



A STUDY OF NEONATAL ADMISSION PATTERN AND OUTCOME FROM RURAL HARYANA

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ABSTRACT

Introduction: India contributes to one fifth of global live birth and more than a quarter of neonatal deaths. There is huge disparity in Neonatal Mortality rate between and even the states. This disparity include rural –urban, poor rich and gender differentials. The first step in improving neonatal survival is to document the number and rate of deaths and identify their common causes.

Aims: This study was undertaken to study the disease pattern and outcome of neonates admitted to the neonatal intensive care unit (NICU) of a rural tertiary care centre located in BPS government medical college for women, Khanpur kalan Sonapat, Haryana.

Inclusion criteria: All neonate admitted in NICU during one year study period (Jan to Dec 2017)

Exclusion criteria

Newborn admitted after surgical intervention and referred due to non availability of beds were excluded.

Conclusion: More emphasis should be given to increase awareness to 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 may improve neonatal outcome in rural India.

KEYWORDS : Birth Asphaxia, Neonatal Morbidity, Neonatal Sepsis

Introduction

In India, 26 million babies are born every year, and 1.2 million die in the first four weeks of life, which accounts for a quarter of global neonatal Deaths [1]. India thus faces the biggest newborn health challenge of any country in the world. The current Neonatal Mortality Rate (NMR) is 28 per 1000 live births in India [2]. High neonatal mortality rate in a country reflects the poor availability of quality and quantity of infrastructure and utilization of neonatal care of that country [1]. Advancement in perinatal and neonatal care have significantly helped in reducing NMR in developed countries, but the mortality and morbidity are still high in developing countries [3]. The first step in improving neonatal survival is to document the number and rate of deaths and identify their common causes [4].

This study was undertaken to study the disease pattern and outcome of neonates admitted to the neonatal intensive care unit (NICU) of a tertiary care teaching hospital located in BPSGMC, Khanpur kalan Sonapat, Haryana. So the knowledge about spectrum of neonatal diseases and proper management of common neonatal problem will lead to better outcome and improved quality of life among survivors [5].

Material and Method

This hospital based retrospective record review study was carried out in the NICU, Department of Pediatrics, at Bhagat phool singh government medical college for women, Khanpur kalan, Sonapat Haryana, India, for a period of 1 year from January 2017 to December 2017. This institute started in 2011 with 100 mbbs seats for only girl students and pg seats have been started in pre and paraclinical branches now with pg dnb seats in some clinical

branches too. Nicu situated in rural Haryana in sonapat district caters to the population of nearby 30 villages, and approximately 3600 deliveries are conducted per year in the hospital. The majority of patients belong to below poverty line income group. Our NICU has bed strength of 09 beds having facility for surfactant administration, ventilation, phototherapy and exchange transfusion., junior residents round the clock available to take care of newborns along with 3:1 to 4:1 patient nurse ratio. The newborn categorized into inborn and outborn and the data were recorded in predesigned performa.

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All neonate admitted in NICU during one year study period (Jan to Dec 2017)

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Newborn admitted after surgical intervention and referred due to non availability of beds were excluded.

Results

A total number of babies admitted to NICU during study period was 412 of which 205 (49%) were out born and 207(51%) were inborn with male to female ratio of 1.16%. Among total admission 204 (49%) were preterm and 208(51%) was term. Maximum admission was there of weight range 2-2.5kg 158 (38%), then 1- 1.5 kg 135(32%) followed by more than 2.5kg birth weight 102(24%), 1.5-2kg 97(23%). Extremely low birth weight babies admitted were 20 corresponds to 4.8% of total admissions. Intra uterine growth retardation was present in 158 (38%) of newborns.

Most common cause of admission was respiratory distress in

preterm 136(33%), and term newborn 113(27%), followed by sepsis 100 (24%) and birth asphyxia 76(18%), 38(9%) newborn admitted with meconium aspiration syndrome and 30(7.2%) with neonatal jaundice and 12 (2.9%) were of hypoglycemia, congenital anomalies were present in 11(2.6%) and hypothermia was there in 7 (1.6%) of cases.

201(44%) were discharged and 33(8%) were left against medical advice out of 412 admissions. There was mortality of 150 (36.6%) newborn. Premature mortality was more than term newborn. Most common cause of mortality was RDS 55(36.6%), followed by sepsis 50(33.3%) HIE3(22%) and Meconium aspiration syndrome 13(8.6%). Extremely low birth weight (<1kg) newborn had higher mortality 19(12.6%).

