

# Incidence, Mortality Pattern, and Outcome of Low Birth Weight Babies Admitted in a Rural Tertiary Care Center: A Retrospective Study

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## Abstract

**Background:** The purpose of this retrospective study was to assess the incidence, Mortality pattern, and outcome of low birth weight (LBW) babies in Mahatma Gandhi Memorial Government Hospital, Trichirappalli for 1 year January 2015 to December 2015.

**Materials and Methods:** All newborn babies weighing <2500 g delivered and admitted to neonatal intensive care unit at MGM Government Hospital, Trichirappalli and outborn babies weighing <2500 g who were referred to our hospital were included in the study. The incidence, mortality, and outcome of these inborn and outborn babies were analyzed separately since there is difference in antenatal care and mortality in the two groups of babies. The delayed referral of outborn babies also necessitates our team to study their profile separately. The statistical test used are percentages and proportions.

**Results:** Out of 3582 babies <2500 g (2171 inborn, 1411 outborn), incidence of LBW was 44%. Incidence of prematurity was 29% (34-37 weeks) and 26.5% (<34 weeks). The majority of baby's duration of stay was 4-7 days. Morbidity profile shows 43% with birth asphyxia, 41% for prematurity and its complications, 34% with respiratory distress syndrome. Out of 3582 babies admitted, the outcome of babies showed 89% (3216) of babies were discharged well and 6.72% (241) babies died in a period of 1-year.

**Conclusion:** Timely intervention, better awareness and interaction with obstetricians, timely resuscitation by trained personnel, adequate manpower, use of antenatal steroids, surfactant, continuous positive airway pressure ventilation, and close monitoring of LBW babies results in better outcome.

**Key words:** Extramural, Gestational age, Inborn, Intramural, Low birth weight babies, Morbidity, Mortality, Neonatal intensive care unit, Outborn, Preterm

## INTRODUCTION

The global prevalence of low birth weight (LBW) is 15.5% which accounts to about 20 million LBW babies born each year, of them 96.5% belong to developing countries.

Neonatal and infant mortality rates can be reduced significantly by providing better care to the mother during

the antenatal period, labor, and better management of the LBW babies.

Appropriate care of LBW infants including their feeding, temperature maintenance, hygienic cord and skin care, early detection, and treatment of infection and its complications can substantially reduce mortality and morbidity.

Kangaroo mother care is a method of care of preterm infants weighing <2 kg it includes exclusive breastfeeding in addition to skin to skin contact and support for the mother-infant dyad and has shown to reduce mortality in hospital-based studies in low and middle-income countries. The WHO document Kangaroo mother care: A practical guide provides guidance on how to organize services in health facilities and on what is needed to provide effective Kangaroo mother care.

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### Aim of the Study

1. To study retrospectively the incidence of low birth babies both inborn and outborn admitted at neonatal intensive care unit (NICU),<sup>1</sup> Mahatma Gandhi Memorial Government Hospital attached to KAPV Government Medical College, Trichirapalli for a period of 1-year from January 2015 to December 2015
2. To assess the mortality pattern in these babies admitted to NICU<sup>2</sup>
3. To know the duration of hospital stay, mortality and outcome in these babies<sup>3</sup>
4. The study includes all newborn babies both intrauterine growth restriction as well as preterm babies weighing <2500 g<sup>4,5</sup>
5. The study was undertaken since large number of LBW babies were delivered in this part of rural Tamil Nadu and this hospital caters to the need of antenatal mothers of four districts.<sup>6,7</sup>

### MATERIALS AND METHODS

It is a retrospective study done at Mahatma Gandhi Memorial Government Hospital, Trichirapalli for a period of 1-year, from January 2015 to December 2015. After obtaining the approval from Ethical Committee, all inborn babies weighing <2500 g delivered and admitted in NICU and those outborn babies weighing <2500 g referred to our hospital requiring admission in NICU were included in this study. The incidence, morbidity, and outcome of these inborn and outborn babies were analyzed separately since there is difference in antenatal care and morbidity in the two groups of babies.<sup>7</sup> The delayed referral of outborn babies also necessitates our team to study their profile separately. The statistical test used are percentages and proportions.

### Limitation of the Study

The detailed morbidity profile of LBW babies is not studied since it is a large study. The study mainly focuses incidence and outcome of LBW babies. The study did not include all LBW babies delivered in MGM Government Hospital, Trichirapalli and only includes LBW babies admitted to NICU.

### RESULTS

Out of 3582 babies <2500 g (2171 inborn, 1411 outborn), incidence of LBW was 44%. Incidence of prematurity was 29% (34-37 weeks) and 26.5% (<34 weeks). The majority of baby's duration of stay was 4-7 days. Morbidity profile shows 43% with birth asphyxia, 41% for prematurity and its complications, 34% with respiratory distress syndrome (RDS). Out of 3582 babies admitted, the outcome of

babies showed 89% (3216) of babies were discharged well and 6.72% (241) babies died in a period of 1-year (Tables 1-5).

### DISCUSSION

Out of 3582 babies admitted to NICU from January 2015 to December 2015, 44% (1576) were LBW babies. 34.4% (1233) were between 1500 and 2499 g, 7.73% (277) were between 1000 and 1499 g, and 1.84% (66) babies were <1000 g.

