# DISEASE BURDEN AND OUTCOME OF NEONATAL ADMISSIONS AT THE TAMALE TEACHING HOSPITAL, GHANA: A PROSPECTIVE STUDY

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## Abstract

***Objective:*** To determine the pattern of diseases and factors affecting the outcome of neonates admitted at the Tamale Teaching Hospital Neonatal Intensive Care Unit (TTH NICU) over three months.

***Methodology:*** A hospital-based prospective cohort design was used to collect data from participants. A sample size of 399 neonates (participants) admitted into the NICU from 1st March 2021 to 10th June 2021. Data was obtained using KoboCollect, exported into Excel for cleaning, coding and analysed using SPSS version 20.

***Results:*** This study screened a total of 450 neonates under 28 days admitted in the NICU of Tamale Teaching Hospital, Ghana, over three months. Fifty-one of them were rejected, and 399 were included in the final analysis. The mean birth weight was 2600 g (±810g), with 33.1% of the neonates having low birth weight. Three hundred and forty-one (341) (85.5%) neonates survived, while 58 (14.5%) died during hospitalisation. The pattern of diseases showed that neonatal sepsis (37.3%, n=149/399), small for gestational age or low birth weight (SGA/LBW) (33.1%, n=132/399), neonatal jaundice (28.1%, n=112/399), prematurity (23.6%, n=94/399), birth asphyxia (13.5%, n=54/399) and congenital anomalies (7.8%, n=31/399) were the most common causes of admissions. All variables which had an association with neonatal mortality ($p < 0.05$) were entered into a binomial logistic model, prematurity (AOR=6.974, 95% CI: 1.766-27.537; p=0.006) was the main predictor of mortality.

***Conclusion:*** The common causes of admission and deaths in the TTH NICU during the study were neonatal sepsis, prematurity, birth asphyxia, LBW/SGA and neonatal jaundice. This highlights the need for interventions to address these conditions as we strive to reduce institutional neonatal mortality.

**Key words:** *Neonatal mortality; NICU, Disease; Prospective study, Tamale*

## Introduction

Globally, an estimated 130 million neonates are born every year[1], out of which approximately 2.5 million die in the first 28 days of life, three-quarters of these deaths happen in the first week of life, and over a quarter occur within the first 24 hours of life [1,2]. According to the United Nations Inter-Agency Group for Child Mortality Estimates UN IGME[3], a considerable percentage (47%) of all under-five deaths occurred in the first 28 days of life. Almost all (98%) of neonatal deaths occur in developing countries [3]. The probability of dying of under five years children is higher in their first month of life [1]. In the Global Health Observatory of WHO in 2018, the global neonatal mortality rate stood at 17.7 per 1000 live births. It was projected that between the years 2018 and 2030, an estimated 27.8 million neonates would lose their lives if the current global reduction rates of neonatal mortalities are maintained [4]. The African Region had the highest rate of neonatal deaths at 27.2 per 1000 live births, with the Eastern Mediterranean and Southeast Asia recording 25.9 and 20.2 per 1000 live births, respectively[1]. West and Central Africa recorded the highest neonatal mortality rate of 30.2 per 1000 live births in 2017. This figure was 9 times higher than high-income countries that recorded 3.0 per 1000 live births[4]. Sub-Saharan Africa, together with Southeast Asia, was responsible for 79% of the entire global burden of neonatal deaths in 2017 [4]. However, these two regions have the slowest progress in reducing the rates of neonatal mortality [5].

