



Impact of socio-economic condition on the birth weight in children

Namrata Mehta • Renuka Kumari
• Anupma kumari

Received : December 2010
Accepted : November 2011
Corresponding Author : Anupma Kumari

Abstract : A survey was conducted in Patna, to study the socio-economic condition and its effect on low birth weight (LBW) condition in children. About 400 mothers were interviewed with standard predesigned questionnaires, which included data on mother's age, weight, education, occupation, economic status and epidemiological diseases. Of these 400 women, 128 had low birth weight children, in which 50.50% were from low income class, 27.11% from middle class and 5.88% were from upper class. In our study we concluded that the low income group had the highest proportion of LBW cases.

Key words : Low birth weight (LBW), Socio-economic status, Prenatal care.

Namrata Mehta

B.Sc. III year, Zoology (Hons.), Session: 2008-2011,
Patna Women's College, Patna University, Patna, Bihar,
India

Renuka Kumari

B.Sc. III year, Zoology (Hons.), Session: 2008-2011,
Patna Women's College, Patna University, Patna, Bihar,
India

Anupma Kumari

Assistant Professor, Dept. of Zoology,
Patna Women's College, Bailey Road, Patna - 800 001,
Bihar, India
E-mail : anumpakumari10@yahoo.com

Introduction :

'Low birth weight (LBW) is a public health problem linked to lack of equity in population and considered to be an important predictor of infant mortality and childhood morbidity in developed and developing countries' (Mc Cornick, 1985). Babies born weighing less than 5 pounds, 8 ounces (2,500 grams) are considered low birth weight babies. On an average, the worldwide incidence of low birth weight (LBW) is 17% per year, making LBW an important infant health problem in many population (Goldenberg & Rouse, 1998). Sensitivity and low

immunity in these infants put them at higher risk to different diseases including retardation in cognitive development, undernourishment, higher rate of diabetes, cardiac diseases and other chronic health problems. A huge part of investment spent on the cure of these diseases every year imposes burden on the family and community. The causes for low birth weight cases include biological processes which are related to mother's physiology including her nutrition, weight, stress, history of any previous LBW child/preterm birth cases, diseases and exposure to tobacco or any kind of drugs (Lynch & Kaplan, 2000). There is a direct relationship between biological processes and socio-economic of background mother (income, occupation, education and possession of basic amenities/goods) which, induce the biological factors as a cause for LBW cases. During the fetal phase, growth depends on the nutritional condition of the mother. Hence, for pregnant women increasing their weight is not sufficient, they should also consume essential nutrients. For many women in the developing world, however, economic, social and cultural factors make it difficult for them to consume the necessary food and access healthcare, which are closely interrelated. Several studies have shown different results on whether socioeconomic factors affect pregnancy outcomes and newborn conditions (Koupilova et al., 2000; Kramer et al., 2001)

The objective of this study is to explore, whether and to what extent there is a direct or indirect relationship between the level of socio-economic condition of mother and the low birth weight with which the baby is born.

Materials and Methods :

The survey was conducted in five hospitals of Patna (Danapur Government hospital, Danapur Railway hospital, Kurji Holy family, Sidharth nursing home, Jakkanpur, Shristi nursing home, Kankarbagh) with gynecological and obstetrics services, during July to November 2010. The study was conducted on 400 pregnant women. Of the 400 births, 128 were with LBW i.e. < 2500 grams and the rest 272 were with normal weight i.e. > 2500 gram.

Upon arrival at the hospital for delivery, women were interviewed to determine if they met our inclusion criteria. Women with history of previous chronic conditions or those with twins or multiple pregnancies were not included. Following delivery, and after obtaining informed consent, each woman was given a questionnaire by the interviewer to obtain information about her socio-economic condition (education, income, occupation, possession of goods, reproductive (parity, previous case of LBW infant) and nutritional factors (weight, prenatal care, diet). Clinical records were also reviewed to verify information about each newborn.

A socio-economic level index was constructed in which (a) "High" indicated those women and their partners who are highly educated and economically well off. (b) "Medium" indicated those those women and their partners who are educated and economically sound but less in comparison to high category (c) "Low" indicated those women and their partners who did not have proper education and regular means of livelihood.

