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PROFILE OF NEONATES ADMITTED IN SPECIAL NEWBORN CARE UNIT OF TERTIARY CARE HOSPITAL IN PERIPHERAL HILLY REGION OF NORTH INDIA.

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Abstract:

Background: India accounts for 30 percent of the neonatal deaths globally. The causes of neonatal deaths in India are infections(33%) such as pneumonia, septicemia and umbilical cord infection; prematurity(35%) and asphyxia(20%) (2).

AIM: To study major causes of morbidity and mortality among neonates in Special Newborn Care Unit of a Tertiary care Hospital in Peripheral hilly region of North India.

Results :A total of 1170 neonates were admitted in the SNCU over one year study period. 34.01% of these were out born babies. Male-female ratio was 1.7:1. 19.57% neonates were of Low Birth Weight, 2.48% were Very Low birth weight and 0.34% babies were Extremely Low birth weight. 10.6% babies were Late Preterm and 4.27% were preterm<34wks.

Majority 30.68% of neonates were admitted for jaundice, 27.44% had sepsis, 21.28% had respiratory distress, 7.35% Birth asphyxia and 4.02% newborn babies had Meconium aspiration syndrome.

78.5% of all admitted neonates were discharged successfully.19.06% required referral to higher centre for further care, 2.22% neonates died and 0.68% Left against medical advice.

In this retrospective study, 38.46% of the died neonates were Preterm (<37wks) and 42.31% had Low Birth weight (<2.5kg).

CONCLUSION

Neonatal jaundice, Sepsis, Respiratory distress and Birth asphyxia are major cause of hospitalization where as Prematurity, Respiratory distress syndrome and birth asphyxia are the leading cause of mortality in our study. The proportionate mortality is higher in outborn than the inborn.

There is more need to promote institutional deliveries, improve antenatal and Post natal care services in this peripheral region to further bring down neonatal morbidity and mortality.

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Keywords: Neonatal deaths, Prematurity, Respiratory Distress syndrome

BACKGROUND

Neonatal deaths are a major contributor to infant mortality rate in India.

Globally 2.4 million children died in the first month of life in 2020 (approximately 6700 neonatal deaths/day, amounting to 47% of all U5child deaths, up from 40% in 1990. Most neonatal deaths(75%) occur during the first week of life, and in 2019, about 1 million newborns died within the first 24 hours. Preterm birth, childbirth-related complications (birth asphyxia or lack of breathing at birth), infections and birth defects caused most neonatal deaths in 2019.(1)

The causes of neonatal deaths in India are infections(33%) such as pneumonia, septicemia and umbilical cord infection; prematurity(35%) and asphyxia(20%) (2).

India accounts for 30 percent of the neonatal deaths globally. In India, the NMR is 22, IMR 30 and U5MR 35 /1000 live births as per SRS 2019. Now as per NFHS-5 report 2019-20 in J&K, NMR decreased to 9.8, IMR 16.3 and U5MR 18.5/1000 live births. Most of these deaths occur within the first days of life.(3,4,5)

This study is conducted in Doda district of Jammu and Kashmir which lies in the outer Himalayan range. Doda Tehsil itself has population of 2.02Lakhs, accounting for maximum (49.5%) population of the district followed Bhaderwah which 18.39%. The child population in the age group 0-6 is 71,240 which accounts for 17.38% of the total population of the district.(6)

Its vast hilly terrain and the huge rural population living in far flung areas make the newborn care in this region especially challenging(5). So it is important to extend researches in such areas for early identification of serious illnesses and judicious use of available resources to further reduce the morbidity and mortality among neonates.

AIM

To study major causes of morbidity and mortality among neonates in Special Newborn Care Unit of Government medical college in peripheral hilly region of Jammu Division in India.

MATERIALS AND METHODS

A Hospital based retrospective descriptive study was conducted in Government medical college Doda, Jammu and Kashmir Union Territory. Data was collected from reporting format of SNCU, Labour room and Operation Theater from 21st December 2021 to 20th December 2022 and Statistical analysis was done in form of percentage and proportions to get the morbidity and mortality profile of neonates admitted in twelve bedded SNCU of Government medical college Doda which is a referral hospital for District Kishtwar and Ramban too.