Although sub-Saharan Africa recorded an annual reduction rate of 1.8% in neonatal mortality from 1990 to 2018, about one million neonates still die every year, partly due to the increased fertility rate in the region [3,4,6]. In 2012, Ghana recorded a neonatal mortality rate of 39 per 1000 live births, which decreased to 30 per 1000 live births in 2014 [7, 8]. Four years later, a significant improvement resulted in a further decline in NMR, resulting in 23.9 per 1000 live births (WHO, 2018). This significant improvement could be attributed partly to the Ghana National Newborn Health Strategy and Action Plan (GNNHSAP) 2014-2018, a policy rolled out by the Ghana Ministry of Health to reduce NMR from 30 per 1000 to 21 per 1000 live births [7]. The common and major causes of neonatal deaths around the world are preventable. They include prematurity, respiratory distress syndrome, sepsis, jaundice, and birth asphyxia[2]. In high-income countries (HIC), most neonatal deaths

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are non-preventable and caused mainly by congenital anomalies. However, deaths occurring in low-and middle-income countries (LMICs) are mainly attributable to prematurity, sepsis, jaundice, etc, which are preventable[1]. With the use of simple and cost-effective measures (such as good and hygienic birth practices, care of the umbilical cords, the use of antibiotics for all forms of neonatal sepsis, kangaroo mother care for preterm babies, early initiation of breastfeeding, and immediate skin-to-skin practice to keep babies warm), 75% of all neonatal deaths in LMICs can be avoided [5].

Global initiatives such as the Millennium Development Goals (Goal 4) and the Sustainable Development Goals (Goal 3) have had some success. However, neonatal mortality is still unacceptably high, and if pragmatic measures are not put in place, most LMICs will not achieve SDG 3. According to Anuradha, Rajesh Kumar [9], health facility-based interventions have the potential to reduce neonatal mortality by 23.50%. Therefore, NICU care is significant for improving the survival of neonates. Most studies [2, 10-12] on neonatal mortality in the NICU have been done retrospectively in different parts of the world and Ghana. Walana, Acquah[13] did a retrospective study in TTH NICU utilising data from the years 2013 to 2015, when the TTH NICU was not as well equipped as it is presently. Therefore, a 3-month prospective study was carried out to determine the pattern of disease and factors affecting the outcome of neonates admitted at the Tamale Teaching Hospital Neonatal Intensive Care Unit This prospective study allowed for complete data regarding neonatal morbidity and mortality.

## Materials and Methods

### *Study Design*

A prospective cohort study was carried out among neonates admitted to the NICU of the Tamale Teaching Hospital from 1st March 2021 to 10th June 2021.

### *Study Area*

This study was carried out in the Neonatal Intensive Care Unit of the Tamale Teaching Hospital (TTH). TTH is a tertiary hospital located in the Tamale Metropolis, the administrative capital of the Northern Region of Ghana and affiliated with the University for Development Studies, School of Medicine. TTH with a bed capacity of 800 is the only referral hospital serving all five regions (Northern, Savannah, North East, Upper West and Upper East) in the northern belt of the country, parts of the Oti and Bono East regions as well as some residents of Burkina-Faso and Togo who live in towns that share boundaries with Ghana. TTH NICU is a 40-bed capacity and provides neonatal healthcare services to babies.

### *Study Population and Sampling Technique*

A sample size of 399 neonates was included in this study. The study population included all neonates admitted into the NICU at the time of data collection. However, neonates who died within an hour of admission or were brought to the NICU for observation were excluded from the study. Neonates delivered at home or other facilities and admitted to the NICU with missing data were also excluded due to the difficulty in obtaining such data. A consecutive non-probability sampling method was used to recruit participants. Each consecutive neonate admitted to the NICU and met the inclusion criteria was enrolled in the study.

### *Data Collection Procedure*

Permission was obtained from the NICU nurses, and with their assistance; mothers/relatives whose babies qualified to be part of the study were introduced to the principal investigator (PI) and research assistant. Upon providing information about the study, informed consent was obtained from parents or guardians. The researcher and the two research assistants performed screening at the time of admission. After obtaining consent, data was collected at admission, during admission and at exit (discharged alive or dead). Data for all variables (dead or discharged home alive, final diagnosis and other variables of interest) were obtained from medical records at admission, updated during the hospital stay, and confirmed at discharge. The nurses and doctors were contacted when there was uncertainty about the information of the included participants. Follow-up was terminated at discharge, transfer or death. The ones who opted for discharge against medical advice were not added to the analysis. The survivors in this study represented neonates who had been discharged home or transferred to different hospitals. Neonates who had low birth weight or were small for the gestational age (LBW/SGA) or both were categorized together.

