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Original Research Article

Morbidity and mortality profile of neonates admitted in neonatal intensive care unit of a tertiary care hospital in Arunachal Pradesh, India: a six-year retrospective study

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ABSTRACT

Background: The risk of mortality is highest in neonatal period. Every day about 6500 neonates die due to lack of quality neonatal care. Knowledge about spectrum of neonatal morbidity and mortality helps in management of neonatal conditions and diseases which will reduce neonatal mortality rate further. The aim of this study was to determine the causes of morbidity and mortality in neonates admitted in our hospital.
Methods: This study was conducted at level III NICU of Rama Krishna Mission Hospital, Itanagar. This is a retrospective descriptive study. Data of neonates admitted in NICU from 1st January 2018 to 31st December 2023 were extracted from admission, discharge register and case record sheet. Data were compiled, tabulated and Statistical analysis was done.
Results: During the study period a total of 2121 neonates were admitted in the NICU, 58.9% were male and 41.1% were females. 54.9% were inborn and 45.1% were outborn. The major causes of admission to NICU were observed to be neonatal jaundice (34.1%), neonatal sepsis (20.8%) and birth asphyxia (12.7%). Mortality during the study was found to be 5.7%. Prematurity with Respiratory Distress Syndrome (RDS) (36.7%) was the most common cause of mortality followed by Neonatal sepsis (20.8%) and Birth asphyxia (17.5%). Highest number of death occurred within 7 days of life (82.5%). Mortality was more in inborn babies (68.3%).
Conclusions: RDS, Neonatal sepsis and birth asphyxia are the common cause of mortality. Improving maternal health, antenatal care, postnatal care, timely intervention, capacity building and good connectivity will help reduce neonatal mortality.

Keywords: Inborn, Morbidity, Mortality, NICU, Neonates, Outborn, Respiratory distress syndrome

INTRODUCTION

The risk of mortality during neonatal period is highest. It is the most vulnerable period for child survival. Globally 2.3 million children died in the first 20 days of life in 2022. This amounts to approximately 6500 newborn deaths every day.[1] According to National Family Health Survey-5 (NFHS-5) data, neonatal mortality rate (NMR) of India is 24.9 per 1000 live births. At national level, NMR varies from 2.3/1000 (Puducherry) to 35.7/1000 live births (Uttar Pradesh).[2] Among the North-Eastern states, Sikkim has the lowest NMR (5/1000 live birth) and Assam has the highest NMR (22.5/1000 live births).[3] NMR of Arunachal Pradesh is 7.7 per 1000 live birth.2 it is a substantial reduction from 11.8/1000 live births (NFHS-4). To reduce NMR further, the knowledge of morbidity and mortality profile of neonates is essential. It identifies the common neonatal problems and help in developing new treatment guidelines, interventions and strengthening health policies. Review of the literature

reveals that at present there is no data regarding profiles of newborn admitted in NICU/SNCU anywhere in Arunachal Pradesh. This study was carried out to know the mortality and morbidity profiles of the neonates admitted in NICU with the objective of detailed analysis of reason for admission and outcome of admitted neonates.

METHODS

This retrospective hospital record based observational study was carried out in Neonatal Intensive Care Unit (NICU) of Rama Krishna Mission Hospital Itanagar, a tertiary care hospital which serves as referral centre from all over the Arunachal Pradesh and adjoining districts of Assam. The NICU has total 8 beds. It is equipped with 7 radiant warmers, 1 incubator, 5 phototherapy units, 1 bubble (continuous positive airway pressure) CPAP.

Data from admission and discharge register as well as patient case sheet were collected and compiled from 1st January 2018 to 31st December 2023.

Ethical approval

The study was conducted after approval by the local Institutional Ethics Committee -Tomo Riba Institute of Health and Medical Sciences (IEC/NEW/INST/2023/4028). Patient's confidentiality was kept secured and only selected researchers accessed the data.

Inclusion criteria

All neonates (0-28 days) admitted in the NICU during this period were included in the study.

Exclusion criteria

Incompletely filled recordings in the admission and discharge register and case sheet. Neonates admitted for observation for less than 6 hours

The data on age at admission, gender, gestation age, birth weight, diagnosis at admissions, mode of delivery, outcome in regard to treatment completed, referred, expired or left against medical advice (LAMA) were collected.

