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Evaluation of mortality and morbidity pattern and associated factors in the low birth-weight babies in sick newborn care unit at Darbhanga Medical College and Hospital

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Abstract

Newborn period is the most critical phase of life as they are prone to various diseases. Survival of the newborn is dependent on availability and accessibility to quality health care system. The present study was planned for Evaluation of Mortality and morbidity pattern and associated factors in the low birth weight babies in sick newborn Care Unit at Darbhanga Medical College and Hospital.

The present study was conducted in Department of Pediatrics, Darbhanga Medical College and Hospital, Laheriasarai, Bihar. Total 100 cases of the low birth weight newborns admitted to SNCU in our hospital were enrolled and evaluated. These newborns were divided in different categories based on the different birth weights.

The outcome from the present study concludes that Perinatal asphyxia (8%) and infection (12%) are important preventable causes of mortality. Also, the respiratory distress syndrome (4%), Meconium Aspiration Syndrome (24%), neonatal sepsis (12%), neonatal hyperbilirubinemia (14%), and HIES (8%) as the major causes of morbidity. The very Low Birth Weight (43%) and prematurity being the commonest contributors of death.

Keywords: neonatal morbidity, neonatal mortality, sick newborn care unit, etc

Introduction

A term infant is an infant who is born after 37 completed weeks (ie, ≥37 weeks' gestation). A preterm infant is born before 37 completed weeks (ie, < 37 weeks' gestation). A post term infant is born after 42 weeks' gestation.

Several terms are used to classify neonates according to BW, as follows:

- Low birth weight (LBW) neonates weigh less than 2500 g, either because of prematurity or because they are small for their gestational age, or both.
- Very low birth weight (VLBW) neonates weigh less than 1500 g, at birth [1].
- Extremely low birth weight (ELBW) neonates weigh less than 1000 g, at birth.

More than half (53%) of all neonatal deaths is contributed by only five countries: India, Nigeria, Pakistan, China and Democratic Republic of the Congo. The major causes of newborn deaths in India are pre-maturity (35%), neonatal infections (33%), intra-partum related complications/ birth asphyxia (20%) and congenital malformations (9%) [2]. Neonatal deaths can be largely preventable. An analysis indicated that available interventions can reduce the three most common cause of neonatal mortality preterm, intrapartum, and infection-related deaths by 58%, 79%, and 84%, respectively [3].

Various identified risk factors for neonates to acquire diseases are Maternal malnourishment, socioeconomic conditions of females during their preconception period, child bearing at an early age, consecutive pregnancies at small intervals, unhygienic cord care practices, not keeping the baby in dry and warm conditions, societal norm that prevents mothers from feeding the child with colostrum's and promoting feeds that are locally acceptable and available like tea and ghutti prepared and administered to otherwise healthy babies in unhygienic conditions making them susceptible to acquiring infections [4]

Preterm infants require as much as 150 kcal/kg/day. For infants to achieve optimal weight gain, maintain a thermoneutral environment. The initial step in nutritional support is to determine an infant's fluid requirement, which depends on gestational age, postnatal age, and any underlying disease [5].

Premature infants have increased fluid requirements because of their increased surface area and the immaturity of their skin. Premature infants may require as much as 200 mL/kg/day.

High percentage of low birth weight babies are born in this hospital due to prevailing maternal under-nutrition and many other factors. Low birth weight babies has high incidence of diseses like perinatal asphyxia, infection, respiratory distress syndrome, meconium aspiration syndrome, neonatal hyperbilirubinemia, HIE [6].

Hence based on above findings, the present study was planned for Evaluation of Mortality and morbidity pattern and associated factors in low birth weight babies in the Sick newborn Care Unit at Darbhanga Medical College and Hospital.

