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# Status of Knowledge on the Risk Factors of Low Birth Weight among the Women of Reproductive Age in Rural Bangladesh

**ABM Alauddin Chowdhury[1*], Keka Rani Halder[1], Md. Imdadul Haque[1,2], Faisal Muhammad[1], Md. Mahamudul Hasan[3] and Moniruddin Chowdhury[4]**

[1]*Department of Public Health, Daffodil International University, Dhanmondi, Dhaka, Bangladesh*

[2]*Health, Nutrition and Population Program, BRAC, Mirpur, Dhaka, Bangladesh*

[3]*Institute of Leather Engineering and Technology, University of Dhaka, Dhaka, Bangladesh*

[4]*Department of Medicine, Centre for Research on Non-Communicable Diseases, Faculty of Medicine and Health Sciences, Universiti Tunku Abdul Rahman (UTAR), Sungai Long Campus, Jalan Sungai Long, Bandar Sungai Long, 43000 Kajang, Selangor D.E, Malaysia*

[*]**Corresponding author:** ABM Alauddin Chowdhury, Faculty of Allied Health Sciences, Department of Public Health, Daffodil International University, Dhanmondi, Dhaka, Bangladesh, Tel: +8801921200890; E-mail: dralauddin@daffodilvarsity.edu.bd

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## Abstract

**Background:** Low birth weight (LBW) is one of the major public health problems in developing countries, like Bangladesh. Maternal knowledge is directly involved with the status of birth of her baby. Very little is known about the knowledge on the risk factors of LBW babies in rural life context of Bangladesh.

**Methods:** A cross sectional study was conducted among the selected reproductive age women of the village Vagna and Shubadda in Kearanigonj sub-district under Dhaka District with a view to assess the level of knowledge about risk factors of low birth weight. A total of 300 reproductive aged women were interviewed purposively using semi-structured questionnaire.

**Results:** The study reported around two-third (64.0%) of the respondents had mentioned that they had perceived knowledge about the low birth weight. Among all the maternal risk factors, anemia was identified by two-fifth of participants (40.0%) followed by malnutrition (18.6%). The study documented only a little less than one fifth of the respondents had knowledge that lack of antenatal care in pregnancy can cause of LBW newborn. Bivariate analysis found statistically significant association between knowledge on low birth weight and respondent's age (P=0.001), education (p=0.001), occupation (p<0.001) and their guardian's education (P=0.001) and occupation (P<0.05). However, education is the most important determinant to have the knowledge about the risk factors and prevention measure of LBW.

**Conclusion:** The study findings observed that women lack the knowledge on risk factors of low birth weight in terms of mothers' risk factors, complication and prevention of low birth weight. The study focused more attention to some affecting factors of the low birth weight with the mother's education, occupation, health status and antenatal care service. The LBW scenario may be reduced in expected rate if health policy makers consider the urgent intervention raising the awareness about the risk factors of LBW, and also providing much reproductive education to the problem of low birth weight.

**Keywords:** Low birth weight; Malnutrition; Risk factors; Anemia; Reproductive age

## Introduction

Low birth weight (LBW) is one of the major health problems of children both in developed and developing countries. It is one of the most serious challenges in maternal and child health [1]. Low birth weight is closely associated with fetal and neonatal mortality and morbidity, inhibited growth and cognitive development, and chronic diseases later in life. LBW is a leading cause of prenatal and neonatal deaths, and as such, it remains a worldwide issue and one of the most important public health problems [2]. According to the World Health Organization (WHO) definition, infants with birth weights of less than 2,500 gm are classified as low birth weight (LBW) [3]. In general, risk factors in the mother that may contribute to low birth weight include young ages, multiple pregnancies, previous LBW infants, poor nutrition, heart disease or hypertension, drug addiction, alcohol abuse, and insufficient prenatal care. Environmental risk factors include smoking, lead exposure, and other types of air pollutions. Majority of pregnant women in developing countries, where rate of LBW is high, are heavily exposed to indoor air pollution, increased relative risk translates into substantial population attributable risk of 21% of LBW [4]. Low birth weight infants have 3-4 times greater risk of dying from diarrhea and acute respiratory infection as compare to normal birth weight babies [5]. For many women in the developing world however, economic, social and cultural factors make it difficult for them to obtain the necessary food and health care, which are closely interrelated and these the risk factors are low socioeconomic conditions low education status maternal age, short birth interval, maternal weight and height, multiparty and maternal medical conditions like hypertension, anemia and diabetes [6]. However, in developing countries like Bangladesh maternal under nutrition is a major determinant of LBW [7]. As far literature reviewed, reproductive

aged women in the developing country like Bangladesh do not have adequate knowledge about the risk factors that contribute to be low birth weight babies. The purpose of the study is to assess the level of knowledge on risk factors and prevention of LBW among the women of reproductive age.

