

# Prevalence and Risk Factors of Low Birth Weight Babies Delivered at BSMMU

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## Summary:

**Objectives:** To measure the prevalence and find out the risk factor of delivery of low birth weight babies at Bangabandhu Sheikh Mujib Medical University (BSMMU). **Methods:** A descriptive type of cross sectional study was done in the Department of Obstetric and Gynaecology, BSMMU, Dhaka from July 2006 to December 2006. **Results:** The results showed that the prevalence of Low Birth Weight (LBW) baby was 16%. The results were statistically analyzed by chi-square test. In this study  $p$  value  $<0.05$  was taken as significant and  $p$  value  $>0.05$  was taken as not significant, other  $p$  value  $<0.01$  was taken as very significant and  $p < 0.001$  was taken as highly significant. The study explored out that age of the women ( $p > 0.05$ ), weight of women ( $p < 0.001$ ), occupation of women ( $p < 0.001$ ) status of food intake ( $p < 0.001$ ), malnutrition of women (anaemia) ( $p < 0.001$ ), antenatal check up ( $p < 0.001$ ), parity of mother ( $p < 0.001$ ), association of gestational age ( $p < 0.001$ ) of the pregnant women, maternal disease (Hypertension & Nephritis) ( $p < 0.001$ ) with their mid arm circumference ( $p < 0.001$ ), are highly significant with delivery of low birth

weight baby. Although association of educational status of women and birth weight of babies is not statistically significant ( $p > 0.05$ ), majority of the pregnant women belonged to the middle class family. From this study, it was found that 35.1% were low BMI and the remaining 64.8% were average BMI. In this study, the pregnant women, without having antenatal care (ANC), 56.8% delivered LBW babies which is statistically highly significant ( $p < 0.001$ ). It was observed that women's educational status and socio-economic condition is important to change the attitude towards a better health care and nutritional benefit. **Conclusion:** The prevalence of low birth weight babies of this study was 16%. Although this study will not be able to reduce the number of low birth weight babies but the result could be utilized for providing better care to mother attending BSMMU. Moreover this information will also help the planner of the hospital specially for resource allocation for malnourished pregnant women and other risk factors influencing LBW baby.

**Key words:** Prevalence, Risk factor, Low birth weight baby

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## Introduction:

Low birth weight (LBW) infants have an increased risk of mortality and morbidity. Prevalence of LBW were estimated by WHO in 1979 and updated in 1982. Out of

127 million infants born in the world in 1982, about 20 million (16%) were estimated to weight less than 2500 gm. e.g LBW. Over 90% of these infants were born in the developing countries. Among reported investigations in Asian countries, India bears the largest percentage (30%) of low birth weight babies followed by Pakistan 27%, Indonesia 24%, Malaysia 10.6% and Iran 14%<sup>1</sup>.

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There is no specific data available in this regard in Bangladesh. A UNICEF report published in 1988 states that prevalence of LBW was 31% in Bangladesh, which is the second highest in the world<sup>1</sup>. Therefore it is an urgent need to explore the risk factors for LBW and take measures to reduce perinatal mortality and morbidity. Considering all information's the present study has been designed to assess maternal nutrition, socioeconomic factors, maternal health related factor, maternal habitual factor, obstetric factor causing LBW influencing neonatal outcome.

It has been estimated by WHO that at least 13.7 million infants are born every year at term with LBW,

representing 11% of all new born in developing countries. This rate is approximately six times higher in developing countries than in developed countries<sup>2</sup>.

In many developing countries like Pakistan, India, Malaysia and Thailand where maternal malnutrition, lack of education, ignorance, physical labour during late pregnancy and poor economic status have been identified as the determinants of LBW<sup>1</sup>. As Bangladesh has similar socioeconomic condition, culture and environment it could be assumed that the same risk factors could have an impact on birth weight.

### Methods

A Descriptive type of cross sectional study was done from July 2006 to December 2006 in the Department of obstetrics and gynecology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka. No sampling technique was applied in this study. Both preterm (28 weeks - <37 weeks) and term (37 weeks – 40 weeks) pregnant women came between 28-40 weeks of pregnancy for delivery from July 2006 to December 2006 were recruited for the study purposively. The patients were admitted either before delivery or in labour.

