



Low birth weight and its determinants in a teaching hospital of Kolkata, India

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Abstract

Background: Birth weight is the most important determinant of child survival and development. It is directly associated with maternal factors and many social factors. Present study aims to find out the proportion of low birth weight (LBW) in this teaching hospital and to assess the influence of some determinants on low birth weight.

Methods: A hospital based cross sectional descriptive study was carried out in post natal ward of tertiary care hospital from August to September 2016. The study population comprised of postnatal mother and their neonate delivered in this institution within the specific time period.

Results: Out of total 276 babies, 68 (24.6%) babies had LBW (Birth weight <2.5 kg). Present study revealed significant association between LBW and education of mother, haemoglobin level and period of gestation

Conclusion: Our study indicates maternal education, consumption of IFA tablets, gestational age are significant determinants of LBW.

Keywords: Low birth weight. Hospital based, IFA tablets.

Introduction

Low birth weight is a sensitive predictor of a newborn's chances for survival, growth and long term physical and psychosocial development. According to WHO low birth weight (LBW) is defined as the birth weight less than 2500gm. It may be either due to prematurity or intrauterine growth retardation or both. In 2015, 20.5 million newborns, an estimated 14.6 per cent of all babies born globally, suffered from LBW.¹ These babies were more likely to die during their first month of life and those who survived face lifelong consequences including a higher risk of stunted growth,² lower IQ,³ and adult-onset chronic conditions such as obesity and diabetes.⁴ Globally

LBW contributes to 40- 60% of newborn mortality.⁵ For the adequate development foetus within uterus maternal nutrition, rest, proper antenatal care and personal hygiene all are very important. Low birth weight girls, in the absence of positive intervention to break the cycle, grow poorly, become stunted women and are more likely to give birth to LBW babies.⁷ The reduction of LBW is one of the important component of millennium developmental goals (MDG) for reduction of child mortality. It is one of the important public health problem and the associated factors are modifiable and preventable. With this background, the present study aims to find out the proportion of LBW delivered in this

tertiary care hospital and to assess the influence of some determinants on low birth weight.

Materials and Methods

A hospital based cross sectional descriptive study was carried out in post natal ward of tertiary care hospital from August to September 2016. The study population comprised of postnatal mother and their neonate delivered in this institution within the specific time period. Mother delivered twin baby, sick baby and mothers with serious ante-partum or postpartum complication were excluded from the study. The birth weight of the baby was taken within 24 hours of delivery. A predesigned structured schedule, bed head ticket and MCP card (mother and child protection card) were used for data collection. The objectives of the study were explained to the mothers of the newborn baby and interview was taken after obtaining informed verbal consent. All the mothers were interviewed within 24 hours of delivery. The predesigned schedule was printed in local language before actual data collection. Data entered in Microsoft excel, and analysis was done by SPSS 16.0 version. Chi –square test was applied and p value was obtained to establish the level of significance.

Results

A total of 276 neonate and their mother were included in the study. Nearly 60% of the mother belonged to the age group 20-29 years; teenage pregnancy was found to be in 31.2% cases. Majority (73.5%) was Hindu and more than half of the study subjects were from joint family. About 57% were urban residents and regarding educational background of these respondents, 11.6% had not completed primary school education whereas 33.3 % completed secondary level and above. For assessment of socioeconomic status Modified B.G Prasad's scale 2015 was used. According to this scale nearly 65% belonged to the middle class and lower middle class jointly.

Out of total 276 babies, 68 (24.6%) babies had LBW (Birth weight <2.5 kg), and female LBW

babies (36) were outnumbered the male babies. Regarding the maternal factors that determine the LBW, the study revealed that, about 22.5% mothers were of short stature. In the study primiparous mothers were 44.9% and birth spacing between last two child births among multiparous women was less than 3 years in 57.9% of mothers. Almost 63% of mothers had taken antenatal checkups less than four times. Prevalence of LBW among mothers educated below primary level was (37.5%), up to primary and middle level education 28.3% and in secondary and above level it was 14 .1%. This association was statistically significant ($p=0.009$). Proportion of LBW among mothers having haemoglobin less than 11 gm/dl was 37.1% compared to the mothers who were non anaemic was 17% only. The difference was statistically highly significant ($P=0.0001$). Prevalence of LBW among mothers consumed more than 100 IFA tablets was 18.8% and among those mothers taken less than 100 IFA tablets was 38.1%. This difference was also statistically significant ($p=.0005$). Proportion of LBW among mothers had gestational age less than completed 37 weeks was 38.6% compared with (19.9%) among the mothers whose gestational age at the time of delivery was 37 weeks or more. This association was statistically significant. There was no significant association was found between LBW and short stature, birth spacing or parity.