**Table 1: Birth weight census**

Year 2015	N (%)		
	IM	EM	Total
Total admission	2171 (60.60)	1411 (39.39)	3582 (100)
>2500 g	1230 (56.65)	776 (54.99)	2006 (56)
1500-2499 g	763 (35.14)	470 (33.3)	1233 (34.4)
1000-1499 g	156 (7.18)	121 (8.57)	277 (7.73)
<1000 g	22 (1.01)	44 (3.11)	66 (1.84)

IM: Intramural (inborn), EM: Extramural (outborn)

**Table 2: Gestational age census**

Year 2015	N (%)		
	IM	EM	Total
Total admission	2171 (60.60)	1411 (39.39)	3582 (100)
>37 weeks	1012 (46.61)	579 (41.3)	1591 (44.41)
34-37 weeks	612 (28.18)	428 (30.33)	1040 (29.03)
<34 weeks	547 (25.19)	404 (28.63)	951 (26.54)

IM: Intramural (inborn), EM: Extramural (outborn)

**Table 3: Outcome census**

Year 2015	N (%)		
	IM	EM	Total
Total admissions	2171 (60.60)	1411 (39.39)	3582 (100)
Discharged	1982 (91.29)	1234 (87.45)	3216 (89.78)
Referral	43 (1.98)	29 (2.05)	72 (2.01)
Discharged against medical advice	23 (1.05)	35 (2.48)	58 (1.61)
Died	123 (5.66)	118 (8.36)	241 (6.72)

IM: Intramural (inborn), EM: Extramural (outborn)

**Table 4: Duration of hospital stay**

Year 2015	N (%)		
	IM	EM	Total
Total admissions	2171 (60.60)	1411 (39.39)	3582 (100)
<1 day	67 (3.08)	42 (2.97)	109 (3.04)
1-3 days	419 (19.29)	299 (21.19)	718 (20.04)
4-7 days	887 (40.85)	514 (36.42)	1401 (39.11)
>7 days	798 (36.75)	556 (39.4)	1354 (37.8)

IM: Intramural (inborn), EM: Extramural (outborn)

**Table 5: Causes of death**

Causes of death	Total
HIE/moderate–Severe birth asphyxia	43
Prematurity with complications	41
RDS	34
Major congenital anomalies	31
Sepsis/pneumonia/meningitis	26
MAS	11
Others (Hyperbilirubinemia/metabolic complications)	42
Causes not established	13
<b>Total</b>	<b>241</b>

MAS: Meconium aspiration syndrome, RDS: Respiratory distress syndrome, HIE: Hypoxic-ischemic encephalopathy

Classification according to gestational age showed 29% (1040) were between 34 and 37 weeks and 26.5% (951) babies were <34 weeks gestation. Their duration of stay showed, out of 3582 babies 39.1% (1401) babies stayed 4-7 days. 37.8% (1354) babies stayed more than 7 days. 20.4% (718) babies stayed between 1 and 3 days and 3% (109) babies stayed <1 day. Hence, the majority of baby's duration of stay was between 4 and 7 days.

Analyzing the outcome of babies admitted to NICU out of 3582 babies 89% (3216) were discharged well, 2% (72) babies were referred to higher center for want of bed or surgery. 1.61% (58) babies were discharged against medical advice and 6.72% (241) babies could not be saved.

Hence, in the period of 1-year from January 2015 to December 2015, the death rate was only 6.72% which is well below the national average and indicated good neonatal care and outcome in our NICU.<sup>7</sup>

Showing the mortality profile of babies, 43 were admitted for birth asphyxia, 41 for prematurity and its complications, 34 were admitted for RDS, 26 were admitted for sepsis, pneumonia and meningitis, 11 were due to meconium aspiration syndrome, 42 were for other causes such as jaundice, anemia, metabolic disorders, and causes not mentioned above. In 13 of babies the causes could not be established, since post-mortem of the babies are not done in our setup.<sup>8,9</sup>

## CONCLUSION

Analyzing the data for the previous year, it is found that 44.4% of total admission is constituted by LBW babies <2500 g and preterm babies constitute 55.57%, now it is a challenge both in manpower, material, and money to treat such large number of LBW babies in NICU.<sup>10,11</sup> An average duration of hospital stay of 4-7 days of such large proportion of LBW babies and good outcome in 89.7% of LBW babies indicates good NICU care. Proper and

persistent antenatal care from primary health care level to Medical College has to be taken to reduce the birth of preterm and LBW babies. Early referral of high-risk pregnancies to the tertiary care centers will greatly reduce the mortality and morbidity in LBW babies.<sup>12,13</sup> Managing the antenatal risk factors for LBW from the first trimester will greatly enhance the prospect of survival of these babies.<sup>14</sup>

Timely intervention, better awareness and interaction with obstetricians, timely resuscitation by trained personnel, adequate manpower, use of antenatal steroids, surfactant, continuous positive airway pressure ventilation, and close monitoring of LBW babies have mostly reduced the death rate of LBW babies in our center to 6.7%.<sup>15</sup>

Further proper antenatal care, correction of anemia, malnutrition will go a long-way in reducing the birth of LBW babies.<sup>16</sup>

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