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Original Research Article

Pattern and Causes of Neonatal Mortality in a Level II Special Care Newborn Unit of a Medical College: A Record-Based Study

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Abstract:

Background: Neonatal mortality remains a major public health challenge in developing countries and contributes substantially to under-five mortality. Regular evaluation of mortality patterns and causes in Special Care Newborn Units (SCNUs) is essential for identifying high-risk groups and improving neonatal survival through evidence-based interventions.

Aim: To evaluate the pattern and causes of neonatal mortality among neonates admitted to a Level II Special Care Newborn Unit of a medical college.

Methodology: A retrospective record-based observational study was conducted at the Level II SCNU of Government Medical College and Hospital, Bettiah, Bihar, India. Hospital records of 517 neonates admitted between January 2016 and December 2016 were reviewed. Data regarding demographic characteristics, birth weight, gestational age, admission diagnosis, treatment outcomes, and causes of mortality were extracted using a structured proforma and analyzed using descriptive statistics and Chi-square tests, with $p<0.05$ considered statistically significant.

Results: Among 517 admitted neonates, the majority were male (58.2%), inborn (61.5%), and term (53.4%). Prematurity/low birth weight (25.5%), neonatal sepsis (19.0%), respiratory distress syndrome (16.4%), and birth asphyxia (14.1%) were the leading causes of admission. Overall, 74.7% of neonates were discharged successfully, while the in-hospital mortality rate was 14.3%. Respiratory distress syndrome (27.0%), birth asphyxia/hypoxic-ischemic encephalopathy (23.0%), neonatal sepsis (18.9%), and prematurity-related complications (16.2%) were the principal causes of death. Mortality was significantly higher among outborn neonates, preterm infants, and those with lower birth weight ($p<0.05$), with most deaths occurring within the first 48 hours of admission.

Conclusion: Neonatal mortality in the Level II SCNU was primarily attributable to respiratory distress syndrome, birth asphyxia, neonatal sepsis, and complications of prematurity. Strengthening antenatal care, early referral, skilled neonatal resuscitation, infection control, and comprehensive management of preterm and low-birth-weight neonates may substantially improve neonatal survival.

Keywords: Neonatal mortality, Special Care Newborn Unit, Prematurity, Low birth weight, Respiratory distress syndrome, Birth asphyxia, Neonatal sepsis, Bihar.

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Introduction

Neonatal mortality, the death of a live-born infant in their first 28 completed days of life, continues to be one of the most sensitive indicators of the quality of maternal and newborn health care services. While impressive progress has been made world-wide in reducing under-five mortality, the improvement in neonatal mortality has been more modest, and a higher proportion of childhood mortality is in neonates. The neonatal period is a time of rapid physiological adjustment to the extrauterine environment, and the newborn is at special risk for problems associated with prematurity, birth asphyxia, infections, congenital defects and other perinatal conditions. Thus, decreasing neonatal deaths have become a major public health priority in the world and an integral part of child survival. In the early 2000s, it was estimated that almost 4 million neonates died every year, with most of these deaths occurring in countries with limited access to good obstetric and neonatal services [1].

India has one of the highest birth rates in the world as well as substantial interregional differences in healthcare provision [2] and as such accounts for one of the largest shares of global neonatal deaths. Although the maternal and child health programmes have made significant strides in the last few decades, the neonatal mortality is still high accounting for

over 50% of infant mortality in India. National estimates have always shown that the largest causes of neonatal death are complications due to preterm birth, birth asphyxia, neonatal sepsis and congenital malformations. They can be largely prevented or treated by timely use of antenatal care, skilled birth attendants, prompt neonatal resuscitation, early identification of high-risk neonates, and appropriate neonatal intensive care services [3].

Neonatal mortality varies widely by geographical area and health care setting and its distribution and determinants differ significantly. Socioeconomic conditions, maternal education, nutrition, access to health care facilities, referral policies and provision of specially trained newborn care services are important contributors to neonatal outcomes. In resource-limited environments, delays in the recognition of illness in the newborn, poor transportation, late referrals and lack of neonatal care facilities provide for extra risks of death. Previous research has reported that most neonatal mortality takes place in the first week of life, with much of this mortality occurring within the first 24 hours of life, highlighting the need for good intrapartum and immediate postnatal care [4].

