

# Maternal Risk Factors Of Low Birth Weight In Chandigarh India

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## Abstract

**Objectives:** To investigate risk factors of Low Birth Weight. **Setting:** Govt. Medical College and Hospital, Chandigarh. **Participants:** 193 neonates delivered in the health facility. **Statistical Analysis:** Normal test of proportions. **Results:** The overall proportion of LBW was 23.8%. Proportion of LBW was comparatively higher among babies born to mothers who were below 20 years of age (50.0%), poorly educated (32.6%), belonging to family with income less than Rs. 2000 per capita, (28.9%), poorly nourished with pre-pregnancy weight less than 45 kg (50.0%), as compared to others. Primi mothers were comparatively at lower risk (18.4%) of delivering LBW babies as compared to multi-gravida mothers (29.5%). Low literacy level, low per capita income, birth order two and above and maternal age above 30 years were found to be significant risk factors of LBW. **Conclusions:** Population based interventions in terms of improving maternal education and socio-economic status irrespective of parity should be adopted for reducing the prevalence of LBW.

## INTRODUCTION

Low Birth Weight (LBW) babies are the neonates weighing less than 2500g or 5.5lb at birth. If born before 37 weeks of gestation, they are called as preterm, otherwise remaining one are small for gestational age (SGA) due to intrauterine growth retardation (IUGR). A weight below the 10<sup>th</sup> percentile of expected weight for the population suggests IUGR. LBW still remains a major public health problem. According to UNICEF, about 18 million infants are born with LBW globally every year. LBW babies carry relatively higher risk of perinatal and neonatal mortality and substandard growth and development subsequently. Morbidity and mortality rates among such neonates are very high. Government of India, along with the strategies developed to achieve "Health for All" by the year 2000, wished to decrease incidence of LBW to 10 percent. We have not achieved it even today. In fact we are far away from the target. Incidence of LBW in India in the year 2008 was 30%. Several studies present a detailed account of factors associated with LBW<sup>2345</sup>. Present study conducted in GMCH, Chandigarh attempts to investigate some maternal risk factors of LBW as it seems to be important to study these factors on regional basis.

## MATERIAL AND METHODS

The study was conducted at Government Medical College

and Hospital, Chandigarh during April 2007 to March 2008. A total of 200 neonates delivered in the health facility were included randomly for investigating some maternal risk factors of LBW and their respective mothers were interviewed using pre-designed interview schedule. For 07 infants birth weight could not be measured and hence they were excluded from the study.

## RESULTS

The overall proportion of LBW was 23.8% among all study subjects studied (of which 47.8% were preterm and 52.2% were SGA). Proportions of LBW were significantly higher ( $P < 0.05$ ) among neonates of mothers below 20 years of age (50.0%), poorly educated (32.6%), belonging to family with income less than Rs. 2000 per capita, (28.9%), poorly nourished with pre-pregnancy weight less than 45 kg (50.0%) than those of mothers aged 26 – 30 years (16.3%), educated up to 12 years or more (12.5%), belonging to family with income between Rs.2000-7000 (19.8%), and well nourished with pre-pregnancy weight 56 kg or more (15.2%) respectively as shown in the table.

Figure 1

Table 1: Risk Factors Of Low Birth Weight

Maternal Factor	Total	LBW No (%)	OR	95% CI of OR	P-value	LBW Prevalence in NFHS-3
<b>Age</b>						
<20 yrs	04	02 (50.0)	2.97	(0.28, 31.1)	0.26	26.1
20 – 25 yrs	131	33 (25.2)	5.13	(0.43, 63.2)	0.09	NR
26 – 30 yrs	49	08 (16.3)	2.00	(0.12, 42.3)	0.56	NR
31 & more	09	03 (33.3)	1.00			20.1
<b>Birth Order</b>						
1	98	15 (15.3)	1.00			22.3
2 – 3	95	31 (32.6)	2.68	(1.27, 5.72)	0.004	20.2
<b>Educational Status</b>						
<5 yrs	43	14 (32.6)	4.22	(1.12, 17.20)	0.01	26.5
5 – 11 yrs	111	28 (27.3)	2.95	(1.19, 10.76)	0.04	22.3
12 +	39	04 (12.5)	1.00			18.8
<b>Maternal Weight (kg)</b>						
<45	20	10 (50.0)	5.60	(1.63, 19.7)	0.001	NR
45 – 50	45	12 (26.7)	2.04	(0.72, 5.79)	0.13	NR
51 – 55	62	14 (22.6)	1.63	(0.61, 4.40)	0.28	NR
56+	66	10 (15.2)	1.00			NR
<b>Family Income (Rs. Per-capita)</b>						
<2000	76	22 (28.9)	1.36	(0.44, 4.38)	0.56	25.4
2000 – 7000	91	18 (19.8)	0.82	(0.26, 2.68)	0.70	23.7
7000 +	26	06 (23.1)	1.00			17.4
<b>Overall</b>	<b>193</b>	<b>46 (23.8)</b>				<b>21.5</b>

