

## Morbidity And Mortality of Low Birth weight Newborns Admitted in Sncu/Nicui in A Tertiary Care Hospital.

Dr.G.V.Ramadevi<sup>1</sup>,Dr.K.V.Ramanarao<sup>2</sup>,Dr.V.Veeraratnakarreddy<sup>3</sup>

<sup>1</sup>(Professor, Dept. Of Pediatrics, Govt. General Hospital, Kurnool, A.P. India.)

<sup>2</sup>(Assistant Professor, Dept. Of Pediatrics, Govt. General Hospital, Kurnool, A.P. India.)

<sup>3</sup>(Consultant Pediatrician, APMC.63453, Kurnool, A.P. India.)

**Abstract:** Aim of the present study is factors that affecting the morbidity and mortality in low birth weight (LBW) babies born with birth weight less than 2500gms. Study is a longitudinal, observational and intervention study done on babies weighing less than 2500 gms irrespective of gestational age admitted to SNCU / NICU, Government General Hospital, Kurnool, from January 2012 to December 2012. At admission Clinical details of all babies were recorded, investigated and managed as per the standard protocols, after exclusion criteria a total of 419 LBW babies (17.5% of all admissions) were included in the study, The incidence of LBW was 52.9% of total NICU admissions. Of the 419 cases 138 were died. Mortality rate was 32.79%; mortality observed was more in ELBW and VLBW babies. In the study major constituents of morbidity was sepsis (45.1%) followed by RDS (20.4%). The remaining 281 cases followed up till 6 months regularly. The babies were periodically checked for weight, head circumference, developmental milestones. 9 cases out of 281 shown morbidity in the form of cerebral palsy (3/9, 33.3%), poor weight gain (2/9, 22.2%), post meningitis sequel (2/9, 22.2%), recurrent seizures (2/9, 22.2%) implicating birth asphyxia as a predominant factor causing morbidity. So we conclude that incidence of low birth babies is relatively high in male babies than females, survival rate improving with increased gestational age and increased weight of the babies. The mortality pattern in the study was in the following order, Sepsis (42%), RDS (31.1%) and Birth asphyxia (10.9%) etc.

**Keywords:** Birth weight, low birth weight, gestational age, morbidity and mortality.

### I. Introduction

Low birth weight (LBW) is one of the most serious challenges in Maternal and Child Health in developing countries. The lower the birth weight the lower is the survival chances. WHO estimates that globally about 25 million LBW babies were born at each year, consisting 17 percent of all live births, nearly 95 percent of them in developing countries. In India currently 8 million LBW infants are born each year which constitutes 40% of global burden the highest for any country.<sup>1,2,3</sup> In India according to National Family Health Survey :3 (2010), prevalence of low birth weight (LBW) babies is 21.5%<sup>4</sup>. LBW is a major cause of infant mortality and is considered as a sensitive index of Nations health and development. LBW is known to increase the risk for major disabilities such as cerebral palsy and mental retardation, anemia of prematurity, Kernicterus, PDA, respiratory distress, apnea, retinopathy, enterocolitis, but researchers now showing evidences that LBW also contributes to minor difficulties in motor skills and in thinking, learning and memory. In view of this, to know the various factors affecting the morbidity and mortality in LBW newborns and burden of complications in relation to morbidity and mortality the present study is conducted in the Special newborn care unit (SNCU) of Govt. General Hospital, Kurnool Medical College, Kurnool.

### II. Material And Methods

This longitudinal, observational and intervention study was done on babies weighing less than 2500 gms irrespective of gestational age<sup>5,6,7</sup> admitted to SCNU/ NICU, Department of Pediatrics, Govt. General Hospital, Kurnool, from January 2012 to December 2012. The newborns were mostly referred from peripheral hospitals for better care. Study population includes a total of 419 cases of LBW newborns of less than 2500 gms chosen among 1267 cases admitted. Information was recorded on a structured proforma by questionnaire method. Information related to age, sex, the problem with which newborn admitted, antenatal, natal, postnatal history, treatment history, socio economic status of parents, etc were considered.

