Bio-social factors of the mothers and birth weight of their newborns in a tertiary hospital, Bangladesh

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Abstract

Background: Low Birth Weight (LBW) is one of the major problems of children in Bangladesh. LBW can be prevented by looking into its associated factors. **Objective:** To explore the bio-social factors of the mothers and its relationship with the birth weight of their new born babies. **Methods:** This cross sectional type of descriptive study was conducted among the mothers, who delivered their babies at the Rajshahi Medical College Hospital. The sample size was 298. Data were collected from the respondents by face to face interview through a partially structured questionnaire. Data analysis involved simple descriptive as well as analytical techniques including chi-square and Fisher's Exact test. **Results:** A total of 298 newborns, only 6.6% had birth weight < 2500 grms. Prevalence of LBW among the anemic mothers and mothers having body weight < 45 kgs in 3rd trimester were significantly higher than that of non anaemic mothers (P=0.039) and the mothers of body weight = 45 kg (P=0.002). **Conclusion:** Prevention of Maternal malnutrition and anaemia may reduce the incidence of LBW in Bangladesh.

Key words: LBW, bio-social factors, Bangladesh.

Introduction

The birth weight is a reliable indicator of foetal wellbeing and maturity.[1] The birth weight of a newborn baby is probably the single most important factor that affects its survival and quality of life.[2,3] The common causes of low birth weight (LBW) are maternal malnutrition, obstetric or medical complications associated with pregnancy, congenital malformations of the foetus and socio-economic factors like heavy work during pregnancy, pregnancy in quick succession or pregnancy at a very young age. Genetic and geographic factors are also related to LBW.[4] There is a correlation between low socio-economic status and LBW.[5] In developing countries maternal malnutrition, anaemia and short birth intervals commonly cause LBW babies.[4] Mothers' weight in pregnancy is associated with birth weight variation.[6] Mean birth weight of babies is less in underweight mothers than that of mothers weighing above 100 lbs (45.4 kgs).[7] In one study it was shown that 51.2% of LBW babies were born to mothers weighing 40 kgs and below. In another study, it was observed that low level of maternal education and paternal unemployment were important determinants of LBW. LBW is one of the major problems of children in Bangladesh.[8] Maximum morbidity and mortality of neonates are related to LBW. LBW can be prevented by looking into the risk factors.[9]

As the prevalence of LBW is one of the most important health indices, it is important to know the prevalence and risk factors for LBW. The aim of this study was to determine the prevalence of LBW and some of its risk factors specially maternal risk factors in Bangladesh. It was hoped that the results of this study could help the health authorities by informing about the maternal risk factors for LBW thereby to reduce its prevalence.

Methods

This cross-sectional type of descriptive study was carried out among the mothers, who delivered a singleton full-term normal newborns in the Department of Obstetrics of Rajshahi Medical College Hospital in the year 2011. The sample size of the study was 298, which was selected purposively. Data were collected from the respondents by face to face interview through a partially structured questionnaire. The questionnaire was designed to record maternal age, educational status, monthly family income, anaemic status and body weight, and birth weight of the newborns. The weight of the mothers were measured by bath room weight machine to the nearest 100 gm . Birthweights of the apparently full-term (based on the date of the last menstrual period) normal newborns were measured just after separation from the placenta by the Detecto-type baby weight machine to the nearest 10 gm. A pregnant women having haemoglobin levels <11 g/dl was considered as anaemic Data were analyzed in computer by using SPSS/PC+ for windows. Data analysis involved simple descriptive as well as analytical techniques including chi-square and Fisher's Exact test.

Results

Out of 298 newborns, 93.4% newborns had birth weight = 2.5 Kg and the rest only 6.6% had birth weight < 2.5 Kg, i.e.; they were LBW babies (Fig. 1).