Results and Discussion :

In this study, we took up about 500 mothers and their infants and 100 of them were not included due to inadequate information.

Table1:- Maternal weight, age and education of women who gave birth to babies having normal weight and LBWs

VARIABLE	TOTAL BIRTH	BIRTH WEIGHT			
		<2500 GMS (n = 128)		<2500 GMS (n = 128)	
		No.	%	No.	%
Maternal age (years)					
20-25	196	59	30.1	137	69.9
25-30	168	55	32.7	113	67.3
30-35	36	14	38.9	22	61.1
Maternal Weight (Kgs)					
<48	32	9	28.1	23	71.9
49-54	107	50	46.7	57	53.3
55-60	225	45	20.0	180	80.0
>60	36	24	66.7	12	33.3
Maternal education					
Up to high school	198	71	35.9	127	64.1
College graduate	141	29	20.6	112	79.4
No qualification	61	28	45.9	33	54.1

We observed that of the 400 women, 128 women gave birth to low birth weight babies of which 50.50% were from low income class, 27.11% from middle class and 5.88% were from upper class (Table-1). The results showed that maternal age did not affect LBW, rather, overweight mothers gave birth to LBW babies. However, mothers who were illiterate and poor gave birth to more LBW babies (Table-1).

It was found that there is a high proportion of low birth weight cases from low income group and it may be mainly due to low access or utilization of prenatal services and maternal lifestyle and behaviour (stress, work load, improper diet, care, etc.). We used ownership of goods and having a job or business as indicators of socioeconomic. Using these indicators we found that low socioeconomic level is the most important risk factor for LBW, independent of other factors such as reproductive and nutritional characteristics, smoking, morbidity during pregnancy, and accessibility of health services and prenatal care. Despite efforts to decrease the proportion of newborns with LBW, success has been quite limited, and the problem persists in both developing and developed countries (Finch, 2003). In recent years, studies focused on explaining how social factors influence this problem have shown that populations with greater inequities have a greater proportion of newborns with LBW (Bloomfield et.al, 2003). Our results were similar to those of other studies describing a positive relationship between socioeconomic condition and effect on health (Conley & Bennett, 2001).

Although many socioeconomic factors related to LBW have been identified, the specific role of each of them is not known, limiting the scope of use of preventive actions.

Acknowledgement :

We are grateful to Dr. Sister Doris D'Souza A.C., Principal, Patna Women's College and the Research Committee for providing the facilities and financial support under the Basic Scientific Research (BSR) Scheme. We thank Dr. Shahla Yasmin, Head, Department of Zoology for her interest in our research work.

References :

- Bloomfield FH, Oliver MH, Hawkins P, Campbell MI, Philips DJ, Gluckman PD, Challis JR, Harding JE (2003). A Periconceptional Nutritional origin for noninfections preterm birth. *Science*. 300:606.
- Conley D, Bennett NG (2001). Birth weight and income, interactions Across generations. *Journal of Health and Social Behaviour*. 42:450-465.
- Finch BK (2003). Socioeconomic gradients and low birth-weight: empirical and Policy considerations. *Health Services Research*. 38 : 1819-1841.
- Goldenberg RL, Rouse DJ (1998). Prevention of Premature Birth, *New England Journal of Medicine*. 339 : 313-320.
- Koupilova I, Rahu K, Rahu M, Karro H, Leon DA (2000). Social determinants of birth weight and length of gestation in Estonia during the transition to democracy, *International Journal of Epidemiology*. 29 :118-124.
- Kramer MS, Goulet L, Lydon J, Seguin L, McNamara H, Dassa C, Platt RW, Chen MF, Gauthier H, Genest J, Kahn S, Libman M, Rozen R, Masse A, Miner L, Asselin G, Benjamin A, Klein J, Koren G (2001). Socio-economic disparities in preterm birth: causal pathways and mechanisms. *Paediatric and perinatal Epidemiology*, (Suppl 2) :104-123.
- Lynch J, Kaplan G (2000). Socioeconomic Position in *Social epidemiology*.13-35. .
- Mc Cornick MC (1985). The contribution of low birth weight to infant mortality and childhood morbidity. *New England Journal of Medicine*, 312:82-90.