

Neonatal Outcome of Newborns Admitted in a Tertiary Level Hospital, Nepal

Uma Devi Ranjitkar¹, Bhuwan K. Dangol², Samundra Mahato³

^{1,2} Tribhuvan University, Institute of Medicine, Maharajgunj Nursing Campus

³ Tribhuvan University, Institute of Medicine, Teaching Hospital, Nepal

Abstract: A healthy newborn is the reflection of healthy nation. Future of a nation depends on health of its newborn and children because today's newborn are adults of tomorrow. A descriptive study was done to find out the neonatal outcome of newborns admitted in Neonatal care Unit (NNU), Tribhuvan University teaching Hospital. A total 110 medical record were reviewed by using consecutive sampling technique. The data was collected from September and October 2019. All collected data were describe in descriptive statistic. Findings shows that majority of neonates were male (62.7%). Most of neonate admitted on the day of birth (83.6%). Nearly two third (61.8%) had normal birth weight. Nearly half (48%) of them were of term gestational weeks. Nearly half 49.1% neonate brought from labor room, immediately after birth (73.6%). Regarding maternal characteristics, 43.6% of mothers belong to the age group of 25 to 30 years. More than half (54.5%) babies born spontaneous vaginal delivery. 43.6% Mother had pregnancy related problem in this pregnancy. Among them 13.6% had Pregnancy induce hypertension, followed by respiratory problems. Majority (84.5%) of neonates stay in NNU 1-5 days with mean 3.78days and SD+/-2.8 days. More than 60% neonate were managing by oxygen therapy by head box and followed by CPAP 10.9 %, antibiotics therapy done for 9% of them and nearly thirteen percents admitted only for supportive care. Regarding outcome, nearly two third, (61.8%) were improved and discharged from NNU and 8% were left against medical advice, and 4.5% were discharge on parent's request.

Keywords: Neonates, Neonatal care unit, neonatal outcome, Tertiary level hospital

1. Introduction

Neonatal period is a very vulnerable period of life due to many problems. India alone contributes to about 25% of neonatal mortality around the world (Sridhar 2015)¹. A healthy newborn is the reflection of healthy nation. An estimated two-thirds of the world's 2.7 million newborn deaths could be prevented with quality care at birth and during the postnatal period. Basic Newborn Care (BNC) is part of the solution and includes hygienic birth and newborn care practices including cord care, thermal care, and early and exclusive breastfeeding. Timely provision of resuscitation if needed is also critical to newborn survival (Enweronu-Laryea et al 2015, Subedi D, HBB Manual). Almost 7 million children under 5 years of age die each year, including 3 million newborns in their first month of life. More than 8 million children die before they attain 5 years of age each year. Most of these deaths occur in developing countries, and most are caused by preventable or treatable diseases (Gautam, S. 2016). This comparatively slow decline in neonatal mortality is a significant barrier to achieving Millennium Development Goal 4, which targets a two-thirds reduction in childhood mortality.

Sustainable Developmental goal (SDG) targeted to reduce neonatal mortality to at least as low as 12 per 1,000 live births by 2030. But the neonatal mortality rate in Nepal is 23 per 1,000 live births and the morbidity and mortality is mainly due to severe infection, hypothermia, Low birth weight and asphyxia in community (Chapagai, et al 2018 and UNICEF, 2016).

According to health statistics of Nepal Out of the 4 million newborns that die each year globally, 1.5 million newborn deaths occur in the 4 countries of South Asia including Nepal. These deaths account for about 40 percent of under-5

mortality and Neonatal deaths accounted for more than 60% of infant mortality. Various professional bodies are assisting with training and advocacy relating to neonatal health. IMCI in Nepal proposes to include management of illnesses and promotion of health from 1 day - 2 months age. Newborn survival has become an important issue to improve the overall health status and for achieving the millennium developmental goals of a developing country (MoH/DoHS 2010). Neonatal sepsis is the leading cause of hospital admission (34.5%) followed by prematurity (23.1%) and asphyxia (23.3%) in Nepal. The neonatal disease pattern is a sensitive indicator of availability, utilization and effectiveness of mother and child health services in the community. Outcomes from NNU provide opportunities to better understand determinants of neonatal mortality and to target interventions with the potential for greatest improvements in neonatal survival. Unfortunately, there are few published reports on outcomes from NNU. A major limitation to developing targeted improvements in facility-based care is the lack of information reported regarding neonatal and clinical characteristics of the patient survived. So, in this study, researcher wants to search the clinical characteristics, and outcomes obtained from a neonatal care unit with the management through medical and nursing care.