### *Sample Size*

Using Cochrane's formula, a sample size of 385 was calculated. However, 5% of the calculated sample size was added to cater to attritions, resulting in a total of 399 participants. A p (estimated proportion of the population) of 50% was used because we did not know the size of the population. A 50% proportion is used when the population of interest is unknown and this helps in achieving maximum sample size (Kotrilik, 2001; Shete, 2020). A precision of 5% was used because it is more practical and feasible compared to 1% which will require a larger sample size. Using a precision of 10% might also mean that the sample size will be small raising concerns about reliability. Again, a precision of 5% is the most common and accepted level of precision in health research. An addition of 5% of the estimated sample was purely based on resources. A higher percentage will mean an increase in sample size. This research was done towards the award of a postgraduate degree, which was funded by the principal investigator.

### *Study Instruments*

The instrument for data collection (questionnaire) was adapted from previous studies (Demisse et al., 2017; Desalew et al., 2020; Orsido et al., 2019), modified to

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suit the present study, and pretested a month earlier in the same NICU before the start of data collection. The questionnaire was designed and entered into a software called KoboCollect (https://www.kobotoolbox.org/), which was used for the data collection.

### *Quality Control*

The link to the software for data collection was shared with the research assistants, who were trained on how to use it. A two-week period was allowed for research assistants to get accustomed to the use of the application. Pretesting of the tool was done in the study area, and one week was given for research assistants to explore how to obtain data on the neonates from the electronic medical record system of the hospital. Each data form submitted via the Application (KoboCollect) was reviewed by the principal investigator to check for missing data. Data forms with incomplete data of up to 50% of variables of interest were rejected, and such participants were removed from the study. After data collection, the data was exported from the KoboCollect to Microsoft Excel 2010, and data cleaning and coding were done and prepared for analysis.

### *Ethical Considerations*

Ethical clearance was obtained from the Committee on Human Research, Publications and Ethics, Kwame Nkrumah University of Science and Technology, Kumasi (reference number: CHRPE/AP/093/21). Written permission was also obtained from the Tamale Teaching Hospital research and development department, and copies were sent to the NICU through the unit head. Informed consent was also obtained from mothers of neonates in the study. The study posed no physical harm to participants. All data obtained from the study were treated with utmost anonymity and confidentiality.

### *Data analysis and Presentation*

All data was captured using KoboCollect, exported to Microsoft Excel for data cleaning, and then analysed using SPSS version 20. Descriptive statistics such as means and standard deviations were used to determine mean age at admission, sex, Apgar score, birth weight, and admission temperature. Resuscitation status, diagnosis, referral status, etc., were presented using frequency counts and percentages. All selected variables such as Admission age, sex, APGAR score at 5th min, Birth weight, admission weight, resuscitation, immediate skin-to-skin care, breastfeeding initiation, oxygen therapy, CPAP, prematurity, birth asphyxia, neonatal sepsis, and neonatal jaundice were analysed in cross-tabulation (chi-square). Variables, which were significantly associated with the outcome of admission (p-value <0.05), were further considered for binomial regression to determine the predictors of outcome.

Odds ratios were reported with their 95% confidence intervals (CIs), and the statistical significance was determined at a p-value of <0.05. Results were presented as tables, histograms, and narrative summaries.

## Results

### *Neonatal Characteristics*

A total of 450 neonates were screened at the end of data collection and 399 met the inclusion criteria and were recruited and included in the data analysis. Fifty-one (51) were rejected; 25 were brought to the NICU for observation, 15 died within an hour of admission, 5 asked for discharge against medical advice (DAMA) and the remaining had incomplete data. The descriptive statistics of neonatal characteristics are shown in Table 1.

