Maternal Socioeconomic Factors Affecting Birth Weight of New Born Babies Born in Combined Military Hospital Dhaka

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ABSTRACT

Background: Low birth weight is one of the deleterious outcomes of pregnancy. To identify the factors contributing to LBW is therefore of paramount importance. But a very little attention had been paid to address the riddle. This effort is to candle the light on maternal socioeconomic factors on birth weight.

Objective: To delineate the pattern of birth weight of newborn babies delivered in CMH Dhaka and ascertains selected demographic, socio-economic characteristics of the mothers.

Methods & Materials: This cross-sectional study was conducted in Combined Military Hospital Dhaka from September to December 2011 on 110 respondents. Data were collected by interview using semi-structured questionnaire. Data were checked, edited, coded, categorized, cleaned and analyzed using software (SPSS version 16)

Results: All the mothers were educated. Mothers who passed SSC exam, 35.5% were highest. Lowest education level was primary, 10%. SSC and below educated mother gave birth to 16.75 LBW babies. The average birth weight babies, 94.74% were delivered by HSC and higher educated mothers. All LBW babies were born other than officer's family. The mean monthly income was Tk 16533. 33% LBW babies born who had family income $\leq$ Tk. 10,000, 52.3% higher birth weight babies had family income $\geq$ Tk. 20000 but results was not statistically significant (p > .05).

Conclusion: All these findings suggest that a substantial evidence of socioeconomic factors like family income, maternal education and social status has an effect on birth weight. Utilizing health care facilities, better training, educating mother, addressing demographic factors, condition can be improved.

Key Words: Low birth weight, pregnancy, newborn babies, socioeconomic factors.

Introduction

Birth weight of an infant is the single most important determinant of chances to survive and undergo healthy growth and development. For this reason increasing attention is now given to birth weight distributions and especially to the frequency of LBW as a general indicator of the health status of population groups. Each year 15.5 percent of all births or more than 20 million infants worldwide, are born with a LBW. More than 95 per cent of LBW babies are born in developing countries.[1]

On an individual basis, birth weight is an important predictor of health; efforts must therefore go into measuring it as accurately as possible at birth and organizing and planning infant care accordingly. The smaller the baby, the more important it is to monitor his/her growth in the weeks after birth. This is particularly important for infants at high risk of poor feeding and inadequate growth. Countries should therefore be encouraged to ensure

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accurate and reliable weighing of infants as close to birth as possible.[1,2]

The epidemiology of LBW is still not well understood, but nevertheless three identifiable interrelated conditions namely maternal malnutrition, unregulated fertility and inadequate antenatal care coupled with several other risk factors have lifted the incidence to an alarming level. On the other hand, those mothers living in a comparatively better socio-economic environment in our country could not come out of the problem of LBW babies.[3,4,5]

The aim of this study is to determine the pattern of birthweight of newborns in Armed Forces population delivered in CMH, Dhaka and at the same time to look for the maternal socio-economic factors related to this pregnancy outcome. The findings, discussion and recommendation of this study will definitely provide some information which will help in formulation of effective planning for improvement of birth weight and reduction in the incidence of LBW in the Armed Forces. It will also help propagating the wave of preventing measures within their family circles in rural areas

Methods and Materials

This was a cross-sectional study carried out at CMH Dhaka between September to December 2011. The study population were all the entitled mothers and their newborn babies who reported to CMH Dhaka for delivery. A total of 110 babies and their mothers were selected conveniently for the study. Data were collected in collaboration with the Gynecologists and Obstetricians of the hospital through face to face interview of mothers by using semi structured questionnaire during the month of November 2011. Weights of the babies were taken within 1 hour of birth. Data were analyzed according to the key variables by using SPSS version 16. Our objective was to determine the pattern of birth weight of newborn babies delivered in CMH Dhaka and ascertain selected demographic, socio-economic and health characteristics of the mothers.

