Original Research Paper

Volume-9 | Issue-9 | September - 2019 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Paediatrics

MORBIDITY AND MORTALITY PROFILE OF NICU IN A TERTIARY CARE HOSPITAL IN NORTH INDIA, A RETROSPECTIVE STUDY

Dr (Col) O. P. Singh Professor, Pediatrics HIMS, Varanasi.

Dr J P Singh* Varanasi. Professor, Pediatrics HIMS, Varanasi *Corresponding Author

ABSTRACT

Introduction: Neonatal period is a highly vulnerable period in human life. Perinatal events have lifelong repercussions.

Details of the profile of neonatal diseases helps in proper management of common neonatal .This leads to better survival rates and improved quality of life amongst babies.

Method: This was a hospital based prospective study. It was conducted after approval from the hospital ethical committee during the period of 01 May 2016 to 30 th Apr 2019. A total of 955 newborns were admitted during this period in the NICU and were enrolled for the study.

Result: The morbidity pattern i.e. cause of hospital admissions was neonatal hyperbilirubinemia requiring phototherapy or exchange transfusion was 323 (34%) , low birth weight babies (<1800 gms)- 12 (1.2%), Respiratory Distress Syndrome-231 (24.2%),Meconium Aspiration Syndrome-42 (4.4%), sepsis-72 (7.5 %), Perinatal hypoxia-51 (5.3 %), Seizures-51 (5.3%), Hypoglycemia-42 (4.4%), Hypocalcaemia-7 2(7.5%) Intracranial Hemorrhage-10 (1%), Various Congenital Anomalies-39 (1.2%), acute Osteomyelitis, Congenital anomalies, Down's syndrome-2(0.2%), Meningomyelocele-(2(0.2), Tracheo-esophageal fistula-(0.2%). The overall mortality was 39(4%). The major causes of mortality in this study were low birth-weight, sepsis, respiratory distress syndrome, intracranial hemorrhage- and cyanotic heart disease in that order. 55 babies were taken away against medical advice.

Conclusion: This study identified neonatal hyperbilirubinemia being the most important cause of morbidity and The major causes of mortality in our study were low birth-weight, sepsis, respiratory distress syndrome, intracranial hemorrhage- and cyanotic heart disease Improving the antenatal care, maternal health and timely intervention by referral to tertiary centers may go a long way in improving neonatal outcome.

Aim and objective : This study was carried out at a tertiary care center in the department of Pediatrics at HIMS Varanasi. The main aim of this study was to carry out a retrospective analysis of NICU morbidity, and mortality profile and compare it to figures and data available in respect to India and the world. The aim was also to analyze the reasons of the same and understand the implications. The study was carried out during the period of May 2016 to Apr 2019. A total of 955 newborns were admitted during this period in the NICU and were enrolled for the study.

KEYWORDS : Neonatal morbidity, Neonatal mortality, NICU, low birth weight

INTRODUCTION

The first 28 days of life i.e. neonatal period is a very vulnerable period of life due to many problems, and in most of the cases these problems are preventable.(1,2,3,4) The neonatal morbidity and mortality rates are very sensitive and good indicators to measure the level of health, and the health care in a hospital. The Perinatal period occupies less than 0.5 percent (first seven days of life) of average life span. There are more deaths within this period than during the next 30-40 years of life in many developing countries (1,2,4, 5). The direct causes of death during neonatal period are preterm births 21%,infections 26%,asphyxia 23%,congenital anomalies 7%,tetanus 7% and diarrhea 3% and others 7% according to a study published in Lancet. The improved levels of newborn care can bring down the mortality rates. About 0.75 million neonates die every year in India, the highest for any country in the world. It is more than 25% of the total global neonatal deaths which occur in India. (1,2,6,7) The neonatal mortality rate (NMR) in India has declined from 52 per 1000 live births in 1990 to 28 per 1000 live births in 2013 (1,2,8), but the rate of decline is slow and lags behind that of infant and under five child mortality rates. In spite of the concerted efforts by government of India and other health agencies ,the millennium goals 2015 could not be achieved. They were focused on decreasing neonatal mortality rate to less than 10; however significant efforts are being done to improve neo natal mortality rate in India. We undertook this study to find out the predominant causes of neonatal morbidity and mortality amongst newborns admitted to NICU.

