COMMON PATTERN OF ADMISSIONS IN NEONATAL UNIT OF A TERTIARY CARE HOSPITAL

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Abstract:
Objectives: *The present study is designed to determine the current pattern of common indication for admissions in neonatal care unit of a tertiary care hospital.* ***Methodology:*** *This Cross sectional study was conducted in Neonatal Unit,KhyberTeaching Hospital, Peshawar, from January 2015 to July,2016. Total 241 patients who fulfilled the inclusion criteria were selectedby Non probability consecutive sampling.Data was collected by using pre designed Performa.The data collected was analyzed in SPSS 24.*
Results: *In this study mean age was 5 days with SD ± 1.521. Sixty three percent neonates were male while 37% neonates were female. Forty two percent neonates had low birth weight, 24% neonates had birth asphyxia, 20% neonates had neonatal jaundice, 17% neonates had preterm birth, 19% neonates had neonatal sepsis, 7% neonates had meconium aspiration syndromewhile 2% neonates had pneumonia.*
Conclusion: *Common pattern of admissions showed that low birth weight is the most common reason for admission followed by birth asphyxia, neonatal jaundice, preterm birth, neonatal sepsis, meconiumaspiration syndrome and pneumonia.*
Key Words: *neonatal care unit neonates, asphyxia, neonatal jaundice, preterm birth.*

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INTRODUCTION:

The world has made substantial progress in reducing maternal and child mortality: globally, under-5 deaths decreased by 47% and maternal deaths by 45% between 1990 and 2013, but many countries are projected to fall short of achieving their MDG 4 and 5 targets[1, 2]. Neonatal period is the most vulnerable period of life due to different diseases. Most causes of neonatal morbidity are preventable[3]. The survival of newborns depends upon the care they receive[4]. Advances in neonatal management have made considerable improvement in survival of newborns but in developing countries neonatal morbidity and mortality both are still very high[5].

Nearly half of the infantile deaths occur within neonatal period[6]. Globally, approximately 7.5 million infants die annually, more than half of these deaths occur during the neonatal period and 98% of the neonatal deaths occur in the developing regions[7]. High neonatal mortality rate remains a problem in developing countries where the economic situation and poor planning of health services have led to little appreciable advancement in neonatal care[8].

Neonatal disease pattern is a sensitive indicator of the availability, utilization and effectiveness of mother and child health services in the community. Since community based data are difficult and expensive to collect in face of lacking resources, hospital based data therefore will reflect changes in community as a whole. For this reason neonatal audit regarding disease is carried out in Pakistan from time to time[9].

The pattern of neonatal disease changes from time to time and between different places. Despite the decrease in neonatal deaths by 17% over the last decade, 3.1 million newborns died in 2010 most of them belonging to developing countries[10, 11]. Knowing the disease pattern in the neonatal intensive care unit (NICU) and disease-wise mortality rate the pediatricians can utilize available resources best and can make requisite efforts to reduce morbidity and mortality[12].

The present study is designed to determine the current pattern of common indication for admissions in neonatal care unit of Khyber teaching hospital Peshawar. As mentioned above, the progress of Pakistan is slow towards MDG 4 and 5 due to high burden of infant mortality and morbidity rate and neonatal period si more prone to death due to certain problems endemics in our local population. Moreover, it is also mentioned in literature that the pattern of admission in neonatal ICUs is variable form one population to another and trends are constantly changing. This study is designed to determine the pattern of common indications responsible of neonatal unit admissions. The results of this study will give us fresh data about current illnesses in neonatal period and will help policy makers to draw recommendations for future research etc.

MATERIAL AND METHODS:

This Cross sectional (Descriptive) study was conducted in Neonatal Unit,KhyberTeaching Hospital, Peshawarfrom January 2015 to July,2016. Non probability consecutive sampling techniquewas used.All neonates referred for admissions in neonatal unit of hospital fromOPD/ER/Labor room of either gender, up to age 7 days were included in our study while neonates resuscitated in the labor room, referred from other hospitals due to any type of complications were excluded from the study.

Total 241 patients who fulfilled the inclusion criteriawere selected. The purpose and benefits of study were explained to the guardians and a written informed consent was obtained. All patients detail history, examination and relevant investigations were done and the information were recorded in pre designed Performa.The data collected was analyzed in SPSS version 24. Mean ± SD was calculated for continuous variable like age. Frequencies and percentages were calculated for categorical variable like gender and common pattern (Low Birth Weight, Birth Asphyxia, Neonatal Jaundice, Preterm Birth, Neonatal sepsis, Meconium Aspiration Syndrome and Pneumonia). Common pattern were stratified with age and gender to see the effect modification. Post stratification chi-square test was applied in which P Value ≤ 0.05 was considered as significant value. Final results were presented as tables and graphs.

