

Low Birth Weight Babies Born to Mothers Admitted to Gynecology and Obstetrics Department of Dhaka Medical College Hospital

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Abstract

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Background: World health organization estimates that 25 million low birth weight (LBW) babies are born annually worldwide and 95% occur in developing countries. Low birth weight is a major public health problem of Bangladesh. So an attempt was made to study the incidence of low birth weight (<2.5kg) and also the associated risk factors of low birth weight among the new born babies born to Dhaka Medical College Hospital.

Aims: To determine the Prevalence of low weight among the babies born and to determine the relationship of low birth weight with maternal factor like maternal weight, height, gestational period, antenatal checkup, heavy physical work during pregnancy, hypertension, age of the mother and parity, in Obs. & Gynae Department, DMCH.

Method: This descriptive cross sectional study was done in Gynecology and Obstetrics Department of Dhaka Medical College Hospital. Five hundred (500) samples were selected for the study. The study was done from 1st January 2006 to 31 December 2006. Data processing and questionnaire are processed manually using scientific calculator and by computer using SPSS programmers version-16. All abortions, still born, gross congenital abnormalities were excluded from this study. The cut off point used for low birth weight is 2.5 kg.

Results: A total of 500 women were interviewed. The incidence of low birth were found 21.6%. Younger than 20 yrs (31.25%) and more than 40 years (35.71%) mother delivered more low birth weight babies. The primigravida and multigravida (>4 parity) showed more low birth weight babies. Women from low socioeconomic condition produced significantly larger number of low birth weight babies as well as short stature. Low maternal height, less educated, illiterate, manual worker mother delivered more low birth weight babies. Preterm birth comprises larger number of low birth weight (LBW 35%). Low height of new born babies also associated with low birth weight. Female babies were higher than the male babies. Preterm babies were lighter (LBW) than the full term babies.

Conclusion: The study finds out the incidence of low birth babies, the figure close to the developing countries. The study revealed that maternal age, gestational age, parity, socioeconomic status, maternal weight and disease condition have strong relations with birth weight of babies. Occupation and antenatal check up also affects birth weight of babies.

Key Words:

LBW, Low Socioeconomic Status, Preterm.

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Introduction

Birth weight is an important health indicator to create a healthy nation. Low birth weight is one of the most serious challenges in maternal and child health born in developed countries. Health of the baby depends on the extent of growth in the mother's womb and depends on the environment both intrauterine and extra uterine.

Human reproduction is a complex social, biochemical and physical process that is not as successful as once thought. There are several factors in mother influencing fetus or neonate.¹ The risk factors related to neonatal nutritional

status should be assessed in mother to reduce potential neonatal risks. The factors vary from one region to another and from one country to another, depending on the socio-economic condition and environment.

LBW is defined in the 29th World Health Assembly (WHA) in 1976 as a birth weight less than 2500gm. There are in fact only two ways in which birth weight can be influenced. One is the length of the time the foetus remains in utero and the other is the foetal growth rate. The Curtailment of either will lead to some form of pre-maturity, the former to pre-term birth and later to faetal growth retardation. Often the two conditions coexist in the developing world.²

Pre-maturity is defined as gestational age of less than 37 completed weeks. Small for gestational age (SGA)- the term is to designate the newborns with birth weight less than 10th percentile or less than 2 standard deviation for the gestational age. A foetus of SGA may be constitutionally small or due to pathologic (foetal growth restriction).

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 newborns in developing countries. This rate is approximately six times higher than in developed countries.³ Another Study shows 20.6 million LBW babies were born in 1979, most of them in developing countries.⁴ One third of the Indian babies are of LBW and this is attributed to maternal under-nutrition.⁵ It has been seen seven million LBW babies are born in India annually.⁶

There is lack of adequate information regarding the risk factors of low birth in Bangladesh. In many developing countries like Pakistan, Malaysia and Thailand maternal nutrition, lack of education, ignorance, physical labour during late pregnancy and poor economic status have been identified as the determinants of LBW.⁷ As Bangladesh has similar socio-economic condition, culture and end environment it could be assumed that the same risk factors could have an impact on birth weight. Therefore it is an urgent need to explore the risk factors for LBW to reduce perinatal morbidity and mortality.

