Esculapio - Journal of Services Institute of Medical Sciences

Original Article

A Profile of Neonatal Admissions and Mortality in Tertiary Care Hospital of Faisalabad

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Abstract

Objective: To study the profile of neonatal admissions and their outcome in a tertiary care hospital.

Methods: The study was conducted in the Neonatal Unit of The Children's Hospital, Faisalabad for one year from 1st Jan 2015 to 31st Dec 2015. Data of all admitted patients during the study period were reviewed and analyzed in terms of demographics, weight, diagnosis, and outcome. The diagnosis was made on clinical features, laboratory reports, and radiological findings. SPSS version 25 was used for data analysis.

Results: Out of 2662 neonates admitted during the study period, 35 were excluded. Out of the 2613 neonates, there were 1824 (69.8%) males and 789 (30.19%) females. There were 2355 (90.12%) full-term while 258(9.87%)babies were preterm neonates. Low birth weight (LBW) babies were 1216 (46.53%) of total cases. The newborns presenting within the first 24 hours of life were 319 (12.2%). Birth asphyxia was the commonest diagnosis at admission accounting for 807 cases (30.88%), followed by neonatal sepsis 751(28.74%) and prematurity 258(9.87%). Out of 2613 babies,1682 (64.4%) were discharged, 232(8.9%) left against medical advice, and 699 (26.8%) neonates expired. Among cases who died, the highest contribution was observed from birth asphyxia in 294 cases (42.60%) followed by neonatal sepsis 211 cases (30.18%) and prematurity 133 cases (19.02%).

Conclusion: Birth asphyxia, prematurity, and sepsis constitute three-fourths of hospital admissions in our neonatal unit. The most common cause of mortality was prematurity followed by birth asphyxia and neonatal sepsis.

Keywords: Birth asphyxia, Prematurity, Sepsis, Tertiary care hospital

How to cite: *Javaid S., Omer T. M., Haq U. A.M., A Profile of Neonatal Admissions and Mortality in Tertiary Care Hospital of Faisalabad. Esculapio 2021;17(03): 283-287.*

DOI: ***https://doi.org/10.51273/esc21.2517314***

Introduction

Neonatal age is defined as the initial 28 days of life.[1] Neonatal mortality is defined as the death of a newborn within the initial 28 days of life.[2] This initial phase of life is very crucial for survival due to the susceptibility of neonates to a variety of illnesses.[3]

According to UNICEF, globally about 5.6 million children died before reaching 5 years of age out of which 2.6 million deaths occurred within the first month of life.[1,4] When we look at local data, WHO estimates the under 5 mortality rate in Pakistan to be 81/1000 live births with neonatal deaths (46/1000 live births) being the major contributor.[5]

This figure is almost 4 times the target of sustainable development goals (SDG) that eyes a reduction of mortality rate due to preventable deaths to at least 12/ 1000 live births by 2030.[6]

Although simple measures like improvement of the hygienic condition, neonatal resuscitation at birth, improvement of antenatal care.[7] improvement of antenatal care, exclusive breastfeeding till 6 months of age can significantly reduce the neonatal mortality.[1,8]

However, the lack of access to health, poor education, and financial constraints are major hindrances to achieve the targets in Pakistan.[9]

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Submission Date: 10-06-2021
1st Revision Date: 24-06-2021
Acceptance Date: 12-07-2021

To achieve the reduction of neonatal mortality, we have to improve the neonatal services by capacity building of health care workers through imparting knowledge, resources, expertise, and tools.[10]

The reduction of neonatal mortality is not possible without the awareness of the causes of neonatal admissions and mortality in our settings. Hence, to identify the major reasons for neonatal admission and mortality, this study was conducted in a tertiary care referral hospital.

Methods

This descriptive observational study was conducted in the Neonatal Unit of The Children Hospital, Faisalabad. The hospital is a tertiary care hospital that receives only the out-born neonates. We reviewed the data from 1st January 2020 to 31st December 2020. The study was initiated after seeking permission from the Institutional Review Board. All the admitted neonates in the neonatal unit were included in the study. Data of all admitted neonates from 1st January 2019 to 31st December 2020 were included in the study. The data was collected from the admission register of the unit and entered on Performa. Neonates with incomplete data were excluded subsequently.

Following operational Definitions were applied:

Neonate: was defined as a baby up to the first 28 days of life.

Low birth weight (LBW) birth: weight less than between 1501 to 2500g

Very low birth weight (VLBW) weight: birth weight between 1.01 to 1500 grams

Extremely low birth weight (ELBW) weight: birth weight of less than 1000grams.

