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MORBIDITY AND MORTALITY PATTERN OF NEONATES ADMITTED INTO THE SPECIAL CARE BABY UNIT OF UNIVERSITY OF PORT HARCOURT TEACHING HOSPITAL, NIGERIA
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J. Okagua and U. Obikwu

ABSTRACT

Background: **The neonatal mortality rate in Nigeria is amongst the highest globally and is mainly due to preventable causes such as neonatal sepsis, perinatal asphyxia and prematurity.**

Objective: **To determine the morbidity and mortality pattern of neonates admitted into the Special Care Baby Unit (SCBU) of the University of Port Harcourt Teaching Hospital (UPTH). Study *Design:* This hospital based retrospective study was carried out over a one year period between September 2014 and August 2015.**

Setting of study: **Port Harcourt is a cosmopolitan city situated in Rivers State in the southern part and Niger Delta zone of Nigeria. The Hospital is the largest tertiary hospital in the state and serves as a referral centre for other peripheral hospitals within the Niger Delta zone of Nigeria. The SCBU caters for sick new-born infants born in the hospital and sick babies referred from other centres.**

Subject/participants: **All sick babies born within (inborn) and outside (out-born) the hospital facility were reviewed. Information on the mothers booking status, sex, age, gestational age at birth, place of birth, APGAR scores, age on admission, diagnosis and outcome of the new-borns admitted were reviewed.**

Results: **A total of 622 babies were admitted into the SCBU of UPTH during the period under review. Of these babies, 54.5% were admitted into the inborn unit, whilst 45.5 % were admitted into the out-born unit of the SCBU. The leading causes of admissions were neonatal sepsis (33%), neonatal jaundice (14.8%), severe birth asphyxia 83 (13.3%) and prematurity (11.41%). Majority of the neonates (77.6%) were admitted within the first week of life. The overall neonatal mortality rate was 12.4%. The mortality rate of the out-born babies of 13.5% was higher than the 11.4% amongst inborn babies, however, this difference was not statistically significant (p=0.333). Neonatal sepsis (29.9%) and severe birth asphyxia (22.1%) were the leading causes of mortality in these**

babies. Conclusion: The neonatal mortality rate in the SCBU of 12.4% is high. We recommend that efforts be made at strengthening the primary health care system to discourage unsupervised deliveries and improving maternal and perinatal care in our health institutions to curb these high mortalities.

INTRODUCTION

The neonatal period is the first 28 days of life and has been the most critical period of life because of the various problems associated with it (1). Of the 135 million babies born every year, 2.9 million do not survive beyond the neonatal period (2). The main reasons for the admission of babies into the Special Care Baby Unit in developing countries are preventable conditions such as prematurity, severe birth asphyxia, neonatal sepsis and neonatal jaundice (3-8). In Nigeria, 63.2% of deliveries still take place at home unsupervised with a neonatal mortality rate of 37 per 1000 live births (9). Different studies (10-14) across the globe have demonstrated different morbidity and mortality pattern and even within the same country over time. It is therefore imperative to periodically evaluate this pattern especially as the last audit in this centre was done over two decades ago (5) and UPTH remains a multicentre for many of the peripheral hospitals within the Niger Delta zone of Nigeria. The present study aims to determine the morbidity and mortality pattern amongst babies admitted into the SCBU of UPTH over a one year period.

MATERIALS AND METHODS

This hospital based retrospective study was carried out over a one year period between September 2014 and August 2015. Port Harcourt is a cosmopolitan city situated in Rivers State in the southern part and Niger Delta zone of Nigeria. The Hospital is the largest tertiary hospital in the state and serves as a referral centre for other peripheral hospitals within the Niger Delta zone of Nigeria. The SCBU caters for sick new-born infants born in the hospital and sick babies referred from other centres. All sick babies admitted into the SCBU within the period under review were included into the study. The SCBU admits babies directly into the unit from the labour ward, labour ward theatres and post-natal wards. Babies referred from other hospitals were first seen in the children's' emergency ward before being transferred into the outborn unit. Babies are considered inborn if their mothers' booked for antenatal care and had their babies in the UPTH. Babies not born in the UPTH, referred from other hospitals, or who were born in UPTH, but had been discharged home, but had to be admitted into the SCBU were considered outborn. These babies were within the first 28 days of life. Information obtained from the admission notes included booking status of the mother, date of delivery, gestational age at delivery, age at presentation, sex of the baby, place of delivery, perinatal history, APGAR scores and diagnosis at presentation. However, the final diagnosis was supported by laboratory investigations and where necessary, modified. The outcome of these babies following management was also documented. Ethical clearance for the study was sought from the Research and Ethics Committee of UPTH.

