

Original Research

Evaluation of Clinical Outcomes of Early Preterm, Late Preterm and Term Infants with Respect to Gestational Age

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ABSTRACT:

Aim: To evaluate hospitalization rates of early preterm, late preterm and term infants with respect to gestational age. **Methodology:** Ninety early preterm, late preterm and term infants of both genders were divided into 3 groups of 30 each. Group I was early preterm, group II was late preterm and group III was term infants. Parameters such as increased hospitalizations, multiple gestation, small for GA status were recorded. **Results:** Out of 90 patients, males were 50 (55.5%) and females 40 (44.5%). The mean gestation age was 32.4 weeks in group I and 36.8 weeks in group II and 39.6 weeks in group III. Birth weight was 2038.2 grams in group I, 2846.2 grams in group II and 3490.2 grams in group III. Multiple gestation was seen in 18% in group I, 12% in group II and 3% in group III. Small for GA was 7% in group I, 11% in group II and 8% in group III. The difference was significant ($P < 0.05$). Hospitalization within 14 days of birth discharge was seen in 3.8%, 3.4% and 3.1% in group I, II and III respectively. Hospitalization within 30 days of birth discharge was seen in 7%, 5.1% and 3.2%. Hospitalization within 90 days of birth discharge was seen in 11.2%, 8.2% and 5.6%. Hospitalization between birth discharge and day 365 of life was seen in 17.5%, 12.2% and 9.4% in group I, II and III respectively. The difference was significant ($P < 0.05$). **Conclusion:** There was high rate of hospitalization in early preterm infants. Higher percentage of multiple gestation was seen in early preterm group and higher percentage of SGA babies were found in late preterm group.

Key words: Preterm infants, neonatal intensive care unit, Gestation age

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INTRODUCTION

Preterm infants, also known as premature infants, are babies born before the completion of 37 weeks of gestation.¹ These infants have not had sufficient time to develop and grow fully in the womb, which can pose various challenges and risks to their health and development. More than 70% of preterm births are late preterm babies (LPIs), defined as those born between 34 0/7 and 36 6/7 weeks' gestational age (GA).² Concerns about higher morbidity and mortality in this demographic during childbirth hospitalization are being raised by an increasing body of evidence.³ Within the first 14 days, 28 days, and one year following discharge, studies looking at longer-term outcomes have found that LPIs have a higher chance of hospitalization and higher associated expenses than term babies (TIs).⁴

Preterm infants often require specialized medical care in a neonatal intensive care unit (NICU) to address their unique needs.⁵ NICUs provide a controlled

environment with specialized equipment and healthcare professionals trained in managing the challenges associated with prematurity. The earlier the baby is born, the higher the risk of developmental delays or disabilities.⁶ Preterm infants may experience challenges in cognitive development, motor skills, language development, and social-emotional development. However, with appropriate care and early intervention programs, many preterm infants can overcome these challenges and catch up with their full-term peers.⁷ Preterm infants may struggle with feeding due to underdeveloped sucking and swallowing reflexes. They may require tube feeding or specialized techniques to ensure adequate nutrition. Nutritional support is crucial for their growth and development, and healthcare providers closely monitor their weight gain and nutritional intake.^{8,9} We performed this study to evaluate outcome of early preterm, late preterm and term infants.

METHODOLOGY

A sum total of ninety early preterm, late preterm and term infants of both genders were recruited in the study. Approval from ethical review committee was obtained before commencing the study.

Data such as name, age, gender etc. was recorded. Patients were divided into 3 groups of 30 each. Group

I was early preterm, group II was late preterm and group III was term infants. Parameters such as increased hospitalizations, multiple gestation, small for GA status were recorded. The results were compiled and entered in MS excel sheet and further subjected for statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Patients distribution

Total- 90		
Gender	Males	Females
Number (%)	50 (55.5%)	40 (44.5%)

Out of 90 patients, males were 50 (55.5%) and females 40 (44.5%) (Table I).

