Study of Pattern of Admissions and Outcomes in a Level II NICU in Northern India: An Experience

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ABSTRACT

Introduction: Neonatal mortality, defined as the number of neonatal deaths (below age of 28 days) per 1000 live births is the most important cause of Under Five mortality in developing nations like India.NICU facilities available in a region are an important indicator of neonatal mortality and play an important role in reduction of neonatal deaths especially among poor urban populations in the country. Aims: Analysis of NICU admissions helps to identify the common causes of admissions, their prognostic implications and potential for prevention of risk factors associated with neonatal mortality and morbidity.

Material and Methods: A retrospective study was performed on 751 neonates over a period of six months at the NICU at Kasturba Hospital, Delhi, India.The neonates were categorised on the basis of their weight and causes of admission and the outcomes were followed to determine major causes of neonatal mortality.

Results: In our study, the maximum number of admissions were of children belonging to the Low Birth Weight category followed by Normal Birth Weight. The least number of admissions were seen in the Extremely Low Birth Weight class.The death rate in the NICU for the period in our study was 5.99% with 45 deaths occurring among the 751 admissions.Respiratory Distress Syndrome and Sepsis (pneumonia/meningitis/septicaemia) were jointly found to be the leading causes of neonatal mortality. Severe Birth Asphyxia, Prematurity and
Meconium Aspiration were among the other major causes of deaths in NICU.

Conclusion: Adherence to more stringent asepsis guidelines, timely identification of risk factors for birth complications and appropriate interventions including immediate referral to higher Center when required could further decrease the likelihood of neonatal deaths.

Keywords: Neonatal Mortality, NICU, Prematurity, Low Birth Weight

INTRODUCTION

Neonatal period provides a foundation for future health of a child. This period is critical and is often compounded with problems flowing out of prematurity, infections, various congenital anomalies and so on.Neonatal mortality, defined as the number of neonatal deaths (below age of 28 days) per 1000 live births is one of the most significant causes of Under Five mortality in developing nations like India.[1] It is closely associated with low birth weight and complications of prematurity.[2] Common causes for admission to the NICU include Sepsis, Respiratory Distress Syndrome and Birth Asphyxiation.Neonatal mortality in India in 2021 was 18 deaths per 1000 live births.NICU facilities available in a region is an important indicator of neonatal mortality and plays an important role in reduction of neonatal deaths especially among poor urban populations in the country. Analysis of NICU admissions helps to identify the common causes of admissions, their prognostic implications and potential for prevention of risk factors associated with neonatal mortality and morbidity.

MATERIAL AND METHODS

A retrospective study was performed over a period of six months at the NICU at Kasturba Hospital, Delhi, India. The patient population consisted of 751 neonates that were admitted to the NICU between April 2022 to October 2022. The neonates were categorised on the basis of their weight as normal birth weight (greater than or equal to 2500 grams), low birth weight (less than 2500 grams), Very Low Birth Weight (less than 1500 grams) and Extremely Low Birth Weight (less than 1000 grams) and the percentage of neonatal mortality in each class was calculated . The patients were also classified on the basis of cause of admission and their outcomes were followed to determine the leading causes of neonatal mortality in the NICU.

RESULTS

During the study period a total of 751 neonates were analysed.Out of the 751 neonates, 315 newborns belonged Normal Birth Weight (41.94%), 351 to Low Birth Weight (46.73%), 75 to Very Low Birth Weight (9.98%) and 10 to Extremely Low Birth Weight category (1.33%).

Out of 751 admissions there were a total of 45 reported neonatal deaths (5.99%).

Out of 45 neonatal deaths, Respiratory Distress Syndrome (n=13;28.88%) and Sepsis (n=13;28.88%) together contribute to 26 deaths.7 deaths were due to Severe Birth Asphyxia (15.55%), Prematurity amounted to 5 deaths (11.11%). Meconium Aspiration Syndrome resulted in 3 deaths (6.66%) while deaths due to miscellaneous causes were 4 (8.8%).

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DISCUSSION

Our study shows that 751 neonates were admitted to the NICU at Kasturba Hospital, Daryaganj, Delhi, India over a period of 6 months starting 1st April 2022 to 31st October 2022.

41.94% of newborns belonged to Normal Birth Weight, 46.73% to Low Birth Weight ,9.98% to Very Low Birth Weight and 1.33% to Extremely Low Birth Weight. These findings are similar to study conducted by Veena Prasad and Nutan Singh.[4] Out of 751 neonates admitted in the NICU 5.99% died.The mortality rate is lower when compared to studies in Bangladesh.[5] In our study the most common cause of mortality was Respiratory Distress Syndrome 28.88% similar to study done by Padmaja Dhawale and NC Mohanty.[6] Also equal contribution is of Sepsis which is in contrast to above study.[6] Severe Birth Asphyxia is the second most common cause at 15.55% which is similar to study by Dhawale and Mohanty.[6]

CONCLUSION

In our study, the maximum number of admissions were of children belonging to Low Birth Weight category followed by the Normal Birth Weight. The least number of admissions were seen in the Extremely Low Birth Weight class. This signifies a need to focus more attention on maternal nutrition and health especially in the Lower Socioeconomic strata to bring down the rates of NICU admissions; in contrast number of admissions of babies with Extremely Low Birth Weight was minimal indicating a significant decline in number of babies born with Extremely low birth weight.

The death rate in the NICU for the period in our study was 5.99% with 45 deaths occurring among the 751 admissions. Respiratory Distress Syndrome and Sepsis (pneumonia/ meningitis/septicaemia) were jointly found to be the leading causes of neonatal mortality. Severe Birth Asphyxia, Prematurity and Meconium Aspiration are among the other major causes of deaths in NICU.Adherence to more stringent asepsis guidelines, identification of risk factors for birth complications at antenatal visits, swift timely interventions and immediate referral to higher Center when required could further decrease the likelihood of neonatal deaths. The findings of the study however need to be confirmed by a larger Cohort Study.

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