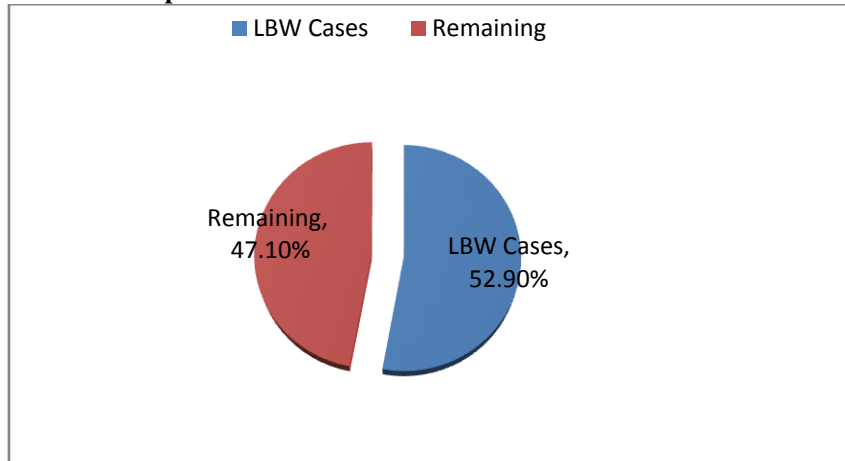
A thorough clinical examination was done on the day of admission followed by necessary investigations and standard protocol treatment followed. The study was approved by the Ethics Committee of the hospital and informed consent of the parents was obtained.

### III. Results

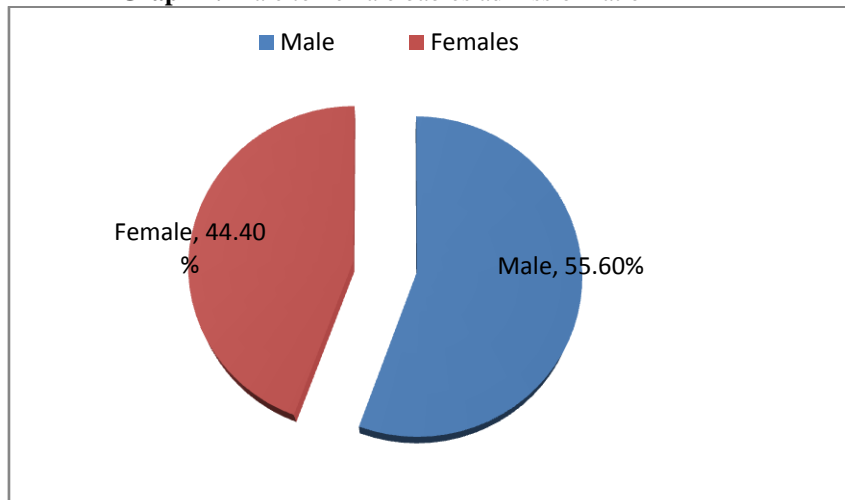
A total of 2391 cases were admitted to SNCU, during the study period. Out of 2391 admissions 1267 were LBW babies admitted both in inborn and outborn. The incidence of low birth weight was 52.9% of total

SNCU admissions. Of the 1267 LBW babies 419 cases were selected for study. Of the 419 cases 138 cases were died, mortality rate was 32.9%, and the number of babies survived were 281cases, survival rate was 67.1%. Mortality observed was more in extremely low birth weight (ELBW) and Very low birth weight (VLBW) mainly. Out of 419 cases studied 233 (55.6%) were male babies and 186 (44.4%) were females. Male to Female ratio is 1.25:1.

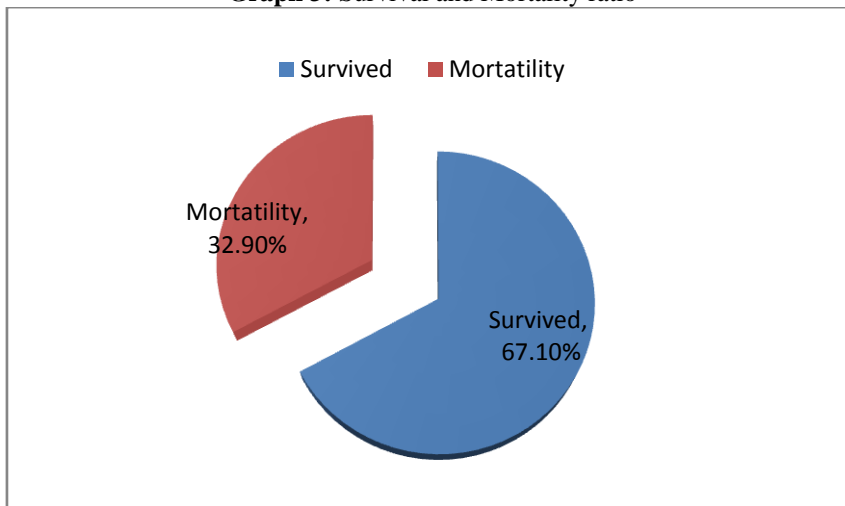
**Graph 1: LBW and Other cases admission ratio**