Methods:

This descriptive cross sectional study was done in Gynecology and Obstetrics Department of Dhaka Medical College Hospital. Five hundred (500) samples were selected for the study. The study was done from 1st January 2006 to 31 December 2006. Data processing and questionnaire are processed manually using scientific calculator and by computer using SPSS programmers version-16. All abortions, still born, gross congenital abnormalities were excluded from this study. The cut off point used for low birth weight is 2.5 kg.

Results

Table-1

Distribution of the mothers according to age (yrs) (n=500)

Maternal age (years)	No. of patients	Percentage (%)
<20	48	9.6
20-26	340	68.0
30-39	99	19.8
>40	13	2.6
Total	500	100.0

Table shows the distribution of the mother according to age. Mothers of 20-29 age group were maximum (68.0%).

Table-II

Distribution of Mothers according to parity (n=500)

Parity	No. of patients	Percentage (%)
0	234	46.8
1	135	27.0
2	74	14.8
3	37	7.4
4 & above	20	4.0
Total	500	100.0

Table-II shows the distribution of mother according to parity. Para – ‘0’ shows the Maximum (46.8 and Para 4 and above group show the minimum (4%)

Table-III

Distribution of Newborns by birth weight (in kg) according to antenatal check up (n=500).

Category of Weight	No. of babies	Percentage (%)	
Low birth weight (LBW)	1500gm and less	14	2.8
	1501gm to 2499 gm	94	18.8
Normal weight	2500gm and above	392	78.4
	Total	500	100

Table-3 show the distribution of neonates according to birth weight. 1500 gm to fewer groups (Very low birth weight group) shows minimum (2.8%) The Percentage of low birth weight (1501 gm to 2499gm) is 18.8%. So total low birth weight is 21.6%.

Table-IV

Distribution of birth weight (in kg) of newborn according to sex (n=500)

Sex	No of patients	Normal weight (n=392)	LBW (n=392)	P value
Male	279(55.80%)	229(82.08%)	50(17.92%)	0.231ns
Female	221(44.20%)	163(73.76%)	26(26.24%)	
Total	500	392	108	

Chi-square test, ns= not significant

Table-4 Shows relationship of newborn birth weight with sex. Male newborn were more 279 (55.80%) than female newborns are 221 (44.20%) table shows that female newborn are lighter in weight that means LBW among female newborn (26.24%) than that of male (17.92%)

Table-V

Distribution of birth weight (in kg) according to antenatal check up (n=500).

Antenatal check up	Total	Normal weight (n=392)	LBW (n=392)	P value
Yes	214(45.88%)	24(11.22%)	190(88.78%)	M
No	286(54.2%)	84(29.37%)	202(70.63%)	0.001s

Chi-square test, s= significant

Table-V shows relation of mother with LWB according to ANC. LWB Birth weight was significantly associated with mother who had no antenatal checkup.

Table-VI

Distribution of Neonates by Birth length (in cm) n=500

Length of neonates	No. of Patients	Percentage (%)
30-39 cm	29	5.8
40-49 cm	281	56.2
50 and above cm	190	38.0

Table shows distribution of neonates by birth length. 40-49 cm length group were maximum (56.2%) and 30-39 cm groups were minimum (5.8%)

Table-VII

Distribution of mothers by age (in yrs) and birth weight. n=500

Age of the mother	Total	Normal weight (n=392)		LBW (n=392)		P value
		No	%	No	%	
19 and below	48	33	68.75	15	31.25	0.114
20-29	342	277	80.99	65	19.01	ns
30-39	96	73	76.04	23	23.96	
40 and above	14	9	64.29	5	35.71	

Chi-square test, ns= not significant

Table shows incidence of low birth were among the age group of mothers below 19 (31.25%) and above 40(35.71%)

Table-VIII

Distribution of Birth weight according to parity n=500

Parity of mothers	Total	Normal weight (n=392)		LBW (n=392)		P value
		No.	%	No	%	
0	236	177	75	59	25	0.237ns
1	133	108	81.20	25	18.80	
2	77	63	87.5	14	12.5	
3	34	30	88.24	4	11.75	
4 and above	20	14	70	6	30	

Chi-square test, ns= not significant

LBW Babies were found to be highest in parity 4 and above (30%) and in primipara (25%). Incidence of LBW babies declined in para 3 (11.76%).

