

**Original Research Article**

Clinical Profile and Outcomes of Neonates Admitted to SNCU Catering Difficult Area in Sub Himalayan Region

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Abstract

Background: Neonatal period is most precious time because most of the preventable morbidities and mortalities occur in this period. In developing countries prematurity, infection and perinatal asphyxia are three major causes for neonatal mortality. Special Neonatal Care Units (SNCUs) have been established at district hospitals to combat this challenge.

Methods: This observational retrospective study was planned to determine the clinical profile and outcome of neonatal admissions at SNCU, MGMSC, Khaneri, a hospital serving the rural and tribal population. Detailed information was collected from files and registers onto the preset proformas and results were compiled and evaluated on master chart.

Results: A total of 105 neonates were included in this study. Out of them 46(43.8%) were inborn and 56.2% were admitted from emergency or outpatient department. There were 53 males and 52 females with male to female ratio of 1:1.01. 66.6% were full term and 33.4% were preterm. Major indications for admission were neonatal jaundice [56(53.3%), respiratory distress [24(22.8%)] and sepsis [20(19.4%)]. The range of hospital stay was from 3 days to 15days with average hospital stay of 4 days. 81(77.6%) babies were discharged after improvement, 18(17.4%) were referred to higher centers, 4(3.1%) left against medical advice and there were 2(1.9%) mortalities. Common causes for mortality and referral were birth asphyxia, prematurity and hyperbilirubinaemia.

Conclusion: Neonatal period is most vulnerable time for development of morbidity and mortality. SNCUs with skilled staff can prevent the worst outcomes by early interventions.

Keywords: SNCU, Neonate, Morbidity, Mortality, Outcome.

Introduction

Neonatal period is a very crucial time because neonate has to survive in independent extra-uterine life. During this period high susceptibility

to infection, hypothermia, jaundice and birth asphyxia increases rate of morbidity and mortality. Globally, neonatal deaths constitute 44% of all deaths in less than 5 years age

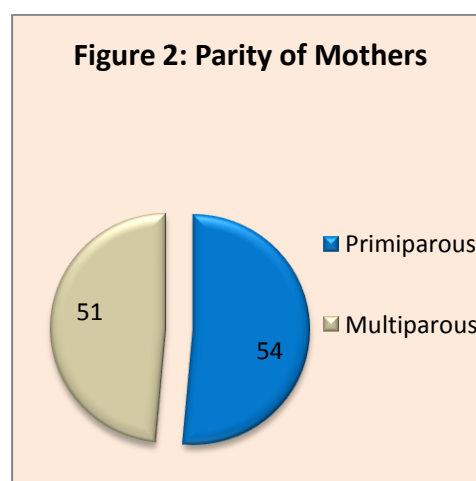
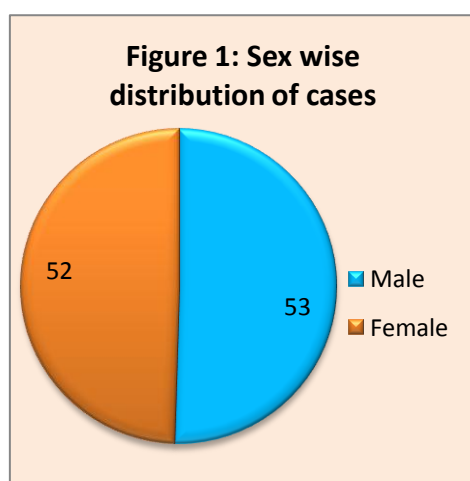
group.^[1] In India, neonatal mortality contributes almost two-thirds of the infant deaths and half of the under-five deaths.^[2] Current Neonatal Mortality Rate (NMR) in India is 25/1000 live births.^[3] Seventy five percent of neonatal deaths occur in first week of life.^[3] The major causes (78%) which contribute to neonatal mortality in developing countries are prematurity, low birth weight, neonatal infections and birth asphyxia.^[4] Most of the causes of morbidity and mortality in the neonatal period are preventable by good antenatal care and by early interventions in neonatal period. Establishment of Special Care Neonatal Units (SNCUs) in rural hospitals can play a critical role in reducing the neonatal morbidity and mortality. SNCU at District Hospital is expected to provide various services:^[5] like resuscitation of asphyxiated newborns, management of sick newborns, post-natal care, follow-up of high risk newborns, referral and immunization services. These SNCUs are equipped with life saving equipments like radiant warmers, phototherapy units, oxygen concentrators, pulse oximeter and intravenous infusion pumps. Further aim of these SNCU is to strengthen the staff with nurse to bed ratio of 1:1.2 and doctor to bed ratio of 1:4.^[6] We conducted this study to evaluate the neonatal outcomes at SNCU Rampur.