**Graph 2: Male to Female babies admission ratio**



**Graph 3: Survival and Mortality ratio**

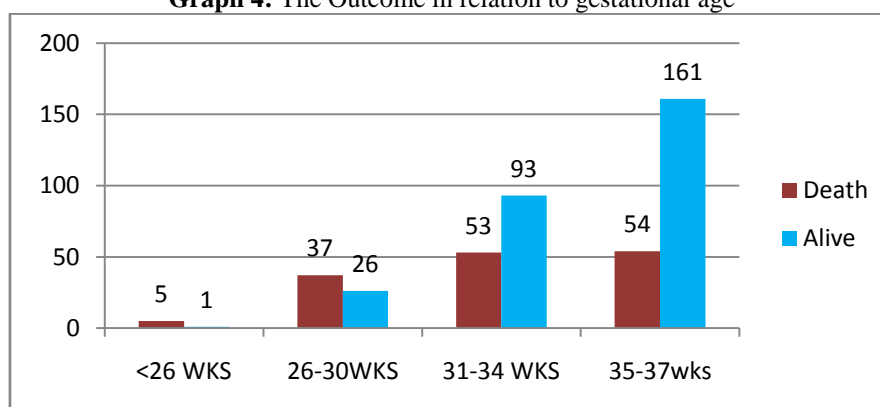


**Table 1 :** Outcome in relation to the gestational age :

Gestational Age	Death	Alive	Total
<26 weeks	5(83.3%)	1(16.7%)	6
26-30 weeks	37(58.7%)	26(41.3)	63
31-34 weeks	53(36.3%)	93(63.7%)	146
35-37 weeks	54(25.1%)	161(74.9%)	215
Total	138	281	419

Out of 6 babies who were less than 26 weeks of gestational age only one baby (16.7%) survived. 63 babies were in the gestational age of 26-30 weeks with mortality and survival rates of 58.7% and 41.3% respectively. 146 babies were of 31-34 weeks with mortality and survival rates were of 36.3% and 63.7% respectively. Those who are nearing term i.e., 35-37 weeks the mortality and survival rates were of 54(25.1%) and 161(74.9%) respectively. The mortality is very high in less than 26 weeks against survival (83.3% vs. 16.7%).

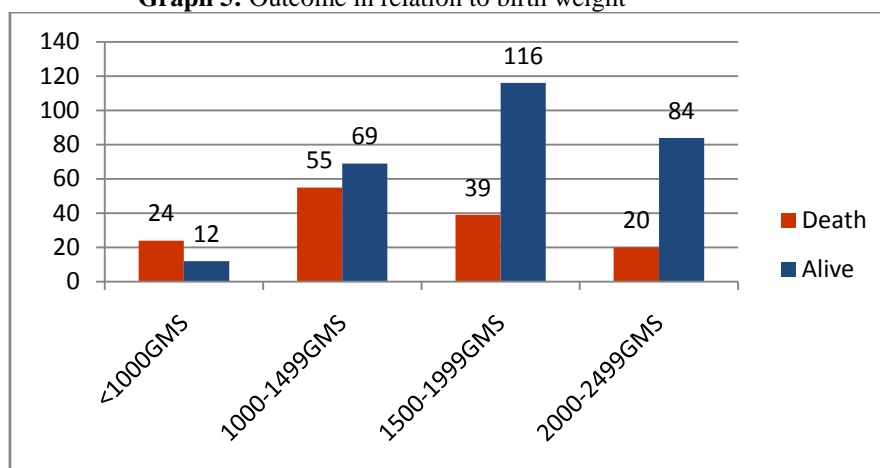
**Graph 4:** The Outcome in relation to gestational age



**Table2:** Outcome in relation to birth weight

Weight	Outcome		Total
	Death	Alive	
<1000 gms	24(66.6%)	12(33.4%)	36
1000-1499 gms	55(44.4%)	69(55.6%)	124
1500-1999 gms	39(25.2%)	116(74.8)	155
2000-2499 gms	20(19.2%)	84(80.8%)	104
Total	138	281	419

**Graph 5:** Outcome in relation to birth weight



The present table shows outcome of LBW babies in relation to birth weight. Out of 36 babies weighing less than 1000gms more death rate was noted i.e., 24(66.6%), survival rate was only 12(33.4%), those weighing 1000-1499 gms the death and survival rates were 44.4% and 55.6% respectively. The death and survival rates in 1500-1999 gms were 25.2% and 74.8% respectively; in 2000-2499 gms the death and survival rates were 19.2% and 80.8% respectively. Emphasizing the need for care of those weighing less than 1500gms.