Eastern UP and Bihar are facing a peculiar and major crisis in the health care management. This part of country has a very high density of population with high illiteracy, ignorance with many social taboos. Safe drinking water is still not available to most of them. Most of these children are malnourished, underweight and stunted. Most of the time the patients from rural areas & some from urban areas too land up in the hands of malafide health agents, who take them to the place which gives them maximum cuts per patients. There is an uncontrolled mushrooming of clinics, nursing homes and hospitals in most of the cities & townships in this part of country. Most of them are being run by untrained professionals with good clout in the society. Deliveries are being conducted by people who are not familiar with basics of neonatal and infant care and at places without any facilities for newborn resuscitation. This is leading to very high perinatal and neonatal morbidity and mortality in this part of India in spite of tremendous efforts by government , PNMR, NMR, IMR and Under-5 mortality is not improving or improving at a very slow pace. It is a well known fact that an educated population takes more precautions against diseases which in turn reduce their morbidities

MATERIALS AND METHODS

This study was conducted in the Department of Pediatrics at a Medical college hospital in North India which has well trained & dedicated staff along with latest medical equipments. This was a hospital based study over a period of two and three years i.e. May 2016 to Apr 2019.All neonates inborn and out born were included in this study.

Inclusion criteria:

1. All neonates brought to NICU.
2. All newborns in which parental consent was obtained.

Exclusion criteria:

1. Babies which were taken away against medical advice.

Study period: Three years

RESULTS

Total number of admissions in NICU during the period01 May 2016 to 30 Apr2019 was 955. Most of them were inborn i.e.813, the percentage being 85 %.The number of out born babies was only 142 (15%).There was no gender bias .The number of male babies was 497 (52%) and that of female babies was 458 (48%).

Table 1. Mode of admission & Sex distribution of NICU admission

	Inborn	Out born	Total
Admission	813	142	955
Percentage	85%	15%	
Gender	497 (M)	458 (F)	955
Percentage	52	48	100

Table 2. Causes of Neonatal Morbidity in this study ;Total-955

Neonatal Hyperbilirubinemia Requiring exchange transfusion/phototherapy	323 (34%)
LBW-Wt less than 1800 grams	12 (1.2%)
Respiratory distress syndrome	231 (24.2%)
Meconium Aspiration Syndrome	42 (4.4%)
Hypoxic Ischemic Syndrome	51 (5.3%)
Sepsis	72 (7.5%)
Seizures	51 (5.3%)
Hypoglycemia	42 (4.4%)
Hypocalcaemia	78 (8.2%)
Conjunctivitis	2 (0.2%)
Umbilical sepsis	4 (0.4%)
Meningitis	2 (0.2%)
%) Intracranial hemorrhage	10 (1%)
Acute Osteomyelitis	2 (0.2%)
Congenital Anomalies	12 (1.25%)
Congenital Heart Diseases	6 (0.63%)
Down's syndrome	2 (0.2%)
Meningomyelocele	2 (0.2%)
Tracheo - esophageal fistula	2 (0.2%)
Multiple Congenital anomalies	2 (0.2%)

Table-3 Details of Neonatal Mortality in this study.Total-39

	Early neonatal death	Late neonatal death
ELBW	06 (15%)	04 (10.2%)
Sepsis	08 (20.4%)	10 (25.6%)
Intracranial hemorrhage	06 (15%)	
RDS	22 (56%)	
Cyanotic heart disease	10 (25.6%)	
Congenital pneumonia	16 (41%)	

