



## A STUDY ON IMMEDIATE OUTCOME OF PRETERM NEONATES ADMITTED IN NICU

### Paediatrics

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### ABSTRACT

**Background:** To Study immediate outcome of preterm babies during the hospital stay. To study the complications of preterm babies and assess the risk factors for mortality.

**Materials and Methods:** This study was conducted in a tertiary hospital, Eluru at ASRAM medical college which is Prospective and descriptive study conducted on 76 preterm babies, over a period of 2 years from August 2017 to August 2019.

**Results:** The incidence of preterm babies in our study is 16.5%, with maximum distribution of 54% is seen between gestational age of 32-34 wks. The maximum clinical presentations are sepsis (81.5%), respiratory distress syndrome (68.4%), birth asphyxia (33.3%), necrotizing enterocolitis is observed in 13.1%. Mortality was observed in 13.1%. Mortality rate was higher in preterm babies complicated either with RDS and with sepsis rather than NEC and HIE etc.,

**Conclusion:** According to this study RDS and sepsis, birth asphyxia are the major causes of death in preterm fortunately all are preventable.

### KEYWORDS

Complications, Birth asphyxia, Necrotizing enterocolitis, Preterm, Sepsis

### INTRODUCTION:

Preterm birth is one of the major clinical problems in Obstetrics and Neonatology, which is associated with perinatal mortality, neonatal morbidity. Incidence of preterm birth is rising worldwide. However, during the last two decades, the survival of premature infants has significantly increased due to advancement in perinatal and neonatal management. Due to continued innovation in neonatal intensive care facilities and obstetric interventions, fetal survival is now possible even at 20 weeks gestation in developed countries. However, in developing countries, survival is rare below 28 weeks of gestation<sup>[1]</sup>. Incidence of preterm birth is rising worldwide because of increased frequency of multiple births, due to increasing psychological stress and medically induced preterm delivery. However, during the last two decades, the survival of premature infants has significantly increased due to advancement in perinatal and neonatal treatment expertise and improvement in the care of high risk mother. The survival rate of low birth weight babies has increased from 10% to 50–60%<sup>[2]</sup>. According to many studies conducted in India and abroad various maternal risk factors have been identified for the premature births as well as outcome of premature babies have been studied. In this study, we tried to find out the neonatal outcome among premature births in our hospital<sup>[1]</sup>.

Preterm labour is defined as the onset of labour prior to 37 completed weeks of gestation i.e., 259 days from first day of last menstrual period. Preterm delivery affects one in 10 births (11%) in USA and varies between 10–69% in India and causes 40–75% neonatal deaths<sup>[1]</sup>.

### AIMS & OBJECTIVES:

- To Study of immediate outcome of preterm babies during the hospital stay.
- To study the complications of preterm babies.
- To assess the risk factors for mortality.

### MATERIALS AND METHODS:

This study was conducted in a tertiary hospital in rural part of Eluru at ASRAM medical college.

**Study Design :** It is a Prospective and descriptive study.

**Sample size:** 76 preterm babies.

**Study period:** Study period from August 2017 to August 2019, over 2 years of study.

### Inclusion criteria:

- Preterm babies born in ASRAM hospital < 37 weeks of gestational age.
- Preterm babies who are small gestational age (SGA), appropriate for gestational age (AGA), large for gestational age (LGA).

### Exclusion criteria:

- All babies who were referred from outside.
- Babies born to unbooked maternal cases.
- Twin babies are excluded in the study.

### Method of data collection:

- Preterm babies delivered in ASRAM MEDICAL College & Research Hospital were taken in to the study.
- Gestational age was calculated from mothers LMP and New Ballard score.
- Babies were weighed using electronic weighing machine present in our NICU with standard error of  $\pm 5$  grams.
- Babies were categorised into small for gestational age (SGA), appropriate for gestational age (AGA) and large for gestational age (LGA) by plotting on intrauterine weight chart (Lubchenco) for both the sexes.
- Babies with birth weight less than 10th percentile were categorised as SGA, between 10th & 90th percentile as AGA and above 90th percentile as LGA.
- Babies were analysed for the following factors till discharge:
  - Weight of babies
  - Sex of babies
  - Asphyxiated babies requiring Ventilatory Support
  - Morbidity pattern of babies
  - Mortality of babies
  - Causes of mortality of babies

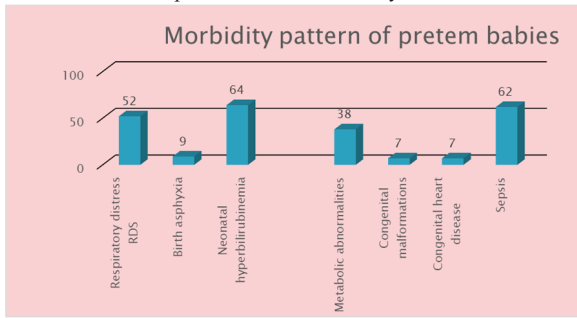
### Statistical methods:

- The information collected regarding all the selected cases were recorded.
- Data analysis was done using ANOVA T test, and chi-square test. It was used to test the significance of difference between quantitative variables.
- A 'p' value less than 0.05 is taken to denote significant relationship. If value of 'p' is more than 0.05 then it is taken to denote absence of relationship between the two variables.

