

## Assessment Of factors associated with low birth weight babies born in RIMS hospital

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### Abstract:

**Background:** Low birth weight is important risk factors for determining the newborn health and survival. It is associated with increase morbidity and mortality. LBW babies are associated with multiple risk factors and reductions of these factors are associated with decrease incidence of LBW babies. **Aims of the study:** To estimate the prevalence and identify the factors associated with LBW babies. **Material and methods:** The cross-sectional study was carried out in all the newborns with birth weight less than 2500 g during the period from October, 2011 to September, 2013. **Results:** The prevalence of LBW was 6% and the incidence of LBW was high among the young mothers, in 1<sup>st</sup> pregnancy and among the un-booked cases. Anaemia was a significant risk factor for LBW. **Conclusion:** Findings of the present study emphasizes the need for improvement of socioeconomic status, proper antenatal care, rest and nutrition of the mother during pregnancy and encouragement to raise literacy rate, proper management of anaemia will surely decrease the prevalence of LBW.

**Key words:** Low birth weight babies, LBW, Anaemia.

### 1.Introduction

Globally 18 million infants are born with low birth weight (LBW) every year. The World Health Organization adopted in 1950, the figure of less than 2500 g (5 pound 8 ounces) as a universal definition of low birth weight. <sup>[1]</sup> LBW is an important predictor of new-born health and survival and is associated with higher risk of infant and childhood mortality, apart from the physical and mental sequelae in the individual. <sup>[2]</sup> The reduction of low birth weight also forms an important contribution to the Millennium Development Goal (MDG) for reducing child mortality. The factors associated with LBW are multiple and interrelated to mother, placenta and foetus. <sup>[3]</sup>

### 2.Aims and Objectives:

To estimate the prevalence and identify the factors associated with LBW.

### 3.Materials And Methods

This cross-sectional study was carried out in the Regional Institute of Medical sciences, Imphal amongst all the new-borns with birth weight less than 2500 g and their mothers during the period from October, 2011 to September, 2013. The data was collected by questionnaire method followed by the thorough clinical examination and anthropometric measurements of new-born and mother.

### 4.Results

The total number of live births in RIMS hospital for the period of October, 2011 to September, 2013 was found to be 23031. Out of which 1382 babies were LBW and the incidence of LBW is 6%. In the present study the highest incidence of LBW was found in birth weight range of 2001- 2500 g consisting of 73.73% of the cases. The mean birth weight of all LBW was 2267 g. The prevailing antenatal registration was found to be 92%.

**Table 1: Association between status of registration of pregnant women and birth weight status of their newborn**

Factors	Level of factors	Low birth weight – n (%), (N= 1382)	Birth weight - $\geq$ 2500 g – n (%), (N= 21649)	Statistical Test*
Registration of Mother	Booked	512(2.42)	20599(97.6)	X <sup>2</sup> = 5731.35 D.f=1,P= 0.000
	Un-booked	870(45.31)	1050(54.7)	
Time of Registration	1 <sup>st</sup> Trim.	102(1.11)	9021(98.89)	X <sup>2</sup> =227.25 D.f=1,P=0.000
	2 <sup>nd</sup> Trim.	189(2.36)	7788(97.64)	
	3 <sup>rd</sup> Trim.	221(5.50)	3790(94.45)	
No. of Antenatal visits	<2	302(20.53)	1169(97.47)	X <sup>2</sup> =2199.81 D.f=1 P=0.000
	2-4	160(1.34)	11744(98.66)	
	$\geq$ 5	50(0.64)	7686(99.36)	

\*Chi-square test

The table 1 shows that 45.3% of the un-booked cases and 2.4% of the booked cases delivered low birth weight babies. This difference was found to be statistically highly significant. Similarly the birth weight of new born was significantly influenced by the number of antenatal visits.

The proportion of LBW was more among the mothers who are studied primary school (47.77%) and the risk of LBW reduces linearly as the education status improved with an overall reduction by 97.87% among the mothers who were studied up to graduate level. The association between mother's education and birth weight was statistically highly significant ( $P < 0.000$ ).

Mothers who belonged to low income group had more number of LBW in comparison to higher income group. This difference was found to be statistically highly significant.

**Table 2: Relation of socioeconomic factors with LBW**

Factors	Level of factors	Low birth weight – n (%), (N= 1382)	Birth weight - $\geq$ 2500 g n (%), (N= 21649)	Statistical Test
Per-capita Income	$\leq$ 2000	967(41.97)	1337(58.03)	$X^2=6039.55, D.f=2, P=0.000$
	2000-7000	276(5.99)	4330(94.01)	
	$\geq$ 7000	139(0.86)	15982(99.14)	
Place of residence	Urban	746(3.99)	17909(96.01)	$X^2=695.56, D.f=1, P=0.000$
	Rural	636(14.53)	3740(85.47)	
Religion	Hindu	748(5.41)	13070(94.59)	$X^2=24.13, D.f=2, P=0.000$
	Muslim	289(7.37)	3627(92.63)	
	Christian	345(6.51)	4952(93.49)	
Type of family	Nuclear	622(5.67)	10343(94.33)	$X^2=3.88, D.f=1, P=0.049$
	Joint	760(6.29)	11306(93.71)	

The mother's responses to their occupational status revealed that the great majority (59.04%) were housewives and 27.34% were working in government or private sectors, while the remaining 13.62% were engaged in different daily labour activities delivered more number of LBW. The pre-dominant religion of the study population was found to be Hindu (59.99%) followed by Christian (23%) while the rest (17.01%) were Muslim. Proportion of LBW was more for Muslim mothers (7.37%) and it was found statistically significant ( $P$ -value  $< 0.000$ ). The risk of delivering LBW was found to be significantly higher in those mothers who were residing in rural areas than those living in urban areas. Majority of mothers (81%) were living in urban areas and 52.39% of the mothers belonged to joint families. It was observed that LBW was higher in mothers who belonged to joint families. This difference was found to be statistically highly significant.