**Table 1. Neonatal Characteristics (Descriptive Statistics)**

***Kg: Kilogramme; Min: Minimum; Max: Maximum; SD: Standard Deviation; ºC: Degree Celsius***

| Variable | No. of participants | Min | Max | Mean (SD) | Median |
|---|---|---|---|---|---|
| Age at admission (days) | 399 | 0 | 28 | 4.13 (±4.97) | 2.00 |
| Birth weight (Kg) | 348 | 0.5 | 5.1 | 2.6 (±0.81) | 2.70 |
| Weight at admission (Kg) | 399 | 0.6 | 5.9 | 2.54 (±0.83) | 2.60 |
| Length of stay in NICU (days) | 399 | 1 | 28 | 6.55 (±5.66) | 5.00 |
| Temperature at admission (ºC) | 399 | 32 | 40 | 36.56 (±1.39) | 36.70 |
| Age at outcome (days) | 399 | 1 | 28 | 10.91 (±6.92) | 9.00 |

The age (days) at admission ranged from 0-28, with a mean of 4.13 (±4.97) days. Thirty-seven percent (37%) (n=125/339) of the neonates had an Apgar score of less than 7/10 in the first minute, and 18% (n=62/399) had an Apgar score of less than 7/10 in the fifth minute. Mortality in neonates with low Apgar score (<7/10) was 25% (n=31/125) in the first minute and 42% (n=26/62) in the fifth minute. A mean birth weight of 2.60 Kg (±0.81Kg) was recorded. Twenty-nine percent (29%, n=100/348) of neonates had low birth weight (LBW) (<2500g), 7% (n=25/348) had very low birth weight (VLBW) (<1500g) and 2% (n=7/348) had extremely low birth weight (ELBW) (<1000g). Mortality was 15% (n=15/100) for LBW, 40% (n=10/25) in VLBW and 43% (n=3/7) in those with ELBW. The mean temperature recorded was 36.56 ºC (±1.39).

The majority of the neonates admitted into the NICU were males (56.9%, n=227). About half (49.1%, n=196/399) of the neonates had immediate skin-to-skin contact with their mothers. For those who received immediate skin-to-skin care, 59.2% (n=116) had it within 30 minutes, 5.6% (n=11) in about an hour, and 1.0% (n=2) had it over an hour later. However, 34.2% (n=67) of neonates' mothers could not tell the time it took for their babies to be placed in skin-to-skin contact with them. Mortality was 7.7% (n=15/196) among



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neonates who had immediate skin-to-skin contact and 21.2% (n=43/203) among those who did not have immediate skin-to-skin contact with their mothers. Fifteen percent 15% (n =59/399) of neonates were resuscitated, and about 42% (n=25/59) of those who were resuscitated died (95% CI: 29.87-54.87; p=<0.001). Breastfeeding was initiated in the delivery room for only 33.8% (n=135) of the neonates. The majority of the neonates (54.3%, n=209) were delivered in TTH, and 27.1% (n=108) of neonates were referred from other health facilities to the NICU.

***Pattern of Diseases***

The leading causes for admission to the NICU included neonatal sepsis, neonatal jaundice, prematurity, birth asphyxia, congenital anomalies, and others (Figure 1).

In a Chi-square test (Table 2), the following were all statistically significant with the outcome of admission; thus, prematurity OR=2.4, 95% CI: 1.67-3.36; p=<0.001), birth asphyxia (OR=2.5, CI: 1.48-4.14; p=0.001;), neonatal sepsis (OR=2.9, 95% CI: 1.46-5.80; p=0.002;), neonatal jaundice (OR=3.9, 95% CI: 1.63-9.38, p=0.001;) and SGA/LBW (OR=0.4, 95% CI: 0.25-0.76; p=0.003;). In binomial logistic regression (Table 3), prematurity was the main predictor of mortality (AOR=6.97, 95% CI: 1.77-27.54; p=0.006).

