

NEONATAL MORBIDITY AND MORTALITY IN BINGHAM UNIVERSITY TEACHING HOSPITAL JOS, PLATEAU, NORTH-CENTRAL NIGERIA

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Abstract

Background: Neonatal mortality rate (NMR) remains high in Nigeria. There is the need to know the major causes of neonatal morbidity and mortality, so as to reduce the trend.

Aim: To determine the causes of neonatal morbidity and mortality in the neonatology unit of Bingham University teaching Hospital (BHUTH), Jos.

Method: This is a retrospective, analytical descriptive hospital-based study carried out in the special care baby unit of BHUTH from January- December 2018.

Results: A total of 324 neonates were enrolled in the study. The ratio of male (189) to female (135) neonates was 1:0.7. There were more babies in the out born (168) than inborn (156). Major causes of morbidity were prematurity (29.3%), Neonatal jaundice (NNJ), (21.9%),

Neonatal sepsis (NS), (12.3%), birth asphyxia (BA), (11.4%) and NNS+NNJ (9.9%). The three main causes of mortality were prematurity (59.1%), severe birth asphyxia (SBA) (27.3%) and NS (13.6%). The difference in mortality due to prematurity was statistically significant between the inborn and out born, ($\chi^2 = 9.08$, $p=0.001$), but that due to severe birth asphyxia was not statistically significant ($\chi^2 = 1.44$, $p=0.230$). Case fatality rate for severe birth asphyxia (SBA) was 32.4%, prematurity 27.4%, and NS 15.0%. Out of 324, 259 (80%) were discharged, 44 (14%) died, 17 (5%) were discharged against medical advice (DAMA) and 4 (1%) were referred.

Conclusion: Prematurity, NNJ and NS were the leading causes of morbidity, while SBA, prematurity and NS were the main causes of mortality in this study.

Key Words: morbidity, mortality, neonate, Jos, Nigeria.

Introduction

Neonatal period is the first 28 days of life. It is the most vulnerable period in the child's life. This is the time the baby completes many of the physiologic adjustments required for extrauterine life. As such there are high rates of morbidity and mortality associated with this period.^{1,2} Globally out of 130 million children born each year, it is estimated that 4 million die within the neonatal period, with 75% of the deaths occurring within the first seven days.^{3,4} 66% of neonatal deaths worldwide occur in Africa and South East Asian regions.⁴ 25% of the one million under five deaths annually occur within the neonatal period in Nigeria.⁵ Globally, neonatal mortality rate has reduced from 37 per 1000 in 1990 to 18 per 1000 in 2017 while in Africa, it was 27 per 1000 in 2017.⁶⁻¹²

Neonatal morbidity and mortality result from inadequate care during delivery or immediately after birth. Prematurity, low birth weight (LBW), sepsis, jaundice and asphyxia are major problems affecting neonates in the developing countries.¹³ Studies done over the past 20 years in Nigeria, showed similar pattern with prematurity, sepsis and birth asphyxia being the

major causes of morbidity.¹⁴⁻²⁵ Most of these studies showed neonatal mortality ranging between 13% and 25.9%. Studies done in other African countries like Cameroon, Ghana, Ethiopia, South Africa, India and Bangladesh showed similar pattern of morbidity and mortality as in Nigeria.²⁶⁻³²

Materials and Methods

Study setting and Population

The study was carried out at Bingham University Teaching Hospital, Jos. The neonatal unit has a special care baby unit (SCBU) where neonates in need of intensive and special care are managed. The inborn SCBU takes care of babies born within the hospital while the out born SCBU takes care of babies referred from other hospitals. The SCBU has a 16-bed capacity for both the inborn and out-born with facilities available for neonatal resuscitation, incubator care, phototherapy, exchange blood transfusion and other essential newborn care services. Staff include consultant paediatrician, senior and junior residents and interns. Nurse: patient ratio varies from 1:3 to 1:6.

