A Cross-Sectional Survey on Clinical Characteristics of Preterm Infants Admitted to NICU in Tertiary Care Hospital, Patiala, Punjab

Ramandeep Kaur Bajwa[1], Sushil Kumar Maheshwari[2]

[1]Department of Mental Health Nursing, NICU, Rajindra Hospital, Patiala, Punjab, [2]Department of Mental Health Nursing, Baba Farid University of Health Sciences, Faridkot, Punjab

Abstract

Aim: The aim of the present work is to detect premature problems, incidence of premature and incidence of neonatal deaths in neonatal intensive care unit (NICU) in Government Rajindra Hospital Patiala (Punjab) through 3 months (March 2020–May 2020).

Subjects and Methods: Study design was retrospective cross-sectional study. Data were collected retrospectively from Healthy Mother/Healthy Child files in the NICU in Government Rajindra Hospital, Patiala. Sample size included 118 neonates.

Results: It shows that 65.2% of neonates were premature, among them (61.02%) of preterms were males. About 61.86% of premature infants were ≥32 weeks and weighed ≥1500 g. Deaths constituted (12.71%) of admitted preterms. Premature death was higher among those ≥32 weeks (15.06%) and also who weight ≥1500 g (13.7). Hyperbilirubinemia was the first cause of admission followed by septicemia and meningitis.

Conclusion: Premature admission and death rate were high. Better antenatal care coverage for pregnant women and continuous training of neonatologists is needed for more accurate assessment and management of premature cases.

Keywords: NICU, Clinical characteristics, Preterm infants

INTRODUCTION

Prematurity is a major health problem because it is a leading cause of infant mortality.[1-4] Prematurity is defined as gestational age <37 completed weeks of gestation measured from the 1st day of the last normal menstrual period.[4] The etiology of prematurity is not clearly known in most situations.[5] Personal factors including maternal age, ethnical variations, low socioeconomic class, over activity, and maternal malnutrition are risk factors.[6-8]

Many obstetric factors may share in this problem including grand multiparity, multiple pregnancy, polyhydramnios, uterine malformation, placenta previa, incompetent cervix, and premature rupture of membrane and ammonites.[5-10] Maternal illness, either acute or chronic renal, pulmonary, hepatic diseases, diabetes and hypertension may decrease placental perfusion below the exceeding needs of the fetus.[9]

Also behavioral factors as smoking, alcoholism, excessive coffee, caffeine, and lack of ante-natal care, all may affect the length of gestational duration leading to prematurity.[5-9] The incidence of prematurity varies from one country to another and from one locality to the other in the same country. It is difficult to obtain accurate data about incidence especially in the developing countries due to lack of recording systems.

According to a WHO study, prematurity depending on data collected from birth certificates ranged from 2.2% to 19.4%.

Address for Correspondence:
Ramandeep Kaur Bajwa, Department of Mental Health Nursing, NICU, Rajindra Hospital, Patiala, Punjab. E-mail: bajwaramandeep56@gmail.com

Every year, an estimated 15 million babies are born preterm (before 37 completed weeks of gestation), and this number is rising. Preterm birth complications are the leading cause of death among children under 5 years of age, responsible for approximately 1 million deaths in 2015.[1] Three-quarters of these deaths could be prevented with current, cost-effective interventions. Across 184 countries, the rate of preterm birth ranges from 5% to 18% of babies born.[11]

Subjects and Methods

Study design

This was a retrospective cross-sectional study.

Study setting

The study included all neonates admitted through (March 2020–May 2020) in the neonatal intensive care unit (NICU) in Government Rajindra Hospital, Patiala. The NICU is tertiary care level and is considered important referral center for premature in district Patiala.

Table 1: Distribution of neonates included in the sample by selected variables (n=118)

Variable	Number	%
All neonates (n=181)		
<37 weeks	118	65.2
>37 weeks	63	34.8
Preterms sex		
Male	72	61.02
Female	46	38.98
Gestational age		
<32 weeks	45	38.13
≥32 weeks	73	61.86
Weight		
<1500 g	45	38.13
≥1500 g	73	61.86
Fate of preterm		
Survived	92	77.97
Deaths	15	12.71
Referral	11	9.32

Table 2: Distribution of neonates included in the sample by selected variables (n=118)

S. No.	Months of admission (2020)	Number of preterm	%
1.	March	60	50.85
2.	April	26	22.03
3.	May	32	27.12

Sample size

The study sample included 181 neonates (118 <37 weeks and 63 equal or more than 37 weeks) admitted during the period March 2020–May 2020.