Table-IX

Distribution of birth weight (in kg) and family income (n=500)

Family status	Total	Normal weight (n=392)		LBW (n=392)		P value
		No.	%	No	%	
Poor	48	30	52.64	18	47.36	0.001s
Low middle class	310	237	76.46	73	23.54	
Middle class	130	114	87.70	16	12.30	
Rich	12	11	91.67	1	8.33	

Chi-square test, s= significant

Table shows low birth weight is significantly higher in poor people (47.36%) and lowest in rich (8.33%)

Table-X

Distribution of neonate's birth weight according to gestation period. (n=500)

Gestational age (in weeks)	No.	Normal weight (n=392)	LBW (n=392)	P value
<37	175	114(65.1%)	61(34.9%)	0.017s
37 and above	325	260(80.0%)	65(20.0%)	

Chi-square test, s= significant

Table shows LBW was significantly lower (20%) in term than Preterm LBW (34.9%)

Table-IX

Relation of mothers height & birth weight of neonate

Maternal height in cm	Total	Normal weight >2.5Kg		LAW >2.5kg		P value
		No	%	No	%	
<145	50	37	74.0	13	26.0	0.600ns
145-150	215	165	76.74	50	23.26	
151-156	222	179	80.663	43	19.37	
>156	13	11	84.62	2	15.36	

Chi-square test, ns= not significant

Table shows that more low birth weight (LBW) with the less height of mother. Birth weight increased with the increased height of mothers.

Table-XII

Distribution of birth weight according to maternal weight (n = 500)

Maternal weight in kg	Total	Normal weight >2.5kg		LBW <2.5Kg	
		No.	%	No.	%
<40	5	2	40	3	60
40-45	26	15	57.69	11	42.31
46-51	231	171	74.63	60	25.37
52-57	166	139	83.73	27	16.27
58-63	44	39	88.63	5	11.37
64-69	20	19	95	1	5
70 and above	8	7	87.50	1	12.50

Table shows increased proportion of LBW babies were found in weight group below 40 kg (60%) and between 40-45kg (42.31%).

Patients were grading at intervals. Maximum number mothers were within at 46-57 kg.

Table-XIII

Distribution of maternal education and birth weight of neonate (n=500)

Education	Normal weight >2.5kg	LBW <2.5Kg	P value			
			No.	%		
Nil	140	85	60.71	55	39.29	<0.001s
Primary	105	91	86.67	14	13.33	
Secondary	130	108	83.08	22	16.92	
College	91	78	85.71	13	14.29	
Above	34	30	88.24	4	11.76	

Chi-square test, ns= not significant

Table shows that 28% of the mothers were illiterate, they gave birth to significantly higher proportion of LBW babies (39.29%) than educated mothers. Most of the normal birth weight (88.24%) babies born to mothers who were highly educated.

Table-XIV

Distribution of Birth weight according to maternal occupation (n-500)

Occupation	Normal weight >2.5kg	LBW <2.5Kg	P value			
			No.	%		
House Wife	370	288	77.84	82	22.16	0.001s
Service	78	70	89.74	8	10.26	
Manual holder	38	21	55.26	17	44.74	
Student	14	13	92.86	1	7.14	

Chi-square test, ns= not significant

Table shows that significantly higher incidences of LBW babies in Manual worker (44.74%) and decrease incidence in service holder groups (10.26%)

Table-XV

Distribution of mothers according to condition of health (n-500)

Heath Status	No. of Mother	Percentage (%)
No associated disorder	399	79.80
High risk pregnancy	101	20.20
Total	500	100

Tables shows two groups mothers one group no associated disorder with pregnancy (79.80%) and another group having associated disorder (High risk Group) (20.20%).

Table-XVI

Distribution of Birth weight of neonates among high risk mother. (n-101)

Name of disease		Normal weight		LBW		P value
		>2.5kg		<2.5Kg		
		No.	%	No.	%	
PET	55	28	50.99	27	49.01	0.289
Essential	6	4	66.67	2	33.33	
Hypertension						
APH	15	4	26.697	11	73.33	
Others	25	12	48.00	13	52.00	

Chi-square test, ns= not significant

Among 500 mothers, 101 mothers had some associated disorder of pregnancy. LBW is more associated with APH (73.33%) but the condition PET is more common.