Low birth weight babies were seen in 26 % of neonates admitted to NICU and the remaining had normal birth weight. Extremely low birth weight babies who got admitted to NICU were 15 (1.5%). The morbidity pattern i.e. cause of hospital admissions was neonatal hyperbilirubinemia requiring phototherapy or exchange transfusion was 323 (34%) , low birth weight babies (<1800 gms)- 12 (1.2%), Respiratory Distress Syndrome-231 (24.2%),Meconium Aspiration Syndrome-42 (4.4%), sepsis-72 (7.5 %), Perinatal hypoxia-51 (5.3 %), Seizures-51 (5.3%), Hypoglycemia-42 (4.4%), Hypocalcaemia-7 2(7.5%) Intracranial Hemorrhage-10 (1%), Various Congenital Anomalies-39 (1.2%), acute Osteomyelitis, Congenital anomalies, Down's syndrome-2(0.2%), Meningomyelocele-(2(0.2), Tracheo-esophageal fistula-(0.2%)

The overall mortality was 39(4%). The major causes of mortality in this study were low birth-weight, sepsis, respiratory distress syndrome, intracranial hemorrhage- and cyanotic heart disease in that order. 55 babies were taken away against medical advice.

DISCUSSION

In this study 955 newborns were admitted in NICU of a medical college hospital. The male to female ratio was almost equal, 497 males to 458 females which is contrary to various studies in India including National Neonatal Perinatal Database (1,2,9, 10, 11). In this study only 26% had low birth weight which is almost similar to studies conducted by Veena Prasad et.al (3), and some other studies where number of LBW were significantly more. The main causes of NICU admissions neonatal hyperbilirubinemia requiring phototherapy or exchange transfusion was 323 (34%) , low birth weight babies (<1800 gms)- 12 (1.2%), Respiratory Distress Syndrome-231 (24.2%),Meconium Aspiration Syndrome-42 (4.4%), sepsis-72 (7.5 %), Perinatal hypoxia-51 (5.3 %), Seizures-51 (5.3%), Hypoglycemia-42 (4.4%), Hypocalcaemia-7 2(7.5%) Intracranial Hemorrhage-10 (1%), Various Congenital Anomalies-39 (1.2%), acute Osteomyelitis, Congenital anomalies, Down's syndrome-2 (0.2%), meningomyelocele-(2(0.2), trachea--esophageal fistula-(0.2%) were .Studies from Africa by Orimadegun AE et al, Owa JA, and Simiyu DE show more admissions due to sepsis, jaundice and tetanus. (14,15,16). In developed countries extreme prematurity and congenital anomalies are the main causes (1,2,17).The incidence of birth asphyxia was 5 % in our study which is less than most of the other Indian Studies.(17) published. The mortality rate observed was 4 % which is much less when compared to various studies reported in India ,Africa and most of the western countries.(18,19,) This could have been much more if the critical babies who were taken away against medical advice were included. The major causes of mortality in our study were low birth-weight, sepsis, respiratory distress syndrome, intracranial hemorrhage- and cyanotic heart disease in that order. Out of all babies admitted 55 babies were taken away against medical advice. (LAMA)

CONCLUSIONS

Morbidity and Mortality rates are good indicators to measure the level of health and health care in a hospital, district, state or country. It also helps in assessing the overall socioeconomic development of a country. Perinatal mortality rate has assumed greater significant as a yardstick of obstetric and pediatric care before and around the time of birth although Perinatal period occupies less than 0.5 percent (less than 168 hrs) of average lifespan; there are more deaths within this period than during the next 30-40 years of life in many developing countries. This study identified neonatal hyperbilirubinemia being the most important cause of morbidity and sepsis , respiratory distress syndrome ,low birth weight, as causes of mortality in that order. Improving the antenatal care, maternal health and timely intervention by referral to tertiary centers may go a long way in improving neonatal outcome. Improving the antenatal care, maternal health and timely intervention by referral to tertiary centers will certainly help in improving neonatal outcome.

LIMITATIONS

This was a retrospective hospital study. The extent of morbidity and mortality was based on the official hospital records and this may not be the exact reflection of morbidities and mortality of new born in the society at large.

