Clinical outcome of the late preterm infants
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Introduction
Late preterm infants are premature newborns born between 34 to 36 weeks of gestational age. Late preterm babies have more chance of jaundice, respiratory problem, sepsis, in comparison to term babies. These babies normally kept in the nursery with the mother. But they can develop major neonatal complications that need admission in neonatal intensive care unit. Late preterm babies are increasing due to termination of high-risk pregnancies. Data mostly are found from the developed countries. The gestational age was determined by last menstrual period and first-trimester ultrasound scan if available and the New Ballards score. The babies who developed respiratory distress were shifted to the neonatal intensive care unit (NICU). Late preterm morbidities were compared with term babies who were admitted at neonatal intensive care unit. Neonatal morbidities like respiratory distress syndrome, transient tachypnea, sepsis, jaundice and perinatal asphyxia were noted. Data on the respiratory support such as nasal continuous positive airways pressure, mechanical ventilation were collected. The need for surfactant administration was also recorded. Overall mortality was calculated.

Materials and Methods
This retrospective study was done at the neonatal intensive care unit and nursery of Square Hospital Ltd from January 2013 to December 2014. Babies delivered between 34 to 36 weeks were included as cases. Babies born above 37 weeks gestation during the study period were taken as controls. The data were recorded like gestational age, mode of delivery, sex, birth weight, admission at neonatal intensive care unit, death and neonatal morbidities. The gestational age was determined by last menstrual period and first-trimester ultrasound scan if available and the New Ballards score. The babies who developed respiratory distress were shifted to the neonatal intensive care unit (NICU). Late preterm morbidities were compared with term babies who were admitted at neonatal intensive care unit. Neonatal morbidities like respiratory distress syndrome, transient tachypnea, sepsis, jaundice and perinatal asphyxia were noted. Data on the respiratory support such as nasal continuous positive airways pressure, mechanical ventilation were collected. The need for surfactant administration was also recorded. Overall mortality was calculated.

Results
During the study period, total 3,749 babies were delivered. Out of them 513 (13.7%) were the late preterm babies and 3,236 babies were the term (Table I). Out of 513 late preterm babies, 261 were females (50.9%). 481 (93.8%) late preterm babies were born by lower segment cesarean section and 32 babies 6.2% were born through vaginal route. 66 (12.9%) late preterm and 36 (1.1%) term babies required NICU admission just after birth.

Abstract
The aim of this retrospective study was to evaluate the short-term clinical outcome of late preterm babies (34-36 week) in a tertiary level hospital from January 2013 to December 2014. A total of 3,749 babies were delivered during this period of which 513 were late preterm. Among the late preterm babies, 481 babies were delivered by cesarean section. Admission to the neonatal intensive care unit after birth was needed in case of 66 babies. Higher incidences of complication like jaundice (14.4%), sepsis (6.2%), respiratory distress syndrome (2.9%), transient tachypnea (2.3%) and others were found in comparison to control term babies. Ventilation was required in 11 cases. Late preterm mortality was 1.4%. In conclusion, late prematurity is associated with significant neonatal morbidity and mortality.
Seventy-four late preterm babies and 155 term babies had jaundice required phototherapy (14.4 vs 4.8%). Respiratory distress syndrome was nearly 14-fold higher in late preterm babies compared to term infants. There was nearly equal sex distribution, similar to another study. In our study, cesarean section was high in late preterm babies, as well as also in term babies. Because a significant portion of high-risk mothers were delivered at our tertiary care center. We could not get enough information regarding induction of labor and indications of delivery. The study showed that elective cesarean section had higher mortality and respiratory morbidity in both late preterm and early term babies. So, the optimal outcome of mother and babies should be the major consideration in the decision for the time of delivery. For most of the low-risk uncomplicated singleton delivery, optimal outcomes are usually achieved if the pregnancy continues to full-term.

In our study, the rate of NICU care admission and the need of respiratory support in late preterm infants were high in comparison to term infants. Respiratory morbidity is nearly 14-fold higher in late preterm when compared with term infants. The late preterm has more chance of sepsis than term babies. Because a significant portion of high-risk mothers were delivered at our tertiary care center. We could not get enough information regarding induction of labor and indications of delivery. The study showed that elective cesarean section had higher mortality and respiratory morbidity in both late preterm and early term babies. So, the optimal outcome of mother and babies should be the major consideration in the decision for the time of delivery. For most of the low-risk uncomplicated singleton delivery, optimal outcomes are usually achieved if the pregnancy continues to full-term.

In our study, short-term morbidities and mortality of late preterm babies were compared with the term babies, who were admitted at NICU. Neonatal hyperbilirubinemia requiring phototherapy was high in the late preterm babies as compared to term babies (28.7 vs 5%) because of developmental immaturity in the liver and feeding difficulties. In another study, 54% late preterm babies developed jaundice that differed from the term infants (37.9%). In our study, among 3,236 babies, 155 (4.8%) term babies and among 513 late preterm babies, 74 (14.4%) late preterm babies got phototherapy for jaundice.

The late preterm has more chance of sepsis than term baby due to poor immunity. In our study, 32 (6.2%) late preterm babies developed sepsis, whereas 7 (0.2%) term babies developed sepsis. Another study also showed the similar result.

Studies showed that late preterm infants are at high-risk of death during the neonatal period, particu-

| Parameters                  | Late preterm (n = 513) | Term (n = 3,236) |
|-----------------------------|------------------------|------------------|
| Jaundice                    | 14.4%                  | 4.8%             |
| Sepsis                      | 6.2%                   | 0.2%             |
| Respiratory distress syndrome| 2.9%                   | 0.0%             |
| Transient tachypnea of the newborn | 2.3%       | 0.2%             |
| Ventilation                 | 2.1%                   | 0.1%             |
| Continuous positive airway pressure | 2.1%     | 0.0%             |
| Surfactant                  | 0.5%                   | 0.0%             |
| Perinatal asphyxia          | 1.2%                   | 0.2%             |
| Death                       | 1.4%                   | 0.0%             |

There is increased morbidities and mortality in the late preterm babies in comparison to term babies. The most common complications in late preterm babies are jaundice (14.4%), sepsis (6.2%), respiratory distress syndrome (2.9%), transient tachypnea (2.3%). The mortality rate was 1.4%. The study also showed late preterm infants have 5.5 times higher-risk for overall morbidity due to any cause relative to term infants. In our study, among 3,236 babies, 155 (4.8%) term babies and among 513 late preterm babies, 74 (14.4%) late preterm babies got phototherapy for jaundice.

### Discussion

In our study, short-term morbidities and mortality of late preterm babies were compared with the term babies, who were admitted at NICU.

In our study, 513 (13.7%) babies were the late preterm and 3,236 (86.3%) were the term. Among them, 66 (12.9%) late preterm and 36 (1.1%) term babies were admitted to the NICU just after birth.
larly in the first few days of life.\textsuperscript{12} The neonatal mortality rate in late preterm was 7.4-fold higher than in term infants.\textsuperscript{13,14} In our study, 7 (1.4\%) late preterm babies died and all term babies survived.

The late preterm group is associated with significant increased use of intensive care, longer stay of hospitalization, and concomitant increased hospital charges. They have more subtle neurodevelopmental issues such as inferior academic performances or behavioral problems and increased the risk of cerebral palsy as compared to term. We could not measure the human and economic impacts of prematurity and the long-term morbidities. We could not determine the etiology of preterm births especially iatrogenic late prematurity.

**Conclusion**

Late prematurity is associated with significant neonatal morbidity and mortality in comparison with term babies. They are most vulnerable population and need proper attention from the beginning of birth.

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