Methodology: The study was a retrospective descriptive study of all neonates admitted into the SCBU of BHUTH, Jos between the period of January-December 2018. Consecutive sampling of all the patient's data was done from the hospital records. Approval was obtained from the Research Ethical

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Committee of Bingham University Teaching Hospital, Jos.

Statistical analysis was done using Epi info version 7.1. Data was expressed as proportions and Chi-square test was used to test for relationships. Results were presented in tables and figures. p-value of less than 0.05 was considered statistically significant in comparative analysis.

Results

A total of 324 babies were admitted during the study period. The ratio of male (189) and female (135) neonates was 1:0.7. There were more babies in the out born (168) than inborn (156). Major causes of morbidity were prematurity (29.3%), NNJ (21.9%), NS (12.3%), Birth asphyxia (11.4%) and NNS+NNJ (9.9%). There was a significant difference between the inborn and out

born cases in prematurity, NNJ, NNS and NNS with NNJ.

The three main causes of mortality were prematurity (59.1%), SBA (27.3%) and NS (13.6%). The difference in mortality rates due to prematurity was statistically significant between the inborn and out born, ($\chi^2 = 9.08$, $p=0.001$), while the difference in the mortality rates due to severe birth asphyxia in out born and inborn, was not statistically significant. There were more deaths due to prematurity than SBA. However, the case fatality rate (CFR) for SBA was higher than prematurity 32.4%, vs 27.4%. Neonatal sepsis had the least CFR of 15%.

Out of 324 admissions, 259 (80%) were discharged, 44 (14%) died, 17(5%) signed against medical advice (SAMA) while 4(1%) were referred to other health facilities.

Table 1. Morbidity profile of neonates admitted during the study period

Morbidity	Inborn No. (%)	Out born No. (%)	Total (%)	χ^2 value	p-value
Prematurity	70 (44.9)	25 (14.9)	95 (29.3)	33.68	<0.001
NNJ	22 (14.1)	49 (29.2)	71 (21.9)	9.86	0.002
Birth Asphyxia	13 (8.3)	24 (14.3)	37 (11.4)	2.28	0.13
Macrosomia	12 (7.7)	1 (0.6)	13 (4.0)	8.82	0.003
NNS Bld. cul. +ve	2 (1.3)	4 (2.4)	6 (1.9)	*	0.503
NNS Bld. Cul. -ve	9 (5.8)	25 (14.9)	34 (10.5)	7.15	0.001
NNS+NNJ	9 (5.8)	23 (13.7)	32 (9.9)	4.85	0.028
Hypoglycaemia	9 (5.8)	2 (1.2)	11 (3.4)	3.87	0.049
Dehydration	2 (1.3)	2 (1.2)	4 (1.2)	*	0.944
TTN	2 (1.3)	2 (1.2)	4 (1.2)	*	0.944
Malaria	0 (0.0)	4 (2.4)	4 (1.2)	*	0.071
Bronchopneumonia	0 (0.0)	4 (2.4)	4 (1.2)	*	0.071
Congenital anomaly	1 (0.6)	0 (0.0)	1 (0.3)	*	0.241
Cellulitis	2 (1.3)	1 (0.6)	3 (0.9)	*	0.291
Birth trauma	1 (0.6)	1 (0.6)	2 (0.6)	*	0.963
HDN	2 (1.3)	1 (0.6)	3 (0.9)	*	0.291
Total	156 (100)	168 (100)	324 (100)		

*- mid-p exact test. TTN- transient tachypnea of the newborn. BPN- bronchopneumonia. HDN-haemorrhagic disease of the newborn. Bld. Cul. – blood culture. +ve. – positive. -ve. - negative

Table 2. Mortality profile of neonates admitted during the study period

Mortality	Inborn No. (%)	Out born No. (%)	Total (%)	χ^2 value	p-value
Prematurity	19 (82.6)	7 (33.3)	26 (59.1)	9.08	0.003
SBA	4 (17.4)	8 (38.1)	12 (27.3)	1.44	0.230
NNS	0 (0.0)	6 (28.6)	6 (13.6)	*	0.008
Total	23 (100)	21 (100)	44 (100)		