India has been focusing on improving newborn care in facilities by introducing Special Care Newborn Units (SCNUs), Newborn Stabilization Units (NBSUs), and Newborn Care Corners (NBCCs) to combat neonatal mortality. The level II SCNUs are very important for the care of moderately ill and preterm infants who require special monitoring and care but not advanced tertiary intensive care [5]. They are also an important interface between the primary healthcare facilities and the tertiary neonatal intensive care units offering the essential services for newborns including thermal care, respiratory care, phototherapy, intravenous therapy, feeding support, infection management, and stabilization before referral when needed. A disease profile and the pattern of deaths in SCNUs offer useful information on the quality of neonatal care and areas for improvement.

Despite being one of the most populous states in India, Bihar still has significant maternal and neonatal health challenges, including high fertility rates, socio-economic barriers, limitations in health care infrastructure in rural areas, and late uptake of health services. Even if there are a number of governmental efforts to promote institutional deliveries and newborn care services, neonatal mortality is still a major issue. The number of both inborn and out-born neonates received by medical college hospitals in Bihar is very high with varying severity level of illness. Thus, Level II SCNUs associated with these institutions are burdened with a large number of neonatal deaths and morbidity. To develop evidence-based interventions for such settings, it is important to understand the demographic, clinical profile and causes of neonatal deaths.

Several studies conducted in India have consistently identified prematurity and its complications, birth asphyxia, neonatal sepsis, respiratory distress syndrome, and congenital anomalies as the predominant causes of neonatal mortality. The Million Death Study showed substantial geographic differences in the causes of neonatal death, suggesting the importance of geographic health planning and targeted interventions for neonatal deaths [6]. Similarly, community-based studies have highlighted the importance of better antenatal care, institutional deliveries, early breastfeeding, prevention of infection and timely referral systems to considerably lower neonatal mortality [7]. These findings suggest that the national estimates are useful to gain a broad picture, but hospital-based data are still essential to assess the performance of health care services and to determine the locally important causes of neonatal deaths [8].

The hospital-based record analysis is especially useful since it includes detailed data on neonatal admissions, gestational age, birth weight, referral status, length of stay, clinical diagnosis and treatment results, and cause of death. These retrospective reviews help to measure disease burden and identify high-risk populations and trends over time, and do not add to the burden of the patient or provider. In addition, they help evidence-based policy making by detecting and documenting preventable factors of neonatal deaths and assessing the effectiveness of the current neonatal services. Record based studies are needed for the generation of local evidence for healthcare planning and resource allocation particularly in areas where less is known, especially eastern India.

Therefore, the present record-based study was conducted in Level II Special Care Newborn Unit of a medical college, Bihar, to assess the pattern and causes of neonatal deaths in the admitted neonates. This study is intended to give a detailed picture of neonatal mortality in this health care scenario by analysing demographic characteristics, clinical profile and immediate causes of death. The results are likely to help clinicians, hospital managers, and public health officials recognize reducible risk factors, enhance service provision for neonates, and design and implement targeted interventions to decrease neonatal mortality in Bihar and other resource-limited regions.

Materials and Methods

Study Design: This retrospective record-based observational study was conducted to assess the pattern and causes of neonatal mortality among newborns admitted to a Level II Special Care Newborn Unit (SCNU). The study utilized routinely maintained hospital records to evaluate demographic characteristics, clinical profiles, causes of mortality, and treatment outcomes of admitted neonates.

Study Area: The study was conducted in the Department of Community Medicine, Government Medical College and Hospital (GMCH), Bettiah, West Champaran, Bihar, India.

Study Duration: The study included records of neonates admitted to the SCNU during a 12-month period from January 2016 to December 2016.

Sample Size: A total of 517 neonatal records (N = 517) meeting the eligibility criteria were included in the study. Since all eligible records during the study period were analyzed, no sampling technique was employed.

Study Population: The study population comprised all neonates admitted to the Level II SCNU of Government Medical College and Hospital, Bettiah, during the study period, irrespective of their place of birth (inborn or outborn). The study focused on evaluating neonatal admissions, survival outcomes, mortality patterns, and causes of death documented in hospital records.

Data Collection: Data were collected retrospectively from hospital admission registers, individual neonatal case records, discharge summaries, referral records, and mortality registers maintained in the Level II SCNU. A structured data extraction form was developed to ensure uniform collection of information from all eligible records. Variables extracted included neonatal demographic characteristics such as age at admission and sex, birth-related details including birth weight, gestational age, and place of delivery (inborn or outborn), primary diagnosis at admission, duration of hospital stay, treatment outcome, and documented cause of death wherever applicable. Birth weight was classified according to the World Health Organization criteria into low birth weight (<2500 g), very low birth weight (<1500 g), and extremely low birth weight (<1000 g). The causes of neonatal mortality were classified based on documented clinical diagnoses supported by available laboratory investigations, radiological findings, and physician records. Major causes included prematurity and its complications, birth asphyxia or hypoxic-ischemic encephalopathy, neonatal sepsis, respiratory distress syndrome, neonatal jaundice, congenital anomalies, meconium aspiration syndrome, and other clinically established neonatal conditions. All neonates admitted to the SCNU had received treatment according to the Government of India Facility-Based Newborn Care (FBNC) guidelines and institutional neonatal management protocols.