Primary diagnosis at admission was considered as final diagnosis even if the baby developed complications of primary disease or having more than one disease. Inborn neonates mean admitted neonates delivered in Rama Krishna Mission Hospital and out born neonates mean admitted neonates delivered outside.

Statistical analysis

Data were code and compiled in MS Excel and analyzed for percentage and proportions.

RESULTS

Total number of NICU admission from 1st January 2018 to 31st December 2023 was 2121. Of which 1164 (54.9%) were inborn and 957 (45.1%) were out born. The ratio of inborn to out born neonates was 1.2:1. The overall admission of male neonates were 1250 (58.9%) and female neonates were 871 (41.1%) giving male: female ratio of 1.4:1. In the inborn, male were 661 (56.8%) and female were 503 (43.2%) with ratio of 1.3:1.

In the out born, male were 589 (61.5%) and female were 368 (38.5%) giving ratio of 1.6:1. The number of babies weighing≥4000 gm were 194 (9.1%), 2500 gm–3999 gm were 1504 (70.9%), 1500-2499 gm (Low birth weight) were 359 (16.9%), 1000-1499 gm (very low birth weight) were 49 (2.3%) and<1000 gm (extreme low birth weight) were 15 (0.7%). Among inborn neonates, 277 (23.8%) were low birth weight (<2.5kg) and 877 (76.2%) had weight≥2.5kg. Among out born neonates, 146 (15.3%) were low birth weight (<2.5kg) and 811 (84.7%) were weighing≥2.5kg (Table 1).

As per gestation age, overall, 1734 (81.7%) were term neonates and 387 (18.3%) were preterm babies. Number of inborn and out born preterm admitted were 262 (22.5%) and 125 (13.1%) respectively. Furthermore, overall segregation shows: term (≥37 weeks) 1734 (81.7%), preterm (32 weeks to less than 37 weeks) 14.1%, very preterm (28 weeks to less than 32 weeks) 3.3% and extreme preterm (<28 weeks) 0.9% (Table 1).

Neonates born through LSCS were more 1128 (53.2%) than vaginal delivery 993 (46. 8%). In the Inborn neonates 667 (57.3%) were born through LSCS and 497 (42.7%) were born through vaginal delivery, whereas 461 (48.2%) out born neonates were delivered through LSCS and 496 (51.8%) through vaginal delivery (Table 1).

Morbidity profile was found to be different in the inborn and out born neonates. In inborn, Neonatal jaundice–239 (20.5%) requiring phototherapy was the most common cause of admission, followed by birth asphyxia 230 (19.8%) and neonatal sepsis 216 (18.6%).

In the out born group neonatal jaundice 484 (50.7%) was the most common morbidity, followed by neonatal sepsis 226 (23.6%) and birth asphyxia 39 (4.1%).

Other major contributors to the neonatal morbidity in inborn and out born were MAS 78 (6.7%) Vs 11 (1.1%), prematurity 71 (6.0%) vs 28 (2.9%), TTNB 58 (4.9%) vs 7 (0.7%), preterm RDS 48 (4.2%) vs 23 (2.4%), major congenital malformation 23 (1.9%) vs 20 (2.2%), hypocalcaemia 22 (1.9%) vs 10 (1%), hypoglycemia 21 (1.8%) vs 5 (1%), congenital heart disease 10 (0.9%) vs 10 (1%), Neonatal seizure 8 (0.7%) vs 11 (1.1%) and others 134 (11.6%) vs 75 (7.8%). Others comprised of neonatal depression requiring observation, transient

pyrexia of neonates/dehydration fever, gastritis, intrauterine growth restriction, Small for gestation age, which could have been managed in the postpartum ward, but due to constant parental anxiety and pressure were admitted in the NICU (Table 2). In the inborn group 1060 (91.1%) were discharged successfully while 17 (1.5%) were referred mainly for surgical emergency due to non-availability of in-house pediatric surgeon, cardiologist intervention and invasive ventilation.

Only 5 (0.4%) left against medical advice. In the out born group 903 (94.4%) neonates were discharged successfully, 12 (1.3%) neonates were referred and 4 (0.4%) left against medical advice (LAMA).

Total mortality was 120 (5.6%) (76 (63.3%) male and 44 (36.7%) females. Further 82 (7%) (51 male and 31 females) were inborn and 38 (3.9%) (25 male and 13 female) were out born. The overall ratio of male: female death was 1.7:1. In both the group male mortality was higher than female. Overall, death was more in low-birth-weight neonates 69 (57.5%) than neonates with weight of≥2.5kg 51 (42.5%).