2. Methodology

Descriptive cross sectional study design was used for this study. Data was collected from September to October 2019 after ethical approval taken from Institutional review board TU, IOM and written permission was obtain from hospital administration and NNU too. Consecutive sampling technique was used in 110 Clinical record reviewed from the patient's chart. Data were collected by investigators themselves. Pretest was done before data collection and modified the tool as needed. Data was collected from

patients' charts on the day of discharge from NNU. Data were analyzed using the statistical package for social science SPSS version 16. Data will analyze on the basis of research objective.

3. Results

Table 1: Demographic Characteristics of Newborn: n= 110

Characteristics	Number	Percentage
Sex		
Male	69	62.7
Female	41	37.3
Age of baby on admission		
0 day (day of birth)	92	83.6
1-3 day	16	14.5
4 day and above	2	1.8
Birth weight		
Below 2 kg	38	34.5
2-3.9 kg	68	61.8
4 kg and above	4	3.6
Gestational age		
29-32 weeks	12	10.9
33- 37 weeks	45	40.9
38-41 weeks	53	48
Neonate brought from		
Labor Room	54	49.1
Operational Theater	37	33.6
Post Natal Ward	7	6.4
Other (Birthing centre)	12	10.9
Time of Admission		
Immediate after birth	81	73.6
With in 24 hour	24	21.8
With in 48 hour	3	2.7
Within 72 hour	2	1.8

Table 1 reveals that majority of neonate were male 62.7%. Most of neonate admitted on the day of birth (83.6%). Nearly two third (61.8%) of neonate had normal birth weight. Nearly half (48%) of neonate were term gestational ages. Nearly half 49.1% neonate brought from labor room immediately after birth 73.6%.

Table 2: Maternal Characteristic n= 110

Characteristics	Number	Percentage
Maternal age		
17 -19 years	9	8
20 – 24 years	31	28.
25 – 30 years	48	43.6
31 – 38 years	22	20
Mode of Delivery		
Spontaneous vaginal delivery	60	54.5
Lower Segment Caesarean Section	45	40.9
Vacuum delivery	5	4.5
Maternal problems	48	43.6
If yes, (n=48)		
Pregnancy Induce Hypertension	15	13.6
Respiratory problem	6	5.4
Anetpartum hemorrhage	6	5.4
Fever	6	5.4
Oligo-hydramnuiou	3	2.7
Gestational Diabetic Mellitus	2	1.8
Anemia	2	1.8
Premature rupture of membrane	2	1.8
Cardiac problems	2	1.8

Table 2 reveals that 43.6% of mothers of neonates belong to the age group of 25 to 30 years. More than half (54.5%) of neonates were born spontaneous vaginal delivery. 43.6% mother had pregnancy related problems Among them 13.6% had Pregnancy induce hypertension, followed by respiratory problem, APH and fever.

Table 3: Neonatal Problems on Admission n=110

Neonatal Problems	Number	Percentage
Tachypnia	35	31.8
Sucking/feeding problems	17	15.4
Low birth weight	14	12.7
Meconium Stain Liquor	8	7.2
Grunting	8	7.2
Large for gestational age	4	3.6
Cyanosis	3	2.7
Congenital abnormalities	3	2.7
Low Apgar score	2	1.8
Need closes observation	66	60

Table 3 shows that among 110 neonates, 31.8% had Tachypnia and 15.4% had suckling/ feeding problems for observation and low birth weight (12.7%). More than half of the neonates admitted for keep close observation due to maternal causes, and obstetric intervention.

Table 4: Final Diagnosis of Neonate n=61

Diagnosis	Number	Percentage
Respiratory distress syndrome(RDS)	24	39.34
Transient Tachypnia Neonatrum(TTN)	14	22.95
Intra uterine growth retardation	10	16.39
Neonatal Jaundice	5	8.19
Birth asphyxia	4	6.55
Sepsis/infection	2	3.27
Vomiting	2	3.27

Table 4 reveals that among all neonates, diagnosis made on admission were 39.34% had respiratory distress syndrome, and 22.95% had Transient Tachypnia Neonatrum (TTN).