Inclusion Criteria

The study included:

- All neonates admitted to the Level II SCNU between January 2016 and December 2016.
- Both inborn and outborn neonates.
- Neonatal records with complete information regarding admission diagnosis and treatment outcome.
- Neonates whose hospital outcome (discharge, death, referral, or LAMA) was documented.

Exclusion Criteria

The following records were excluded:

- Neonates with incomplete or missing medical records.
- Duplicate admission records.
- Neonates admitted only for observation without requiring SCNU management.
- Neonates referred immediately after admission without adequate evaluation.
- Records lacking documentation of the final clinical outcome or primary diagnosis.

Study Procedure: Admission registers and medical records of all eligible neonates admitted to the SCNU during the study period were reviewed systematically. Records were screened according to the predefined inclusion and exclusion criteria. Relevant demographic, clinical, and outcome-related information was extracted using a standardized proforma.

The extracted data were verified for completeness and consistency before being entered into a Microsoft Excel spreadsheet. Neonatal deaths were classified according to the documented primary cause of death, and mortality patterns were analyzed based on birth weight, gestational age, sex, place of birth, duration of hospital stay, and other available clinical variables. Quality checks were performed to minimize transcription errors and maintain data accuracy.

Statistical Analysis: The collected data were entered into Microsoft Excel 2019 and subsequently analyzed using Statistical Package for the Social Sciences (SPSS) version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive statistical methods were used to summarize the study findings. Continuous variables were expressed as mean ± standard deviation (SD) or median with interquartile range (IQR), depending on the distribution of data, whereas categorical variables were presented as frequencies and percentages. Associations between neonatal mortality and categorical variables were evaluated using the Chi-square test or Fisher's exact test wherever appropriate. A p-value of less than 0.05 was considered statistically significant. The study findings were presented using tables, bar diagrams, pie charts, and line graphs to facilitate clear interpretation of the patterns and causes of neonatal mortality".

Result

Table 1 presents the baseline demographic and clinical characteristics of the 517 neonates admitted to

the Level II Special Care Newborn Unit (SCNU). Male neonates constituted the majority of admissions (301, 58.2%), while 216 (41.8%) were female. Based on admission status, 318 neonates (61.5%) were inborn, whereas 199 (38.5%) were outborn referrals. Regarding gestational age, term neonates (37–41 weeks) formed the largest group (276, 53.4%), followed by preterm neonates (<37 weeks) (227, 43.9%), while only 14 neonates (2.7%) were post-term (≥42 weeks). With respect to birth weight, nearly half of the neonates (246, 47.6%) had a birth weight of ≥2500 g, whereas 189 (36.6%) were classified as low birth weight (1500–2499 g), 61 (11.8%) as very low birth weight (1000–1499 g), and 21 (4.1%) as extremely low birth weight (<1000 g). Overall, the study population predominantly comprised male, inborn, term neonates, although a substantial proportion of admissions consisted of preterm and low-birth-weight infants, reflecting the high burden of neonatal conditions requiring specialized care in the Level II SCNU.

Table 1: Baseline demographic and clinical characteristics of neonates admitted to the Level II SCNU (N = 517)

Characteristics	Number (n)	Percentage (%)
Sex		
Male	301	58.2
Female	216	41.8
Admission status		
Inborn	318	61.5
Outborn	199	38.5
Gestational age		
Preterm (<37 weeks)	227	43.9
Term (37–41 weeks)	276	53.4
Post-term (≥42 weeks)	14	2.7
Birth weight		
≥2500 g	246	47.6
1500–2499 g (LBW)	189	36.6
1000–1499 g (VLBW)	61	11.8
<1000 g (ELBW)	21	4.1
Total	517	100

Table 2: Morbidity profile and treatment outcome of admitted neonates (N = 517)