Comparing the mortality in different weight groups, highest number of mortalities was observed in 2500-3900 grams 47 (39.2%) followed by 1500-2499 grams 38 (31.7%). Overall mortality was more in preterm babies 69 (57.5%) then term babies 51 (42.5%). However highest number of mortalities was in≥37 weeks GA 51 (42.5%) followed by>32-37 weeks GA (28.3%) (Table 4). After admission to NICU a total of 28 (23.3%) neonates died within 24 hours of life. Majority died between 1-7 days of life 71 (59.1%. Early neonatal death (death within 7 days of life) is 99 (82.4%). After 7 days. 21 (17.6%) neonates died (Late neonatal death) (Table 5).

Duration between admission and death shows that most of the death 46 (38.3%) occurred between 1-3 days of admission and it is followed by death 30 (25%) within 24 hours of admission.

Prematurity/preterm with RDS was the major cause of mortality 44 (36.7%) (Inborn 33 (40.2%) and out born 11 (28.9%). It was followed by neonatal sepsis 25 (20.8%) (Inborn 12 (14.6%) and out born 13 (34.2%), birth asphyxia 21 (17.5%) (Inborn 17 (20.7%) and out born 4 (10.5%), MAS 13 (10.8%) (Inborn 12 (14.6%) and out born 1 (2.6%).

Other causes of mortality were major congenital malformations (5.8%), congenital heart disease (3.3%), PPHN (2.5%), NEC (0.8%), cause not established 2 (1.7%) (Table 6).

Proportionate mortality according to the birth weight was that as weight decreases, mortality increases significantly. Overall proportionate mortality for normal weight group was 3.1%, In LBW 10.6%, in VLBW 38.8% and in ELBW 80%. In the inborn group mortality in normal weight was 3.6%, which increase with decreasing weight as in LBW 12%, VLBW 45.2% and ELBW 76.9%. Similar trend in the proportionate mortality is seen in out born group. For normal weight 2.6%, LBW-7.9%, VLBW-27.8% and ELBW-100% (Table 7).

Proportionate mortality rate according to gestation age shows significant increase in death as gestation age decreases. Overall, it is 2.9% for term neonates and 11.4% for preterm, 32.2% for very preterm and 83.3% for extreme preterm. Similar trend is observed in inborn and out born group (Table 8).

Table 1: Frequency and percentage distribution of neonatal baseline characteristics of admitted neonates.

Variables	Inborn	Outborn	Total
	n=1164 (54.9%)	n=957 (45.1%)	n=2121
Gender			
Male	661 (56.8%)	589 (61.5%)	1250 (58.9%)
Female	503 (43.2%)	368 (38.5%)	871 (41.1%)
Birth weight (gm)			
≥4000	118 (10.1%)	76 (7.9%)	194 (9.1%)
2500-3999	769 (66.1%)	735 (76.8%)	1504 (70.9%)
1500-2499	233 (22.0%)	126 (13.2%)	359 (16.9%)
1000-1499	31 (2.7%)	18 (1.9%)	49 (2.3%)
<1000	13 (1.1%)	2 (0.2%)	15 (0.7%)
Gestation (weeks)			
≥37	902 (77.5%)	832 (86.9%)	1734 (81.7%)
32- <37	197 (16.9%	101 (10.6%)	298 (14.1%)
28- <32	51 (4.4%)	18 (1.9%)	69 (3.3%)
<28	14 (1.2%)	6 (0.6%)	20 (0.9%)
Types of delivery			
Vaginal delivery	497 (42.7%)	496 (51.8%)	993 (46.8%)
LSCS	667 (57.3%)	461 (48.2%)	1128 (53.2%)

Table 2: Frequency and percentage distribution of morbidity pattern among admitted neonates.