Results

Table-1: Distribution of respondents by educational status (n=110)

Education	Frequency	%
Primary	11	10.0
Class X	22	20.0
SSC	39	35.5
HSC	20	18.2
Graduate and above	18	16.4
Total	110	100.0

Table 1 shows all the mothers were educated. Almost 73.7% mothers, were class X or more educated. Lowest education level was primary and the number of mothers in this group were 10%.
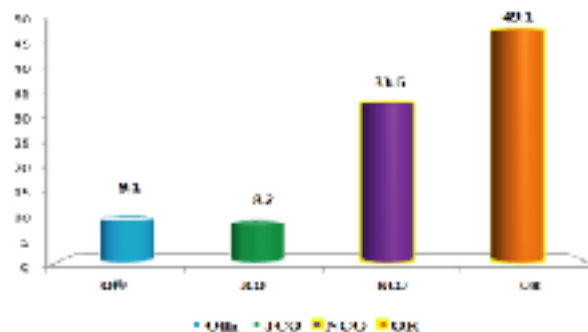
Figuer-1: Distribution of respondents by husbands' status (n=110)

Table-2: Distribution of respondents by monthly family income (n=110)

Monthly income	Frequency	%
≤ 10000	6	5.5
10000-20000	89	80.9
20000-35000	11	10.0
≥ 35000	4	3.6
Total	110	100.0

The above table shows mean monthly income was Tk 16533. Almost 81% of the respondents had family income Tk 10000-20000, followed by 10% had income Tk 20000-30000, Tk less than 10000 were 5.5%.

Table-3: Association between birth weight of new born and maternal education (n=110)

Educational status	Weight group of in newborn gm					Total %
	Up to 2000	2000-2500	2500-3000	3000-3500	3500 & above	
Primary	0(0)	1(9.1)	7(63.6)	3(27.3)	0(0)	11(100)
Class x	1(4.5)	3(13.6)	8(36.4)	9(40.9)	1(4.5)	22(100)
SSC	3(7.7)	4(10.3)	8(20.5)	20(51.3)	4(10.3)	39(100)
HSC	0(0)	0(0)	4(20)	11(55)	5(25)	20(100)
Graduate & above	0(0)	2(11.1)	4(22.2)	7(38.9)	5(27.8)	18(100)
Total	4(3.6)	10(9.1)	31(28.2)	50(45.5)	15(13.6)	110(100)

*Figure in parenthesis indicate percentage $\chi^2=22.45$; df $=16$; p $>.05$

The above table shows education level SSC and below gave birth to more number of LBW babies, 12 (16.7%). The percentage of average weight babies were delivered more (94.74%) by mothers whose education level was HSC and higher. Higher birth weight (more than 3000 gm) was 27.3% in mothers having primary education, 45.4% in class X, 61.6% in SSC and 80% in mothers with education level HSC. The result was not statistically significant (p $>.05$).

Table-4: Association between birth weight of new born and husband's status of mother (n=110)

Husband's status	Weight group of in newborn gm					Total %
	Up to 2000	2000-2500	2500-3000	3000-3500	3500 and above	
Officer	0(0)	0(0)	3(30)	4(40)	3(30)	10(100)
JCO	0(0)	2(22.2)	2(22.2)	3(33.3)	2(22.2)	9(100)
NCO	0(0)	3(8.1)	10(27)	18(48.6)	6(16.2)	37(100)
Other Ranks	4(7.4)	5(9.3)	16(29.6)	25(46.3)	4(7.4)	54(100)
Total	4(3.6)	10(9.1)	31(28.2)	50(45.5)	15(13.6)	110(100)

*Figure in parenthesis indicate percentage $\chi^2=11.603$; df$=12$; p $>.05$

All LBW babies were born in other than officers' family 12.7%. Percentage of birth weight in higher weight group (3500 gm and more decreased) as the status of husbands decreased, for officers it was 30%, JCOs 22.2%, NCOs 16.2% and for Other Ranks it was 7.4%. The result was not statistically significant (p $>.05$).