Table II Assessment of baseline characteristics

Parameters	Group I	Group II	Group III	P value
Gestation age (weeks)	32.4	36.8	39.6	0.05
Birth weight (grams)	2038.2	2846.2	3490.2	0.04
Multiple gestation (%)	18%	12%	3%	0.02
Small for GA (%)	7%	11%	8%	0.17

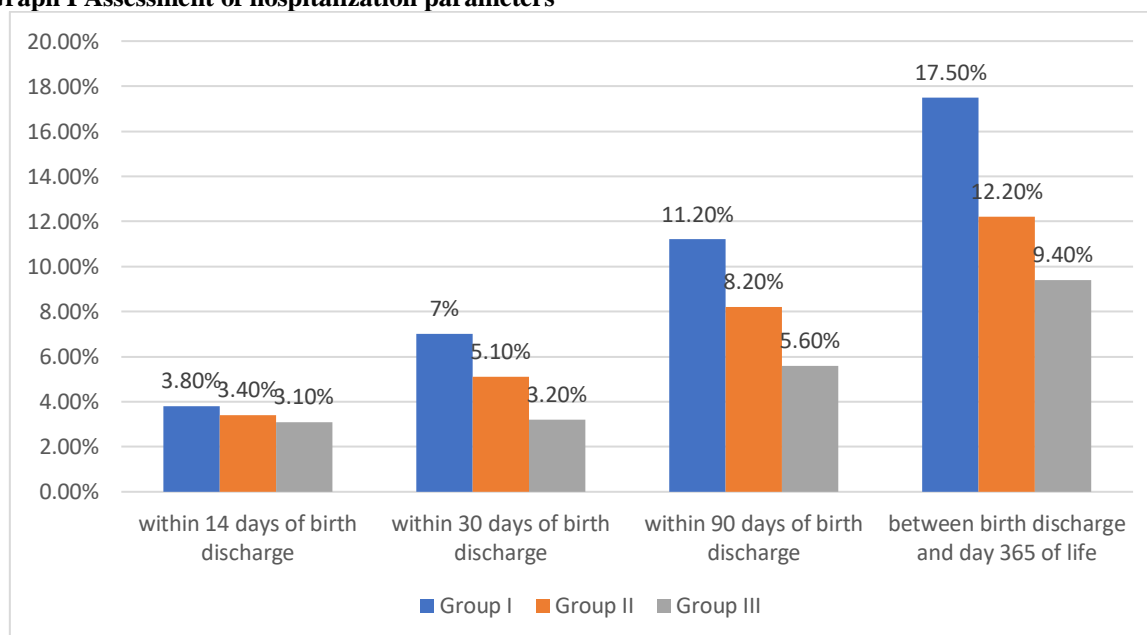
The mean gestation age was 32.4 weeks in group I and 36.8 weeks in group II and 39.6 weeks in group III. Birth weight was 2038.2 grams in group I, 2846.2 grams in group II and 3490.2 grams in group III. Multiple gestation was seen in 18% in group I, 12% in group II and 3% in group III. Small for GA was 7% in group I, 11% in group II and 8% in group III. The difference was significant (P< 0.05) (Table II).

Table III Assessment of hospitalization parameters

Parameters	Variables	Group I	Group II	Group III	P value
Hospitalization	within 14 days of birth discharge	3.8%	3.4%	3.1%	0.05
	within 30 days of birth discharge	7%	5.1%	3.2%	0.04
	within 90 days of birth discharge	11.2%	8.2%	5.6%	0.11
	between birth discharge and day 365 of life	17.5%	12.2%	9.4%	0.27

Hospitalization within 14 days of birth discharge was seen in 3.8%, 3.4% and 3.1% in group I, II and III respectively. Hospitalization within 30 days of birth discharge was seen in 7%, 5.1% and 3.2%. Hospitalization within 90 days of birth discharge was seen in 11.2%, 8.2% and 5.6%. Hospitalization between birth discharge and day 365 of life was seen in 17.5%, 12.2% and 9.4% in group I, II and III respectively. The difference was significant (P< 0.05) (Table III, graph I).