RESULTS:

Age distribution among 241 neonates was analyzed as 133(55%) neonates were in age range 1-4 days while 108(45%) neonates were in age range 5-7 days. Mean age was 5 days with SD ± 1.521.Gender distribution among 241 neonates was analyzed as 152(63%) neonates were male while 89(37%) neonates were female. Common pattern of admission was observed,among them low birth weight was most common that is 42% followed by Birth Asphyxia, Neonatal Jaundice, Preterm Birth, Neonatal sepsis, Meconium Aspiration Syndrome and Pneumonia as expressed in table 1.among low birth weight 55(55.5%) were admitted in first 4 days while 46(44.5%) were in 5 to 7 days. Detail of common pattern with age is given in table no 2.

TABLE NO 1. FREQUENCY OF COMMON PATTERN
(n=241)

COMMON PATTERN	FREQUENCY	PERCENTAGE
Low Birth Weight	101	42%
Birth Asphyxia	58	24%
Neonatal Jaundice	48	20%
Preterm Birth	**41**	**17%**
Neonatal sepsis	**46**	**19%**
Meconium Aspiration Syndrome	**17**	**7%**
Pneumonia	**5**	**2%**

TABLE NO 2. STRATIFICATION OF COMMON PATTERN W.R.T AGE DISTRIBUTION
(n=241)

COMMON PATTERN	Status	1-4 days	5-7 days	Total	P value
Low Birth Weight	Yes	55	46	101	0.8462
	No	78	62	140	
Birth Asphyxia	Yes	32	26	58	0.9979
	No	101	82	183	
Neonatal Jaundice	Yes	26	22	48	0.8738
	No	107	86	193	
Preterm Birth	Yes	23	18	41	0.8976
	No	110	90	200	
Neonatal sepsis	Yes	25	21	46	0.8988
	No	108	87	195	
Meconium Aspiration Syndrome	Yes	9	8	17	0.8469
	No	124	100	224	
Pneumonia	Yes	3	2	5	0.8369
	No	130	106	236	

DISCUSSION:

The world has made substantial progress in reducing maternal and child mortality: globally, under-5 deaths decreased by 47% and maternal deaths by 45% between 1990 and 2013, but many countries are projected to fall short of achieving their MDG 4 and 5 targets[1, 2]. Neonatal period is the most vulnerable period of life due to different diseases. Most causes of neonatal morbidity are preventable[3]. The survival of newborns depends upon the care they receive[4]. Advances in neonatal management have made considerable improvement in survival of newborns but in developing countries neonatal morbidity and mortality both are still very high[5].

Our study shows that mean age was 5 days with SD ± 1.521. Sixty three percent neonates were male while 37% neonates were female. Forty two percent neonates had low birth weight, 24% neonates had birth asphaxia, 20% neonates had neonatal jaundice, 17% neonates had preterm birth, 19% neonates had neonatal sepsis, 7% neonates had meconium aspiration syndrome and 2% neonates had pneumonia.

In one local study, the low birth weight accounted for 40.54% of the total admissions. Birth asphyxia was the major cause of admission (24.3%), followed by jaundice (17.9%), prematurity (16.5%), neonatal sepsis (16%), meconium aspiration syndrome (6%), infant of diabetic mother (2.7%), pneumonia (2.5%), meningitis (1.3%)[9]. In another study, reasons for admission were preterm/low birth weight in 981 (23.35%) patients, neonatal sepsis in 713 (16.97%), respiratory distress syndrome in 601 (14.31%), neonatal jaundice in 457 (10.88%), birth asphyxia in 401 (9.54%), meconium aspiration syndrome in 344 (8.19%), intra uterine growth retardation (IUGR) in 121 (2.88%), babies with hepatitis-B positive mother

in 108 (2.57%), vomiting in 91 (2.17%), neonatal seizures in 9 (0.21%) and haemorrhage disease of newborn in 4 (0.10%)[11].