*- mid-p exact test

Table 3. Distribution of case fatality rate of mortalities

Diagnosis	No. admitted	Deaths (%)	CFR (%)
Prematurity	95	26 (59.1)	27.4
SBA	37	12 (27.3)	32.4
NNS	40	6 (13.6)	15.0
Total	172	44	

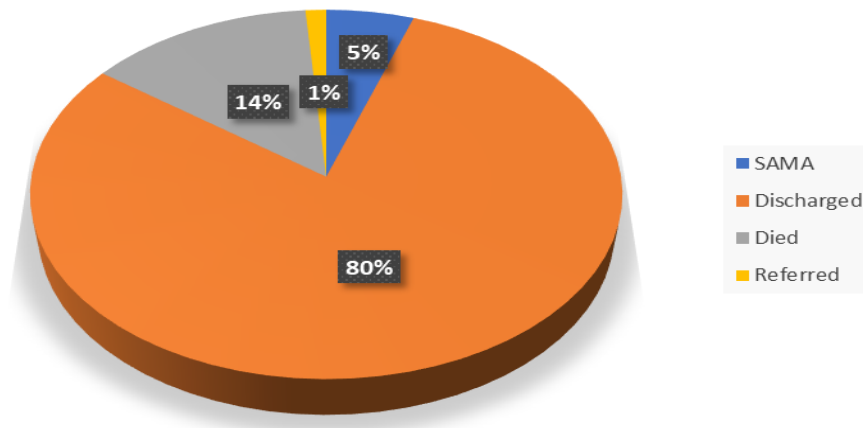


Fig 1. Outcome of admissions

Discussion

Three hundred and twenty-four babies were admitted during the study period, comprising 189(58.3%) males, and 135(41.7%) females. This finding is similar to studies done in other developing world.^{18,20,22,23,26, 31,32,33} Prematurity, Neonatal jaundice, Neonatal sepsis and Birth asphyxia were the most common diagnosis at admission. The high rate of prematurity is due to the tertiary status which is a referral center for other health facilities. This also explains the predominance of out born admissions 168(51.9%) compared to inborn 156(48.1). This is in contrast to findings obtained in the University of Benin Teaching Hospital (UBTH) by Omoigberale et al,¹⁶ and Ekwochi et al in Enugu¹⁸ where there were more inborn patients than out born. The high rate of neonatal jaundice in the out born is related to the high rate of home deliveries without strict asepsis for cord care and the use of naphthalene ball.

The mortality rate in this study was 13.6% which is similar to what was obtained in Sagamu,¹⁴Enugu,¹⁸and Birnin kudu,²⁵but lower than rates obtained by Ugwu in Delta state,²³Ndombo in Cameroon²⁶ Kotwal in India,³⁰ and Toma in Jos.³³The high mortality rate seen in this study and other studies in Nigeria is due to high home deliveries which are usually conducted by unskilled birth attendants, lack of adequate facilities in the primary and secondary health care centers to care for new born and delay in presentation to referral centers due to delay in referral, financial constraints and poor road networks. This is in contrast to what is obtained in the developed countries.¹²

Prematurity accounted for the highest mortality in this study with 59.1%, which could be attributed to lack of ventilator support. 5% were discharged against medical advice which is comparable to what was obtained in Azare,¹⁹Kano,²⁰ Abuja,²² and in Birnin Kudu.²⁵

Conclusion

The three main causes of morbidity in this study were prematurity, neonatal jaundice and neonatal sepsis, while the three main causes of mortality were prematurity, SBA and NS. All these could be prevented by improving facilities for the care of preterm neonate, health education on the risk factors for preterm delivery, jaundice, sepsis, severe birth asphyxia and improved antenatal care services.

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