Table No 1. Socio-demographic characteristics of the study population (N=276)

| Variable | Number | Percentage(%) |
|------------------------------|--------|---------------|
| ≤20 | 86 | 31.2 |
| 20-29 | 164 | 59.4 |
| ≥ 30 | 26 | 9.4 |
| Religion | | |
| Hindu | 203 | 73.5 |
| Muslim | 73 | 26.5 |
| Type of family | | |
| Nuclear | 132 | 47.8 |
| Joint | 144 | 52.2 |
| Residence | | |
| Urban | 157 | 56.9 |
| Rural | 119 | 43.1 |
| Literacy status | | |
| Below primary | 32 | 11.6 |
| Primary and middle | 152 | 55.1 |
| Secondary and above | 92 | 33.3 |
| Socio economic status | | |
| Upper class | 8 | 2.9 |
| Upper middle class | 23 | 8.3 |
| Middle class | 78 | 28.3 |
| Lower middle class | 104 | 37.7 |
| Lower class | 63 | 22.8 |

Table No 2. Maternal characteristics related to obstetric history and antenatal care (N=276)

| Variables | Number | Percentage(%) |
|---------------------------------|--------|---------------|
| Height of mother(cms) | | |
| <145 | 62 | 22.5 |
| ≥145 | 214 | 77.5 |
| Parity | | |
| P0 | 124 | 44.9 |
| P1-P2 | 131 | 47.5 |
| P3-P4 | 21 | 7.6 |
| Birth Spacing | | |
| <3 yrs | 88 | 57.9 |
| >3yrs | 64 | 42.1 |
| Haemoglobin level | | |
| <11 | 105 | 38.0 |
| >11 | 171 | 62.0 |
| Consumed 100 IFA tablets | | |
| Yes | 192 | 69.6 |
| No | 84 | 30.4 |
| Ante natal visits | | |
| <4 | 172 | 62.3 |
| >4 | 104 | 37.7 |
| Gestational age | | |
| Term | 206 | 74.6 |
| Preterm | 70 | 25.4 |

Table 3 Association of factors with Low birth weight (N=276)

| Variable | | Low birth weight | | Total (%) | Chi square test |
|----------------------|---------------------|------------------|-----------|-----------|----------------------------|
| | | Yes (%) | No(%) | | |
| Literacy status | Below primary | 12(37.5) | 20(62.5) | 32(100) | $\chi^2=9.41$ p=0.009 |
| | primary and middle | 43(28.3) | 109(71.7) | 152(100) | |
| | Secondary and above | 13(14.1) | 79(85.9) | 92(100) | |
| Haemoglobin level | <11 gm% | 39(37.1) | 66(62.9) | 105(100) | $\chi^2=14.27$ p=0.0001 |
| | ≥11gm% | 29(17.0) | 142(83.0) | 171(100) | |
| Consumed 100 IFA tab | Yes | 36(18.8) | 156(81.2) | 192(100) | $\chi^2=11.77$ p=0.0005 |
| | No | 32(38.1) | 52(61.9) | 84(100) | |
| Gestational age | Term | 41(19.9) | 165(80.1) | 206(100) | $\chi^2=9.80$ p=0.001 |
| | Preterm | 27(38.6) | 43(61.4) | 70(100) | |

Discussion

The proportion of LBW was 24.6% which was not corroborated with the result of Kumar M. et al⁶ (17%) and Sumana M et al⁷(16%).¹¹ Maternal age was divided in to three groups,<2 years,2-29 yrs and more than 3 years, which does not have any significance in our study. This is similar to the study done by K. S. Negi⁸ Maternal education was associated with the LBW in this study (p=0.009). Similar findings was reported by Srinivas P et al.⁹ The present study revealed that anaemia is a risk factor for LBW which is comparable to study done by Joshi et al,¹⁰ Sharma et al.¹¹ Maternal anaemia & severe maternal complications significantly and adversely influenced the birth weight. Present study also revealed a significant association with LBW and consumption of IFA tablets(p=0.0005 (p=0.0005), similar finding was reported by Kumar M et al⁶Dasgupta et al¹² observed that Odds of having LBW was twice among the mothers who inadequately consume IFA tablets. The study showed that maternal gestation was significantly associated with LBW(p=.001). Similar findings was observed by Dasgupta et al.¹² The study revealed that there was no significant association found between short stature, parity and number of antenatal checkups. Although antenatal checkup has a definite role in overall improvement in health outcomes in respect to mother as well as baby.

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