Data analysis

Data entry and analysis was done using SPSS software version 21.0. These results are presented as tables and charts in simple proportions. The data fields were checked for accuracy using visual checking technique to eliminate possible data entry errors or inconsistencies of information. Bivariate analysis was done with chi-square (X2) test to examine the relationship between the

variables. In all cases, a probability value (p value) of < 0.05 was regarded as statistically significant.

RESULTS

Characteristics of the new-borns admitted into the SCBU

There were 622 babies admitted into the SCBU during the review period. 332 (53.4%) males, and 290 (46.6%) females giving an M:F ratio of 1.1:1 as shown in figure 1. Of these, 339 (54.5%) were inborn while 283 (45.5 %) were out-born babies respectively. There were more term babies (84%) than pre-term (16%). This difference was statistically significant (p = 0.038). Figure 2 shows the sex distribution of the neonates in the inborn and outborn units respectively. As shown in figure 3, majority of the neonates (77.6%) were admitted within the first week of life.

Figure 1
Sex distribution of the neonates admitted into SCBU

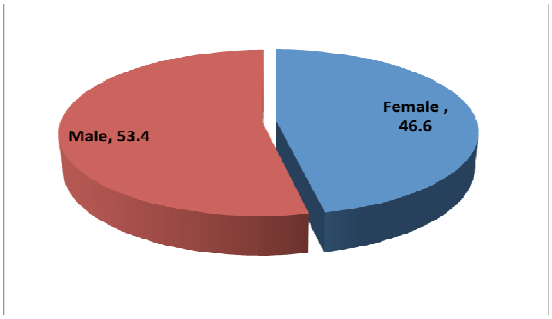


Figure 2
Sex distribution of the neonates admitted into the SCBU by inborn and outborn

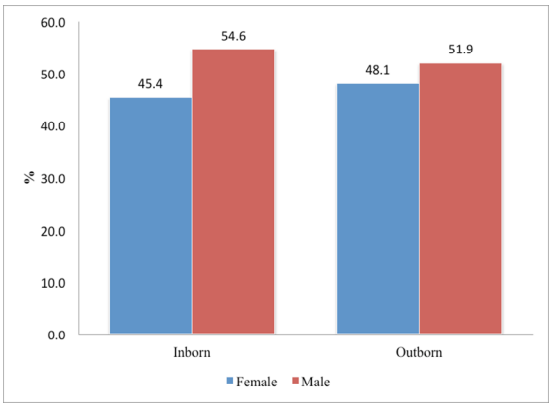
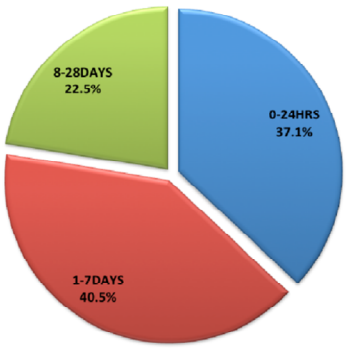


Figure 3
Time of presentation amongst the neonates admitted into the SCBU



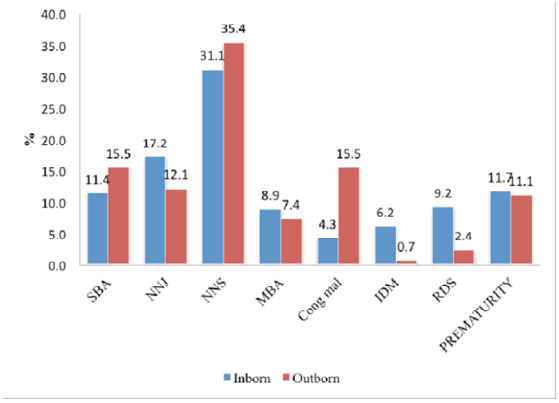
Morbidity pattern amongst the newborns admitted into the SCBU