Preterm/Premature: neonate born before 37 completed weeks

Asphyxia Neonatorum (ANN): History of delayed cry at birth.

Sepsis: History and examination supported by complete blood count with platelets, C reactive proteins (CRP), and positive blood, urine, or cerebrospinal fluid (CSF) culture.

Congenital heart disease (CHD): confirmed with echocardiography.

Acute watery diarrhea (AWD): was described as loose watery stools.

Meconium aspiration syndrome (MAS): was diagnosed on the history of being born through meconium-stained amniotic fluid, respiratory distress, and chest radiograph.

Bronchopneumonia: clinical and radiological findings of consolidation.

Neonatal jaundice: Serum bilirubin in the pathological zone in age, weight, and gestation specific range.

Congenital malformations: neonates with different anomalies and syndromic features.

Meningitis: was diagnosed on basis of clinical findings and CSF complete examination.

Respiratory distress syndrome: was diagnosed on basis of history, clinical examination, and chest X-ray.

The other conditions like Infant of a diabetic mother, metabolic disorders, urinary tract infections, Bleeding disorders, tetanus, acute renal failure, and seizure disorder were included in others and diagnosed clinically and confirmed with relevant laboratory investigations.

Data Analysis

Both quantitative data (age, gestational age, and weight) and qualitative data (gender, final diagnosis, and outcome i.e. neonates who were discharged, left against medical advice, or died) were recorded on a Performa. All data were entered and analyzed using computer software SPSS version 25.

Results

A total of 2662 neonates were admitted to our unit from 1st January 2020 to 31st December 2020. A total of 35 cases were excluded due to incomplete data and 2613 cases were included for the study.

Out of 2613 neonates, there were 1824 (69.8 0%) males and 789 (30.19%) females the male: female ratio was 2.3: 1.

There were 2166 (82.89%) full-term and 447 (17.10%) preterm neonates. A total of 1303 (49.86%) babies presented to our unit between 8 to 28 days of life, while 319 (12.20 %) babies presented in the first 24 hours of life.

The commonest diagnosis was birth asphyxia 807 cases (30.88%), Neonatal Sepsis was diagnosed in 751 cases (28.74%), and 258 cases (9.87%) presented with prematurity. hyperbilirubinemia, Acute Watery Diarrhea, and Bronchopneumonia were seen in 407 (15.57%), 161 (6.16%), and 65 (2.48%) cases respectively. A

total of 1216 cases (46.5%) were in low birth weight category.

The outcome data revealed that 1682 cases (64.4%) were discharged, 699 cases (26.8%) expired, 232 cases (8.9%) left against medical advice; the highest proportion of mortality was frombirth asphyxia 294 cases (42.60%), followed by Sepsis 211 cases (30.18%) and prematurity 133 cases (19.02%).

Discussion

Our study was performed to determine the profile of admission and outcomes in a tertiary care neonatal unit. We determined that about twice as many males got admitted in the unit as compared to females which is consistent with regional studies revealing gender preference favoring male babies.[11] However, the ratio of females was greater than males in a study performed in Islamabad that may be attributed to the small sample size.[12]

Out of the total pool, the number of low birth weight babies (< than 2.5 kg) was 1216 (46.53 %). Klemm found a similar percentage of 55.3% in Bangladesh.[13] In an Indian study, a higher percentage (60.62%) of low birth weight babies was noted.[14]

Table 1: *Demographic Data*

		Frequency (n)	Percentage (%)
Age (Days)	< 1 day	319	12.2%
	1-3 days	380	14.5%
	4-7 days	581	22.2%
	8-28 days	1303	49.9%
	> 28 days	30	1.1%
Gender	Male	1824	69.8%
	Female	789	30.2%
Gestational Age (Weeks)	<28 wks	16	0.6%
	28-32 wks	75	2.9%
	32-37 wks	356	13.6%
	37-42 wks	2164	82.8%
	> 42 wks	2	1%
Weight (kg)	< 1 kg	21	0.8%
	1-1.5 kg	153	5.9%
	1.5-2.5 kg	1042	39.5%
	2.5-4 kg	1373	52.5%
	> 4 kg	24	0.9%