Methods

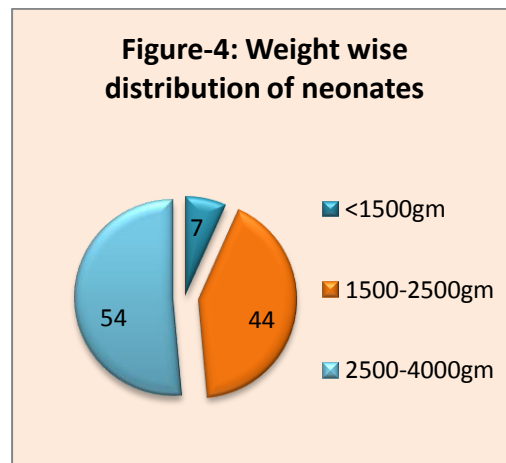
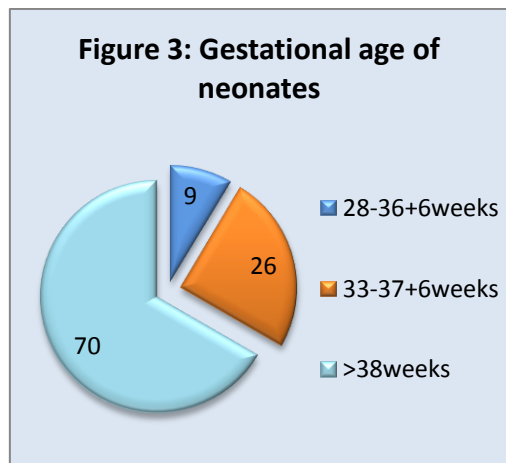
This is a hospital data based retrospective study conducted at SNCU MGMSC Khaneri, Rampur: a hospital, serving rural and tribal population. Information regarding epidemiology, clinical presentation, morbidities and outcomes was recorded from patient's files on pre-formed proformas. All admitted babies of less than 28 days were included except those where parents denied for the consent. Exclusion Criteria were babies who had life of more than 28 days (post-neonates) and neonates who were not admitted in SNCUs. Statistical analysis was done by using Microsoft Office Excel. The standard case definitions of National Neonatology Forum were used.

Results

SNCU Rampur is a newly established 8 bedded unit. It is staffed by two pediatrician and 12 staff nurses with nurse to bed ratio of 1:1.7 and doctor to bed ratio of 1:6. A total of 105 babies were enrolled for this study. 46 (43.8%) babies were inborn; and 59 (56.2%) were out born. There were 53 males and 52 females with male to female ratio of 1:1.01 (Figure-1). There were 54(51.4%) primiparous and 51(48.6%) multi-parous women (Figure-2).