RESULTS

- About **2952 deliveries** including 1482 LSCS were conducted in GMC Doda during this one year period. 78 were still births and **a total of 1170 neonates were admitted in the SNCU** .

Among these 772 (65.99%) were inborn and 398 (34.01%) out born (Table 1).

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Table 1

Total Neonatal admissions in SNCU	**1170**
Inborn	772 (65.99%)
Outborn	398(34.01%)

- 741 (62.33%) were males and 429 (36.67%) females so the **male-female ratio was 1.7:1. (Table 2)**

Table 2

Males	**Females**	**Total**
741(62.33%)	429 (36.67%)	1170(100%)

Results..

19.57% neonates were of Low Birth Weight, 2.48% were Very Low birth weight and 0.34% babies were Extremely Low birth weight.

It was found that 908 babies had a birth weight of more than 2500 gms, out of these 908 babies 68% were inborn and 31% were outborn. 227 (19%) had birth weight between 1.5kg-2.49kg, out of these 57% were inborn and 42% outborn.

Out of 29 neonates between 1kg-1.49kg about 72 % were inborn and 27% outborn. 4 were ELBW i.e. had birth weight less than 1kg. (Table 3)

Table 3

Birth Weight	**Inborn**	**Outborn**	**Total**
>2.5kg	618	290	908 (77.61%)
1.5 to 2.49kg (LBW)	130	97	229 (19.57%)
1kg-1.49kg (VLBW)	21	8	29 (2.48%)
<1kg (ELBW)	3	1	4 (0.34%)

Results...

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There were **995 (85.04%) term babies**, Out of which 66% were inborn and 33% were outborn.**124 (10.6%) were Late Preterm** in which 61% were inborn and 38% were outborn. **50 (4.27%) babies were preterm<34wks**, which included 66% inborn and 34% outborn respectively. (Table 4)

Table 4

Gestation	Inborn	Outborn	**Total**
Term	662	333	**995 (85.04%)**
Late Preterm	76	48	**124 (10.6%)**
Preterm<34wks	33	17	**50 (4.27%)**

MORBIDITY PROFILE

Majority 30.68% of neonates were admitted for jaundice, 27.44% had sepsis, 21.28% had respiratory distress, 7.35% Birth asphyxia and 4.02% had Meconium aspiration syndrome (Table 5)

Table 5

Morbidity Profile	Inborn	Outborn	Total
Jaundice Requiring Phototherapy	241(31.21%)	118(29.64%)	359 **(30.68%)**
Respiratory Distress Syndrome	148(19.20%)	101(25.37%)	249 **(21.28%)**
Sepsis	206(26.70%)	115(28.89%)	321 **(27.44%)**
Meconium Aspiration Syndrome	36(4.67%)	11(2.76%)	**47 (4.02%)**
Birth Asphyxia	60(7.77%)	26(6.53%)	**86 (7.35%)**
Hypothermia	16(2.07%)	4(1.01%)	20(1.71%)
Hypoglycemia	13(1.68%)	12(3.01%)	25(2.14%)
Others	52(6.73%)	11(2.76%)	63(5.38%)
Total	772 (100%)	398(100%)	1170(100%)

OUTCOME

78.5% of all admitted neonates were discharged successfully from SNCU i.e. 621(80.44% out of 772) inborn and 292 (73.36% out of 398) outborn neonates were discharged successfully.

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19.06% required referral for further care i.e. about 16.58% of inborn and 23.87% of outborn required referal while 0.68% left against medical advice.

A total of **26 (2.22%) neonates died**, in which 15(1.94%) were inborn and 11(2.76%) were outborn. (Table 6)

Table 6

Outcome	Inborn	Outborn	Total
Discharged successfully	621(80.44%)	292(73.36%)	913(78.5%)
Referred to higher centre	128(16.58%)	95(23.87%)	223(19.06%)
LAMA	8(1.04%)	0(0%)	8(0.68%)
Died	15(1.94%)	11(2.76%)	26(2.22%)
Total	772(100%)	398(100%)	1170(100%)

Cause of Death

Respiratory Distress syndrome (38.46%) was most common cause of death followed by birth asphyxia (19.23%) and Meconium Aspiration Syndrome (11.54%). Rest 8 neonates died due to other causes (including Septicemia, Congenital malformations, etc)

Out of 26 who died, 10 (38.46%)were Preterm (5.75% of 174 Preterm/near term) and 16 were term (1.61% of 995 term babies).