Disease	Inborn	Outborn	Total
NNH	239 (20.5%)	484 (50.7%)	723 (34.1%)
Neonatal sepsis	216 (18.6%)	226 (23.6%)	442 (20.8%)
Birth asphxia	230 (19.8%)	39 (4.1%)	269(12.7%)
Prematurity	71 (6.0%)	28 (2.9%)	99((4.7%)
MAS	78 (6.7%)	11 (1.1%)	89(4.3%)
Preterm RDS	48 (4.2%)	23 (2.4%)	71(3.3%)
TTNB	58 (4.9%)	7 (0.7%)	65(3.1%)
Congenital malformation	23 (1.9%)	20 (2.2%)	43 (2.1%)
Hypocalcaemia	22 (1.9%)	10 (1.0%)	32 (1.5%)
Hypoglycemia	21 (1.8%)	5 (0.5%)	26 (1.2%)
CHD	10 (0.9%)	10 (1.0%)	20 (0.9%)
Neonatal seizure	8 (0.7%)	11 (1.1%)	19 (0.9%)
PPHN	4 (0.3%)	7 (0.7%)	11 (0.4%)
NEC	2 (0.2%)	1 (0.1%)	3 (0.1%)
Others	134 (11.6%)	75 (7.8%)	209 (9.9%)
Total	1164	957	2121

Table 3: Outcome of admitted neonates.

Outcome	Inborn (n=1164)	Outborn (n=957)	Total (n=2121)
Discharge	1060 (91.1%)	903 (94.4%)	1963 (92.6%)
Referral	17 (1.5%)	12 (1.3%)	29 (1.4%)
LAMA	5 (0.4%)	4 (0.4%)	9 (0.4%)
Death	82 (7.0%)	38 (3.9%)	120 (5.6%)

Table 4: Frequency and percentage distribution of mortality pattern according to gender, birth weight, gestation age mode of delivery.

Category		In born n=82	Out born n=38	Total n=120
Sex	Male	51 (62.2%)	25 (65.8%)	76 (63.3%)
	Female	31 (37.8%)	13 (34.2%)	44 (36.7%)
Birth weight	≥4000	2 (2.3%)	2 (5.3%)	4 (3.3%)
	2500-3999	28 (34.1%)	19 (50%)	47(39.2%)
	1500-2499	28 (34.1%)	10 (26.4%)	38 (31.7%)
	1000-1499	14 (17.1%)	5 (13.1%)	19 (15.8%)
	<1000	10 (12.1%)	2 (5.2%)	12 (10.0%)
Gestation	>37	31 (37.8%)	20 (52.6%)	51 (42.5%)
	32-37	23 (28.1%)	11 (28.9%)	34 (28.3%)
	28- <32	17 (20.7%)	3 (7.9%)	20 (16.7%)
	<28	11 (13.4%)	4 (10.5%)	15 (12.5%)
Mode of delivery	Vaginal delivery	53 (64.6%)	32 (84.2%)	85 (70.8%)
	LSCS	29 (35.4%)	6 (15.8%)	35 (29.2%)

Table 5: Frequency and percentage distribution of mortality pattern based on age at death and duration between admission and death.

Category		In born n=82	Out born n=38	Total n=120
Age at death	<1 day	22 (26.8%)	6 (15.8%)	28 (23.3%)
	1-7 day	53 (64.6%)	18 (47.3%)	71 (59.1%)
	>7 day	7 (8.5%)	14 (36.8%)	21 (17.6%)
Duration between admission and death	<1 day	22 (26.8%)	8 (21.1%)	30 (25.0%)
	1-3 day	29 (35.4%)	17 (44.7%)	46 (38.3%)

Continued.

Category		In born n=82	Out born n=38	Total n=120
	4-7 day	25 (30.5%)	4 (10.5%)	29 (24.2%)
	>7 day	6 (7.3%)	9 (23.7%)	15 (12.5%)

Table 6: Disease specific mortality.

Disease	Inborn	Outborn	Total
Prematurity with RDS	33 (40.2%)	11 (28.9%)	44 (36.7%)
Neonatal sepsis	12 (14.6%)	13 (34.2%)	25 (20.8%)
Perinatal asphyxia	17 (20.7%)	4 (10.5%)	21(17.5%)
MAS	12 (14.6%)	1 (2.6%)	13 (10.8%)
Congenital malformations	3 (3.8)	4 (10.5%)	7 (5.8%)
CHD	3 (3.7%)	1 (2.6%)	4 (3.3%)
PPHN	1 (1.2%)	2 (5.3%)	3 (2.5%)
NEC	1 (1.2%)	0 (0%)	1 (0.8%)
Others	0 (0%)	2 (5.3%)	2 (1.7%)
Total	82	38	120

Table 7: Proportionate mortality according to birth weight.