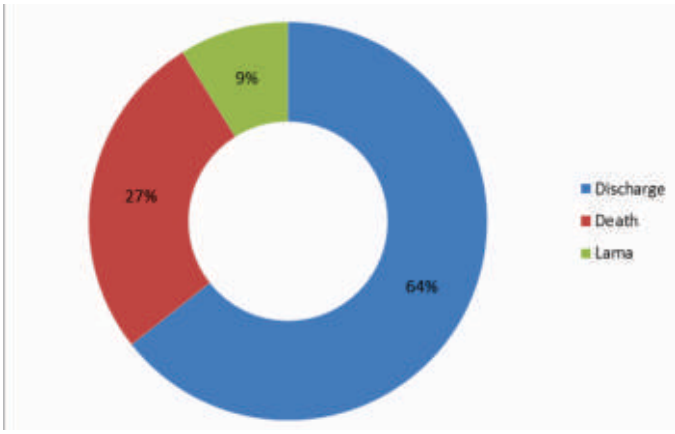

Figure 1: *Clinical Outcome*

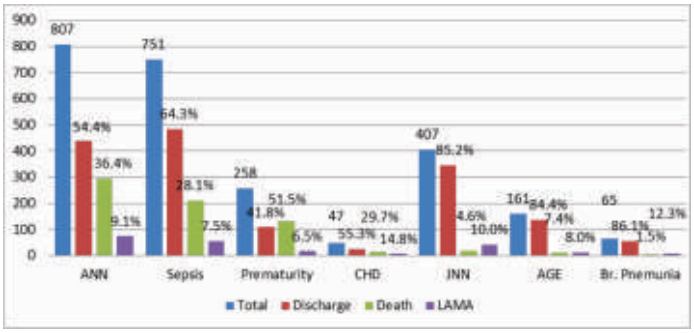

Figure 2: *Graphical Representation of Neonatal Admission & Outcome*

This difference can be explained as almost 48 percent of the study population in the Indian study was preterm as compared to 9.47% preterm babies in our study. Low birth weight babies are prone to morbidity and mortality that explains the high burden of these babies seeking admission in neonatal units.[15]

As we look at the age of admission, the highest number of newborns (49.86%) presented between 8 to 28 days of life, while 12.20% of babies presented within the first 24 hours of life. This pattern is consistent with the results of regional referral hospital studies that receive only out-born neonates like our unit.[1] On the contrary, Begum et all found 81.3 % of neonates got admitted in the neonatal unit within the first 24 hours of age. This difference can be explained as these study centers receive both inborn and outborn neonates.[16]

The leading cause of admission in our study was birth asphyxia that constituted 30.88% of patients. Our finding conforms with local studies like Lahore 31.89%, Multan 34.5%.[1,17] The high index of birth asphyxia may be attributed to the fact that about half of the deliveries are conducted outside health facilities, thus lack of proper health care at the time of birth is the major cause of the high burden of asphyxiated babies.[1]

Neonatal sepsis was observed in 28.74% in our study which is in conformity with studies conducted by Ali SR in Karachi with 20.3% and a study held in South Africa with 21%.[18,19]

The percentage of septic neonates was 33.8% in Abottabad and 38% in an Indian study. This difference may be explained as neonatal meningitis, cellulitis and bronchopneumonia were also counted under sepsis rather than separate entity ad in our study.[20,21]

Prematurity contributed to 9.87% of our admissions. This finding is similar to the 13% noted by Narayan in India.[26] However, as we look at local data, the frequency of admissions with prematurity were 21.47%, 20%, and 27.9% were observed by Khan, Quddusi, and Ali SR respectively. The difference may be since our study center receives only the outborn / referred cases.[18,20]

The outcome data shows that 64.4% patients were discharged and 26.8% patients expired which is similar to findings of Karachi and Larkana with observed mortality rate of 25.85% and 38 % respectively.[23,24]

Birth Asphyxia, Sepsis, and prematurity were leading causes of mortality, responsible for 39.9%, 30%, and 17.9% of deaths. This is similar to studies conducted in developing countries.[1,24]

A total of 8.9% cases left against medical advice, which is much lower than reported elsewhere (from 20.25% to 26.2%). The main reason of leaving against medical advice was poor socioeconomic status and perceived poor outcome of the patient.[1,17,25]

Conclusion

Birth asphyxia, prematurity, and sepsis constitute three-fourths of hospital admissions in our neonatal unit. The most common cause of mortality was prematurity followed by birth asphyxia and neonatal sepsis.

Conflict of Interest: None

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Authors Contribution

S.J: Conceptualization of Project,

S.J, M.T.O, M.A.U.H.: Data Collection, Literature Search, Statistical Analysis, Drafting, Revision, Writing of Manuscript