## Materials and Method

### Study design and setting

This cross-sectional study was conducted during the period from May 2014 to October 2014 using a semi structure questionnaire. The study was conducted among reproductive female residents aged of 15 years to 49 years in the village of Vagna and Shubadda of Keranigonj sub-district under Dhaka district. The study included the women in reproductive age from all sort socio-economic background and considered both pregnant and non-pregnant women in the study period to gather the information about the knowledge and perception related to LBW from different perspectives.

### Study samples

Non probability Purposive sampling technique was adopted to collect data from the rural setting of Dhaka who were available in study period and fulfilled selection criteria. Thus 300 samples were gathered within the time frame of work. The required sample size of this study was calculated by using the following formula:

$n=Z^2pq/d^2$

Where,

n=required sample size.

p=prevalence=30.5%=0.30

q=1-p=1-0.30=0.70

Z=1.96 at 95% level of confidence

d=error limit (5%)=0.05

So, $n=[(1.96)2 \times 0.30 \times 0.70]/(0.05)^2$

n=322 The calculated size of the sample was 322. But due to limited time period, the sample was collected from pre-defined population was 300.

### Research instrument

A semi structure questionnaire was developed to collect the data. The questionnaire was pretested and necessary modification was done and finalized the questionnaire before collection of data. The questionnaire was developed by using variables as per objective. The questionnaire was two sectioned. The first section included socio demographic condition of the respondent and second section considered knowledge related question about the idea of low birth weight, cause of low birth weight, it's complication and about the preventive measures of low birth weight.

### Data processing and analysis

Univariate and bivariate analysis were done; and showed the association between usual individual status of knowledge and other demographic variables among the rural women which was performed by Pearson Chi-square test using statistical software SPSS 16.0 version.

### Ethical issues

To comply the ethical issues informed written consent was taken and also content and objective of the study was clearly describe before starting the interview. The study approved by the Department of Public Health, Faculty of Allied Health Sciences in Daffodil International University. The interview was conducted individually with face-to-face questionnaire maintaining strict confidentiality of the information.

However, no personal questions were asked other than income. Each and every given information had been kept secret and during data analysis all responses were coded. The respondents were given absolute freedom of withdrawing themselves at any time they wanted to. Every endeavor was made to limit harmful effect of the study either by the family or by the other individuals.

## Results

### Socio-demographic factors of the respondents

Table 1 shows the distribution of the respondents by age group, the mean age of the respondent was 28.6 years ± 9.5. It was found that 18-25 was the highest age group which is about 39.3% and lowest among the age group was 15-17 years which is about 8.7% Among the respondents, majority of the had secondary education (46.3%). And only one-fifth (21.3%) of the respondents had primary education level, and only a few proportion (2.7%) had graduate education level.

More than two-third (37.6%) of the respondents had secondary education and the rest of the (29.7%) belonged to primary education level and most importantly 46 (15.3%) were illiterate. Majority of the respondents were housewives which was 72.0%. 14.0% of the respondents were students and only few number were day labor, where about half (47.3%) of the respondents' guardian depended on farming and nearly one-fifth of the respondents' guardian occupation was business (Table 1).

| Factors | Frequency (n=300) | Percent |
|---|---|---|
| **Age** | | |
| 15-17 | 26 | 8.7 |
| 18-25 | 118 | 39.3 |
| 26-30 | 46 | 15.3 |
| 31-40 | 62 | 20.7 |
| 41-50 | 48 | 16 |
| **Respondents educational** | | |
| Illiterate | 40 | 13.3 |
| primary | 64 | 21.3 |
| Secondary | 139 | 46.3 |
| Higher secondary | 49 | 16.3 |
| Graduate | 8 | 2.7 |
| **Respondents guardian education** | | |
| Illiterate | 46 | 15.3 |

| | | |
|---|---|---|
| primary | 89 | 29.7 |
| Secondary | 113 | 37.6 |
| Higher secondary | 39 | 13 |
| Graduate | 13 | 4.3 |
| **Respondents occupation** | | |
| Housewife | 216 | 72 |
| Service | 14 | 4.7 |
| Student | 42 | 14 |
| Day labor | 2 | 0.6 |
| Others | 26 | 8.7 |
| **Respondents guardian occupation** | | |
| Service | 45 | 15 |
| Day labor | 39 | 13 |
| Business | 56 | 18.7 |
| Farmers | 142 | 47/3 |
| Others | 18 | 6 |
| Total | 300 | 100 |