Of the 622 babies admitted, 205 (33%) were admitted for neonatal sepsis (NNS), 92 (14.8%) for neonatal jaundice (NNJ) and 83 (13.3%) for severe birth asphyxia (SBA) as shown in table 1. The inborn babies had a higher prevalence of neonatal jaundice and respiratory distress syndrome (17.2% and 9.2%) compared to the outborn babies (12.1% and 2.4%) respectively. However, the outborn babies had a higher prevalence of neonatal sepsis and severe birth asphyxia (35.4% and 15.5%) compared to the inborn babies (31.1% and 11.4%) respectively. However, these differences were not statistically significant (X2= 2.801, p =0.094) as shown in figure 4.

Table 1
Morbidity Pattern of the babies admitted into the SCBU

Diagnosis	No.	%
SBA	83	13.3
NNJ	92	14.8
NNS	205	33.0
MBA	51	8.2
CONGMAL	59	9.5
IDM	23	3.7
RDS	38	6.1
PREMATURITY	71	11.4
Total	622	100.0

Figure 4
Morbidity of the babies admitted into the SCBU by unit



Mortality pattern and outcome of the newborns admitted into the SCBU

- SBA-Severe birth asphyxia
- NNJ- Neonatal jaundice
- NNS- Neonatal sepsis
- MBA- Moderate birth asphyxia
- Cong Mal- Congenital Malformation
- IDM- Infant of a diabetic mother
- RDS- Respiratory distress syndrome

Of the 622 babies admitted, 77 died giving a mortality rate of 12.4%. The discharge against medical advice (DAMA) rate was 15% whilst 72.6% were discharged home. The outborn mortality rate of 13.5% was higher than the 11.4% mortality rate found in inborn babies as shown in figure 5 and 6.

Of the 77 deaths that occurred, 23 (29.9%) were due to neonatal sepsis, 19 (24.7%) were due to severe birth asphyxia while 17 (22.1%) and 11 (14.3%) was due to neonatal jaundice as shown on Table 2.

Figure 5
Pattern of outcome amongst the babies admitted into the SCBU

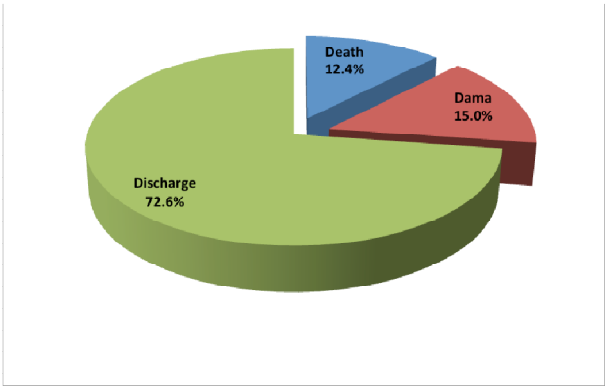


Figure 6
Outcome amongst the babies admitted in the SCBU by inborn and outborn

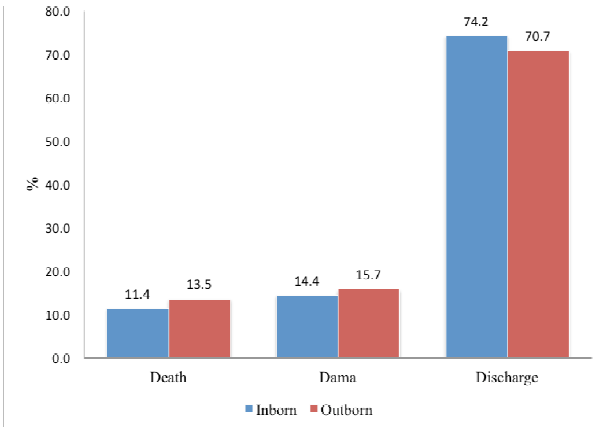


Table 2
Mortality Pattern of the babies admitted into the SCBU

Diagnosis	No	%
NNS	23	29.9
SBA	19	24.7
NNJ	17	22.1
PREMATURITY	11	14.3
OTHERS	7	9.0
Total	**77**	**100.0**