Table 5: Medical management and Duration of Admission in NNU n=110

variables	Frequency	Percentage
O ₂ by Head box	64	61.8
Supportive care (Feeding, warm, O ₂)	14	12.7
CPAP *	12	10.9
Antibiotics	10	9
Phototherapy	6	5.4
Duration of stay		
1-5 Days	93	84.5
6-9 Days	9	8
10 days and above	8	7

*CPAP (Continuous Positive Airway Pressure)

This table 5 reveals that among the medical management for admitted neonate, 61.8% were manage by oxygen given through head box. 12.7% were only for supportive and 10.9 % were managing through by CPAP. The majority (84.5%) of neonates was admitted in NNU 1-5 days and mean duration of stay was 3.78days and SD+/-2.8 days. The duration of stay was few hours to 14 days. Regarding

nursing management, all babies were given care as emergence of situation, as need based and as routine of the neonatal units such as skin care, feeding, dress changing, daily weighing, monitoring of vitals, oxygen administration, medication, incubator care, monitoring in phototherapy, mothers/ parent's counseling .

Table 6: Outcome of Neonate admitted in NNU
n=110

Variables	Number	Percent
Improve and discharge	68	61.8
Trans-out other unit (NICU/Pediatric/ Maternity)	27	24.5
Left Against Medical Advice	10	9.09
Discharge On Parent's Request	5	4.5

Table 6 reveals that (61.8%) of neonate were improved and discharged from NNU and 9.09% of neonate discontinued their treatment and went left against medical advice, discharge on parent's request were 4.5 %.

4. Discussions

This discussion section is the finding of the study and compare with literature. The study findings reveals that majority of neonate were male (62.7%), most of them admitted on the day of birth (83.6%). they were brought from labor room (49.1%), Immediate after birth (73.6), nearly half (40.9 %) babies were pre term (33- 37) week of gestation. Majority of baby's weight at the time of admission belongs to normal range (2-3.9 kg). This study is similar to a study conducted by Chapagain et al. (2018) Kanti Children's Hospital, Kathmandu, Nepal and Kumar et, al.,(2019) where 59.54% were male and 40.46% were female. Regarding vital status during admission found that among 110 neonates, majority 80.9% had normal body temperature, and 82.7 % had normal heart rate and 80 % had normal respiration at the time of admission. The diagnostics test found that hematology abnormal 11.8%, biochemistry abnormal 8.2%, comb test positive in 9%, blood culture positive 5.5% and CRP positive in 9%.

Regarding maternal age 43.6% of mothers of neonates belong to the age group of 25 to 30 years. More than half (54.5%) of neonates were born spontaneous vaginal delivery. Among the mother who had the problems 13.6% of them had Pregnancy induce hypertension, followed by respiratory problem, Ante partum hemorrhage (APH) and fever.

Neonatal Problems are indicators for admission in neonate unit, 31.8% with Tachypnea, and 15.4% with suckling/feeding problems. Others were of Meconium stain liquor, Large for gestational age, congenital abnormalities and having low Apgar score. Diagnoses of neonate were RDS 21.8%, and TTN 12.7 %, neonatal jaundice 4.5 %, Birth asphyxia 3.6% and infection 1.8%. This findings is in contrast with Chapagain (2018), where neonatal sepsis was (69.36%), Neonatal jaundice 12.36% of the cases, it may be different setting it was conducted in intermediate care unit. it is also in contrast with study of Shridher (2015), where the major causes of morbidity were neonatal sepsis (28.8%), similar with this study, birth asphyxia (17.72%), neonatal

jaundice (7.02%), and meconium aspiration syndrome (5.47%) it is also contrasted with result of¹³. jaundice (24.72%), sepsis (20.48%), birth asphyxia (18.52%), meconium aspiration syndrome (10.11%). this different may be due to different in sampling size, setting and time duration of study. But the finding of respiratory distress syndrome (RDS) (23.85%) is similar with it. In this study finding shows that the duration of stay was found 1 to 5 days in majority cases (84.5%). This finding also supported by the study conducted by Sharma R, (2017) where, duration of stay in NNU was 1-5 days and mean duration of stay 3.78 days and SD+/-2.8 days. The duration of stay was few hours to 14 days. This is also similar with the finding of average duration of stay in an SCNU is usually 5-7 days. The average duration of stay for preterm babies or very LBW babies is usually long, and the proportion of LBW babies affects the average duration of stay. It varied between two and 15 days. In this study, medical management for admitted neonate were oxygen by head box to more than sixty percent and followed by CPAP 10.9 %, antibiotics used only for 9% of them and nearly thirteen percents were admitted only for supportive care due to maternal illness.