After taking history with attention to particular aspects relevant to this study, clinical examination was done by the investigator. Patients who were admitted few days before labour with medical or obstetrical complications were treated accordingly. Antenatal foetal monitoring

was done clinically. Gestational age was determined by history of last menstrual period and early ultrasonography was done for those women who were unable to give the date of last menstrual period. After delivery, condition and determinants of the baby was measured. Weight of the baby was taken by weighing machine (beambar scale). All the data were entered into the template of SPSS software after necessary screening and both qualitative and quantitative analysis were performed accordingly. Descriptive analysis was done by Frequency Test to get the percentage. Analytic analysis was done by chi-square test for measuring the association in order to answer the research questions.

### Results

During the study period a population of seven hundred patients were studied in the Department of Obstetrics and Gynaecology in BSMMU, Bangladesh.

Among them 591 were normal birth weight baby and 109 were low birth weight baby. The results showed that the prevalence of low birth weight baby is 16%. We get p value from null hypothesis. Birth weight of the babies in relation to maternal age, weight, height, educational status, occupation, status of food intake, parity, gestational period, disease, ANC, BMI, Maternal mid arm circumference were statistically analyzed by chi-square test. In our study significant p value was <0.05 and p value >0.05 was taken as not significant other p value <0.01 very significant and p <0.001 highly significant (Table I & II)

**Table-I**

*Distribution of normal birth weight and LBW babies in both Preterm and term pregnant women.*

| Gestational Period   | Birth weight of the baby |            | Total        | p value |
|----------------------|--------------------------|------------|--------------|---------|
|                      | Normal (%)               | LBW (%)    |              |         |
| 28 weeks – <37 weeks | 105 (15%)                | 25 (3.57%) | 130 (18.57%) | <0.0001 |
| 37 weeks – 40 weeks  | 486 (69.42%)             | 84 (12%)   | 570 (81.42%) |         |
| Total                | 591 (84%)                | 109 (16%)  | 700 (100%)   |         |

**Table-II**

*Association of age of mother and birth weight of newborn*

| Age groups     | Birth weight of the baby |           | Total       | p value |
|----------------|--------------------------|-----------|-------------|---------|
|                | Normal (%)               | LBW (%)   |             |         |
| 18-25 years    | 300 (50.7)               | 66 (60.5) | 366 (52.2%) | >0.05   |
| 26-35 years    | 259 (43.8)               | 37 (33.9) | 296 (42.2%) |         |
| Above 35 years | 32 (5.4)                 | 6 (5.5)   | 38 (5.4%)   |         |
| Total          | 591(100)                 | 109 (100) | 700         |         |

Among the seven hundred study populations total normal birth weight babies were 591 (84%), of them preterm babies were 105 (15%) and term babies were 486 (69.42%). In this study total low birth weight babies were 109 (16%), of them preterm babies were 25 (3.57%) and term babies were 84 (12%).

The lowest age of the mother was 18 years and the highest was 49. 52.2% mothers were between 18-25 years, 42.2% were between 26-35 years group and remaining 5.4% were above 35 years old.

P value of the  $\chi^2$  test between age of mothers and birth weight of baby result was  $>0.05$  at  $df: 2$  [Here  $df$ =degree of freedom] chi-square value was  $p > 0.05$  which is not significant. 60.5 percent LBW were found among the age group of 18-25 years mothers ( $p > 0.05$ ), 33.9% in 26-35 years age group and remaining 5.5% were among mothers age above 35 years. Although the findings is not significant but it can be said that the lower the age of mother the more is the incidence of low birth weight baby.

The study explored out that age of the women ( $p > 0.05$ ), weight of women ( $p < 0.001$ ), occupation of women ( $p < 0.001$ ) status of food intake ( $p < 0.001$ ), malnutrition of women (anaemia) ( $p < 0.001$ ), antenatal check up ( $p < 0.001$ ), parity of mother ( $p < 0.001$ ), association of gestational age ( $p < 0.001$ ) of the pregnant women, maternal disease (Hypertension & Nephritis) ( $p < 0.001$ ) with their mid arm circumference ( $p < 0.001$ ), are highly significant with delivery of low birth weight baby. Although association of educational status of women and birth weight of babies is not statistically significant ( $p > 0.05$ ), majority of the pregnant women belonged to the middle class family. From this study, it was found that 35.1% were low BMI and the remaining 64.8% were average BMI. In this study, the pregnant women, without having antenatal care (ANC), 56.8% delivered LBW babies which is statistically highly significant ( $p < 0.001$ ).

