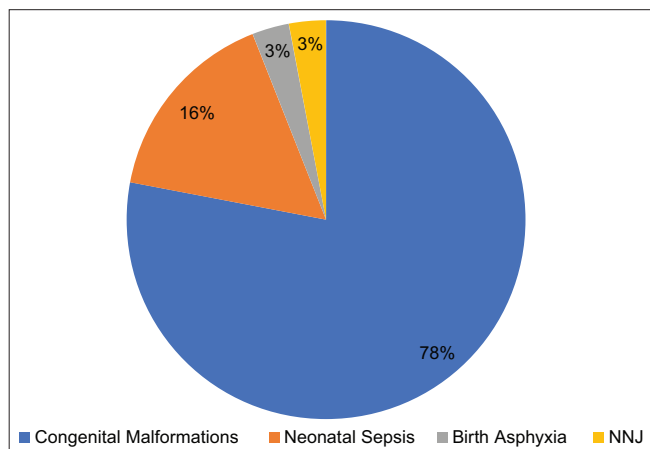


Figure 2: Distribution of referred cases by disease. NNJ: Neonatal Jaundice

Another reason is the genetic make-up of the male child which makes him more vulnerable to stress of diseases.

The most common disease of the newborn in this study is NNS and this is in agreement with studies from other parts of Nigeria^[8,12-14] and Sudan.^[15] This is in contrast to reports from Enugu and Kano where the most frequent disease in their studies was birth asphyxia.^[7,10] The reason for the high cases of NNS may be due to high rate of home deliveries, poor cord care practices, and for the fact that the study period predates the wide scale-up of 4% chlorhexidine gel use in Nigeria. The least common disease is neonatal burns which were due to accidental fall into hot water. Neonatal accidents are rare in Nigeria.

The NMR in this study is 6.6%. This is comparable to the 7.16% reported from Birnin-Kudu, Jigawa State, Nigeria.^[16] However, higher rate of 20.4% from State Specialist Hospital, Gusau,^[9] 14.8% from Zaria,^[17] 13.3% from Abuja, and 20.3% from Benin City.^[18] The wide difference in mortality rates may result from few specialists available at the State Specialist Hospital and generally limited equipment for the care of newborns across the country as some of the publications were done more than a decade ago. The leading cause of death is birth asphyxia which is in consonant with findings from other parts of Nigeria.^[7,19-21]

However, the findings from Azare^[13] and Sagamu^[22] revealed that prematurity were the leading cause of death in their centers. The three leading causes of death in this study were Birth Asphyxia, Prematurity, and NNS. This correlates with the reports from Dutse, Jigawa State,^[8] and Benin City.^[23] These causes of death are to a large extent preventable with effective health education, antenatal care, and delivery in hospital by our pregnant mothers under the supervision of skilled health attendants.

DAMA rate was 1.7%. This is lower than 5.2% reported from Azare^[13] and 4.3% from Port Harcourt.^[24] The rate of DAMA in this study is however higher than 0.4% obtained in Dutse.^[8] Prematurity accounted for the highest number of cases of DAMA. The reason for this is because premature babies stay long in the hospital, the use of incubators and oxygen for their treatment adds to the high financial burden on care givers.

The highest number of neonates referred out of the unit was those diagnosed with congenital malformations. This was because we lacked resident consultant pediatric surgeon in the center.

CONCLUSION

The major causes of morbidity and mortality in this study are preventable. There is need to improve health

education at community level for pregnant women to enhance their utilization of antenatal facilities, delivery in the hospital and infection prevention measures. The National Health Insurance Scheme should cover newborn health services. These measures when implemented, will give Nigeria a leap in the race towards attaining SDG by the year 2030.

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Declaration of patient consent

Patient's consent not required as there are no patients in this study.

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Conflicts of interest

There are no conflicts of interest.

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