

## A study on Neonatal Admission in Rural Medical Colleges

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### Abstract

**Background:** World Health Organization (WHO) has defined preterm birth as any live birth before 37 completed weeks of gestation. It occurs due to many reasons. Mostly it happens spontaneously, but some preterm births are due to early induction of labor or cesarean birth. The most common causes of preterm birth include multiple pregnancies, infections, and chronic conditions such as diabetes and high blood pressure. **Subjects and Methods:** This study conducted in a tertiary care centre. Total 104 neonates were included in this study and data were recorded as predesigned Performa. Duration of this study was one year from. **Results:** In this study, 104 total cases were included, out of these 52.8% males and 47.2% were females. Among the all these 49.1% were preterm & 50.9% were term maturity. In the present study, 50.9% cases were belongs to >2 kg weight followed by 1-2 kg (44.2%) & <1kg (4.9%). This study had 33.6% mortality & 66.4% mortality. **Conclusion:** This study showed that more emphasis should be given to increase antenatal visits in rural areas, maternal education, increasing maternal age at first pregnancy, prolongation of deliveries till term and timely referral with adequate numbers of health care staff.

Keywords: Admission, neonate.

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### INTRODUCTION

It has been reported that every year 26 million babies are born and 1.2 million die in the first four weeks of life in India. It accounts for one fourth of global neonatal deaths. Thus, our country is facing the major newborn health challenge of any other country in the world. The existing Neonatal Mortality Rate (NMR) in India is 28 per 1000 live births. It shows the inadequate availability of quality and quantity of infrastructure and utilization of neonatal care of the country.<sup>[1-2]</sup> In developed countries, NMR has been reduced due to the advancement in perinatal and neonatal care. But the mortality and morbidity rates are still high in developing countries.<sup>[3]</sup> It is essential to document the number and rate of deaths and identify their common causes for the improvement in neonatal survival.<sup>[4]</sup>

The present study was undertaken to examine the disease pattern and outcome of neonates admitted to the neonatal intensive care unit (NICU) of a tertiary care hospital located in a tertiary care centre. The purpose of the study was to explore the spectrum of neonatal diseases and proper management of neonatal care. It will lead

to better outcome and improved quality of life among survivors.<sup>[5]</sup>

World Health Organization (WHO) has defined preterm birth as any live birth before 37 completed weeks of gestation. It occurs due to many reasons. Mostly it happens spontaneously, but some preterm births are due to early induction of labor or cesarean birth. The most common causes of preterm birth include multiple pregnancies, infections, and chronic conditions such as diabetes and high blood pressure. Genetic influence could also be a reason. For the prevention of preterm birth, it is important to understand the causes and mechanisms.

It has been estimated globally in 2010 that more than 15 million babies born were preterm, out of which more than 1 million died as a result of preterm birth and related complications.<sup>[6]</sup> Though neonatal mortality rates (NMRs) have fallen between 1990 and 2009 globally,<sup>[7]</sup> yet the numbers and rates of preterm birth have increased during this period.<sup>[8]</sup> The concern about the burden of preterm birth has resulted in November 7th being earmarked as World Prematurity Day globally.<sup>[9]</sup>

Increasing preterm birth could significantly influence the attainment of Millennium Development Goal.<sup>[10]</sup> WHO's has been set in the "born too soon" report to reduce preterm-specific mortality by 50% by 2025.6 Around one-third of preterm survivors suffers from severe long-term neurological disabilities such as cerebral palsy or mental retardation.<sup>[11]</sup> Even 34-36 weeks' gestation births (late preterm) also have a increased rate of disabilities, jaundice, and delayed brain development. Preterm birth affects infants as well as their families. They have to spend time and money to ensure care

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for their preterm infants.<sup>[12]</sup>

In developed countries, advanced care of preterm babies has reduced mortality. But in developing countries where the management of preterm birth babies is still facing the difficulties due to the scarcity of resources and poorly-equipped specialized newborn care units. Therefore, morbidity and mortality of preterm births remains a potential challenge to newborn health in developing countries.

Presently, there is limited literature on the epidemiology of preterm births to guide efforts at preventing and managing preterm births. The aims of this study were to determine the magnitude of preterm admissions and to ascertain the need for improved facility in the care of the preterm babies.

## METHODS

### Study Area:

This study conducted in in a tertiary care centre.

### Study Population:

Total 104 neonates were included in this study and data were recoded as predesigned Performa.

### Study Duration:

Duration of this study was one year.

### Exclusion Criteria:

Cases which were admitting after surgical intervention excluded from this study.

### Inclusion Criteria:

All the cases were admitting in the duration of study.

### Data Analysis:

Data were analyzed by using Microsoft excel.

