ORIGINAL ARTICLE

Socioeconomic and nutritional determinants of low birth weight babies: A hospital based study

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Citation

Abstract

According to the World Health Organization (WHO) definition, infants with birth weights of less than 2,500 grams are classified as low birth weight (LBW). LBW is a sensitive indicator for predicting the chances of both infant survival and healthy childhood growth and development, and it also reflects the present and past health status of the mother. LBW constitutes an important factor affecting neonatal mortality and morbidity. **Objective:** To find the percentage of low birth weight babies and its determinants. **Materials and methods:** Present study was a cross sectional type. All mothers delivering live born singleton neonate in study place (Postnatal ward of Rohilkhand Medical College and hospital) were interviewed with pretested, predesigned schedule. Statistical analysis was done using SPSS version 21software and chi square test, OR etc. **Results:** Overall percentage of LBW was 20% and mean birth weight was 2776.85 + 383.6 gm LBW was found to be more common in the rural population and poor educational status. A higher percentage of LBW was seen in mothers with inadequate diet and those who were anaemic. **Conclusion:** The present study revealed that the percentage of LBW babies as 20%. LBW percentage was higher in mothers belonging to rural areas, with lower socioeconomic status, those who were illiterate, vegetarian by diet and anemic status.

Key Words

Socioeconomic; nutritional; low birth weight; hospital

Introduction

According to the World Health Organization (WHO) definition, infants with birth weights of less than 2,500 g are classified as low birth weight (LBW). LBW is not only a sensitive indicator for predicting the chances of both infant survival and healthy childhood growth and development, but is also a reflector of the present and past health status of the mother.LBW occurred in 60.0% of prenatal deaths, and in those deaths occurring within the first week of life, the incidence of LBW was 71.0%. As a rule, LBW might constitute the single most important factor affecting neonatal mortality and morbidity, as evidenced by the fact that LBW babies are 40 times greater contributors to neonatal mortality and morbidity. Even if a LBW baby survives, it likely to suffer a high incidence of malnutrition, diarrhoea, acute respiratory infection, infectious disease, neurodevelopment problems such as cerebral palsy, and physical defects. In addition, LBW also determines the postnatal mental, physical, and neurological development of children (1).

The number of low birth weight babies is concentrated in two regions of the developing world namely, Asia and Africa. In industrialized countries the epidemiology of low birth weight has been extensively studied, while in less developed countries reliable data on low birth weight still remain limited. The primary reason is that more than 40 per cent of babies are born at home and without a skilled attendant. As for the burden in India, NFHS-3 mentions that among children for whose birth

weight was reported, 22 percent had a low birth weight, it being slightly higher in rural areas (23 percent) than in urban areas (19 percent) (2).

Aims & Objectives

1. To know the percentage of low birth weight babies.
2. To find the association of socioeconomic and nutritional determinants with birth weight

Material and Methods

Study area: Study was carried out in postnatal ward of Rohilkhand Medical College and hospital, Bareilly, Uttar Pradesh. **Study period:** January 2014 to July 2014.Study population: **Inclusion Criteria:** All mothers delivering live born neonate in study place. **Exclusion criteria:** 1) Mothers with multiple pregnancy. 2) Neonates with congenital malformations, chromosomal anomalies and hemolytic disease of the newborn. **Nature of study:** Cross sectional study. **Sample size:** 200 (taken by consecutive sampling technique.) **Study Tool:** Pretested, predesigned schedule. **Data collection:** Schedule was prepared and pretested by carrying out pilot study with a sample of 40 subjects after taking clearance from the ethical committee. Interviews with the mother were conducted after explaining the purpose, benefits, risks, and confidentiality of the study. Schedule contained pertinent questions regarding residence, socioeconomic and education status, diet history, intake of iron folic acid and maternal haemoglobin. **Data analysis:** By SPSS version 21 program in the computer and appropriate statistical tests.

Results

Preliminary data: Out of 200 singleton live born babies during the study period, 103(51.5%) were boys and 97(48.5%) were girls. Figure 1: Nearly 80% babies had normal birth weight and 20% had LBW. The overall mean birth weight was 2776.85 + 383.6 gm, minimum being 1700 grams and maximum being 4000 gm.