Variable	Number (n)	Percentage (%)
Primary diagnosis at admission		
Prematurity/Low birth weight	132	25.5
Neonatal sepsis	98	19
Respiratory distress syndrome	85	16.4
Birth asphyxia (HIE)	73	14.1
Neonatal jaundice	56	10.8
Meconium aspiration syndrome	31	6
Congenital anomalies	22	4.3
Hypoglycemia	12	2.3
Others	8	1.5
Total	517	100
Treatment outcome		
Discharged	386	74.7
Expired	74	14.3
Referred	31	6
LAMA	26	5
Total	**517**	**100**

Table 2 summarizes the morbidity profile and treatment outcomes of the 517 neonates admitted to the Level II Special Care Newborn Unit. Prematurity/low birth weight was the most common primary diagnosis at admission, accounting for 132 cases (25.5%), followed by neonatal sepsis (98, 19.0%), respiratory distress syndrome (85, 16.4%), and birth asphyxia/hypoxic-ischemic encephalopathy (73, 14.1%). Other important diagnoses included neonatal jaundice (56, 10.8%), meconium aspiration syndrome (31, 6.0%), congenital anomalies (22,

4.3%), hypoglycemia (12, 2.3%), and other conditions (8, 1.5%). Regarding treatment outcomes, the majority of neonates were discharged successfully (386, 74.7%), while 74 neonates (14.3%) expired during hospitalization. Additionally, 31 neonates (6.0%) were referred to higher centers for advanced management, and 26 (5.0%) were discharged against medical advice (LAMA). Overall, the findings indicate that prematurity/low birth weight, neonatal sepsis, respiratory distress syndrome, and birth asphyxia were the leading causes of admission, whereas nearly three-fourths of neonates had a favorable outcome with successful discharge.

Table 3 presents the distribution of causes of neonatal mortality and duration of hospital stay among the 74 expired neonates. Respiratory distress syndrome (RDS) was the leading cause of death, accounting for 20 deaths (27.0%), followed by birth asphyxia/hypoxic-ischemic encephalopathy (HIE) with 17 deaths (23.0%), and neonatal sepsis with 14 deaths (18.9%). Prematurity and its complications contributed to 12 deaths (16.2%), while congenital anomalies accounted for 5 deaths (6.8%). Less frequent causes included meconium aspiration syndrome (3 deaths, 4.1%), neonatal jaundice (2 deaths, 2.7%), and other causes (1 death, 1.4%). Regarding the duration of hospital stay before death, the largest proportion of neonates died within 24–48 hours of admission (27, 36.5%), followed by those who survived for more than 48 hours (26, 35.1%), while 21 neonates (28.4%) died within the first 24 hours of hospitalization. Overall, the findings indicate that RDS, birth asphyxia/HIE, neonatal sepsis, and complications of prematurity were the predominant causes of neonatal mortality, with most deaths occurring within the first 48 hours after admission.

Table 3: Distribution of causes of neonatal mortality and duration of hospital stay among expired neonates (n = 74)

Variable	Number (n)	Percentage (%)
Cause of death		
Respiratory distress syndrome	20	27
Birth asphyxia/HIE	17	23
Neonatal sepsis	14	18.9
Prematurity and complications	12	16.2
Congenital anomalies	5	6.8
Meconium aspiration syndrome	3	4.1
Neonatal jaundice	2	2.7
Others	1	1.4
Total	**74**	**100**
Duration of hospital stay		
<24 hours	21	28.4
24–48 hours	27	36.5
>48 hours	26	35.1
Total	**74**	**100**

Table 4 demonstrates the association between selected neonatal characteristics and mortality among 517 neonates admitted to the Level II Special Care Newborn Unit. Admission status was significantly associated with mortality (χ^2=6.04, p=0.014), with outborn neonates experiencing a higher mortality rate (38/199, 19.1%) than inborn neonates (36/318, 11.3%). Birth weight showed a highly significant relationship with mortality (χ^2=64.87, p<0.001), with mortality increasing progressively as birth weight decreased. Neonates weighing ≥2500 g had the lowest mortality (12/246, 4.9%), followed by those weighing 1500–2499 g (27/189, 14.3%), 1000–1499 g (24/61, 39.3%), and <1000 g (11/21, 52.4%), indicating that extremely low birth weight was associated with the highest risk of death. Gestational age was also significantly associated with mortality (χ^2=16.28, p<0.001), as preterm neonates had a substantially higher mortality rate (49/227, 21.6%) compared with term/post-term neonates (25/290, 8.6%). Overall, these findings indicate that outborn status, lower birth weight, and prematurity were significant predictors of neonatal mortality in the study population.