11 (42.31%) had Birth weight below 2.5kg (i.e. LBW/VLBW).

DISCUSSION

- In our study 65.99% of admissions were inborn and males (62.33%) were predominant which was similar to various other studies like that of Manab narayan baruah et al., Kotwal YS et al., Rattan singh manhas et al and Rakesh kumar et al. (7,8.9,10)

- In our study, majority 30.68% of neonates were admitted for jaundice, 27.44% had sepsis, 21.28% had respiratory distress, 7.35% Birth asphyxia and 4.02% had Meconium aspiration syndrome which was similar to various other studies like that of Manab narayan baruah et al., Kotwal YS et al., Rattan singh manhas et al and Rakesh kumar et al. (7)

- Manab narayan baruah et al in his study in 2016 about morbidity and mortality profile of newborns admitted in special care new born unit of a teaching hospital of upper assam,

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A three year study reported neonatal sepsis, jaundice and birth asphyxia as the common morbidities.(7)

- Kotwal YS, Yatoo GH and Ahmed jan et al in their study about Morbidity and Mortality among neonates admitted to a neonatal intensive care unit of tertiary care teaching hospital of Jammu and kashmir done in 2017 reported that the neonatal jaundice(26%) was the most common cause of admission to NICU followed by septicemia(19.1%) and prematurity(12.5%).(8)

- Rakesh kumar et al did study in special new born care unit of teaching hospital in uttarakhand, India got major cause of admission in SNCU were Jaundice(24.72%), sepsis (20.48%), birth asphyxia (18.52%), meconium aspiration syndrome (10.11%). (10)

- 78.5% of all admitted neonates were discharged successfully, 19.06% required referral and a total of 26 (2.22%) neonates died. Past study by Rattan singh manhas et al from same District Hospital Doda in 2018 reported that 59% of the outborns and 56% of the inborn babies were discharged succesfully, while 31% of the total admissions required referral. 11% and 7% of the outborn and inborn babies left against medical advice,whereas 3% and 2% respectively died.(8) our data shows slight better outcome due to improving facilities and staff services due to upgradation of facilities from District hospital to new developing Government medical college.(9)

- In our study 42.31% of the dead had Low Birth weight, 38.46% were Preterm and respiratory distress syndrome, birth asphyxia and meconium aspiration syndrome were major causes of mortality. Whereas In Study by Manab narayan baruah et al. about 66.1% of the death were due to low birth weight. sepsis(42.6%), birth asphyxia(29.3%) and prematurity related complication(17.5%) were the common causes of death.(7)
- In study by Rakesh kumar et al. Birth asphyxia was the major cause of mortality followed by sepsis and prematurity mortality was more in outborn babies 14.67% compared to inborn babies (9.8%). (10)
- In study by Kotwal YS et al. Prematurity (24.2%) was the most common cause of death followed by septicemia(18.2%), birth asphyxia (11.1%) and meconium aspiration syndrome(10.1%) (8)

CONCLUSION

Neonatal jaundice, Sepsis, Respiratory distress and Birth asphyxia are major cause of hospitalization where as Prematurity, Respiratory distress syndrome and birth asphyxia are the leading cause of mortality in our study. The proportionate mortality is higher in outborn than the inborn.

All the leading causes of mortality in the study are preventable to certain extent. So there is urgent need to take necessary steps at multiple levels. Health care programs, effective neonatal resuscitation programs, adequate trained manpower in newborn care units and further studies are some of the measures which can increase the quality of care to decrease the fatality rate in newborns.

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Also we have to focus on antenatal care, aseptic precautions and neonatal care from the primary care itself to bring down neonatal mortality.

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