Original Article

Risk Factors of Low Birth Weight Baby

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Abstract:

Low birth weight (LBW, <2500g) is an important indicator of reproductive health and general health status of population. LBW is considered as the single most important predictor of infant mortality, especially of deaths within the first month of life. This is a prospective case control study carried out in the Department of Obstetrics & Gynaecolgy, Faridpur Medical College Hospital, Faridpur, during the period of August 2015 to July 2016 to find out the risk factors associated with low birth weight babies and to know modifiable risk factors. Total 300 samples were included in this study. All pregnant women who delivered a LBW baby during one year of study period were selected. One hundred mothers who delivered babies having birth weight <2500 gram were selected as cases and 200 mothers who delivered babies having birth weight 2500 gram and above were taken as control. This study shows most frequent maternal age group was 18-25 years in case group and 26-35 years in control group. Fifty four percent were female and 46% were male babies in case group where as 39% were female and 61% were male babies in control group. In LBW babies mothers, having regular antenatal care were only 23.8%. Maternal factors including maternal height, maternal weight, pre-eclampsia, PROM, chronic hypertension & PPH, heart disease and DM were associated with low birth weight. Fifty six percent mothers had average food intake and 34% had poor food intake in mothers of low birth weight baby. The status of antenatal check-up and poor socio economic condition also strongly influence birth weight of baby. There is a need for national prospective research project to study the low birth weight problem at the national level.

Key words: Low Birth Weight Baby, Risk Factors.

Introduction:

Maternal and child mortality and morbidity is unacceptably high in our country. Low birth weight is one of the most important risk factor for neonatal & childhood mortality and morbidity. It has got negative impact in future development also[1].

Low birth weight (LBW) has been defined by the World Health Organization (WHO) as birth weight of less than 2500 grams irrespective of the gestational age[1,2]. More than 20 million infants worldwide, representing 15.5 percent of all births are born with low birth-weight (LBW), 95.6 percent of them are in the developing countries[3]. Half of all low birth-weight babies are born in South-central Asia, where more than a quarter, (30%) in Bangladesh and in India, 21% in Nepal and 19% in Pakistan[4].

The causes of LBW babies in women are multifactorial including poor nutritional status & low socio-economic condition of the mother, short maternal stature, chronic maternal disease, multiple gestation, fetal genetic & chromosomal anomalies, low pregnancy body mass index (BMI), primi parity, high level of alcohol consumption and smoking (passive smoking)[5]. In developing countries like Bangladesh most common cause is under nutrition. Poor nutritional status of the mother at conception & inadequate energy & protein intake during pregnancy can result intrauterine growth retardation (IUGR)[6].

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LBW has been associated with higher probabilities of infection, malnutrition, handicapped conditions, mental deficiencies and problems related to behavior and learning during childhood[7,8]. Children who survive LBW have a higher incidence of diseases, retardation in cognitive development and undernourishment. There is also an evidence that LBW or its determinant factors are associated with a predisposition to higher rates of diabetes, cardiac diseases and other future chronic health problems[9-11]. In our country, no such intensive research data have been found.

This study is one such step to find out the risk factors among genetic, constitutional, socio-economic, demographic & health related condition contributing to the development of LBW babies in Bangladesh. So from this study we can plan for preventive measures or intervention program to address the problem.

Material and Methods:

This is a prospective case control study carried out in the Department of Obstetrics & Gynaecolgy, Faridpur Medical College Hospital, Faridpur, during the period of August 2015 to July 2016. Total 300 samples were included in this study. All women of pregnancy who delivered a LBW baby during 1 year of study period were selected. One hundred mothers having babies whose birth weight <2500 gram were selected as cases and 200 mothers who delivered babies having birth weight 2500 gram and above were taken as control. All mothers were informed about the prospect and procedure of the study and informed written consent were taken. Analysis of data was done by using software package SPSS program version of 20. Statistical test like chi- square test was done to analyze the data. P value <0.05 was defined as statistically significant.

Results:

Table I: Demographic characteristics

Age of mother	Cases		Control		P value
	No	%	No	%	
18-25 yrs	66	66	80	40	
26-35 yrs	30	30	108	54	0.011
>35 yrs	4	4	12	6	
Family income					
<2000 TK	32	32	10	5	
2001-5000 TK	54	54	92	46	0.001
5001-10000 TK	8	8	64	32	
>10000 TK	6	6	34	17	

A summary of the total participants with age-group distribution was shown in the table I. Among the participants (n=300), 45.50% were male and 54.50% were female. 31-40 years aged female were the highest participants (81 out of 300).