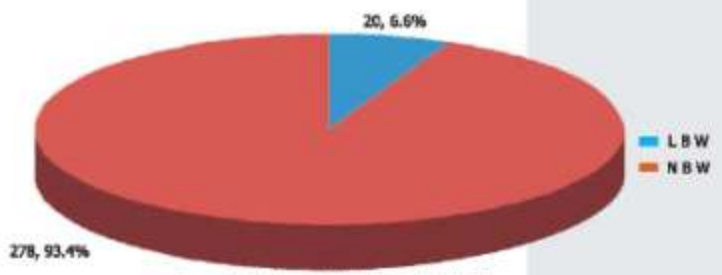

Figure 1 : Birth weight status of the babies

A total of 298 pregnant mothers, 75.2% mothers were in the 20-35 years age group, 15.1% were in group >35 years and 9.7% in group <20 years. The mean age of the mothers was 23.80 ± 4.18 years. The prevalence of LBW among the mothers of < 20 years, 20-35 years and >35 years age groups were 10.3%, 5.4% and 11.1% respectively. Age of the mothers was not significantly associated with LBW. Majority (60.4%) of the mothers' did not complete their primary education (up to Class V). The rest of the mothers (39.6%) completed their primary level education. Prevalences of LBW among the mothers of different educational levels were not remarkably differed from each other. More than 92% of the mothers had monthly family income TK 12000.00 or less. Only 7.72% of the mothers had family income more than Tk.12000. The average monthly family income was Taka 6460.53 ± 8424.49. Monthly family income of the mother was not significantly associated with LBW. Forty three percent of the mothers were anaemic. Prevalence of LBW among the anemic mothers was significantly higher than that of non anaemic mothers (P=0.039). Out of 298 mothers, 83.2% mothers had body weigh ≥ 45 Kg and the rest (16.8%) mothers had body weight < 45 Kg. Prevalences of LBW among the mothers of body weight < 45 Kg and ≥ 45 Kg were 18.0% and 4.4% respectively. Prevalence of LBW was statistically associated with the body weight of the mothers (P=0.002). The age, educational status and monthly family income were not statistically associated with the prevalence of LBW (Table 1)

Table-1: Mothers' biosocial factors and low birth weight.

Mother's biosocial factor	Status of birth weight		P-value
	Low birth weight N (%)	Normal birth weight N (%)	
Age			
< 20 years	3 (10.3)	26 (89.7)	0.264**
20-35 years	12 (5.4)	212 (94.6)	
>35 years	5 (11.1)	40 (88.9)	
Educational status			
Below class V	12 (6.67)	168 (93.33)	0.572*
Class V or above	8 (6.78)	110 (93.22)	
Family income			
Up to taka 12000	20 (7.27)	255 (92.73)	0.246**
Taka 12001 +	0 (0.0)	23 (100.0)	
Anaemia			
No anaemia	7 (4.12)	163 (95.88)	0.039*
Anaemia	13 (10.15)	115 (89.85)	
Body weight			
> 45 Kg	9 (18.0)	41 (82.0)	0.002**
≥ 45 Kg	11 (4.43)	237 (95.57)	

*Chi-square test aplied, **Fisher's Exact test

Discussion

One of the nutritional goals of the 1990 World Summit for Children was to reduce the prevalence of LBW to less than 10% by the year 2000 needless to say, LBW remains a formidable challenge for the 21st century for the developing countries like Bangladesh[10]. But the different studies[11-14] in the last few decades indicated that Bangladesh achieved a remarkable progress to overcome this challenge. The prevalence of LBW declined from 50% to 20% as well as the mean birth weight increased from 2.48 to 2.66 kgs in Bangladesh. The present study findings were also consistent with this trend.

Although in this study age of the mothers was not significantly associated with the LBW, but the mothers who were young (<20 years) or old (>35 years) are more likely to birth LBW infants than those aged 20-35 years. It corresponds with the findings of Ahmed et. al.[15] and Eisner et al.[16] This fact reflected both biological immunity in case of mothers below 20 years of age and consequences of aging in elderly women may be due decline hormonal activities, which may occur after the age of 35 years.

Anaemia in pregnancy is a common problem and 50% of the pregnant women in developing countries are suffering from anaemia.[17] The present study findings also agreed with this. In a study in Pakistan, Badshah et al.[18] observed that the anaemic mothers were at risk to delivere LBW babies compared to non anaemic mothers. The results of a study in Ahmedabad, India by Mavalankar et al.[19] were also consistent with Badshah et al.[18] with reference to the effect of maternal anaemia on low birth weight. Lone et al.[20] in a multivariate analysis of their study population showed that the risk of low birth weight babies in the anaemic population was 1.9 times higher (95% CI 1.0-3.4) than non-anaemic mothers. The results of this present study were also consistent with the above mentioned studies, showing that the majority of anaemic mothers gave birth to LBW babies, with a significant difference (p=0.039) from the non anaemic group.

Maternal weight <45 kgs in 3rd trimester of pregnancy is an important risk factor of LBW.[21] The prevalence of low birthweight (LBW) is higher in Asia than elsewhere,[22] because about 60% of women in South Asia and 40% in South-East Asia are underweight (<45 kg).[23] In this present study low birth weight was also significantly associated with maternal pre-delivery body weight ≤45 kg.

LBW is probably the main reason why over 50% of the children in South Asia are underweight.[24] The adverse consequences of LBW continue to be manifested during childhood, and are passed on to the next generation when women, who have been chronically undernourished in their past, become pregnant. LBW and subsequent stunting are caused by undernutrition and other health problems, rather than by racial or ethnic differences. So, Improvements in maternal nutrition and health can increase birthweight and prevent LBW in the developing countries like Bangladesh.

The present study findings suggested anaemia and body weight <45 kgs in 3rd trimester, are predominant bio-social factors associated with LBW. Thus, more care on mother (maternal) nutrition and prevention of anaemia may prevent LBW in Bangladesh.

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