**Table 3:** Presenting complaint vs. birth weight:

Presenting complaint	<1000 gms	1000-1499 gms	1500-1999 gms	2000-2499 gms	Total
Poor Cry	8(22.2%)	14(11.2%)	11(7%)	10(9.6%)	43(10.2%)
RD	23(63.8%)	67(54%)	61(39.3%)	34(32.6%)	185(44.1%)
Seizures	0	5(4%)	24(15.4%)	25(24%)	54(12.9%)
Poor Feeding	4(11%)	27(21.7%)	44(28.3%)	26(25%)	101(24.1%)
Jaundice	0	6(4.8%)	10(6.5%)	8(7.7%)	24(5.7%)
Bleeding	1	0	4	1	6
Distension	0	0	1	0	1
Apnea	0	5	0	0	5
Total	36	124	155	104	419

This table shows the presenting complaint in various LBW babies. In Those weighing less than 1000gms, Out of 36 babies 23(63.8%) babies were with respiratory distress, poor cry 8(22.2%). In those weighing 1000-1499gms out of 124 members 67(54%) were with respiratory distress, 27(21.7%) were with poor feeding and 14 (11.2%) were with poor cry. Those weighing 1500-1999gms again respiratory distress forms the major proportion 61(39.3%), 44(28.3%) with poor feeding and 24(15.4%) with seizures. In 2000-2499 groups Respiratory distress 34(32.6%); seizures and poor feeding sharing almost equal distribution 24% and 25% respectively. Among 419 LBW babies Respiratory distress forms the predominant presenting complaint (44.1%) the same is seen in all other weighing babies followed by poor feeding (24.1%) and poor cry (10.2%).

**Table 4:** Diagnosis vs. weight of the Newborn

Diagnosis	<1000 gms	1000-1499 gms	1500-1999 gms	2000-2499 gms	Total
HT & HG	1(14.2%)	3(42.9%)	3(42.9%)	0	7
Sepsis	5(2.6%)	54(28.5%)	88(46.5%)	42(22.2%)	189
HB	0	5(17.2%)	15(51.7%)	9(31.1%)	29
RDS	23(27.1%)	51(60%)	11(12.9%)	0	85
HIE	2	5	15(32.6%)	24(52.1%)	46
MAS	0	1	4	9(64.2%)	14
TTN	0	0	4	10(71.4%)	14
CA	2	2	8	9	21
Apnea	0	2	0	0	2
HDN	0	0	5	0	5
Seizures	3	1	2	1	7
Total	36	124	155	104	419

Out of 7 cases with Hypoglycemia (HG) and Hypothermia (HT) only 01(14.2%) baby weighing less than 1000gms present. 3(42.9%) babies each fall under 1000-1499 and 1500-1999gms. None of the babies weighing more than 2000gms presented with this. Out of 189 babies presented with sepsis, 5(2.64%) babies weighing less than 1000 gms, 54(28.5%) babies were present in the 1000-1499gms, 1500-1999gms were 88 (46.5%) and 42(22.6%) were weighing in between 2000-2499gms. Out of 29 babies with Hyperbilirubinemia (HB) none were present in less than 1000gms, 5 (17.2%) babies were in between 1000-1499gms, 15(51.7%) were in the group of 1500-1999gms and 9(31.1%) babies were in between 2000-2499gms. Out of 85 cases with Respiratory distress syndrome(RDS) 23(27.1%) babies were in the less than 1000gms, 51(60%) babies were in the range of 1000-1499gms, 11(12.9%) were in the range of 1500-1999gms. Among Birth asphyxia (BA/HIE), MAS and TTN, majority were in the range of 2000-2499gms (52.1%, 64.2% and 74.1%) respectively. In less than 1000gms (ELBW) babies it shows Respiratory distress syndrome is the predominant morbidity factor (63.8%) followed by Sepsis (13.8%). In babies weighing 1000-1499gms (VLBW) sepsis and respiratory distress syndrome (43.5% and 41.4%) becoming the predominant ones. In 1500 to 1999 gm babies sepsis is the predominant diagnosis (56.7%) followed by hyperbilirubinemia and birth asphyxia sharing equally i.e., 9.7% respectively. In 2000-2499gms sepsis (40.3%), birth asphyxia (23%), MAS & TTN sharing with 8.7% and 9.6% respectively.

