Section: Pediatrics/ Neonatology

Original Research Article

MORTALITY AND MORBIDITY PATTERNS IN THE NEONATAL INTENSIVE CARE UNIT (NICU) OF A TERTIARY CARE HOSPITAL IN SOUTH INDIA

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Received *: 14/05/2023*
Received in revised form *: 04/07/2023*
Accepted *: 19/07/2023*

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DOI: 10.5530/ijmedph.2023.3.23

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2023; 13 (3); 143-145

ABSTRACT

Background: To study mortality and morbidity patterns in the NICU of a tertiary care hospital.

Material and Methods: This was a hospital-based Prospective study conducted over one year in the NICU of a tertiary care hospital. Data on neonates admitted, including gender, gestational age, maternal risk factors, and disease-specific mortality, were collected and analyzed.

Results: Of 3587 neonates admitted, 58.8% were males. The primary causes of mortality were respiratory distress syndrome, hypoxic ischemic encephalopathy, and sepsis. Mortality was associated with factors like lower gestational age, Low birth weight, LSCS, male gender and maternal risk factors.

Conclusion: Understanding the patterns of Neonatal mortality and morbidity can help in optimizing resource allocation and improving neonatal outcomes.

Keywords: NICU, Neonatal Mortality, morbidity, risk factors.

INTRODUCTION

India's neonatal mortality rate (NMR) is approximately 20 deaths per 1,000 live births as of 2024. Despite improvements in healthcare access and programs, regional disparities remain significant. Neonates face risks from socioeconomic factors, care infrastructure, and resource limitations. Though Mortality in Neonates has improved with advanced care in most NICUs, morbidity in the high-risk survivors still remains a significant Public Health Problem. Neonatal Morbidity has a long-lasting impact on the babies, family and Productivity. This study analyzes mortality and morbidity patterns in a NICU to guide resource allocation and improve outcomes in tertiary care hospitals.

Aim & Objective

Aim: To study mortality and morbidity patterns in the Neonatal Intensive Care Unit at a tertiary care hospital.

Objectives

- To calculate the association of gender, location of birth, mode of delivery, gestational age, and maternal risk factors with mortality.
- To calculate disease-specific mortality rates of NICU-admitted newborns.

MATERIAL AND METHODS

Study Design: A hospital-based Prospective observational study.
Study Setting: Neonatal Unit of Department of Pediatrics SVRRGG Hospital , Tirupati.
Study Period: One year from January 2020 to December 2020.
Sample Size: All babies admitted to the NICU during the one-year study period (~3000 admissions per year).

Inclusion Criteria

1. All neonates admitted to the NICU of the Pediatrics Department, SVRGGH, Tirupati whose Parents have given consent.

Exclusion Criteria

1. Babies and parents who lost to follow-up or left without prior information.

Study Method: Prospective observational study. Data collected included demographic data, gestational age, weight, day of life, various maternal risk factors, mode of delivery, interventions and disease-specific details.

RESULTS

Out of 3587 neonates, the results are summarized as follows:

Out of 3587 admissions 633(18%) newborns died.

Table 1: Association of Gender with Outcome

Gender	Survival	Death	Total
Male	1684	425	2109
Female	1270	208	1478
Total	2954	633	3587

Table 2: Association of Gestational Age with Outcome

Gestational Age	Survival	Death	Total
>37 weeks	1804	184	1988
32-37 weeks	764	216	980
28-32 weeks	345	158	503
<28 weeks	41	75	116

Table 3: Association of Delivery Mode with Outcome

Mode of Delivery	Survival	Death	Total
NVD	1649	320	1969
LSCS	1025	280	1305
AVD	280	33	313

Table 4: Disease Specific Mortality in Neonates

Mortality	Number	%
Respiratory distress syndrome	225	35.5%
Hypoxic ischemic encephalopathy	161	25.4 %
Sepsis/pneumonia/meningitis	148	23.4 %
Meconium aspiration syndrome	45	7.1 %
Major congenital malformations	39	6.2%
Others	15	2.4 %

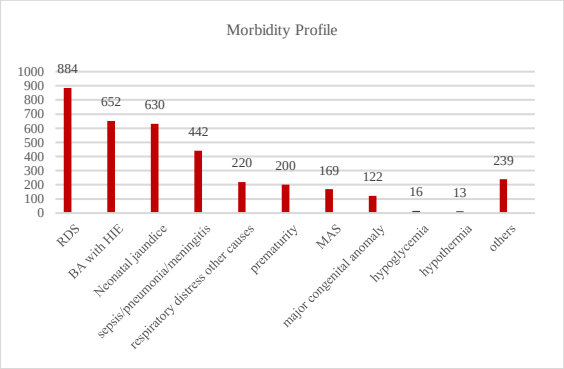

Fig.1 Disease profile of neonates admitted in NICU

DISCUSSION

Being a tertiary care hospital an average of ten sick babies were admitted daily in our NICU. Around fifty percent of babies were Low birth weight babies. Preterm babies constituted half of the gestational age category. Fourteen percent of Mothers were in high-risk age group. Two-third of these Babies required intervention at birth followed by respiratory support. Respiratory Distress syndrome was the most common cause of admission followed by Birth Asphyxia, Neonatal Jaundice and Sepsis. Overall mortality observed in our study was 18% of admissions. High Neonatal Mortality was observed in babies admitted with Respiratory Distress Syndrome followed by HIE and Septicemia. Mortality among male Babies were significantly higher compared to female babies. Lower gestational age and Birth weight had significantly higher mortality. Majority of maternal risk factors observed in our study were Anemia followed by Pregnancy Induced Hypertension, Multiple gestation and PROM. Gender, gestational age, Birth weight, maternal risk factors and delivery mode were major determinants of mortality. The study highlights significant factors influencing neonatal outcomes, emphasizing the need for early diagnosis and intervention.

CONCLUSION

Male gender, lower gestational age, Low birth Weight and LSCS were associated with higher Neonatal mortality. The primary causes of death were respiratory distress syndrome, hypoxic ischemic encephalopathy and sepsis. Long term morbidity is a cause of concern in NICU survivors which emphasizes the need for developmentally supportive care in neonatal units and multidisciplinary follow up of NICU graduates.

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