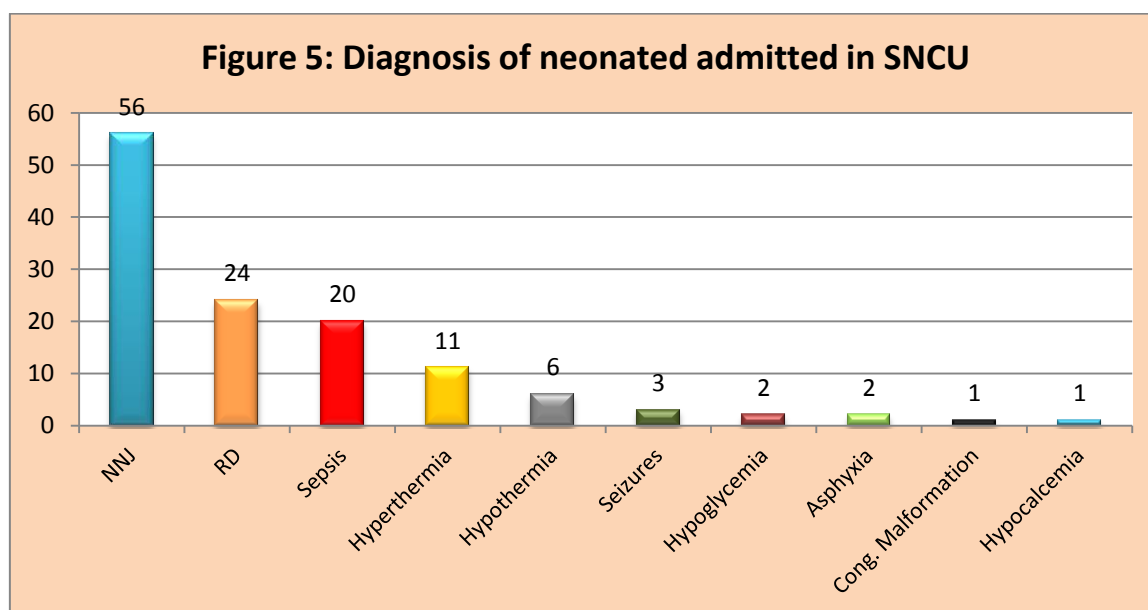


Mode of delivery was spontaneous vaginal delivery in 64(61%) and cesarean section in 41(39%) mothers. Majority 70(66.6%) of the babies were term and rest (33.4%) were preterm (Figure-3).



78(74.2%) babies were admitted on the first day of life; whereas 27(25.7%) babies were admitted beyond second day of life. The range of hospital stay was from 3 days to 15 days with average hospital stay of 4 days. Major indications for admissions were neonatal jaundice [56(53.3%)], respiratory distress [24(22.8%)] and sepsis [20(19.4%)]. Others were environmental hyperthermia, hypothermia, neonatal seizures, hypoglycemia and hypocalcaemia (Figure-5).

81(77.6%) babies were discharged after improvement, 18(17.4%) were referred to higher centers, 4(3.1%) left against medical advice and there were 2(1.9%) mortalities. Commonest cause for mortality was birth asphyxia found in both preterm male babies. Prematurity, hyperbilirubinaemia, severe birth asphyxia and congenital malformations were common indications for referral.



Discussion

The frequencies of neonatal deaths vary between and within regions, but overall infections, prematurity and birth asphyxia are major causes for morbidity and mortality in neonates.^[7] It is estimated that up to 50% of all neonatal deaths occur within the first 24 hours after birth, and

75% by one week of age.^[8] Establishment of SNCUs is one of the active interventions to reduce neonatal mortality at district level setups. The aim of this study was to identify the patterns of neonatal admissions and factors associated with mortality among these neonates. Our results revealed no discrepancy between the males and

females number as described in some studies from Developing countries.^[9] This finding shows that no sex specific illness or no sex discrimination is prevalent in this region so male to female ratio was equal. The proportion of preterm admission was 33.6%, consistent with the range of 25.8%-50.4% reported from other studies.^[10,11] Though most 54(51.4%) newborns had adequate birth weight but 51(48.6%) had low birth weight which is comparable with studies from than South Africa (52.5%) and India (60%).^[9,12] It indicates that neonatal low birth weight and pre-term deliveries are one of the common indications for SNCU admission. Neonatal jaundice (53.3%), respiratory distress (22.8%) and sepsis (19.4%) were the major reasons for admission in accordance to study by Yusuf et al.^[13] While, Modi and Kirubakaran^[9] reported the sepsis (23.7%), asphyxia (5.3%), pre-term delivery (14.2%) and jaundice (13.4%) as the major reasons for admission.^[13,14] Sepsis was found more in out born babies (16, 27.1% of total out born babies) compared to inborn ones (4, 8.6% of total inborn). This indicates unhygienic deliveries either by unskilled person at septic places or baby's exposure to infections during transport or referral. Inborn neonates showed birth asphyxia, meconium aspiration and jaundice as more common complications than outborn. In our setup many mothers are from far flung tribal areas and further inhabitant laborers from Nepal, UP and Bihar usually brings mothers in advanced stage with complications. This can be the reason for higher rate of above complications amongst inborn. Strengthening of antenatal, intra-partum and post partum care is very important to combat these complications. There were 1.9% mortalities and 3.4% referrals during study period collaborating with the findings of Shakya et al.^[15] Mortality rates were found higher (13.7%-27%) in some studies probably due to more number of preterm babies and sicker neonates.^[16] Commonest cause for mortality was birth asphyxia in accordance with literature reports.^[17] The limitation of our study was small sample size.

But this is a good initiative to run a SNCU successfully in difficult to reach area with such a paucity of staff and equipments.

Conclusion

Neonatal period is most venerable time for development of morbidity and mortality. Neonatal jaundice, prematurity, low birth weight, perinatal asphyxia and sepsis are major causes for admission and also for morbidity and mortality. SCNU with skilled staff can reduce both morbidity and mortality by early interventions in hard to reach areas.

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