Data collection technique

Neonatal data were collected from child files in NICU. Data included incidence of premature babies admitted per month, birth weight, gestational age, and cause of admission.

Table 1 shows the distribution of neonate included in the sample by selected variables. About 65.2% of neonate in the NICU were preterms. More than half (61.02) admission were male. 61.86% of preterms have the gestational age ≥32 weeks and 61.86% weights ≥1500 g. Survival rate among preterms was 77.97% and death constitutes 12.71% of admitted preterms infants.

Table 2 shows the distribution of neonates included in the sample by selected variables. The percentage of admission was 50.85 % in March, followed by 27.12% in May and 22.03% in April.

Table 3 shows distribution of death of preterms by selected variables. Percentage of deaths among preterms ≥32 weeks was 15.06% compared to 8.9% among those <32 weeks of gestation. This difference was statistically non-significant ($\chi^2 = 0.97$, $P = 3.84$). Table also reveals that percentage of deaths was high among preterm ≥1500 g ($\chi^2 = 11.24$, $P = 3.84$) compared to preterms <1500. This difference was also statistically non-significant.

Table 4 shows the distribution of preterms included in the sample by cause of admission. Hyperbilirubinemia was found to be the first cause of admission, followed by septicemia and meningitis, and third respiratory problems.

Discussion

The result [Table 1] of the present study depicts that (38.98%) were females, 61.86% were ≥32 weeks and 61.86 % weighed ≥ 1500 gm. Deaths constituted (12.71%) of admitted preterms.

Percentage [Table 3] of deaths among preterms ≥32 weeks was 15.06% compared to 8.9% among those <32 weeks of gestation.

Hyperbilirubinemia [Table 4] was the first cause of admission followed by septicemia and meningitis.

Table 3: Distribution of the deaths of preterms by selected variables (n=118)

Deaths of preterm	No Deaths		Deaths		Total		Test of Significance
	n	%	n	%	n	%	
Gestational age							
<32	41	91.1	4	8.9	45	100.0	χ^2=0.97
≥32	62	84.93	11	15.06	73	100.00	df=1
							P=3.84
Weight							
<1500 g	40	88.9	5	11.1	45	100.0	χ^2=11.24
≥1500 g	63	86.3	10	13.7	73	100.0	df=1
							P=3.84

Table 4: Distribution of preterms included in the sample by cause of admission (*n*=118)

Causes of admission	Number
Hyperbilirubinemia	1
Septicemia and Meningitis	2
Respiratory problems	3
Others (IDM, CHD, etc.)	4
Neurological problems	5

Preterm had more than one cause during admission

A similar statistical study was conducted on Preterm Infants Admitted to NICU in Fawzy Moaz Hospital For Children. One year (October 1999–October 2000). Data were collected retrospectively from Healthy Mother/Healthy Child files in the NICU. Sample size included 480 neonates (106). Results revealed that 22.1% of cases admitted in the NICU were premature. Among those 51.9% were females, 75.5% were ≥32 weeks, and 62.3% weighed ≥ 1500 g. Deaths constituted 48% of admitted preterms. Premature death was significantly higher among those <32 weeks (80.8%) and <1500 g (60%). Hyperbilirubinemia was the first cause of admission (28.4%).[12]

Another descriptive prospective study was conducted to determine the cause and disease pattern of neonatal morbidity and mortality in the secondary care neonatal unit of a district hospital in department of Pediatrics, General Hospital, Sec 16, Chandigarh. All neonates who born over 1 year were enrolled in the study. About 4.33% babies were born prematurely (<37 weeks), 21.7% babies were low birth weight (LBW) (<2500 g) including 0.4% very LBW babies (<1500 g) and 0.26% as extra LBW (<1000 g) babies.[13]

CONCLUSION

Most of the admitted infants were premature. More than half of preterms were having gestational age ≥32 weeks and weighed ≥1500 g. Deaths constituted (12.71%) of admitted preterms. Hyperbilirubinemia was the first cause of admission followed by septicemia and meningitis.

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Conflict of Interest

Funding

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