Discussion

Out of total 412 admission male to female ratio was 1.16% which was similar to Saharia et al ,Shridhar P , Roy et al and Mani kant et al and [5,6,7,8]. The male preponderance in admission was also there in international studies Ugu b nigeria and sey al from pakistan [9,10]. Term baby slightly outnumbered in admission to preterm babies 208 and 204 respectively. Maximum number of admission occurs with weight range of 2-2.5 kg that means low birth weight similar to saharia et al ,Veena p and Shridhar et al [5,9,6]. Nearly 30% of neonates- 7.5 million are born with low birth weight in India [2], about 60 % of the LBW are born term after foetal growth restriction and 40% are born preterm [12]. This may be due to poor maternal health condition, low socio-economic status and less visits to health care facility [13].

Most common cause of admission in our study was RDS in premature 136 (33%)and term newborn 113 (27%) followed by sepsis24% and birth asphyxia18% which was near similar to study by Shridhar et al[6]. In studies from high altitude area show neonatal jaundice as most common cause of admission as high altitude leading to increase red cell blood mass may be the reason [1,14]. Studies According to national neonatal perinatal database sepsis(36%) is the most common morbidity responsible for admission followed by prematurity (26.5%) and birth asphyxia (10%) [15].

Mortality rate in our study was 36,6% which was similar to Garg p et al 35%, Prakash j et al 25.5% and Prasad Vet al 18.8% [16,18,9] , in contrast to this low mortality reported by Saharia et al 13% [5], kotwal Y S et al 9.7% [1] and 8 % by Narayan R[14]. This may be due to neonatal mortality rate in rural area is twice that in urban areas (31 verses 15 per 1000 live births) as there is important rural urban and socioeconomic difference in NMR in India[17]. Most common causes of mortality was premature with RDS followed by sepsis and birth asphyxia which was similar to other studies [16,18,19].

Extremely low birth weight with respiratory distress was also corresponds to high mortality in our study. A systematic analysis of global , regional and national causes of child mortality in 2013 identified preterm birth complications and infections to be two major causes of neonatal deaths in india [20,21].

Conclusion

As per our study prematurity and respiratory distress in preterm and term newborn was the most common morbidity factor followed by sepsis and birth asphyxia as most of the other studies from India .Mortality rate is quite high in our study this may be due to large number of cases referred from peripheral area to our NICU, where inspite of giving quality care we are giving quantity care ,but because of rural area, availability of less numbers of health care staff is also responsible for poor outcome of neonates.RDS and prematurity with neonatal sepsis is most common cause of mortality in our NICU. So more emphasis should we given to increase awareness to 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 may improve neonatal outcome in rural India.

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Conflict of interest

None.

Limitation of study

This is a hospital based study may not represent community as whole and outcome of newborn who left against medical advice was unknown.

Admission Pattern among studied Neonates (Table 1)

	No	Percentage
In born	207	51%
Out born	205	49%
Total	412	100%

Sex Distribution among Studied/morbid Neonates (Table 2)

Sex	Number	Percentage (%)
Male	222	53%
Female	190	47%
Total	412	100%

Admission Pattern/ Morbidity Profile as per age Maturity (Table 3)

Maturity	Number	Percentage (%)
Preterm	204	49%
Term	208	51%
Total	412	100%

Weight Distribution among Morbid/studied Neonates (Table 4)

Weight(kg)	Number	Percentage (%)
<1 kg	20	4.8 %
1-1.5 Kg	135	32%
1.5-2 Kg	97	23%
2-2.5 Kg	158	38%
>2.5 Kg	102	24%

Outcomes of morbid neonates after NICU Admission (Table 5)

Outcomes	Number	Percentage (%)
Deaths	150	36%
Discharge	201	44%
Lama	33	8%

Causes of Neonatal Morbidity at NICU Admission (Table 6)

Cause	Number	Percentage (%)
Respiratory Distress Syndrome (preterm)	136	33%
Respiratory Distress(term newborn with Transient tachypnea,pneumonia etc)	113	27%
Sepsis	100	24%
Birth Asphyxia / Hypoxic Ischaemic Injury	76	18.4.2%
Meconium Aspiration Syndrome	38	9.2%
Intrauterine Growth Restriction	158	38%
Neonatal Jaundice	30	7.2%
Hypothermia	7	1.6%
Hypoglycemia	12	2.9%
Congenital Abnormality	11	2.6%

Distribution of Mortality as per age maturity (Table 7)

Maturity	Number	Percentage (%)
Preterm	100	66%
Term	50	33%
Total	150	100%

Causes of Neonatal Mortality at NICU (Table 8)

Cause	Number	Percentage (%)
Respiratory Distress Syndrome	55	36.6%
Sepsis	50	33.3%
Hypoxic Ischemic Injury	33	22%
Meconium aspiration syndrome	13	8.6%
Extremely Low Birth Weight	19	12.6%
Congenital Abnormality	5	3.3%