Table-5: Association between birth weight in gram and family income (n=110)

Family income group	Weight group of in newborn gm					Total %
	Up to 2000	2000-2500	2500-3000	3000-3500	3500 & above	
Up to 10000	2(33.3)	0(0)	1(16.7)	3(50.0)	0(0)	6(100)
10000-20000	2(2.2)	9(10.1)	26(29.2)	41(46.1)	11(12.4)	89(100)
20000-30000	0(0)	1(9.1)	3(27.3)	4(36.4)	3(27.3)	11(100)
>30000	0(0)	0(0)	1(25)	2(50)	1(25)	4(100)
Total	4(3.6)	10(9.1)	31(28.2)	50(45.5)	15(13.6)	110(100)

*Figure in parenthesis indicate percentage $\chi^2=$ 19.970; df$=12$; p $>.05$

Table shows the proportion of LBW among the mothers were highest (33.3%) having the family income Tk 10000 and less but no LBW baby with family income more than Tk 30000. None of the babies had higher birth weight (3500 and above) having the family income Tk 10000 and less, on the other hand 52.3% high birth weight babies having family income ≥ Tk. 20,000. The finding was not statistically significant (p $>.05$).

Discussion

This cross-sectional study was carried out on mothers who delivered their babies at CMH Dhaka to find out the socioeconomic characteristics of mothers that influence birth weight of newborn babies in Armed Forces. The factors influencing birth weight had extensively been studied and most are well known. In this study educational status, family income and status of husband were studied.

The significance of birth weight as one of the most important determinant of infant mortality and morbidity is well documented in social and bio-medical research. Infants of LBW (i.e., less than 2500 gm), the risk of dying in the first year of life is about 20 times than that of infants weighing 2500 gm or more.[1] For infants of VLBW (i.e., less than 1500 gm), the risk is considerably greater, about 90 times than that of infants weighting 2500 gm or more.[5] In the present study 12.7% of the babies were LBW with birth weight less than 2500 gm and the mean birth weight was 2949.82 gm. According

LBW in Bangladesh was 30% and in a study conducted by BBS, mean birth weight was 2632 gm.[6,9] This improvement in frequency as well as in mean birth weight may have been contributed by the better socio-economic conditions and health care facilities including ante-natal checkup in Armed Forces Hospital and CWCs, higher literacy rate (100%), lower number of parity (mean 1.78).[10,11]

Women's education is important to bring change in the attitude towards a better health care and nutrition. Rate of LBW babies were higher (16.67%) among mothers whose education level was SSC and below and on the contrary mothers with education level HSC and higher gave birth to lower proportion (5.26%) of LBW babies. Higher birth weight (more than 3000 gm) was 27.3% in mothers having primary education, 45.4% in class X, 61.6% in SSC and 80% in mothers with education level HSC (Table-12). The finding was not statistically significant ($p > 0.05$) but it is supported by studies of Kramer, MS,[13] and Richard EB.[14] who found a positive co-relation between birth weight and maternal education level.

Family income influences birth weight through nutrition, age of mother, education, poverty, birth intervals, ante-natal care, frequency of infections etc. Early marriage and initiation of child bearing at a younger age, tendency of taking more babies with less interval is common in lower income group. Infections due to poor environment or lowered resistance due to malnourishment, inadequate health care and lack of health information are common in low socio-economic group. All these act individually or in combination to influence the pregnancy outcome.[11]

The study showed the proportion of LBW among the mothers were highest (33.3%) having the family income Tk 10000 and less but no LBW baby with family income more than Tk 30000. None of the babies had higher birth weight (3500 and above) having the family income Tk 10000 and below, on the other hand 27.3% and 25% having family income Tk. 20,000-30000 and more than Tk 30000 respectively as supported by the study conducted by Begum MR.[4]

Conclusion

Birth weight is a recognized significant indicator of survival and future growth and development of new born babies. This study has identified some of the maternal characteristics which influence birth weight of newborn babies. In this study most of the babies had average birth weight and near to thirteen percent were LBW babies. All the mothers were educated. Education of mother had a direct impact on birth weight. LBW was found less among higher educated mothers. According to family income, higher proportions of LBW babies were born in lower income group and vice versa. All these findings suggest that a substantial evidence of association between maternal socioeconomic factors and birth weight of new born babies were in strong existence.

Conflict of Interest: None

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