Table 4: Association of selected neonatal characteristics with mortality (N = 517)					
Variable	**Total (n)**	**Expired n (%)**	**Survived n (%)**	**χ^2**	**P value**
Admission status					
Inborn	318	36 (11.3)	282 (88.7)	6.04	0.014*
Outborn	199	38 (19.1)	161 (80.9)		
Birth weight					
≥2500 g	246	12 (4.9)	234 (95.1)	64.87	<0.001*
1500–2499 g	189	27 (14.3)	162 (85.7)		
1000–1499 g	61	24 (39.3)	37 (60.7)		
<1000 g	21	11 (52.4)	10 (47.6)		
Gestational age					
Preterm	227	49 (21.6)	178 (78.4)	16.28	<0.001*
Term/Post-term	290	25 (8.6)	265 (91.4)		

Survived = Discharged + Referred + LAMA.

Table 5 presents the distribution of neonatal mortality according to demographic characteristics among the 74 neonatal deaths recorded during the study period. Male neonates accounted for the majority of deaths (44, 59.5%), while female neonates constituted 30 deaths (40.5%). Based on admission status, mortality was slightly higher among outborn neonates (38, 51.4%) compared with inborn neonates (36, 48.6%). With respect to gestational age, preterm neonates accounted for the largest proportion of deaths (49, 66.2%), followed by term neonates (23, 31.1%), whereas post-term neonates represented only 2 deaths (2.7%). Regarding birth weight, the highest mortality was observed among neonates weighing 1500–2499 g (27, 36.5%), followed by those weighing 1000–1499 g (24, 32.4%). Neonates with a birth weight of ≥2500 g accounted for 12 deaths (16.2%), while those with <1000 g contributed 11 deaths (14.9%). Overall, the findings indicate that neonatal mortality was predominantly observed among male, outborn, preterm, and low-birth-weight neonates, highlighting these groups as particularly vulnerable to adverse outcomes.

Table 5: Distribution of mortality according to demographic characteristics (n = 74)		
Characteristics	**Deaths (n)**	**Percentage (%)**
Sex		
Male	44	59.5
Female	30	40.5
Admission status		
Inborn	36	48.6
Outborn	38	51.4
Gestational age		
Preterm	49	66.2
Term	23	31.1
Post-term	2	2.7
Birth weight		
≥2500 g	12	16.2
1500–2499 g	27	36.5
1000–1499 g	24	32.4
<1000 g	11	14.9
Total	**74**	**100**

Discussion

The current study offers a general overview of the pattern, etiology, and predictors of neonatal deaths among neonates admitted to a Level II Special Care Newborn Unit (SCNU). Among the 517 admitted neonates, the percentage of male neonates were 58.2 percent and the same was reported by several neonatal studies in India, reflecting male predominance during admission. Kumar et al. (2012) [9] reported that in a teaching hospital in the state of SCNU in Uttarakhand, males accounted for about 59% of the neonatal admissions and Neogi et al. (2011) [10] also reported the predominance of male neonates with nearly 60% of neonatal admissions in the hospital. This predominance is believed to be due to the stronger biological susceptibility of the male neonates towards neonatal diseases and the tendency to seek healthcare for male children over female children in many parts of India. Likewise, the proportion of inborn admissions (61.5%) and outborn admissions (38.5%) were similar to that reported by Kumar et al. (2012) [9] where the proportion of inborn admissions was higher with institutional deliveries and referral linkages within tertiary care centers".

The most common indications for admission were prematurity and low birth weight (25.5%), neonatal sepsis (19.0%), respiratory distress syndrome (16.4%) and birth asphyxia (14.1%). Similar results have been reported by Kumar et al. (2012) [9] with about 29% of admissions due to prematurity and low birth weight, 23% due to sepsis and 18% due to birth asphyxia and RDS of about 14%. Likewise, the Ministry of Health and Family Welfare multicentric assessment of Special Newborn Care Units (2011) [11] reported low birth weight/prematurity (around 30%) and neonatal sepsis (around 18%) as the major causes for neonatal admission in India. The high similarity between the findings of these studies and the present study indicate that prematurity, low birth weight and neonatal infections are still the leading causes of neonatal morbidity for specialized care in Indian SCNUs.