**Table 2. Association between Pattern of Disease and Outcomes of NICU Admissions**

| Variable | Survived | Died | $x^2$ | df | *p*-value |
|---|---|---|---|---|---|
| **Prematurity** | | | 19.923 | 1 | <0.001 |
| Yes | 67 | 27 | | | |
| No | 274 | 31 | | | |
| **Birth asphyxia** | | | 11.452 | 1 | 0.001 |
| Yes | 38 | 16 | | | |
| No | 303 | 42 | | | |
| **Neonatal sepsis** | | | 9.796 | 1 | 0.002 |
| Yes | 138 | 11 | | | |
| No | 203 | 47 | | | |
| **Neonatal jaundice** | | | 10.56 | 1 | 0.001 |
| Yes | 106 | 6 | | | |
| No | 235 | 52 | | | |
| **SGA/LBW** | | | 8.773 | 1 | 0.003 |
| Yes | 103 | 29 | | | |
| No | 238 | 29 | | | |

***Kg: Kilogramme; LBW: Low Birth Weight; NICU: Neonatal Intensive Care Unit; SGA: Small for Gestational Age***

**Table 3. Predictors of neonatal outcome**

| Variable | AOR | 95% Confidence Interval | P-value |
|---|---|---|---|
| **Prematurity** | | | |
| Yes | 6.97 | 1.77, 27.54 | 0.006 |
| No | Ref | Ref | Ref |
| **Birth asphyxia** | | | |
| Yes | 0.33 | 0.05, 2.08 | 0.239 |
| No | Ref | Ref | Ref |
| **Neonatal sepsis** | | | |
| Yes | 1.75 | 0.49, 6.26 | 0.388 |
| No | Ref | Ref | Ref |
| **Neonatal jaundice** | | | |
| Yes | 0.60 | 0.17, 2.16 | 0.436 |
| No | Ref | Ref | Ref |
| **SGA/LBW** | | | |
| Yes | 0.30 | 0.14, 0.63 | 0.002 |
| No | Ref | Ref | Ref |

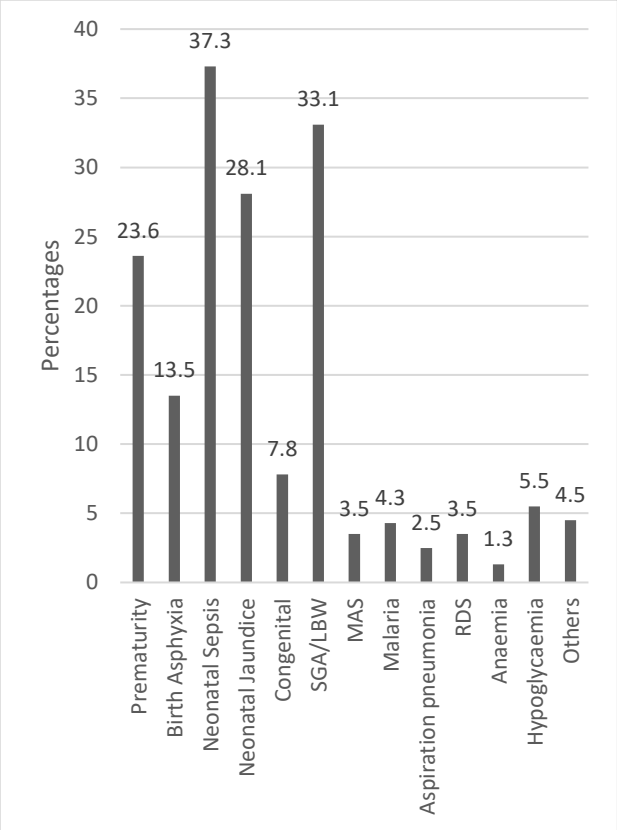


***Figure 1. Patterns of Diseases in the NICU. MAS: Meconium Aspiration Syndrome; NICU: Neonatal Intensive Care Unit; SGA/LBW: Small for Gestational Age/Low Birth Weight; RDS: Respiratory Disease Syndrome***



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***Outcome of Admission***

About 85.5% (n=341) of neonates in this study survived, and the remaining 14.5% (n=58) died (95% CI: 11.05 - 17.95). The total crude mortality rate in this study was 14.5% (n=58), in which 44.8% (n=26) were males and 55.2% (n=32) were females.