Table II: Sex of the new born and its relation to birth weight

Sex of the new born	Cases		Control		P value
	No	%	No	%	
Female	54	54	78	39	
Male	46	46	122	61	0.081

Table III: Influence of weight and height of the mother on birth weight of newborn

	Cases		Control		P value
	No	%	No	%	
Weight					
<45 kg	42	42	20	10	
45-50 kg	22	22	32	16	
51-55 kg	16	16	48	24	0.001
56-60 kg	14	14	52	26	
>60 kg	6	6	48	24	
Height					
<145 cm	24	24	16	8	
145-150 cm	46	46	68	34	0.001
>150 cm	30	30	116	58	

Table IV: Nutritional status & its relation to birth weight

Nutritional status of the mother	Cases		Control		P value
	No	%	No	%	
Poor	34	34	22	11	
Average	56	56	130	65	0.001
Good	10	10	48	24	

Table V: Parity of the mother & its relation to birth weight

Parity of mother	Cases		Control		P value
	No	%	No	%	
Para 1	52	52	28	14	
Para 2-3	40	40	126	63	0.001
Para 4 & above	8	8	46	23	

Table VI: Maternal diseases & its relation on birth weight

Maternal disease	Cases		Control		P value
	No	%	No	%	
Pre-eclampsia	18	18	16	8	
Ch. Hypertension & PPH	14	14	12	6	0.1453
Heart disease	2	2	4	2	
Diabetes mellitus	4	4	12	6	
Others & NAD	62	62	156	78	

Discussion:

Birth weight is a recognized indicator of survival and future prognosis of the new born. Low birth weight remains a major public health problem in many communities. It is a major and probably the most important contributory factor to infant and perinatal mortality as well as different types of morbidity in childhood. The mean birth weight of the new born babies in certain geographical area also reflects the level of socio-economic development. The frequency of low birth weight varies throughout the world and even among groups within same community[12].

Recent estimates by UNICEF, shows that the LBW rates in developed countries are between 4-7% while in developing countries it has been shown to be as high as 25% of all birth[13]. Begum observed 31.2% LBW in her study conducted in Dhaka Medical College Hospital among 1000 mothers. She found that babies born to the youngest mothers (14-19 years) were significantly lighter than those born to older mothers[14]. Akhter et al also found significant relationship between birth weight and age of the mother[15].

In this study 66% of mother ageing 18-25 years gave birth of low birth weight babies in case group and 54% mother of 26-35 years gave birth of normal weight babies in control group. So it can be said that youngest groups are at greatest risk of bearing a low birth weight baby.

In this study, mother of case group that is who gave birth of a LBW baby, 42% of them have weight less than 45 kg. Whereas in the control group 50% are within 51-60 kg. The differences between the two groups were statistically significant. This result is consistent with Sultana N et al who found that increase in maternal weight associated with decreased incidence of LBW babies[16]. Begum found that maternal height have a positive effect on birth weight. Birth weight increases with increment of maternal height.

In this study 70% mother of the case group were <145 to 150 cm. Where as 58% mother of control group having height more than 150 cm. So it can be concluded that maternal anthropometry has a direct effect on fetal growth.

In this study women of lower socio-economic condition having lower family income were more in the case group. Women of middle and upper middle class were more in control group and gave birth of a baby weighing 2.5 kg or more. Das and Begum also found that low socio-economic condition is a determinant of LBW babies.

Kramer MS et al analyze various studies and found that parity had a significant effect on birth weight. Nullipara & extremely high parity was associated with low birth weight baby[17]. In this study prim parity was associated with 52% of LBW babies, whereas para-4 and above gave birth of a LBW babies in 8% cases. The result is mostly consistent with other studies[4,5,6].

Maternal hypertension either chronic hypertension, pregnancy induced hypertension or pre-eclampsia are known to be associated with a reduction of birth weight. Earlier onset hypertension and association of proteinuria are indicator of poor pregnancy outcome. Higher the blood pressure, lighter the baby[18].

Conclusion:

The current study was undertaken to find out the risk factors of low birth weight baby, specially the modifiable risk factors. The findings will serve as references for future intervention and further in-depth studies among the pregnant women in relation to low birth weight. Maternal age and gestational age both greatly influence the birth weight of newborn. Poor socio-economic condition comprising as significant risk factor by its indirect effect.

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