

IMPACT OF PROTEIN AND PROTEIN SUPPLEMENTS INTAKE ON LOW BIRTH WEIGHT INFANTS WITH THE REFERENCE OF UJJAIN CITY

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ABSTRACT

Low birth weight (LBW) has been defined by the World Health Organization (WHO 1992) as weight at birth of less than 2500 gm. LBW at birth may be the outcome of either preterm birth (before 37 weeks of gestation) or retarded fetal (intrauterine) growth. LBW is associated with multiple problems such as fetal and neonatal mortality or morbidity. We undertook a retrospective study or analysis of protein intake of women during gestational age and LBW (low birth weight) data available at the five hospitals situated in Ujjain city. The women who attended the ante-natal checkup or came for delivery were from the rural and peri-urban population of Ujjain district of Madhya Pradesh, India. We also investigated the association between LBW, protein & protein supplements intake during gestation age. Information on all pregnant women who came for pre-natal check-ups and who delivered a child at the obstetrics and gynecology facility in the hospital during the period January 2015 to January 2016 were included in the analysis. Out of the total registered 200 cases of respondents, 111 (55.5%) women who followed or 89 (44.5%) women who are not followed all the inclusion criteria of the study were considered for data analysis and results were expressed by mean test. Among the newborns delivered to the mothers included in the study, 114 (57 %) were LBW, i.e., below 2500 although 86 (43%) had a normal birth weight. As per the retrospective analysis we can conclude that, maximum weight gain of fetus occurs during the last 3 months of pregnancy. If pregnant women can be provided more additional protein and protein supplement, and proper maternal checkup during the pregnancy, the incidence of LBW can be reduced significantly.

KEYWORDS: LBW, WHO, RBS, HB, Gynecology, Preterm Birth

INTRODUCTION

The period of intrauterine growth and development is one of the most vulnerable periods in the human life cycle. Low-birth weight babies are new born weighing less than 2,500 grams or born before 37 weeks of gestation, with the measurement taken within the first hours of life, before significant postnatal weight loss has occurred.

Low birth weight infant is a major public health problem in the Indian states, contributing substantially both to infant mortality and to childhood disability. Preterm delivery or pregnancy complication is more common in the Indian States than in many other industrialized nations, and is the factor most responsible for the relatively high infant mortality rate in India. LBW is associated with multiple problems such as fetal and neonatal mortality or morbidity with increased risk of cardiovascular, impaired mental development and metabolic disorders in adult life. In India it is common observation on neonates, weighing 2000 gm or less. By common observation of pediatrician of our country have accepted 2000 gm as the dividing line between low birth weight neonates and normal babies. Low-birth-weight babies have a high risk of neonatal and infant morbidity and hence the proportion of babies with low-birth-weight. According to the World Health

Organization (WHO 1992) a baby born weighing 2500 grams or less is considered low birth weight, irrespective of gestational period, and recommended an additional demarcation of 1500 grams to define very low birth weight.

As per maternal weight should be nearly ideal at the start of pregnancy to prevent complication that may arise from either maternal obesity or underweight. Underweight in the mothers associated with low birth weight, whereas maternal overweight is associated with increased risk of gestational hypertension, diabetes, and toxemia. (**David. L. Katz**)

In developed countries, most infants are weighed at birth only those born in institutions are weighed. These infants constitute a small--usually privileged--minority. A recent survey has shown that only about one-third of births in the developing world take place in institutions; in some countries, the proportion is lower than one-fifth. Even when records of birth weights exist at the institutional level, they are rarely collated at the national level. Taken as a whole, the data would tend to indicate a slight decrease in the incidence of LBW. It is estimated that, of the 127 million infants born in 1982, 16.0 %-(some 20 million)--had LBW. This constitutes a decrease in both relative and absolute terms when compared to the estimates for 1979-21 million LBW infants making up 16.8% of the 122 million born that year. For developing countries only, the proportion has fallen from 18.4% to 17.6%.