It was observed that the lower the weight, height, educational status, food intake, mid arm circumference and BMI of the mother, the higher is the chance of low birth weight baby. It also observed that the chance of low birth weight baby is higher in day labourer and service holder. Higher significant relationship was found between low birth weight baby and anaemia of the mother. Maternal disease during pregnancy also influences the low birth weight baby. Lack of antenatal care, increase the chance of low birth weight baby.

### Discussion:

Birth weight as a measurement of intrauterine growth has come to be established as useful parameter in the hands of obstetricians, neonatologists and public health workers. It is directly related to gestational age of the foetus. Low birth weight is probably the most important single factor in perinatal death throughout the world especially in the developing countries. The frequency of low birth weight varies throughout the world and even among groups within same community.

Khanam ST<sup>3</sup> found 41% LBW in her study (1978). Begum MR<sup>4</sup> observed 31.2% LBW in her study (1993). Begum MR<sup>4</sup> observed in her study that maternal age makes a difference to birth weight and the teenage produces significantly more low birth weight babies than those between 20-29 years. In this study, most of the variables of the mother are found statistically highly significant ( $p < 0.001$ ) in relation with low birth weight of the babies. The study also shows that lower the weight of the mother, the greater is the chance of LBW baby. The similar findings were found in study conducted by Karim E<sup>5</sup> (1996). In his study a longitudinal anthropometric study of mother infants pairs from Dhaka, Bangladesh (1996) found 20.6% LBW (N=248). Kashefa<sup>6</sup> found 39.1% LBW (2001). In this study, LBW were found 16 percent while normal birth weights were 84 percent. So, our findings show low percentage of LBW babies than any previous study. It was revealed in this study that the occupation of mother, antenatal care (ANC), Body mass index (BMI), status of food intake, malnutrition of the mother (Anaemia) and gestational age of mother were associated with low birth weight of new born baby. In the present study, age of the pregnant women is also related with LBW babies but not statistically significant ( $p > 0.05$ ).

Regardless of age, height and social class of women with mid arm circumference of less than 20 cm always produce LBW infants<sup>7</sup>. So it is clear that maternal anthropometry has a direct effect on foetal growth and gestational age.

In another study conducted by Manik<sup>8</sup> it was found, out of 50 LBW babies, 10 (20%) babies were born to mothers having no antenatal check up, 30 (60%) babies were born to mothers having irregular antenatal visit (<4 visit) and 10 (20%) babies were born to mothers having regular antenatal visit. Bangladesh demographic

and health survey 2000<sup>9</sup> showed that currently 59% urban and only 28% rural birth had received antenatal care from medically trained persons.

In her study Begum MR<sup>4</sup> found that mothers who had not any antenatal check up were the majority (54.9%) and birth weight was found to be lowest among this group i.e (41.5%). Nobrega FJ et al<sup>10</sup> also found similar result in their study.

Kramer MS<sup>11</sup> analyzed various studies and found that parity had a significant effect on birth weight. The babies of nullipara and grand multipara mother were associated with LBW.

Although occupation, food intake and malnutrition are highly significant in this study but there was no previous study done in our country in this field.

Finally, it was found from this study that birth weight is related to many factors. Relation with many variables i.e maternal age, height, weight, social class, nutritional status, antenatal care, maternal diseases, gestational age, parity were significant.

#### **Conclusion:**

Risk factors like antenatal care (ANC), body mass index (BMI), status of food intake, malnutrition (anaemia), gestational age and occupation of the mother has greater influence on birth of newborn. Prevention of LBW should be the principle goal of every obstetric team but ultimate goal is the removal of the pathology leading to LBW. Good social, medical and obstetric care can prevent LBW, neonatal and infant mortality and

morbidity and can make a healthy nation with full mental and physical development.

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