#### IV. Discussion

The present study was conducted in the SNCU/NICU, Department of Pediatrics, Government General Hospital, Kurnool Medical College, Kurnool. A.P., during the period from January 2012 to December 2012. Out of 2391 admissions 1267 were low birth weight babies admitted both from inborn and out born, of which 419 cases were selected after excluding left against medical advice and not willing for participation in study. The incidence of low birth weight observed in the study was 52.9% of total NICU admissions of babies. LBW incidence is relatively higher in male babies when compared to female babies. The gender distribution

among low birth weight group is comparable with Emel altuncu et al<sup>8</sup>, Kayastha et al<sup>9</sup>. In the study of Emel altuncu et al<sup>8</sup> male preponderance is high when compared to female (53.6% vs. 44.6 %) which is also seen Kayastha et al<sup>9</sup> (52% vs. 48%). In the current study also the similar results obtained (55.6% vs. 45.4%).

ELBW (<1000gms) incidence is relatively high in the current study (8.6%) which is more when compared to Emel altuncu et al<sup>8</sup> (3.3%) and Kayastha et al<sup>9</sup> (4.1%) depicting that the burden of ELBW is relatively high in the current study causing more burden of morbidity and mortality. VLBW (1000-1500gms) incidence is also relatively high in the current study i.e., (29.5%) when compared to Emel altuncu et al<sup>8</sup> (10.7%) and Kayastha et al<sup>9</sup> (8.7%). The incidence of those babies with more than 2000gms is high in the Emel altuncu et al<sup>8</sup> and Kayastha et al<sup>9</sup> when compared to current study.

The problem of extreme prematurity i.e. less than 28 weeks of gestational age is also very high in the current study which is comparable with Were FN et al<sup>10</sup> i.e., (7.3% vs. 9%), which is less in the Kayastha et al<sup>9</sup> (3%). Those born in between 29 to 32 weeks were in the order of 22.2%, 16.5% and 29% in the Present study, Kayastha et al<sup>9</sup> and Were FN et al<sup>10</sup> respectively. The low birth weight babies nearing term that lies in between 33 to 36 weeks were in the order of 42.7%, 33.5% and 69% in the Present study, Kayastha et al<sup>9</sup> and Were FN et al<sup>10</sup> respectively, Indicating more of near term babies being born in Were FN et al study. The overall survival of extremely low birth weight babies (<1000gms), is almost zero percent on Were FN et al<sup>10</sup> study, where as in Daynia E. ballot et al<sup>11</sup> study is 35%. where as in current study it comes around 33% matching with the Daynia E. ballot et al<sup>11</sup> study and is better than Were FN et al<sup>10</sup> study. The survival of ELBW infants in the present review of 33% was less than that of other developing countries, such as Thailand<sup>12</sup> and Jamaica<sup>13</sup>.

The survival pattern in VLBW in the current study is about (66.4%) which is a bit less when compared to Daynia E. ballot et al study<sup>11</sup> (70.5%) and Velaphi et al<sup>14</sup> (72%). Out of 419 cases, excluding the babies died (138 cases) 281 cases followed up till 6 months regularly. The babies were periodically checked for weight, head circumference, developmental milestones. 9 cases out of 281 shown morbidity in the form of cerebral palsy (3/9, 33.3%), poor weight gain (2/9, 22.2%), post meningitis sequel (2/9, 22.2%), recurrent seizures (2/9, 22.2%) implicating birth asphyxia, as a predominant factor causing morbidity.

## V. Conclusion

Incidence of low birth weight is 52.9%; Incidence of low birth weight is relatively higher in male babies when compared to female babies. The survival rate in low birth weight babies improving with increased gestational age. The survival rate is increasing with increased birth weight of babies. The mortality pattern in the study was in the following order, Sepsis(42%), RDS(31.1%), Birth asphyxia(10.4%), Congenital anomalies(CA) (10.1%), Morbidity of the low birth weight newborns admitted to SNCU is low (2.2%).

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