DISCUSSION

In the present study, six hundred and twenty two babies were admitted into the newborn unit in the period under review. This number is much higher than the 261, 328 and 356 admitted over a one year period in similar tertiary centers in Enugu, (7) Bauchi (10) and Shagamu (15), Nigeria respectively. This reflects the high number of births within the hospital and the fact that the hospital serves as a referral center for many other peripheral hospitals within the Niger Delta region of Nigeria. There were more males admitted into the newborn unit than females. This trend has been reported by other researchers in Nigeria (8,10,16). The reason for this pattern could not be explained from our study. There were more inborn admissions than outborn admissions in this study. This is similar to findings in studies in Enugu (7) and Benin (8), Nigeria. This is a reflection of the continuous surveillance for complications by the Paediatricians in the hospital who routinely examine and care for these inborn babies compared to the outborn babies. This early identification and intervention by the specialist could account for the higher number of inborn admissions compared to the outboards. In this study, the leading causes of morbidity in these newborns were neonatal sepsis, neonatal jaundice, severe birth asphyxia and prematurity. This is similar to findings reported by other researchers in Nigeria (5-8). These causes have remained the leading causes of morbidity and mortality in developing countries compared to developed countries. The higher prevalence of neonatal sepsis of 33% found in this study, maybe as a result of the inclusion of both cases with proven culture positive sepsis and those with presumed sepsis. Similar reports have been found in studies (12,16) done within the same zone as the present study. However in many developing countries, positive culture is obtained in less than half of the patients treated with neonatal sepsis (16). More often neonatal sepsis is diagnosed on clinical presentation especially in developing countries (17). The finding of more cases of severe birth asphyxia admitted into the outborn unit is in keeping with that reported by Ekwochi et al (8) in which 32.6% of the severe birth asphyxia babies were in born whilst, 67.4% were outborn admissions. This highlights the high proportion of poor unskilled supervision of deliveries and inadequate neonatal resuscitation skills outside the tertiary facilities where most of these deliveries are said to occur. It is said that in Nigeria, 63.2% of deliveries still take place at home (9) unsupervised with its outcome worsening the morbidity and

mortality rates as evidenced in this present study.

The neonatal mortality rate of 12.4% found in this study is lower than the mortality rates of 19.3%, 20.3% and 25.9% reported in Calabar (14), Benin (8) and Bauchi (10), Nigeria respectively. A mortality rate of 39% was reported in rural Gambia (18). Limited facilities and manpower have been implicated in the higher neonatal mortality rates documented in the developing countries (19). This lower mortality rate found in our study is a reflection of present efforts made in the newborn units of the UPTH in improving the outcome of babies delivered in the hospital by continuous surveillance, paediatricians attendance at all high risk deliveries, and improved practices of newborn resuscitation and respiratory support for the preterm babies. The neonatal mortality rate in the present study is similar to the 14.2% mortality rate reported by Ekwochi et a (I7) in Enugu State University Teaching Hospital in 2014. The outborn babies in this study had a higher mortality rate than the inborn babies. This is in keeping with reports from other studies in Nigeria (5,11,12). This is a reflection of the fact that they are more likely to be delivered in the hands of poorly skilled attendants with late presentations and more severe complications. The Discharge against medical advice (DAMA) rate was 15%. This is significantly higher than the 4.3% DAMA rate reported by Opara and Eke (20) in the same unit between 2007- 2009. It is also higher than the 5.2% reported in Bauchi (10) and the 6.7% reported in Gwagwalada, Abuja (21), Nigeria. The DAMA rate in the present study almost certainly mirrors the worsening level of poverty and the seemingly high cost of medical care with a predisposition of families to seek alternative medicine.

In the present study, neonatal sepsis accounted for the highest cause of death at 29.9%, followed closely by severe birth asphyxia. This is also similar to reports by different researchers (13,14,16) in the Nigeria, and in South Sudan (4). High rates of unsupervised home deliveries and use of unsterile delivery practices could account for the findings in this study. This is however at variance with the study in Bangladesh (22) were prematurity accounted for 71.1% of the mortality and in Egypt (23) where prematurity and low birth weight were the leading causes of death.

CONCLUSION

The neonatal mortality rate of 12.4% in this study is still very high and mainly due to preventable causes including neonatal sepsis and severe birth asphyxia. This could be improved upon by scaling up of currently existing antenatal services, skilled attendance at all deliveries, improved perinatal care and enhancement of the neonatal resuscitation training programmes to enhance better neonatal survival.

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