Discussion

The purpose of this study was to find out the rate of low birth weight among the babies born to mother admitted in Dhaka Medical college Hospital.

Birth weight is a recognized indicator of survival and future prognosis of the new born. Low birth weight is probably the largest single factor in prenatal death throughout the world.

The frequency of Low birth weight varies throughout the world. In this study rate of LBW was found 21.6% (Table-3). A Study done by Rahman Jahaara in 2005 the result was 19.5%,⁴⁸ That means almost same result. Another study done by Nahar⁴⁹ on recent trends in perinatal health in south Asia showed rate of low birth babies is 23%, the figure is also close to the study.

Another study was done by GM Monowar Hossain et al showed 24% LBW⁵⁰ and found that regular antennal check up was associated with low incidence of low birth weight (11.22%) (Table-5) than that of mother who had no antenatal checkup (29.37%) in the particular study. This result is consistent with the study done by Dr. Rashida Begum⁵¹ and Dr. Jahannara,⁴⁸ AKMA Salam et al.⁵² in low birth survey of Bangladesh 2003-2004.

In this study 19 years and below age group mother and 40 years and above age group showed higher incidence of low birth weight (Table-VII). Similar studies done by AKMA Salam et al.⁵² Dr. Rashida Begum⁵¹ and Dr. Rahman Jahan Ara⁴⁸ showed almost same result.

Another study done in New York in 2001-2003 by National Center for health statistics and showed increased incidence of low birth among mother of less than 20 years (9.6%) and more than 40 years (10.9%).⁵³

The study result is also consistent with another two studies done by Hashem et al⁵⁴ and Meyer et al.⁵⁵ where they also showed that 19 years and below age group and more than 35 years age group delivered significantly lighter babies.

In this study incidence of low birth was found to be highest among parity 4 and above (30%) (Table-8) and also it is higher in primipara. In a study done by Rashida Begum in 1993 showed multipara (4-6) had more low birth babies.⁵¹

In another study done by AKM Salam et al in 2003-2004 in Bangladesh showed high incidence of low birth weight babies among multipara and primipara.⁵²

In this study low income and less educated group were associated with higher incidence of low birth weight babies (Table-9 & 10). The result is consistent with the data received from medical reference of low birth weight March of dimes 2nd May 2006.⁵⁶

K. Naznaeen 2001 also mentioned in her study that economic status has a lot of influence on pregnancy outcome.³⁸

Nahar N. showed in her study that low birth weight babies were higher among the mother who never gone to school.⁴⁹

In this Particular study gestational age less than 37 weeks was associated with higher incidence of LBW (35%) than that of term pregnancy (Table-10) (20%). Similar results found in different studies like study by AKMA Salam et al.⁵² in 2003-2004. Hossain GM.⁵⁰ Monowar at in July 2005.

In another study done by Shohely Yeamin et al.⁵⁷ in Bangladesh Showed strong association of LBW and Perterm babies.

In this particular study mothers less than 40kg produce more LBW and also height less than 145 cm produced more LBW babies (Table-11 & 12). Nahar N et al.⁴⁹ also found similar effect of mother's weight and height.

Different diseased condition of mother causes low birth weight babies. In this Study PET, essential hypertension, APH was found more associated with LBW babies (Table -16).

Birth weight Wikipedia of 25 April 2006 Mentioned higher Prevalence of LBW with PET.⁵⁸

A Study was done by Begum Rashid Showed higher incidence of low birth babies among mother having PET, Essential hyperextension and APH.⁵¹

Conclusion

The Study finds out the incidence of low birth babies, the figures are close to the developing countries. The study revealed that maternal age, gestational age, parity,

socioeconomic status, maternal weight and disease condition have relations with birth weight of babies. Occupation and antenatal check up also affects birth weight of babies. The study was carried out to find out the relation of different maternal variables with birth weight. Based on the study findings following recommendation can be made. To reduce LBW more antenatal checkup should be ensured through mass awareness of people; less educated mother can be involved through more field visit by health workers and mass media can be utilized to disseminate the different information which has got impact on birth weight and also the effect of low birth in future life.

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