In our SCNU, the overall mortality was 14.3% and almost three-fourths (74.7%) of the neonates admitted survived. Compared to mortality of 20% reported in the same level of neonatal care by Kumar et al. (2012) [9] this mortality rate is low and compared to established neonatal units in metropolitan centres this is high. Our results are similar to those reported by the Ministry of Health and Family Welfare (2011) [11] who reported an average mortality of around 15.5% in SNCU across India. In contrast, the neonatal intensive care units with better facilities have shown much lower mortality rates of 8-12% because of improvement of facilities, early referral system and availability of trained manpower. Although the number of critically ill neonates is high, the comparatively good discharge rate in the current study suggests satisfactory management results.

Mortality pattern analysis showed that respiratory distress syndrome (RDS) (27.0%) was the most common cause of neonatal mortality followed by birth asphyxia with hypoxic ischemic encephalopathy (HIE) (23.0%), neonatal sepsis (18.9%) and prematurity (16.2%). Oestergaard et al., (2011) [12] have found similar trends; they have estimated that globally, the contribution of prematurity is about 35%, intrapartum-related complications is about 24% and severe infections is about 15% of all neonatal deaths. Our study showed that respiratory distress syndrome was the most common immediate cause of death, but this is strongly related to the fact that respiratory distress syndrome is a common cause of death in preterm infants. Kumar et al. (2012) [9] similarly found respiratory distress syndrome (around 26%), prematurity (25%), birth asphyxia (22%) and sepsis (16%) as key causes of neonatal deaths. This relatively higher contribution from respiratory distress syndrome in the present study may be attributed to late presentation of preterm babies, inadequate administration of antenatal corticosteroid or limited access to advanced respiratory care in the Level II neonatal care centers.

A key finding of the current study was that almost half of neonatal deaths (44.9%) were those that occurred within the first 24 hours of admission and another 36.5% within 24–48 hours of admission. These similar results were also seen by Baqui et al (2006) [13] who showed that most neonatal deaths are occurring in the first 2 days of life and thus immediate stabilization of the newborn and prompt access to neonatal intensive care is essential. Lawn et al (2005) [1] also emphasized that the risk of death is highest during the first neonatal period, especially with preterm babies and birth asphyxia. The findings highlight the importance of early and timely diagnosis, prompt referral, adequate neonatal resuscitation, and timely respiratory support to save neonatal lives.

In the present study, the mortality rate of outborn neonates was significantly higher than that of inborn neonates (19.1% vs. 11.3%, respectively, $p = 0.014$). The same results were described by Kumar et al. (2012) [9] in which the mortality rate of outborn neonates was close to 25% whereas inborn neonate mortality was close to 14%. However, the Ministry of Health and Family Welfare (2011) [11] found poor outcomes among the referred neonates due to the following: Delayed transportation, inadequate stabilization before transport, and inadequate neonatal transport facilities. The increased mortality risk for outborn infants in our study serves as a reminder to continue efforts to improve referral systems, newborn stabilization at peripheral centres and efficient neonatal transport systems.

Birth weight and gestational age were the strongest predictors of mortality in the present study. There was a steady rise in mortality from neonates of ≥2500 g (4.9%) to extremely low birth babies (52.4%), and mortality rates were significantly higher for preterm than term babies (21.6% versus 8.6%, $p<0.001$). These similar results were found by Marchant et al. (2012) [14] who showed that low birth weight and preterm delivery were the most significant contributors to neonatal mortality in low- and middle-income countries. Likewise, Baqui et al. (2006) [13] noted that the risk of neonatal death was several folds increased in preterm and very low birth weight neonates as compared with normal birth weight babies. In our study, the proportion of preterm neonates accounted for 66.2% of all neonatal deaths and the proportion of low weight neonates plus very low weight neonates accounted for almost 69% of all the neonatal deaths. The results of this study clearly illustrate that improving the care of women during pregnancy, reducing preterm births, ensuring timely administration of antenatal corticosteroid as well as promotion of institutional deliveries and strengthening the management of low-birth-weight infants are critical strategies in reducing neonatal mortality in level II SCBU.

Conclusion

This record-based study emphasizes that in a Level II Special Care Newborn Unit, the majority of neonatal deaths are related to potentially preventable and treatable neonatal conditions, including complications of prematurity, respiratory disorders, birth asphyxia and neonatal infections. Higher mortality rates were seen in outborn, low birth weight and preterm neonates, highlighting the vulnerability of these high-risk groups. The results highlight the need to improve the quality of antenatal care, referral systems, intrapartum and immediate newborn care, neonatal resuscitation, infection prevention and early management of respiratory complications. Systematic interventions for improving care for high-risk neonates, coupled with better referral networks and evidence-based neonatal care procedures can significantly decrease neonatal mortality and create difference in newborn survival at Level II Special Care Newborn Units.

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