A major limitation in this study was the small sample size when compared to the other studies from India and abroad. In addition all data used in this study is from single NICU.

This being a retrospective study permission from the ethical committee was not required.

REFERENCES

1. Singh O.P.,Kaul K.K.; Morbidity and mortality profile of NICU in a tertiary care hospital of North India, a retrospective study; Volume-8 | Issue-2 | February-2018 | 8618 ISSN - 2249-555X | IF : 5.397 | IC Value :86.18
2. Singh O.P.,Kaul K.K.; Low Birth Weight babies and maternal variables and disorders affecting them a retrospective study; Volume-7 | Issue-12 | December-2017 | 4.894 ISSN - 2249-555X | IF : | IC Value : 86.18
3. Prasad V, Singh N. causes of morbidity and mortality in neonates admitted in Government Medical College, Haldwani in Kumaun region (Uttarakhand) India. JPBS 2011; 8:1-4.
4. Bhutta ZA. Priorities in newborn management and development of clinical neonatology in Pakistan. J Coll Phys Surg Pak 1997;7:231-4
5. Govt of India(2014) INAP-India Newborn Action Plan, Sept 2014,Ministry of health and family Welfare, New Delhi.
6. Park's Textbook of preventive and social medicine, 23rd edition,ch-9 ,pages 520-607
7. Review State of newborn health in India MJ Sankar, SB Neogi, J Sharma, M Chauhan, R Srivastava, PK Prabhakar, A Khera, R Kumar, S Zodpey and VK Paul, Journal of Perinatology (2016) 36, S3–S8
8. 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
9. LawnJE,Cousen S, Zupam J. Lancet Neonatal Survey Steering Team,4 million neonatal deaths, when?, where?, why?, Lancet 2005:365:891-900.
10. Jain S, Bhakoo ON, Singh M 1990,Neonatal monitoring recommendations and proceedings of the seminar 1990.Chathram hospital& research center, Indore pp:6-17.
11. Nath Roy R, et al The mortality pattern of the hospitalized children in a tertiary care hospital of Kolkata.Indian Journal of Community Medicine 2008:33(3):187-9.
12. Ritu Rakholia,Vineeta Rawat,Mehar Bano,Gurpreet Singh,Neonatal morbidity and mortality of sick newborns admitted in a teaching hospital of Uttarakhand 2014:1(4):L228-34.
13. Bhatia B. D, Mathur N B, Chaturvedi ,P Dubey AP.Neonatal mortality pattern in rural based medical college hospital.Indian J of Pediatrics 1984:51309-12.
14. Orimadegun AE, Akinbami FO, Tongo OO, Okereke JO. Comparison of neonates born outside and inside hospitals in a children emergency unit, Southwest of Nigeria. PediatrEmerg Care 2008;24:354-8. 13. Owa JA, Osinaike AI. Neonatal morbidity and mortality in Nigeria. Indian Journal Pediatrics 1998;65:441-9.
15. Simiyu DE. Morbidity and mortality of neonates admitted in general pediatric ward at Kenyatta National Hospital. East Afr Med J 2003;80:6116.
16. Simpson CD, Ye XY, Hellmann J, Tomlinson C. Trends in cause-specific mortality at a Canadian out born NICU. Pediatrics 2010;126:e 1538-44.
17. Mani Kant Kumar, Sachida Thakur, BrishBhanu Singh.Study of the Morbidity and the Mortality Patterns in the Neonatal Intensive Care Unit at a Tertiary Care teaching Hospital in Rohtas District, Bihar, Indian.Journal of Clinical and Diagnostic Research 2012;6(2):282-5.
18. Shrestha S, Karki U. Indications of admission and outcome in a newly established neonatal intensive care unit in a developing country (Nepal). Nepal Med Coll J 2012;14:64-7.
19. Kumar M, Paul VK, Kapoor SK, Anand K, Deorari AK. Neonatal outcomes at a Sub district hospital in North India. J Trop Pediatr 2002;48:43-6. 27