## RESULTS

**Table 1: Distribution of cases according to Pattern of admission of neonates**

	Number of cases	Percentage
In Born	51	49.1%
Out Born	53	50.9%
Total	104	100%

**Table 2: Distribution of cases according to sex.**

Sex	Number of cases	Percentage
Male	55	52.8%
Female	49	47.2%
Total	104	100%

**Table 3: Admission pattern profile as per maturity**

Maturity	Number of cases	Percentage
Preterm	51	49.1%
Term	53	50.9%
Total	104	100%

In this study, 104 total cases were included, out of these 52.8% males and 47.2% were females. Among the all these 49.1% were preterm & 50.9% were term maturity. In the present study, 50.9% cases were belongs to >2 kg weight followed by 1-2 kg (44.2%) & <1kg (4.9%). This study had

33.6% mortality & 66.4% mortality. Different type of causes occurs among morbidity cases like Respiratory discharge syndrome (46.3%), Sepsis (26%), Birth Asphyxia (15.9%), Neonatal Jaundice (23.1%), and Hypoglycemia (7.2%). Different types of causes occur among mortality cases like Respiratory distress Syndrome, Sepsis (37.1%), Hypoxic ischemic Injury (34.2%), and extremely low birth weight (22.8%).

**Table 4: Distribution of cases according to age**

Weight	Number of cases	Percentage
<1 kg	5	4.9%
1-2 kg	46	44.2%
>2kg	53	50.9%
Total	104	100%

**Table 5: Distribution of cases according to outcome of morbid**

Outcomes	Number of cases	Percentage
Death	35	33.6%
Discharge	69	66.4%

**Table 6: Causes of neonatal morbidity at NICU admission**

Causes	Number of cases	Percentage
Respiratory discharge syndrome	32	46.3%
Respiratory Distress	19	27.5%
Sepsis	18	26%
Birth Asphyxia	11	15.9%
Neonatal Jaundice	16	23.1%
Hypoglycemia	5	7.2%

**Table 7: Distribution of cases in mortal neonates**

Maturity	Number of cases	Percentage
Preterm	25	71.4%
Term	10	28.6%
Total	35	100%

**Table 8: Causes of neonatal mortality**

Causes	Number of cases	Percentage
Respiratory distress Syndrome	13	37.1%
Sepsis	12	34.2%
Hypoxic ischemic Injury	8	22.8%
Extremely low birth weight	5	14.2%

## DISCUSSION

The sample size of the present study was 104. Out of 104 admissions, male & female ratio was 52.8% & 47.2% respectively. Saharia et al, Shridhar P, Roy et al and Mani kant et al also showed the similar ratio in their studies.<sup>[13-16]</sup> The male majority in admission was also observed in international studies Ugu b nigeria and seyal et al from Pakistan.<sup>[17-18]</sup> The admission of term baby was slightly outnumbered in comparison to preterm babies i.e. 25 and 10 respectively. Maximum number of admission occurs with weight range of >2kg. These results are very much similar to Saharia et al, Veena p and Shridhar et al,<sup>[13,17,14]</sup> studies. In India, 30% of neonates (7.5 million) are born with low birth weight.<sup>[19]</sup> 60 % of the LBW are born term after foetal growth

restriction and 40% are born preterm.<sup>[20]</sup> The reason could be due to poor maternal health condition, low socio-economic status and less visits to health care facility.<sup>[21]</sup>

The most common cause of admission in this study was RDS in premature 46.3 % and term newborn 27.5% followed by sepsis 26% and birth asphyxia 15.9%. These observations were supported by Shridhar et al studies.<sup>[14]</sup> It has been showed in studies from high altitude area that neonatal jaundice was the most significant cause of admission. The reason may be as high altitude leading to increase red cell blood mass,<sup>[22-23]</sup> National neonatal perinatal database reported that sepsis (36%) is the most common morbidity and responsible for admission followed by prematurity (26.5%) and birth asphyxia (10%).<sup>[24]</sup>

In our study, mortality rate was 33.6% that was similar to Garg p et al 35%, Prakash j et al 25.5% and Prasad Vet al 18.8% studies.<sup>[24,26,17]</sup> In contrast, low mortality was observed by Saharia et al 13%,<sup>[13]</sup> kotwal Y S et al 9.7%,<sup>[22]</sup> and 8 % by Narayan R.<sup>[23]</sup> This may be due to neonatal mortality rate in rural area is twice in comparison to urban areas (31 verses 15 per 1000 live births). In India, there is a significant rural, urban and socioeconomic difference in NMR.<sup>[24-27]</sup>

In the present study, low birth weight with respiratory distress was also corresponds to high mortality. It has been identified by a systematic analysis of global, regional and national causes of child mortality in 2013 that preterm birth complications and infections were two major causes of neonatal deaths.<sup>[28-29]</sup>

## CONCLUSION

This study concludes that, mortality rate is quite high in our study. The reason may be due to large number of cases referred from peripheral area to our NICU, where in spite of giving quality care we are giving quantity care. The other reason for poor outcome of neonates is the less numbers of health care staff in rural areas. The present study also revealed that RDS and prematurity with neonatal sepsis is most common cause of mortality in our NICU.

The above discussion showed that the more emphasis should be given to increase antenatal visits in rural areas, maternal education, increasing maternal age at first pregnancy, prolongation of deliveries till term and timely referral with adequate numbers of health care staff.

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