Birth weight (gm)	Inborn	Outborn	Total
≥4000	2/118 (1.7%)	2/76 (2.6%)	4/194 (2.1%)
2500-3999	28/769 (3.6%)	19/735 (2.6%)	47/1504 (3.1%)
1500-2499	28/233 (12.0%)	10/126 (7.9%)	38/359 (10.6%)
1000-1499	14/31 (45.2%)	5/18 (27.8%)	19/49 (38.8%)
<1000	10/13 (76.9%)	2/2 (100%)	12/15 (80%)

Table 8: Proportionate mortality according to gestation age.

Gestation age (in years)	Inborn	Outborn	Total
>37	31/913 (3.4%)	20/831 (2.4%)	51/1744 (2.9%)
32- 37	23/195 (11.8%)	11/102 (10.8%)	34/297 (11.4%)
28- <32	17/44 (38.6%)	3/18 (16.7%)	20/62 (32.2%)
<28	11/12 (91.7%)	4/6 (66.7%)	15/18 (83.3%)

DISCUSSION

Morbidity profile

In our study, a total of 2121 neonates were admitted in the NICU of which 54.9% were inborn and 45.1% were out born which is comparable to other studies.[10-15] Comparatively higher admission of inborn might be due to increase number of hospital deliveries for safety of mother and child during delivery, delivery of high-risk mother at tertiary care centres, identification of high-risk babies, as well as availability of NICU. There was male preponderance in admission (M:F ratio- 1.43:1), 58.9% were male and 41.1% were female. The finding is similar to the studies by Baruah M N et al, (male 58.4% and female 41.6%), Kumar R et al, (male 59.5% and female 40.4%) and Rehman k and Begum R (male 58.7% and female 41.2%).[9,10,16] Significant higher number of male admissions in both inborn and out born group needs further evaluation. Low birth weight neonates (<2500gm) constituted 20% of total admission (inborn 23.8% and out born 15.3%) which is comparable to the study by Rndad et al, (39.18%), Sinha et al, (27.6%).[11,12] Higher proportions of LBW neonates were observed by Kumar R et al, 43.86 %4 Verma et al, (61.6%), shah et al, (63%), Rahman K and Begum R (49.7%).[9,13,14] Overall term neonates were 81.8% and preterm were18.3%. Among preterm, neonates between 32 to 37 weeks (PT) were 14.1%, 28 to<32 weeks (very PT) were 3.3% and<28 weeks (extreme PT) were 0.9%. Comparable findings were observed by Adikane et al, (20.28%, 79.72%).[15] A study from Nepal by Bastola et al, (8.33%) showed lower proportion of preterm admitted than the present study.[16] Further, study by Ravikumar et al, (30.06%), Verma et al, (37%), Rahman K and Begum R (47.7%), Mohibur Rahman et al, (43.5%) shows higher number of preterm neonates.[9,13,17,18]

Neonates born through LSCS had higher morbidity (53.2%) than through vaginal delivery (46.8%) which is

comparable to study by Sasamal S et al, (LSCS (65.4%) and vaginal delivery (33.4%).[19] On analysis of morbidity profile of neonates in our study, Neonatal Jaundice was found to be the most common cause of admission (34.1%). It was followed by neonatal sepsis (20.8%), birth asphyxia (12.7%), others (9.9%), prematurity (GA<34 weeks) 4.7%, MAS (4.3%), preterm RDS (3.3%), TTNB (3.1%), (others include neonatal depression, transient pyrexia of neonates/dehydration fever, meconium gastritis, IUGR, SGA, neonatal rhinitis). Recent study by Sasamal S et al, (19.30%) and Mahibur Rahman et al, (41.4%) reported neonatal jaundice as the commonest cause of neonatal admission.[18,19] Significantly higher number of jaundiced babies were in out born group (50.7% vs 20.5%). This could be due to early discharge of mother from postpartum ward (on request), not evaluating the neonates in post-partum ward and common practice of treatment of jaundice by local priest and local herbs. Study by kumar et al, Saharia et al, Rahman K and Begum R (28.7%) reported birth asphyxia (28.7%) as the commonest cause of admission.[4,5,9] It was observed that the proportion of birth asphyxia in our study is significantly higher in inborn babies (19.8% vs 4.1%). This could be due to high delivery load with limited human resources, high risk pregnancy, delayed arrival to hospital due to delayed referral from periphery, poor road communication and scarce availability of govt. ambulances. Other Indian studies reported sepsis as the leading cause of admission.[10,19,22,23]

Out of total 2121 admitted neonates, 1963 (92.6%) were discharged successfully, 29 (1.4%) were referred to other centres (for cardiologist intervention, paediatric surgery intervention and invasive ventilation), 9 (0.4%) left against medical advice. The rate of successful discharge (92.6%) is higher and incidence of LAMA (0.4%) is lower than other studies.[4,9,14] This could be due to better care of admitted neonates, high number of babies admitted with neonatal depression and dehydration fever and taking parents into confidence by giving sufficient time in counselling.

