Original Research Article

Neonatal Morbidity Patterns and Admission Outcomes: A Cross Sectional Study at a Tertiary Care Hospital in Pakistan

ABSTRACT

Objective: To determine the neonatal mortality and ascertain the disease patterns at neonatal ward in a tertiary care hospital

Material and Methods: Design: Hospital based cross sectional study. **Participants:** two thousand, two hundred and seventy five neonates were registered using retrospective data from 1st January 2020 to 31st Dec 2020. We recorded gender, birth weight, cause of admission, and admission outcome. Data was analyzed using Microsoft excel data spread sheet.

Results: There were 2275 patients registered from CPDR (complete patient data record register) from 1st January 2020 to 31st Dec 2020. The mean birth weight was 2.35kg, with lowest birth weight of 0.9kg and highest birth weight of 4.8kg (SD 0.8 and SE 0.01, CI 0.025). Out of 2175 admitted neonates 506 (23.2%) died, 1250 (57.4%) were discharged after desired improvement, most common presenting complaint and cause of admission was HIE grade 1 , followed by Sepsis, 418 (18.5%), 380(16.9%), respectively.

Conclusions: Hypoxic Ischemic Encephalopathy grade I is the most common morbidity pattern in our study, the mortality rate was observed very high, indicators of birth weight were also poor. There is a great need for improvement of antenatal care for mothers to enhance different measures of newborn welfare and wellbeing.

Keywords: Neonatal mortality, neonatal morbidity, Low birth weight, Newborn, Pakistan

INTRODUCTION

According to the studies low birth weight neonates have 25-30 times higher risk for neonatal mortality compared to those with normal birth weight(1) (2). Children born with birth weight lower than 2500g at the time of birth, stay at risk of increased mortality during their neonatal period, infancy, childhood and even much later in the life (3) (4) (5). More than 20 million children are born low birth weight all over the world, which measures nearly 15.5% of all the births. Low birth weight stands as a considerable public health problem in several parts of the world. It is realistically associated with short and long standing fearsome outcomes. In low income countries, the prevalence of LBW is 18.5% on average, being highest in South Asian countries, where as in Pakistan it was 19% according recent data (6) (7).

The span of first 28 days of a neonate is highly important period of life since more than 2/3 of the infant deaths in Pakistan occur during the first month. It is predicted that 4 million out of total 130 million neonates born worldwide, die within four weeks of their life. Nearly half of the neonatal deaths occur during the first 24 hours of life.(8) (9) (10) (11). The most common causes of neonatal mortality are sepsis 34%, prematurity 28% and birth asphyxia 24% in developing countries. Whereas most common causes for developed countries are prematurity and malformations(12). In developing countries, 30-50% of the neonates die out of sepsis every year (9), however majority of the causes of neonatal mortality in developing countries are preventable. Pakistan is ranked as on 3rd highest position worldwide since 7% of world neonatal deaths occur in Pakistan with a rate of 48 per 1000 live births and with a cumulative of 298000 neonatal deaths in the country every year (13). One of the main factors of neonatal death is weight at the time of the birth. WHO also declared that around 15% of the neonatal deaths occur due to low birth weight. (5). Hence, There was dire need of the time to evaluate the patterns of disease while neonatal admission and measure the percentage of neonatal mortality. Therefore the objective of this study was to evaluate the disease patterns and the mortality rate at the tertiary care hospital.

MATERIALS AND METHODS:

Study Design: Hospital based cross sectional study. **Participants:** **2275** five neonates were registered from the available record from 1st January 2020 to 31st december 2020. Gender, birth weight, cause of admission and admission outcome were included as variables. Data was analyzed using Microsoft excel data spread sheet.

Study Setting: The study was conducted in neonatal ward at Chandka Medical College Hospital Larkana, **Data Analysis**: We used Microsoft Excel spread sheet to enter and analyze the data. Descriptive statistics were used for numerical data. Pivot tables were created for categorical data.

Ethical Approval: The approval for the study was approved from Ethical committee University Kebangsaan Malaysia and hospital administration and Chandka Medical College hospital Larkana, Pakistan.