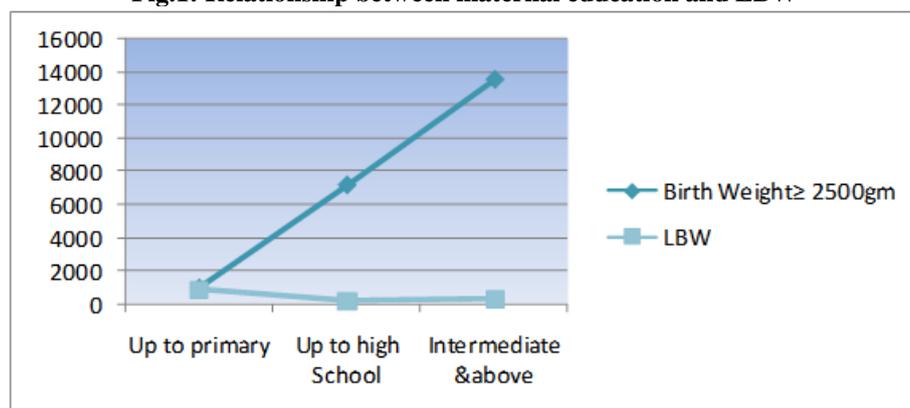
**Table 3: Relationship between Parity, Gestational weight, Inter pregnancy interval with LBW**

Factors	Level of factors	Low birth weight -n (%), (N= 1382)	Birth weight - $\geq$ 2500 g n (%), (N= 21649)	Statistical Test
Parity	1	987(10.71)	8225(89.29)	$X^2=698.55, D.f=3, P=0.000$
	2	345(4.68)	7018(95.32)	
	3	31(0.65)	4734(99.34)	
	$\geq$ 4	19(1.12)	1672(98.88)	
Gestational Weight (Kg)	$<$ 45	733(12.44)	5158(87.56)	$X^2=599.25, D.f=2, P=0.000$
	45-55	594(4.10)	13870(95.9)	
	$\geq$ 56	55(2.05)	2621(97.95)	
Inter pregnancy interval (Month)	$<$ 12	773(18.64)	3372(81.36)	$X^2=1566.05, D.f=2, P=0.000$
	12-48	386(5.98)	6062(94.02)	
	$>$ 48	223(1.79)	12215(98.21)	

Table 3 depicts that the LBW rate was high for parity one i.e. 10.71% when compared to parity two (4.68%) and parity three and above (1.77%). The association was found to be highly significant ( $p < 0.000$ ). The maximum number of LBW (12.44%) was delivered by mothers whose gestational weight at third trimester was  $<$  45 Kg. The association between gestational weight and LBW found to be statistically significant ( $p < 0.000$ ).

In present study all mothers (booked) were screened for haemoglobin (Hb) level, 40% of the mothers in this study were anaemic, 24% of the mothers who's Hb  $<$  7gm% delivered LBW. A statistically significant relationship was found between the haemoglobin concentration and birth weight. Mother who had a bad obstetric history has delivered more number of LBW.

**Fig.1: Relationship between maternal education and LBW**



### 5. Discussion

The present hospital based cross sectional study shows the incidence of LBW 6%. National Family Health Survey-3 (NFHS-3) data shows that the prevalence of low birth weight babies in India as a whole and Manipur are 21.5% and 13.1% respectively.<sup>[4]</sup>

The Present study reports low proportions of LBW amongst better educated, elderly women having higher family income as in NFHS-3.<sup>[8]</sup> Percentages of LBW were obtained to be maximum for mothers educated up to 5<sup>th</sup> level (47.77%), low per capita income up to Rs. 2000 (41.97%), which were in agreement with respective prevalence rates of 26.5% and 25.4% reported in NFHS-3 surveys.<sup>[4]</sup> Maternal occupation was found to be significant risk factor for delivering LBW. The incidence of LBW was high among young mothers of age 20 years and it was found to be significantly higher in primiparas. Similar observations were also reported by NFHS-3,<sup>[4]</sup> Anand et al,<sup>[5]</sup> Kamaladoss et al.<sup>[6]</sup> More number of LBW were born to mothers whose inter pregnancy interval was < 12 months. Mothers shorter than 150 cm of height delivered a higher proportion of LBW.

The present study also revealed that anaemia was a risk factor for LBW (<7gm/dl) which was comparable to the findings of study by Joshi et al<sup>[7]</sup> and Mavalankar et al.<sup>[8]</sup> Similarly mothers with bad obstetric history (BOH) delivered more number of LBW than mothers with no BOH which was in accordance with other studies.<sup>[9]</sup>

The proportion of LBW was higher (45.31%) among the un-booked mothers when compared with (2.42%) the mother who had regular ANC check-up. Joshi et al<sup>[7]</sup> and Idris et al<sup>[10]</sup> also published the similar findings in their study where the incidence of LBW was 57% and 61.76% in mothers who did not receive any antenatal care.

### 6. Conclusion

The prevalence of LBW in the present study was found to be very low (6%) as compared to the national average of 21.5% which may be attributable to various factors like as it was hospital based study, catchment area mostly urban, higher per capita income, 60% of mothers were having Hb >11 gm% and they were availing the antenatal services. So it may not reflect the real scenario.

Thus findings of the present study emphasizes the need for improvement of socioeconomic status, proper antenatal care, rest and nutrition of the mother during pregnancy and encouragement to raise literacy rate, proper management of anaemia will surely decrease the prevalence of LBW.

### 7. Reference

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