Mortality profile

A total of 120 (5.6%) neonates died out of total 2121 admission. The mortality rate observed was similar to the study by Sasamal S et al, (6.8%), Baruah et al, (7.5%) and lower than the study by Rakholia R et al, (20.53%), Ranjan A et al, (23.4%), Rahman K and Begum R (11.4%), Mahibur Rahman et al, (12.1%).[9,10,18-21] Data shows mortality rate in inborn is 7%, which was higher than the outborn 3.9%. Most of the existing Indian studies shows higher outborn mortality.[9,14,22] The findings could be due to higher high-risk deliveries in the hospital, late arrival at the hospital due to poor road connectivity. Gender specific mortality shows that 63.3% are male (inborn 62.2%, outborn 65.8%) and 36.7% are female (inborn 37.8%, outborn 34.2%), which is similar to the study by Mahibur Rahman et al and Rahman K and Begum R.[9,18] Mortality in preterm (57.5%) were more than term neonates (42.5%). The finding is opposite to some Indian studies.[4,9,14]

Weight wise distribution of mortality revealed that mortality in low birth weight (<2500 gm) neonates (57.6%) were more than neonates with weight ≥2500gm (42.4%). On further categorization as ELBW (10%), VLBW (15.8%), LBW (31.7%) between 2500 gm to 3999 gm (39.2%) and ≥4000 gm (3.3%). Similar findings have been reported by Sasamal S et al, as ELBW (21.72%), VLBW (15.94%), LBW (37.09%), 2500 gm - 4499 gm (25.1%) and ≥ 4500 gm (0.14%).19 Out of 49 VLBW neonates, 19 (38.8%) died and among 15 ELBW, 12 (80%) died probably because of non-availability of surfactant and invasive ventilation.

Mortality was higher in neonates born through vaginal delivery 85 (70.8%) than through LSCS 35 (29.2%). This is opposite to the study by Sasamal S et al, (mortality of 47.96% in vaginally delivered babies and 51.62% in LSCS born babies).[19]

In our NICU, 82.4% death occurred within 7 days of life compared to late neonatal death (17.6%). This is in concordance with the findings by Kumar R et al, Anupama D et al, Baruah et al, Malik S et al.[4,6,8,10]

The most common cause of mortality in our study is preterm RDS (36.7%) similar to the findings in study by Adikane et al, (57.4%), Sridhar et al, (43.3%), Verma et al, (39%) Malakar et al, (25.48%).[13,15,23,24] It was followed by neonatal sepsis (20.8%), birth asphyxia (17.5%), MAS (10.8%), congenital malformations (5.8%), congenital heart disease (3.3%), PPHN (2.5%), NEC (0.8%) and cause not established (1.7%). Many studies showed birth asphyxia as the major cause of mortality in neonates but the major cause of mortality remain same across studies.[4,5,8,9,14]

Proportionate mortality reveals that lower the birth weight higher the probability of death (≥2500 gm: 3.1%, 1500-2499 gm: 10.6%, 1000-1499:38.8 %, <1000: 80%). Similar trend was also seen by Rahman K and Begum R, Mahibur Rahman et al.[9,18]

This is a retrospective study, the epidemiological factors including socio-economic background, maternal factors, antenatal, intranatal and postnatal factors could not be analysed, which could have influenced the outcome.

Follow up of referred and LAMA neonates were not done in the study. This is a hospital-based study, the results from this study cannot be a complete reflection of the problem in the community.

CONCLUSION

From our study, we conclude that neonatal jaundice, neonatal sepsis and birth asphyxia are the leading cause of admission in NICU. Common cause of neonatal

mortality are preterm RDS, neonatal sepsis and birth asphyxia. Most of the morbidities and mortalities can be prevented by improvement of maternal health, quality antenatal care, providing intranatal and neonatal care by skilled health worker in a well-equipped facility with adequate human resources.

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