RESULTS

There were 2275 patients registered from CPDR (complete patient data record) from 1st January 2020 to 31st Dec 2020. The mean birth weight was 2.35kg, with lowest birth weight of 0.9kg and highest birth weight of 4.8kg (SD 0.8 and SE 0.01, CI 0.025). Table 1A

Out of 2175 admitted neonates 506 (23.2%) could not survive, 1250 (57.4%) were discharged after desired improvement, parents of 106 (4.6%) neonates managed to get requested discharge (DOR), 287 (13.2%) left against medical advice LAMA and remaining 1.2% were referred to other hospital for either intensive care or surgical intervention. Table 1B

Most common presenting complaint and cause of admission was HIE grade 1, followed by Sepsis, Preterm and BA with 418 (18.5%), 380(16.9%), 315 (14.01%) and 224(9.9%) respectively. Table 1C

Table 01 Details of Birth Weight, Admission Outcomes and Cause of Admission at the Hospital

A. Birth Weight of admitted Neonates

Details of Birth Weight of admitted Neonates	
Mean	2.352397712
Standard Error	0.012345171
Median	2.5
Mode	2.5
Standard Deviation	0.888568265
Minimum	0.9
Maximum	4.8
Largest(1)	4.8
Smallest(1)	0.9
Confidence Level (95.0%)	0.024208988

B. Outcome of Admission at Neonatal Ward

Status	No.	%
DC	1250	57.47
DOR	106	4.87
EXPIRE	506	23.26
LAMA	287	13.2
REF TO CLF	3	0.14
REF TO KHI	12	0.55
REF TO PEADS SURGERY	11	0.51
Grand Total	2175	100

C. Cause of Admission at Neonatal Ward

Cause of Admission	No.	%
HIE I	418	18.59
SEPSIS	380	16.9
PRETERM	315	14.01
BA	224	9.96
RDS	190	8.45
HIE II	156	6.94
NNJ	118	5.25
LBW	104	4.63
TTN	70	3.11
MAS	56	2.49
PNEUMONIA	34	1.51
PSB I	32	1.42
HIE III	24	1.07
Others (less than 1% each)	127	5.67
Grand Total	2248	100

DISCUSSION

A total of 2257 neonates were registered using CPDR, compete patient data record register from 1st January 2020 to 31st December 2020. In this study we observed that the mean birth weight was 2.35kg, with lowest birth weight of 0.9kg and highest birth weight of 4.8kg (SD 0.8 and SE 0.01, CI 0.025). Mean birth weight observed in our study was significantly lesser than published research by Naveed et al (mean 3.0kg) (16). Also much lower than publish research in Nepal in 2010 (mean 2.75kg) (17). This relates with overall decrease weight at the time of birth in south Asian countries(18).

In our study, out of 2175 admitted neonates 506 (23.26%) could not survive, this constitutes a huge number. However, our finding is consistent with a study conducted in Pakistan (Deaths 23%). Our reported neonatal mortality is higher compared to published research by Yasmin et al (123/1000) from Bangladesh (19). A possible explanation for this may be that the hospital setting was actually a tertiary care set up where most of referral cases arrive at late stages. findings of our study are lower as compared to Bangladesh (28%) and reasonably lower than those from India 59.2% (15) In our study, the most common presenting complaint and cause of admission was HIE grade I , followed by Sepsis, Preterm and BA with 418 (18.59), 380(16.90),315 (14.01%) and 224(9.96) respectively. While the disease pattern observed by Shirazi.H in his study that was nearly relatable, as, Disease pattern of admission showed that 1397(25%) babies had sepsis, 1058 (19%) had birth asphyxia and 1088(19.4%) had respiratory distress syndrome (20). Greater number of babies with sepsis reveals that the neonates had infection he blood at the time birth.

Usually the mother also gets admission in critical stages which expose the poor antenatal care in our area. Mothers with antenatal sepsis endanger the health of neonate who can possible develop sepsis as neonatal sepsis is one of the leading causes for admission to a neonatal unit in developing countries (21). Nearly 22-66% of all booking in neonatal wards are due to infections which causes almost 70 % and almost 70% of all neonatal deaths (10) (22) .

CONCLUSION

Study observed that neonatal mortality in Pakistan is at alarming condition. The findings of the study highlight that there is a lot to be scheduled and implemented to improve this badly affected indicator. Hypoxic Ischemic Encephalopathy grade I is the most common morbidity pattern in our study, indicators of birth weight were also poor in the setting. There is need for improvement antenatal care for mothers to improve various indicators of neonatal wellbeing.

LIMITATIONS OF STUDY

Since this a hospital based study so it may not represent the community profile of neonatal mortality. The hospital is a referral hospital so high incidence of referred high risk cases is an intrinsic limitation of study

Conflict of Interest

Authors declared no any conflict of interest

Funding Source

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