Figure 2: 131(65.5%) mothers belonged to urban area and 69(34.5%) to rural area. The percentage of LBW in mothers belonging to rural background was higher (27.5%) as compared to urban (16%) and the association was statistically significant.(p=0.04) Table 1: Out of 200 mothers, 68(34%) were educated upto primary level, 65(32.5%) upto high school, 37(18.5%) were illiterate, 23(11.5%) upto intermediate and 7(3.5%)

were graduate. Percentage of LBW was highest amongst the illiterate mothers and it was statistically significant.

Maximum number of mothers, 80 (40%) belong to socio economic class II followed by 72 (36%) in class III, 33(16.5%) in class IV, 10(5%) in class I and 5(2.5%) in class V. Percentage of LBW was maximum in socio economic class V (40%). Table 2: 134(67%)mothers were vegetarian and 66(33%) were non vegetarian.LBW percentage was higher in women on vegetarian diet(21.6%) as compared to non-vegetarians(16.7%) but the association was not statistically significant.29 (14.5%) mothers took less than 3 meals per day during their pregnancy and LBW rate was higher in mothers taking less than 3 meals per day(38%) as compared to those who took more than 3 meals(16.2%). 141 (70.5%) mothers had taken iron and folic acid during their pregnancy. Percentage of LBW was higher in those mothers who had not taken IFA. As the level of haemoglobin increased among the mothers, the percentage of LBW decreased.

Discussion

Socio-economic class improved. Similar findings reported in study by Joshi et al (4). Percentage of LBW was higher in those mothers who had not taken IFA (39%) as compared to those who had taken (12%). As the level of haemoglobin increased among the mothers, the percentage of LBW increased. Similar results found in study by Dasgupta et al (2).

Conclusion

The present study revealed that the percentage of LBW babies as 20%. LBW percentage was higher in mothers belonging to rural areas, with lower socioeconomic status, those who were illiterate, vegetarian by diet and anemic status.

Recommendation

Low birth weight still poses a fair problem in our perspective, and when we cannot do a drastic socio-economic up-liftment, some basic factors, like good ANC care, correcting anemia, and above all motivating the mother to follow some habits in the ANC period like adequate consumption of food and adequate rest, institutional deliveries shall take a long way forward in addressing the problem.

Relevance of the study

The study pinpoints some of the key maternal factors as illiteracy, dietary habit, anaemic status and IFA

intake as important determinants of low birth weight babies.

Authors Contribution

SN: conceptualized, designed data collection. TP: data analysis and interpretation.

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Tables

TABLE 1: EFFECT OF EDUCATION, SOCIOECONOMIC CLASS ON BIRTH WEIGHT.

Maternal characteristics		Birth weight in grams		
		<2500	>2500	
Education status	Illiterate	19(51.35%)	18(48.64%)	37(100%)
	Primary	15(22.05%)	53(77.94%)	68(100%)
	High School	6(9.2%)	59(90.7%)	65(100%)
	Intermediate	0	23(100%)	23(100%)
	Graduate & above	0	7(100%)	7(100%)
X2 =35.1, df = 1, p = 0.000				
Socio-economic class	I	0	10(100%)	10(100%)
	II	7(8.75%)	73(91.25%)	80(100%)
	III	18(25%)	54(75%)	72(100%)
	IV	13(39.4%)	20(60.6%)	33(100%)
	V	2(40%)	3(60%)	5(100%)
X2 =18.96, df = 4, p = 0.001				

TABLE 2: EFFECT OF DIETARY HABITS, INTAKE OF IRON FOLIC ACID AND HAEMOGLOBIN ON BIRTH WEIGHT

Maternal characteristics		Birth weight in grams		
		<2500	>2500	
Dietary habit	Vegetarian	29(21.6%)	105(78.4%)	134(100%)
	Non veg	11(16.7%)	55(83.3%)	66(100%)
X2 =0.68, df = 1, p = 0.40				
Meals per day	<3	11(38%)	18(62%)	29(100%)
	>3	29(16.2%)	142(83.8%)	171(100%)
X2 =12.097, df = 2, p = 0.002				
IFA taken	Yes	17(12%)	124(88%)	141(100%)
	No	23(39%)	36(61%)	59(100%)
X2 =18.48, df = 1, p = 0.000				
Hb in gm/dl	<7	1(50%)	1(50%)	2(100%)
	7-9.9	15(26.8%)	41(73.2%)	56(100%)
	10-10.9	16(22.2%)	56(77.7%)	72(100%)
	>11	8(11.4%)	62(88.6%)	70(100%)
X2 =6.17, df = 3, p = 0.103				

Figures

Fig 1. Birth weight distribution

Fig 2: Impact of residence on birth weight