Regarding nursing management, all babies were given care as emergence of situation, as need based and as routine of the neonatal units such as skin care, feeding, dress changing, daily weighing, monitoring of vitals, oxygen administration, medication, incubator care, monitoring in phototherapy, mothers/ parent's counseling . Regarding to outcome of neonate, maximum (61.8%) were improved and discharged from NNU and only 8% of neonate discontinued their treatment and went left against medical advice. this findings is supported with study of Chapagain (2018), where the most of the admitted cases (86.80%) were improved and only 5.1% of cases were either discharged on request or left against medical advice.

5. Conclusion and Recommendations

This study identified male neonate were more than female. They were admitted immediate after birth, brought either labor room or operation theater. Most of them were preterm; some of them had problems related to maternal condition. The common problems were found respiratory distress, TTN, IUGR NNJ. Most of them were managed by oxygen therapy, photo therapy, and antibiotic and other supportive cares. It is also concluded that the neonate admitted in NNU had good outcome.

According to findings of this study, it can be recommend that proper antenatal care is important for neonatal health some of cases were admitted due to maternal problems during antenatal period.

Most of the neonates were admitted immediate after birth form labor or operation room so the health care facility should emphasis care during birth.

The finding also recommend that if the neonate get proper care in NNU its outcome is very good so this kind of services need to expansion all where the birthing centre is established.

References

- [1] Chapagain RH, Basaula YN, Kayatha M, Adhikari K, Shrestha SM. Disease Profile and Hospital Outcome of Newborn Admitted to Neonatal Intermediate Care Unit at Tertiary Care Center in Nepal *Kathmandu Univ Med J* 2018; Online First.
- [2] Department of Health Service, Kathmandu, Nepal Neonatal Health Strategies in Nepal (NHS), 2004.
- [3] Department of Health Service, Kathmandu, Nepal. Annual report 2073/2074(2016/017)
- [4] Enweronu-Laryea et al.: Basic newborn care and neonatal resuscitation: a multi-country analysis of health system bottlenecks and potential solutions. *BMC Pregnancy and Childbirth* 2015 15(Suppl 2):S4.
- [5] Gautam Shweta , Agrawa Avyact and Bangre., Ashutosh Ashutosh Impact of a tertiary sick newborn care unit on neonatal mortality and morbidity *Int. J. of Healthcare and Biomed Research*, Vol: 04, Issue: 03, April 2016, 55-59 www.ijhbr.com ISSN: 2319-7072
- [6] Kumar R, Mundhra R, Jain A, Jain S. Morbidity and mortality profile of neonates admitted in special newborn care unit of a teaching hospital in Uttarakhand, India. *Int J Res Med Sci* 2019; 7:241-6.
- [7] Ministry of Health and Population, Government of Nepal
- [8] MoHP, NHTC HBB Hand Book, Training Manual 2018
- [9] Nepal GoV, MOHP In service skilled birth attendant core skills training, government of Nepal, MOHP, 2010
- [10] Sharma,R. (2013). *Essential Paediatrics for Nurses* (2nd ed.). Jyapee Brothers Medical Publisher, New Delhi, India (pp: 137).
- [11] Sharma Rakesh Kumar, Khan Ruhi, and Anjum Shahid A study to evaluate the functioning of Special Care Newborn Unit (SNCU) *International Journal of Biomedical Research IJBR* (2017) 08 (09) Journal DOI: <https://doi.org/10.7439/ijbr> www.ssjournals.com
- [12] 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.
- [13] Subedi, D., & Gautam, S. (2017) *.Midwifery nursing part III* (3rd ed.). Medhavi Publication , Baneshwor, Kathmandu, Nepal
- [14] UNICEF, Save Newborns: 2016 Progress Report Six Headline Results for Children in South Asia