Primigravida mothers were comparatively at lower risk (15.3%) of delivering LBW babies as compared to multi-gravida mothers (32.6%). Also, prevalence of LBW was found to be comparatively higher among less educated mothers (32.6% for mothers with five years of schooling) low income group (28.9%). LBW prevalence was found maximum in case of maternal age above 30 years (33.3%) and maternal weight below 45 kg (50.0%). The prevalence rates of LBW in case of multi-gravida mothers (29.5% Vs 20.2%) and age above 30 years (33.3% Vs 20.1%) were found to be significantly higher as compared to those obtained in NFHS-3 survey.

Risk of LBW was not found to vary significantly with maternal age ( $P > 0.05$ ). Also, family income was not obtained to be significant risk factor for LBW ( $P > 0.50$ ). Risk was significantly higher ( $P = 0.004$ ) for birth order 2-3 as compared to birth order 1. Low level of educational status of mothers (below 5 years of schooling) was also found to be a significant risk factor ( $P = 0.01$ ) for LBW. Relative risk estimate (2.95) for 5-12 years of schooling was also found to be a significant risk factor ( $P = 0.04$ ) as compared to more than 12 years of schooling. Maternal weight below 45 kg was also found to be a significant risk factor ( $P = 0.001$ ).

## DISCUSSION

Prevalence of LBW (23.8%) observed in our study is comparable to 21.5% observed in National Family Health Survey (NFHS-3)<sup>6</sup>. Present study reports low proportions of LBW amongst better educated, elderly women having higher family income as in NFHS-3. Percentages of LBW are obtained to be maximum for mothers educated upto 5<sup>th</sup> level (32.6%), low per capita income up to Rs. 2000 (28.9%) in the present study, which are in agreement with respective prevalence rates of 26.5% and 25.4% reported in NFHS-3 survey. However, proportion of LBW in case of birth order one was lower in the present study as compared to that for birth order 2-3 in contrary to findings of NFHS -3 survey.

In NHFS-3, prevalence of LBW based on mothers ‘expressing’ the infants as small or very small was very close, to the one ‘recorded’ by measurements (20.8% Vs 21.5%) indicating a need for the Pediatricians to give extreme value to the experiences of mothers while faking history of infants health conditions. A Kolkata based study<sup>7</sup> has recorded prevalence of LBW as 28.6%. In United States, the percentages of preterm births and LBW rose to 12.0% and 7.8% respectively in 2002, from 9.4% and 6.7% in 1984<sup>8</sup>. In our country approximately one third LBW neonates are premature<sup>9</sup>. Such infants constituted 47.8% in our study. This higher percentage population of premature infants may be because of an overall high age of mothers. The proportion of premature babies varied from 21.6% in Nepal<sup>7</sup> to 61.2% in Ahmedabad, India<sup>10</sup>. Since most of the risk factors for LBW are also the one associated with higher maternal mortality, control of these factors will be of paramount importance more so for a country like India where indicators related to maternal and child health are still poor.

Findings of the present study in terms of low literacy level, low per capita income as risk factors of LBW agree with findings of NFHS-3 survey. However, results in terms of birth order two and above and maternal age above 30 years as risk factors found in this study do not agree with respective findings of NFHS-3 survey wherein younger and primi mothers were found to be at higher risk of delivery LBW babies.

## CONCLUSIONS AND SUGGESTIONS

Findings of the present study suggest the need of population based interventions in terms of improving maternal education and socio-economic status. Also, elderly and multi-gravida mothers should be given special care and they

should be imparted health education for adopting contraception and proper ANC care for reducing LBW.

### **KEY MESSAGES**

There is need of population based interventions in terms of improving maternal education and socio-economic status irrespective of background characteristics.

Elderly mothers should be given special care and they should be imparted health education for adopting contraception and proper ANC care for reducing LBW.

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