**OBSERVATIONS AND RESULTS:**

In the present study 76 premature babies are admitted out of 459 newborns in NICU during the period august (2017 to 2019).

- The incidence of preterm babies in our study is 16.5%



- The common complications seen in preterm babies in the present study are neonatal jaundice (84.2%) and sepsis (81.5%): The other complications include RDS (68.4%), birth asphyxia (11.8%), metabolic abnormalities (50%), congenital malformations (9.2%) and congenital heart disease (9.2%).

**Gestational Age And Outcome Of Babies:**

GESTATIONAL AGE & OUTCOME OF BABIES				
Gestational age (weeks)	Total		P VALUE	
	No.	Alive	Dead	
26 - 28	4	3(75%)	1(25%)	0.438
29 - 31	9	9(100%)	0	
32 - 34	41	36(88%)	5(12%)	0.788
35 - 37	22	18(82%)	4(18%)	0.651
total	76	66	10	

**Mortality Associated With Morbidities In Preterm Babies:**

MORTALITY ASSOCIATED WITH MORBIDITIES IN PRETERM BABIES						
			NO		P value	
			DEAD	%		
PRETERM	CARE		7	0	0.941	
PRETERM	SEPSIS		12	1	0.769	
PRETERM	SEPSIS	RDS	19	2	0.044*	
PRETERM	SEPSIS	BA	3	2	---	
PRETERM	SEPSIS	RDS BA	0	0	0.516	
PRETERM	SEPSIS	RDS BA&MA	5	1	0.857	
PRETERM	SEPSIS	RDS MA	21	3	---	
PRETERM	RDS		7	0	---	
PRETERM	BA		0	0	0.274	
PRETERM	RDS	BA	2	1	---	
TOTAL			76	10		

**DISCUSSION:**

- Incidence of preterm baby's comparison during the period of august 2017-2019, 459 newborns are admitted in our NICU, among them 383 are term babies and 76 are preterm babies, it amounts to 16.5% of total admissions.
- Incidence of preterm delivery varies between countries. It is 12.3% is a study by Martin et al<sup>[3]</sup>(USA).7% by Bibbly et al<sup>[4]</sup>(U.K).5.5 by Robert et al<sup>[5]</sup>(Australia) while India being a developing country with vast difference of health care facilities and resources availability between urban and rural settings.
- The incidence of preterm deliveries ranges from 10% to 40%. In rural India almost 90% of deliveries occur at domiciliary level conducted by traditional birth attenders assessing their gestational age poses a considering challenge.
- In the present study the incidence of preterm babies is 16.5% which is similar to a study by Singh Uma et al<sup>[6]</sup> which is estimated to be 20.9%.

**Weight of the preterm and outcome:**

- In the present study the survival in babies weighing less than 1500g is 80% which is comparable to that of K.K ROY study<sup>[7]</sup> where it is 74.4%.
- In the present study the survival in babies weighing less than 2000gms is 85% whereas the survival in the study done by Suresh et al<sup>[8]</sup> is 72% which is almost similar to our study.

**Weight for gestational age and survival:**

- The survival of SGA babies is 83% and AGA babies 86% is almost equal in our study.
- The survival of AGA babies is almost equal to 80% in another study by Elizabeth et, al<sup>[9]</sup>.
- The survival of SGA is 83% in our study which is contrast to 55% in Elizabeth et, al<sup>[9]</sup>.

**Morbidity pattern in preterms:**

- In our study the order of morbidities in preterms is NHB (84%), sepsis (81.5%), RDS(68.4%) followed birth asphyxia and hypoglycemia (41%).
- The decreasing order of incidence of morbidities like NHB, RDS, sepsis and birth asphyxia is common in almost all the studies. But the incidence varied sepsis is having higher incidence in our study may be because of less aseptic obstetric care in outborn babies.

**Cause of death in preterm babies:**

- In the present study main causes of deaths are respiratory distress , Septicemia and birth asphyxia with respiratory distress in contrast the main causes of death in study by Satish et al<sup>[10]</sup>. RDS (85.4%), sepsis(10.4%) and CHD (14.1%).
- It is observed that the incidence of sepsis and sepsis leading to death are high in the present study compared to other study this may be due to inclusion of outborn babies.

**CONCLUSION:**

According to this study RDS and sepsis, birth asphyxia are the major causes according to death in preterm fortunately all are preventive causes by strengthening existing maternal health care at community level and by proper maternal antenatal care, the preterm deliveries should be delayed such that baby reaches at least 34 weeks of gestation there by mortality and morbidities can be decreased.

The presence of person trained in neonatal resuscitation should be present to resuscitate babies born out of high risk pregnancies who are deprived at birth. By this we can decrease the incidence of asphyxia and related mortality.

At least CPAP should be available at all maternity hospitals in the delivery room. There by babies with RDS can be salvaged early all the babies requiring surfactant should be given. Surfactant affordability should not be a restrain. There by we can prevent RDS and RDS related morbidities and mortality. Sepsis is another preventable cause of death. Strict aseptic precautions should be taken in delivery rooms and NICU. The staff also should be trained to take all precautions to prevent nosocomial infections in this vulnerable group of babies.

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