## Discussion

The majority of the neonates admitted were males; this corroborates with other studies conducted in Ethiopia[2], Nigeria[14], and Ghana[11,13]. Ochoga and colleagues[14] have attributed the high number of male neonates in the NICU over females partly to cultural beliefs that more value is placed on the male baby over the females; hence, they will quickly be sent to the hospital when they are unwell. It could also be due to biological factors where surfactant markers like lecithin, phosphatidylglycerol, and phosphatidylinositol turn to appear earlier in females than males, making the females have relatively well-developed lungs than males at the time of birth[15,16].

The Apgar score is a tool used to tell the vitality of a newborn and has been proven to be essential in determining a newborn's survival[17]. In this study, 31% of the neonates had an Apgar score less than 7/10 in the first minute, and 15.5% had an Apgar score less than 7/10 in the fifth minute, a remarkable improvement in the vitality of the neonates in the fifth minute, which may be a sign of good resuscitation practices. Studies by Andegiorgish, Andemariam[18], Annan and Asiedu[17], Desalew, Sintayehu[19], and Owusu, Lim[11] found an association between Apgar score at 5 minutes and neonatal mortality. In a study by Annan and Asiedu[17], there was a significant association between the Apgar score of a neonate and its survival. Findings in this study agree with earlier findings that assert that neonates with Apgar scores of less than 7/10 in the fifth minute of life were more likely to record higher neonatal mortality as compared to their counterparts who scored ≥7/10[11, 20].

Thirty-eight percent (38%) of neonates in the present study had birth weights less than 2.5 kg. A Chi-Square analysis found a significant association between birth weight and neonatal outcome (VLBW, p=0.001 and ELBW, p=0.006). However, a binomial regression did not find birth weight as a predictor of neonatal mortality. In the study of Andegiorgish, Andemariam [18], nearly half (40.9%) of all ELBWs died. The case fatality rate for LBW was 24.8% in the study of Gunasekhar and Somasekhara[21]. Cavallin and colleagues attributed the burden of morbidity and mortality in the NICU to LBW[22]. In this study, 40% (n=10/25) of VLBW and 42.9% (n=3/7) of ELBW babies also died.

One cost-effective means of providing good thermo-regulation is by ensuring skin-to-skin contact between mother and baby. However, this current study found that, in the delivery room, more than half of the neonates did not get skin-to-skin contact with their mothers; nonetheless, some had skin-to-skin contact within 30 minutes of birth. Other neonates also received skin-to-skin care after 30 minutes, which does not qualify for immediate skin-to-skin care. It is noteworthy that immediate skin-to-skin care in this study is the mothers' self-report, and its accuracy cannot be ascertained. Nonetheless, the rate of skin-to-skin care in this study is higher than in the study by Abdul-Mumin, Dawuni[23]. There was high mortality among neonates who did not receive immediate skin-to-skin care following birth. This is similar to the studies by Cavallin, Bonasia[22], Demisse, Alemu[2], and Tekleab, Amaru[24] who also reported high cases of mortality due to hypothermia. In a Chi-Square analysis, this study also showed that neonates with hyperthermia had 4.28 (95%CI: 1.66-11.02; p=0.001) odds of dying compared to those who had normal body temperature. This conforms with the study by Desalew, Sintayehu[19] that, neonates with high temperature (fever) on admission were almost seven times more likely to die compared with their counterparts with normothermia.