**Table 1:** Socio-demographic characteristics of the respondents.

## Knowledge about the maternal risk factors contribute to low birth weight

Table 2 shows, 64% respondents had familiarity with low birth weight whereas 36% had no knowledge about low birth weight. Nearly one-fifth (18.6%) of the respondents knew malnutrition while 40% chose anemia as maternal risk factors that contribute.

Among the rest 16.3% and 11.6% responded smoking and hypertension as maternal risk factors contribute to low birth weight. However, nearly three-fourth (58.0%) of the respondents did not know about the maternal risk factors that contribute to LBW.

More than two-third (69.6%) of the respondents did not have knowledge for the question to maternal disease that contribute to LBW, while 13.4% responses went with tuberculosis, the rest 7.0% distribution each chose diabetes and heart disease.

## Knowledge about the complication for low birth weight

Table 2 reveals that more than half (54.6%) responses went with suffer from malnutrition while 38.0% chose growth retardation.

The rest 37.0% and 26.0% respondents responded with baby might die and delay mental growth while 16.6% and 15.6% respectively mentioned frequent attack of diarrhea and frequent attack of pneumonias complication for low birth weight.

## Knowledge about cause and prevention of low birth weight

Table 3 reveals that 51.3% and 41.6% responses went with inadequate food intake and inadequate rest accordingly while 27.6% and 10.9% chose repeated child birth and adolescent pregnancy.

The rest of 30.3% mentioned about heavy work during pregnancy and 17.3% about not receiving antenatal care accordingly as right answer for knowledge about the causes of low birth weight. However, more than two-third (37.0%) did not know about the cause of LBW.

According to Table 3, 49.6% responses went with taking adequate food while 45.0% chose taking adequate rest.

The rest 40.3% and 37.6% respondents responded with avoid adolescent marriage/pregnancy and avoid repeated pregnancy, and 32.6% preferred abstaining from heavy work while 20.6% selected receiving regular ANC would be best option.

| Variables | Frequency | Percent |
|---|---|---|
| **Knowledge on low birth weight** | | |
| Yes | 192 | 64.0 |
| No | 108 | 36.0 |
| Total | 300 | 100 |
| **Knowledge about the maternal risk factors contribute to low birth weight*** | | |
| Anemia | 120 | 40.0 |
| Not gain weight regularly for hypertension | 35 | 11.6 |
| Smoking | 49 | 16.3 |
| Malnutrition | 56 | 18.6 |
| Not known | 174 | 58.0 |
| **Knowledge about maternal diseases contribute to low birth weight** | | |
| Diabetes. | 22 | 7.0 |
| Heart disease | 22 | 7.0 |
| Tuberculosis | 42 | 13.4 |
| Lung disease | 5 | 1.6 |
| Not known | 209 | 69.6 |
| **Knowledge about the complication for low birth weight*** | | |
| Baby may die | 111 | 37.0 |
| Suffer from malnutrition | 164 | 54.6 |
| Growth retardation | 114 | 38.0 |
| Delay mental growth | 78 | 26.0 |
| Frequent attack of diarrhea | 50 | 16.6 |
| Frequent attack of pneumonia | 47 | 15.6 |
| Mal adaptation | 36 | 12.0 |
| Not known | 108 | 36.0 |
| *Multiple responses considered | | |

**Table 2:** Distribution of the respondents by knowledge on risk factors of LBW.

| Variables | Frequency | Percent |
|---|---|---|
| **Knowledge about the causes of low birth weight*** | | |
| Inadequate food intake | 154 | 51.3 |
| Inadequate rest | 125 | 41.6 |
| Adolescent pregnancy | 83 | 10.9 |
| Repeated child birth | 96 | 27.6 |
| Not receiving antenatal care | 52 | 17.3 |
| Short stature | 13 | 4.3 |
| Heavy work during pregnancy | 91 | 30.3 |
| Mental stress | 34 | 11.3 |
| Not known | 111 | 37.0 |
| **Knowledge about prevention of low birth weight*** | | |
| Taking adequate food | 149 | 49.6 |
| Avoid adolescent marriage/pregnancy | 121 | 40.3 |
| Avoid repeated pregnancy | 113 | 37.6 |
| Taking adequate rest | 135 | 45.0 |
| Receiving regular ANC | 62 | 20.6 |
| Abstaining from heavy work | 98 | 32.6 |
| Avoid mental stress | 34 | 11.3 |
| Avoid smoking | 36 | 12.0 |
| Not known | 109 | 36.3 |
| * Multiple responses considered | | |

**Table 3:** Distribution of the respondents by knowledge on cause and prevention of LBW.

## Association between status of respondents and low birth weight

In this study, the most important findings directed this study further was women who were young in age were less likely to have knowledge on LBW and there is highly significant association between knowledge on low birth weight and age of the respondents ($p<0.001$).