REFERENCES

- Kotwal YS, Yatoo GH and Ahmede Jan FA(2017). Morbidity and Mortality Among Neonates Admitted to a Neonatal Intensive Care Unit of a Tertiary Care Teaching Hospital of Jammu and Kashmir (India). *Journal of Neonatal and Paediatric Medicine*. 3:136. Doi:10.4172/2572-4983.1000136
- MJ Sankar, SB Neogi, J Sharma et al. State of Newborn Health in India. *Journal of Perinatology*. 36, 53-58; doi:10.1038/jp.2016.183
- Sridhar PV, Thammanna PS, Sandeep M. Morbidity Pattern and Hospital Outcome of Neonates Admitted in a Tertiary care Teaching Hospital, Mandya. *Int J Sci Stud* 2015;3(6):126-129
- Sadia Yasmeen, Khawaja Ahmad Irfan Waheed, Rafia Gul. SPECTRUM OF NEONATAL ADMISSIONS AND THEIR OUTCOME IN A TERTIARY CARE HOSPITAL. *Pak Armed Forces Med J* 2017; 67 (6): 1044-49
- Dr.NiruPrabhaSaharia, Dr.AratiDeka, Dr.Vivekananda M.S. Mortality and Morbidity Pattern of Neonatal ICU of Gauhati Medical College and Hospital. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)* e-ISSN: 2279-0853, p-ISSN: 2279-0861. Volume 15, Issue 6 Ver. XI (June 2016), PP 73-75
- Sridhar PV, Thammanna PS, Sandeep M. Morbidity Pattern and Hospital Outcome of Neonates Admitted in a Tertiary Care Teaching Hospital, Mandya. *Int J Sci Stud* 2015;3(6):126-129
- Roy RN, Nandy S, Shrivastava P, Chakraborty A, Dasgupta M, Kundu TK. Mortality pattern of hospitalized children in a tertiary care hospital of Kolkata. *Indian J Community Med* 2008;33:187-9.
- Mani Kant, Thakur S, Singh B. Study of morbidity and the mortality pattern in the neonatal intensive care unit at a tertiary care teaching hospital in Rohtas District, Bihar, India. *Journal of clinical and diagnostic research*. 2012 April;6(2): 282-5.
- Prasad V, Singh N. Causes of morbidity and mortality in the neonates admitted in government medical college, Haldwani in Kumaun region, (Uttarakhand) India. *Journal of Pharmaceutical and biomedical science*, 2011; 8(8): 1-4.
- Kumar MK, Thakur SN, Singh BB (2012) Study of the Morbidity and the Mortality Patterns in the Neonatal Intensive Care Unit. *Journal of Clinical and Diagnostic Research* 6:282-285.
- Seyal T, Husnain F, Anwar A (2011) Audit of Neonatal Morbidity and Mortality at Neonatal unit of Sir Gangaram Hospital Lahore. *Annals King Edward Med Coll* 1:9-13.
- Lee ACC, Katz J, Blencowe H, Cousens S, Kozuki N, Vogel JP et al. National and regional estimates of term and preterm babies born small for gestational age in 138 low-income and middle-income countries in 2010. *Lancet Glob Health* 2013; 1:e26–e36.
- Lawn JE, Cousens S, Zupan J; Lancet Neonatal Survival Steering Team. 4 million neonatal deaths: When? Where? Why? *Lancet* 2005; 365: 891–900.
- Raghendra Narayan. A study of the pattern of admissions and outcome in a neonatal intensive care unit at high altitude. *Sri Lanka Journal of Child Health*, 2012; 41(2): 79-81.
- Morbidity and mortality among outborn neonates at 10 tertiary care institutions in India during the year 2000. *J Trop Pediatr* 2004; 50: 170–4.
- Garg P, Krishak R, Shukla DK, NICU in a community level hospital. *Indian J Pediatr* 2005; 72(1): 27-30.
- Registrar General of India. Sample registration system (SRS) statistical report 2013. New Delhi: 2013
- Prakash J, Das N. Pattern of admission to neonatal unit. *J Coll Physicians surg Pak* 2005; 15(6): 341-4.
- Anjum ZM, Shamoony M (2009) Pattern of Neonatal unit of Allied Hospital Faisalabad Pakistan. *Annals Punjab Med Col* 3: 129-131
- Liu L, Oza S, Hogan D, Perin J, Rudan I, Lawn JE et al. Global, regional, and national causes of child mortality in 2000–13, with projections to inform post-2015 priorities: an updated systematic analysis. *Lancet* 2015; 385(9966): 430–440.
- Liu L, Johnson HL, Cousens S, Perin J, Scott S, Lawn JE et al. Global, regional, and national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000. *Lancet* 2012; 379: 2151–2161.