Similar results were found in another study conducted by Syed R et al[13] in which there were 979 males (63%) while 575 (37%) were females. Of the 1,554 admitted, 891 (57.3%) were born in the hospital while a significant 663 (42.7%) were born elsewhere and referred to the AKMCC neonatal unit for further management—as this unit is the only secondary care centre catering to three districts in the Sindh province. The majority of the newborns (51.3%) were admitted during the first 24 hours of life. Regarding the birth weight of these babies, 13 patients were categorized as having ELBW (0.8%), 85 as VLBW (5.4%) and 587 as LBW (37.8%). Prematurity and infections were the main causes of admission to the neonatal unit, at 27.9% and 20.33%, respectively. Birth asphyxia was the third most common cause of admission (13%) followed by NNJ (11.3%). The major causes of infections were sepsis (70.8%), pneumonia (12.6%) and acute gastroenteritis (8.22%). There were 115 neonates admitted for observation due to other causes (7.4%). Among them, 23.4% had feeding issues, 19.1% had a history of meconium-stained liquor and 16.5% of babies had a history of maternal complications related to pregnancy and admitted for observation in the neonatal unit Among the 106 neonates who did not survive, the leading causes of death were prematurity and LBW (56, 52.8%), followed by birth asphyxia (22, 20.8%) and neonatal infections (10, 9.4%). The case fatalities for the main neonatal diagnoses were prematurity (12.8%), neonatal encephalopathy (10.8%), neonatal infections (3.2%) and other causes (3%).

For more than 25 years, LBW has been observed to be one of the major risk factors for neonatal admissions in multiple studies conducted in many developing countries.[14] In this study, LBW was found in 37.7% of patients; this can be compared to 39% in Lahore,[15] 36% in Larkana[16] 55.4% in Karachi [17] and 41.2% in Peshawar.[18] The incidence of LBW is higher in Pakistan compared to other developing countries; for instance, LBW was 20% in a study done in India,[19,20] 13.25% in a Bangladesh study[21] and 11.02% in an Ethiopian one.[22]The higher rate of LBW observed in Pakistan may be due to multiple factors, including the poor nutritional status of mothers, inadequate facilities for antenatal care and the high illiteracy rate.

Preterm birth rates have been reported to range from 5% to 7% of live births in some developed countries, but are estimated to be substantially higher in developing countries.[23]In this study, prematurity was the reason for admission in 17% of neonates. This rate was higher than in a study done in Karachi[17] which reported that 6.8% of neonates were admitted for prematurity. The figure from the current study is higher as the AKMCC neonatal unit is the primary referral center for newborns from rural areas, and the majority of preterm babies (41.8%) are admitted for care.

In this study, infection as the reason for admission accounted for 40% of cases, as compared to 28.72% reported in Peshawar[18] and 45.2% in Karachi.[17] The majority of neonatal infections are due to unhygienic conditions and unsterilized delivery practices[14] Neonatal sepsis continues to be a major cause of morbidity and mortality in Pakistan. It is also one of the major causes of neonatal mortality in developing countries in general—contributing to 15% of all neonatal deaths.[24] Neonatal sepsis in this study was the most prevalent infection, accounting for 19% of all infections. Additionally, acute gastroenteritis was also seen in 8.22% of the cases.

In this study, birth asphyxia was 24% as compared to 16.52% of neonates in the study conducted in Peshawar,[18] 18.85% in the Karachi study[17] and 40.66% in Lahore.[15] The important risk factors for birth asphyxia reported from a study conducted in Hyderabad, India, include the lack of antenatal care, poor nutritional status, antepartum hemorrhaging, maternal toxaemia and having a home delivery. Antenatal monitoring of high-risk pregnancies, timely referrals, resuscitation at the time of birth and improving maternal health levels are mandatory to reduce the high number of case fatalities and morbidities related to birth asphyxia.

Neonatal hyperbilirubinaemia resulting in clinical jaundice is a common problem among infants.[25] Information about the incidence of NNJ in developing countries is lacking, as the vast majority of births occur at home. The majority of the data is from tertiary care or intensive care nurseries with no population denominator.[26] NNJ was responsible for 11.3% of neonatal admissions to the AKMCC neonatal unit, in comparison to 20% in the study done in Peshawar,[18] 15% in Karachi[17] and 8.3% in Lahore.[15] Higher incidences of jaundice in neonates have been reported from other developing countries, such as Bangladesh and Nigeria (30.71% and 17.25%, respectively).[27,28]

The neonatal mortality rate reported in one study was 6.8%. which is significantly lower than the rates reported from other locations, for instance in the

Peshawar study the rate was 14.87%,[18] in the Karachi one 25.85%,[17] in Lahore 34%[15] and in Larkana 38%.[16] The major causes of neonatal mortality in the current study were prematurity (52.8%), birth asphyxia (20.8%) and neonatal infections (9.4%) .

CONCLUSION:
Common pattern of admissions showed that low birth weight is the most common reason for admission followed by birth asphyxia, neonatal jaundice, preterm birth, neonatal sepsis, meconium aspiration syndrome and pneumonia.

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