The knowledge on low birth weight was found to be high among the respondents who were educated where less knowledge was found among the illiterate respondent. This indicated that knowledge on low birth weight significantly associated with level of education ($p=0.001$).

The level of knowledge on low birth weight was also found to be higher among the respondent's guardian who were educationally higher and the difference was statistically significant ($p=0.001$) Hence, there is strong evidence to conclude that the relationship between the two variables ("guardian's education level" and "knowledge on low birth weight") is significant. The knowledge on antenatal care service during pregnancy was found to be high among the respondents who were educated, whereas low in the illiterate ($p=0.001$) at 5% level of significance.

The respondents engaged in gainful job such as service holder had better knowledge of low birth weight than the housewife that is no knowledge on low birth weight was found to be high among the day labors and the difference was statistically significant($p<0.001$).

A statistically significant association was even found between guardians' occupation and knowledge on low birth weight.

Data analysis revealed that the respondents guardian engaged in gainful job such as service holder had better knowledge of low birth weight than the business and farmer and, day laborer ($p<0.001$) (Table 4).

| Status of respondents | Status of low birth weight | Total number with Percentage {f (%)} | | P Value |
|---|---|---|---|---|
| | | Yes | No | |
| Age of the respondent | Knowledge on low birth weight | 192 (64.0) | 108 (36.0) | 0.001 |
| Education level (Illiterate and Educated) | Knowledge on low birth weight | 192 (64.0) | 108 (36.0) | 0.001 |
| Education level (Illiterate and Educated) | knowledge on antenatal care service during pregnancy | 194 (64.7) | 106 (35.3) | 0.001 |
| Guardian's education level (Illiterate and Educated) | knowledge on low birth weight | 192 (64.0) | 108 (36.0) | 0.001 |
| Guardian's education level (Illiterate and Educated) | knowledge on antenatal care service during pregnancy | 194 (64.7) | 106 (35.3) | 0.001 |
| Occupation of the respondent (Housewife, service, student, day labor) | Knowledge on low birth weight | 192 (64.0) | 108 (36.0) | <0.001 |
| Occupation of the guardian (Service, day labor, business, farmer) | Knowledge on low birth weight | 192 (64.0) | 108 (36.0) | 0.03 |

**Table 4:** Association between status of respondents and status of low birth weight.

## Discussion

Low Birth Weight (LBW) is very common in Bangladesh and its neighboring south Asian countries. Still there is lack of awareness and required knowledge regarding the risk factors and prevention of low birth weight. The cross-sectional study was conducted among the reproductive aged women with the aim of assessing the level of knowledge about the risk factors of low birth weight in the rural settings. This study revealed that around two-third (64.0%) of the respondents had mentioned that they had perceived knowledge about the low birth weight whereas 36% do not have any knowledge about low birth weight. The latest regional estimates of LBW range from 25% in South Asia, where more than one-half of the world's LBW infants are born [8]. However about one-third of the women found no ideas about the low birth weight of their babies.

This study explored that knowledge about the maternal risk factors that contributed to LBW babies, maternal anemia of them was identified by highest proportion of participants (40.0%). The finding is consistent with the study conducted in Pakistan [9]. Anemia, which is mostly due to iron deficiency in many parts of world, is a problem in the same places where LBW is a concern [10,11]. Similarly, Poor nutrition is a known cause of LBW, especially in developing countries. More than a decade ago it was concluded that maternal nutritional factors both before and during pregnancy account for >50% of cases of LBW in many developing countries. However, less than one-fifth (18.6%) of the study participants knew only that maternal malnutrition is the contributing risk factors of low birth weight babies.

The study also observed that only 11.6% of the respondent had knowledge about hypertension as maternal risk factors contribute to low birth weight. In a study carried out in Iran indicated that maternal history of chronic diseases including hypertension increased the risk of giving birth to a LBW infant by 3.70 fold [12]. However, nearly three-fourth (58.0%) of the respondents did not know any maternal risk factors that contribute to LBW.