MATERIAL & METHOD

STUDY DESIGN

The chosen area of the study in Ujjain city of Madhya Pradesh in India, we undertook a retrospective studied or analysis of protein & protein supplements intake of women during gestational age and effect on LBW infant (low birth weight), data available at the five hospitals situated in Ujjain city. The chosen hospitals covered all area of the city; it is based on survey cum controlled and experimental study. Total respondents are selected, 40 patients form each hospital were selected. The women who attended the ante-natal checkup or came for delivery were from the rural and peri-urban population of Ujjain district of Madhya Pradesh, India. We also investigated the association between LBW, protein and protein supplements during gestation period.

METHODS

This community based study was conducted in Ujjain district, Study population comprised of women in 1st trimester of pregnancy belonged to different area. Inclusion criteria (as per questionnaire) for the study population were pregnancy with staring of 1st trimester, agreed to follow the intervention protocol during 3rd trimester and supposed to be delivered at chosen hospitals (newborn birth weight would be recorded within 24 hrs). During the survey given all dietary, protein and protein supplements counseling to pregnant women (RDA 2010) who came for pre-natal check-ups and who delivered a child at the obstetrics and gynecology facility in the hospital during the period January 2015 to January 2016 were included in the analysis. Relevant information was acquired from the medical charts; the weights of the newborns were recorded using an appropriate balance. All babies were weighed within one hour of birth by trained nursing personnel.

RESULT & DISCUSSIONS

Out of the total registered 200 cases of respondents, 111 (55.5%) women who followed or 89 (44.5%) women who are not followed all the inclusion criteria of the study were considered for data analysis, and results were expressed by mean test. Among the newborns delivered to the mothers included in the study, 114 (57 %) were LBW, i.e., below 2500

although 86 (43%) had a normal birth weight. Distribution of LBW and normal birth weight newborns showed that intake of protein & proteins supplements during gestation period did not have any statistically significant association [Table 1]. Closer examination of the data showed that as many as 166 (83%) newborns of women consuming between 50-70 gm proteins per day were LBW 92 (46%) or normal weight 74 (37%). The proportion of LBW newborns came down with an increase of protein consumption of mother above 70 gm protein per day were LBW ratio is 13 (6.5%) or normal birth weight 8 (4%). Among 8 (4 %) mothers consuming 30-50 gm protein per day were LBW 06 (3%) or normal birth weight 02 (1%), during the gestation period 05 (2.5%) of women's protein intake data not available or not found due to some reason, but at the time delivered of baby birth weight recorded were normal weight was 02 (1%), or LBW 03 (1.5). Type of work carried out and rest taken by mother were also found to be important variables associated with birth weight of newborns. According to protein intake of women they were divided into 3 broad categories (30-50gm, 50-70gm, above 70 gm, day). In the study we also found protein supplements (protein -x, Pentasure, GERD, etc) intake during the gestation period were 158 (79 %) women who followed prescribed supplements, and her LBW infants 97 (48.5 %) or normal birth weight 61(30.5%). Among 42 (21%) women who not followed the prescribed supplements were LBW ratio 19 (9.5%), normal birth weight 23 (11.5 %). In the study of LBW or protein substitute intake in Ujjain city data showed statistically significant differences in [Table 2].

CONCLUSIONS

As per the retrospective analysis we can conclude that, maximum weight gain of fetus occurs during the last 3 months of pregnancy. If pregnant women or during gestation period can be provided additional protein and protein supplements, and proper maternal checkup during the pregnancy, the incidence of LBW can be reduced significantly. In our study no significant difference was found between protein and protein supplements intake during gestation period by mother or LBW infants of Ujjain city communities.

TABULATION

Table 1: Distribution of Birth Weight (%) as Per Protein Intake of Respondents

S. NO	PROTIEN INTAKE (GM/DAY)	NUMBER OF RESPONDENTS (%)	WEIGHT OF NEWBORNS	
			NORMAL WEIGHT (%)	LBW (%)
1	30 -50	08 (4%)	02 (1)	06 (3)
2	50 – 70	166 (83%)	74 (37)	92 (46)
3	ABOVE 70	21 (10.5%)	08 (4)	13 (6.5)
4	NOT FOUND	05 (2.5%)	02 (1)	03 (1.5)
	TOTAL	200 (100%)	86 (%)	114 (%)

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