Graph I Assessment of hospitalization parameters



DISCUSSION

Early newborn morbidities such as respiratory distress syndrome, apnoea, transitory tachypnea of the newborn, hypoglycemia, hypothermia, persistent jaundice, convulsions, and feeding issues are more common in late-preterm infants.^{10,11} The need for additional resources, such as supplemental oxygen support, re-hospitalization, and higher medical care costs, is also more common in late preterm infants than in term infants.^{12,13,14} We performed this study to evaluate outcome of early preterm, late preterm and term infants.

Our results showed that out of 90 patients, males were 50 (55.5%) and females 40 (44.5%). Boyle et al¹⁵ examined variations in the provision of care for infants born late (34–36 weeks) and moderately (32–33 weeks) preterm (LMPT) and characterize neonatal outcomes. 1258 (79% of eligible) term-born infants and 1146 (83%) LMPT participants were sought out. Infants born to LMPTs were significantly less likely to be breastfed (64.2% vs. 72.2%) and significantly more likely to have resuscitation (17.5% vs. 7.4%), respiratory (11.8% vs. 0.9%), and nutritional support (3.5% vs. 0.3%) at birth. There was a gradient of risk that increased with decreasing gestation for all treatments and morbidities. Despite the fact that 60% of late-preterm infants were never admitted to a NNU, 83% of them needed medical attention while in postnatal wards. Clinical management varied greatly among services.

We observed that the mean gestation age was 32.4 weeks in group I and 36.8 weeks in group II and 39.6 weeks in group III. Birth weight was 2038.2 grams in group I, 2846.2 grams in group II and 3490.2 grams in group III. Multiple gestation was seen in 18% in group I, 12% in group II and 3% in group III. Small for GA was 7% in group I, 11% in group II and 8% in group III. Ray et al¹⁶ hypothesized that odds of any hospitalization would generally decrease with increasing GA, with late preterm infants experiencing additional increased risk of specific hospitalizations, such as hyperbilirubinemia. Odds of any hospitalization within the first year of life decreased with advancing GA, but observed odds of any hospitalization exceeded expected odds for 35-, 36-, and 37-week GA infants for all time periods after discharge. Odds of any hospitalization for hyperbilirubinemia were greatest for infants 33 to 38 weeks' GA (peak odds ratio at 36 weeks' GA: 2.86 and a relative peak in odds of any hospitalization for specific infections was observed among infants 33 to 36 weeks' GA.

It was found that hospitalization within 14 days of birth discharge was seen in 3.8%, 3.4% and 3.1% in group I, II and III respectively. Hospitalization within 30 days of birth discharge was seen in 7%, 5.1% and 3.2%. Hospitalization within 90 days of birth discharge was seen in 11.2%, 8.2% and 5.6%. Hospitalization between birth discharge and day 365 of life was seen in 17.5%, 12.2% and 9.4% in group I,

II and III respectively. In order to determine the extent of the elevated risk associated with late preterm births compared to births later in gestation, McIntire¹⁷ examined infant death and morbidity rates at 34, 35, and 36 weeks of gestation compared with births at term during the preceding 18 years. At our hospital, late preterm singleton live births made up about 9% of all deliveries and 76% of all preterm births. In comparison to 0.2 at 39 weeks, late preterm newborn mortality rates per 1,000 live births were 1.1, 1.5, and 0.5 at 34, 35, and 36 weeks, respectively. At 34, 35, and 36 weeks, there was a noticeably higher rate of neonatal morbidity, which included respiratory distress managed with a ventilator, transient tachypnea, grades 1 or 2 intraventricular hemorrhage, sepsis work-ups, culture-proven sepsis, phototherapy for hyperbilirubinemia, and intubation in the delivery room. Approximately 80% of late preterm births were attributed to idiopathic preterm labor or ruptured membranes and 20% to obstetric complications.

CONCLUSION

There was high rate of hospitalization in early preterm infants. Higher percentage of multiple gestation was seen in early preterm group and higher percentage of SGA babies were found in late preterm group.

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