Status of age of the reproductive women is one of the determinants to have the knowledge regarding low birth weight of their babies. The mean age of the respondent was 28.6 years ± 9.5. About three-fifth (39.3%.) of the participants was found as highest between 18-25 age group. The present study revealed women who were young in age were less likely to have knowledge on LBW and there is highly significant association between knowledge on low birth weight and age of the respondents ($p<0.001$) This is consistent with another study conducted in Bangladesh, which stated that the incidence of low birth weight is highest among the mother of less than 20 years and more than 35 years of age [13].

The study also reported education status was utmost important background characteristics for the respondent to know the risk factors regarding low birth weight babies. It was found that more than three-fourth (46.3%) of the respondents completed secondary level of education and 13.3% were illiterate and one-fifth (21.3%) had primary level of education, Nearly two-fifth (37.6%) respondent's guardian completed secondary level of education. Knowledge on low birth weight was found to be high among the respondents who were higher educated, where less knowledge was found among the illiterate respondents. This indicated that knowledge on low birth weight significantly associated with level of education ($p=0.001$). This is in line with study done in Nepal and Lahore showed that maternal education of the family were found to be significantly associated with birth weight of the new born [14,15]. Likewise, In this study, the level of knowledge on low birth weight was found high among the respondent's guardian as well who were in educationally higher ($p=0.001$). Some other studies also documented that most of the LBW (50%) came from the mother without education [16,17].

The study identified another predictor of having knowledge on LBW was occupation of the respondents. Majority of the study participants (72.0%) were housewives. Findings of the study reported that the respondents engaged in gainful job such as service holder had better knowledge of low birth weight than the house wife and less knowledge on low birth weight was documented was among the day labor and the difference was statistically significant ($p<0.001$). A statistically significant association was also found between guardian occupation and Knowledge on low birth weight. The respondents guardian engaged in gainful job such as service holder had a better knowledge of low birth weight than the businessman and farmer ($p<0.001$). Unemployment either before pregnancy or during pregnancy significantly increased the risk of LBW baby [18]. In contrast with the present finding, a study in Tanzania explored that there was no statistically significant difference among mothers' occupations regarding LBW of their new-born [19].

This documented nearly one-fifth (17.3%) of respondent had the knowledge that lack of receiving antenatal care in pregnancy can cause LBW of their children. The knowledge on antenatal care service during pregnancy was found to be high among the respondents who were educated where as low in the illiterate and the association was statistically significant ($p=0.001$) at 5% level of significance. Evidently, low socio-economic status, birth interval, underweight are associated with low birth weight [20]. Further, majority of mothers had low level of knowledge about normal birth weight [21].

Regarding Knowledge about prevention on low birth weight, majority of the respondents in this study (49.6%) determined the adequate food intake as a preventive measure against low birth weight, while 45.0% chose taking adequate rest as best option. This in agreement with the study in Gambia [22,23]. In the other study it was concluded that balanced protein-energy supplements during pregnancy can reduce the incidence of small-for-gestational-age infants by almost one-third [24].

## Conclusion

The study findings revealed that women lack the knowledge on risk factors of low birth weight in terms of meaning, causes, complication and prevention of low birth weight. Still more than one-third of the study people are no longer informed about the low birth weight of the new born. The study also focused giving more attention to the factors affecting the low birth weight i.e. mothers education, occupation, physical labor, health status and antenatal care service. Assessing the extents of maternal knowledge regarding risk factors of low birth weight it is worthy to provide information about prevention of low birth weight. The study last of by raising the awareness about the risk factors, and also by providing much reproductive education this problem of low birth weight among the women can be eliminated in expected rate.

## Recommendations

The study result identified that reproductive age of women had less adequate knowledge about low birth weight. Low birth weight is a serious public health problem in Bangladesh and it is important to take initiative to reduce low birth weight of the newborns. Knowledge of

reproductive age women is significantly associated with low birth weight. The following suggestions can be given to strengthen knowledge of reproductive age women to reduce the prevalence of low birth weight.

1. Creating awareness among reproductive aged women about the cause and effect of low birth weight and benefit of normal birth weight should be prioritized.

2. Overall education need to initiate and specifically the still under privileged women education should be expanded.

3. In school curriculum, adding reproductive education for adolescent may be useful.

4. A broader context of study is required to unveil the real picture about low birth weight and it's after effect.

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