Methodology

The present study was planned in Department of Pediatrics, Darbhanga Medical College and Hospital, Laheriasarai, Bihar. Total 100 cases of the low birth weight newborns admitted to SNCU in our hospital were enrolled and

evaluated. These newborns were divided in different categories based on the different birth weights.
Preterm—Live born neonate delivered before 37 weeks from 1st day of last menstrual period (LMP) and confirmed clinically after delivery.
LBW (low birth weight) —was defined as birth weight of 1500 grams to 2499 grams.
VLBW (Very Low Birth Weight) -- birth weight of 1000 grams to 1499 grams.
ELBW (Extremely Low Birth Weight) -- birth weight < 1000 grams.
All the patients were informed consents. The aim and the objective of the present study were conveyed to them. Approval of the institutional ethical committee was taken prior to conduct of this study.
Following was the inclusion and exclusion criteria for the present study.
Inclusion criteria: Low birth weight new-borns < 28 days of life admitted in SNCU from february 2019 to january 2020.
Exclusion Criteria: (a) Babies who left the hospital against medical advice. (b) Neonates whose medical records were incomplete. New-borns admitted in the hospital but referred to other hospital due to any reason.

Results & Discussion

Table 1: Basic Details

Parameters	No. of Cases	Percentage
Sex		
Males	58	58
Females	42	42
Weight		
Less than 2.5 kg	26	26
1.5 to 2.499 kg	54	54
1 – 1.499 kg	16	16
Less than 1 kg	4	4
Gestation Period		
More than 37 weeks	54	54
Less than 37 weeks	46	46
Total	100	100

Table 2: Morbidity Pattern

Morbidity	No. of Cases	Percentage
Respiratory distress syndrome	32	32
Meconium aspiration syndrome	24	24
Respiratory distress (other causes)	04	04
Birth asphyxia with HIE	08	08
Sepsis/pneumonia/meningitis	12	12
Jaundice	14	14
Major congenital anomaly	02	02
Hypothermia	00	00
Hypoglycaemia	02	02
Other	02	02
Total	100	100

Table 3: Survival Pattern

Outcome	No. of Cases	Percentage
Discharged	86	86
Death	14	14
Total	100	100

Table 4: Weight of Neonates undergone death

Outcome	No. of Cases	Percentage
Less than 2.5 kg	2	14
1.5 to 2.499 kg	4	29
1 – 1.499 kg	6	43
Less than 1 kg	2	14
Total	14	100

The first 28 days of life is the most vulnerable time for a child survival. Most of the neonatal deaths occur in the Ist week of life. As per UNICEF data, March 2018, global neonatal mortality rate is 18 deaths/ 1000 live birth. The current neonatal mortality rate (NMR) in India is 28 / 1000 live births [7]. In India, there are disparities of NMR among the states. Kerala and Goa have low neonatal mortality rate 10 /1000 live births while Madhya Pradesh, Uttar Pradesh, Bihar and Rajasthan having very high NMR and accounts for 57% of India's total neonatal deaths [8].
To achieve millennium development goals specific focus on neonatal mortality and morbidity is required. In a report published in The Lancet, the major direct cause of the deaths in low birth weight babiies were preterm (27%), infections (26%), asphyxia (23%), congenital anomaly (7%), others (7%), tetanus (7%) and diarrhoea (3%) [9].
As low birth weight babies are expected to develop complications during infancy and further in life course, prevention and control of its determinants factors should be considered in primary health care settings in order to improve mother and child health [10].
Infants born preterm are more likely to die during the neonatal period (first 28 days) and infancy (first year) and mortality rates increases proportionally with decreasing gestational age or birth weight [11].
This hospital-based study may not reflect adequately the picture existing in the community. There is need to implement appropriate strategies to improve antenatal, intrapartum and postnatal care targeting to reduce birth asphyxia, neonatal infection and premature birth. Implementing child survival programmes like India Newborn Action Plan (INAP) 2014 may go a long way to reduce these preventable causes of neonatal morbidity and mortality [12].

Conclusion

The data generated from the present study concludes that Perinatal asphyxia (8%) and infection (12%) are important

preventable causes of mortality. Also, the respiratory distress syndrome (4%), Meconium Aspiration Syndrome (24%), neonatal sepsis (12%), neonatal hyperbilirubinemia (14%), and HIES (8%) as the major causes of morbidity. The Low Birth Weight and prematurity being the commonest contributors of death, attempts to prolong the pregnancy each week might improve the neonatal outcome considerably.

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