The present study found that neonates who were resuscitated had an increased risk of mortality compared to their counterparts who were not resuscitated. This could be explained by the fact that neonates who required resuscitation had very poor vitality, as seen in their Apgar scores. It could also be because resuscitation is not optimally done (poor thermal control, the use of inappropriate devices and inadequate provider skills)[23,25]. Inadequate optimal post-resuscitation care and transport to the NICU may also contribute to the risk of death among resuscitated neonates. Providers of neonatal care, especially newborn resuscitation, should be adequately trained to offer such services.

Early initiation of breastfeeding is very essential in ensuring the immunity of infants to prevent infections and also a means of providing warmth for the neonates. It also positively influences the duration of exclusive breastfeeding[1]. It is one of the tested and tried means recommended by WHO to aid in the survival and thriving of neonates. In this study, less than half of the neonates, initiated breastfeeding in the delivery room. Early initiation of breastfeeding is key in preventing neonatal death, but ,Orsido, Asseffa[25] found in their study that breastfeeding in the first hour was seldom practiced or promoted. Desalew, Sintayehu[19] reported that neonates who did not initiate breastfeeding within 24 hours were 12 times more likely to die. In the current study, 84.5% (n=49/58) of neonates who died did not have breastfeeding initiated in the delivery room. However, poor vitality and early referral could be the reason for not achieving early initiation of breastfeeding.

The leading causes of admissions to the NICU and subsequent mortality in this study were neonatal sepsis, prematurity, neonatal jaundice, small for gestational age or low birth weight (SGA/LBW), and birth asphyxia. This agrees with studies conducted in Ghana and other LMICs[13,17,19,24]. This further confirms the WHO assertion that most neonatal deaths in LMICs are preventable (WHO, 2018; Demisse et al., 2017).

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Prematurity was the main predictor of mortality (AOR=6.974, 95% CI: 1.766-27.537; p=0.006). This can be explained by the high prevalence of complications associated with prematurity in our study, such as jaundice, sepsis, asphyxia and LBW. All these increase the risk of mortality in preterm neonates, explaining the reason for prematurity being a predictor of neonatal deaths consistent with other studies [2,13,17,19,24].

About half of the deaths in this study were early neonatal mortality; this is, however, lower than the finding of Farah et al. (2018), who recorded 96% of early neonatal mortality. This can be linked to different circumstances surrounding labour and delivery and immediate newborn care interventions.

The study-specific mortality rate in TTH NICU was 14.5%. This rate agrees with similar rates reported by other studies in Ghana, Nigeria, and Ethiopia[2,13,14]; all these other studies employed a retrospective design. The rate in this study was higher than the NMR in studies conducted in Eritrea[18]. Nonetheless, the finding in the current study was also lower than the 51.8% reported by Annan and Asiedu[17] in Ghana using a prospective design, the 33.3% reported by Weddih, Ahmed[26] in Mauritania that employed a retrospective design and the 23.1% that was reported in Ethiopia using a prospective design[24]. These different findings amongst studies could be explained partly by the variations in study design, sample size, type of hospital setting, and differences in the resources of the various hospitals where the studies were conducted.

## Limitations

The strength of this present study hinges on it being the first prospective study to the best of our knowledge in the Tamale Teaching Hospital regarding the pattern and burden of diseases and factors affecting the outcome of admissions into the NICU. In interpreting the findings of this study for generalization, one needs to carefully consider the fact that this study was done in just three months; the duration was short and did not include all seasons of the year.

Another important limitation of the study is the single institution study site. This affects the generalizability of the findings.

## Conclusion

The common causes of admission and deaths in the TTH NICU during the study were neonatal sepsis, prematurity, birth asphyxia, LBW/SGA and neonatal jaundice. This highlights the need for interventions to address these conditions as we strive to reduce institutional neonatal mortality.

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## Author Contribution

**Conceptualization:** Sylvia Phaphali Adzitey; **Supervision:** Alhassan Abdul-Mumin, Victor Mogre; **Writing – original draft:** Sylvia Phaphali Adzitey; **Writing – review & editing:** Sylvia Phaphali Adzitey, Alhassan Abdul-Mumin, Victor Mogre.

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