Eastern Journal of Medicine 18 (2013) 13 -15

Original Article

A study of epidemiological factors affecting low birth weight

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Abstract. About half of all deaths in perinatal period are directly or indirectly related to low birth. A multifactorial inter-relationship exists between the pregnant mother's environment and growth of fetus. There are numerous factors associated with low birth weight and if these factors are detected early and addressed properly, the low birth weight and the consequences thereof can be reduced. To identify the epidemiological factors affecting low birth weight in our set up.This a cross sectional study. August 2010 to July 2011. A total of 500 recently delivered mothers with alive born babies.Chi-square test was used in statistical analyses. Maternal age, socioeconomic and educational status, interpregnancy interval and number of antenatal visits along with maternal anemia, hypertension and urinary tract infection, during pregnancy were significantly associated with low birth weight. Proper health education along with over all socioeconomic development, are the very important steps to be taken to decrease the incidence of low birth weight.

Key words: Low birth weight, epidemiological factors, morbid factors

1. Introduction

Low birth weight (LBW) is defined as a body weight of less than 2500 gr at birth. More than twenty million low birth weight babies are born every year throughout the world, in spite of considerable efforts to improve the maternal and child health quality. About half of all deaths in perinatal period are directly or indirectly related to low birth weight (1). And the single most important predictor of infant mortality, especially of deaths within the first month of life, is low birth weight. About 15.5% of all births are born with low birth weight globally (2). With about ninety percent of these born in developing countries.

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Received: 27.04.2012
Accepted: 10.07.2012

There is a multifactorial inter-relationship between the pregnant mother's environment and growth of fetus. Low birth weight is an important national concern in India (3). The prevalence of low birth weight is slightly higher in rural areas than in urban areas (4).

There are numerous factors associated with low birth weight. The major ones include maternal factors like socioeconomic status, calorie intake, urinary tract infection and antenatal care. Other factors include smoking, maternal age, genital infections, maternal ill health and stress (5).

If the maternal risk factors associated with low birth weight are detected early and addressed properly, the low birth weight and the consequences thereof can be reduced (5). So it is exceedingly important to identify the various risk factors associated with low birth weight in a particular population. With this objective the present study was undertaken to identify the epidemiological factors affecting low birth weight in our set up.

The present study was undertaken to identify the epidemiological factors affecting low birth weight.

2. Materials and methods

The present study was undertaken at the Department of Community Medicine in our institute between August 2010 and July 2011. A total of 500 subjects were included. It was a cross sectional study and the study subjects were recently delivered mothers with alive born babies. Informed consent was taken from mothers before enrolment in the study. Information was collected from the mothers through face to face interview by a using a pre-tested questionnaire. Birth weight was taken from the records available with the mother. The data collected was subjected to analysis by standard statistical formula SPSS program. For comparative analysis chi-square test was used. At 95% confidence limit p value <0.05 was labeled as significant.

3. Results

The birth weight observed was between 1600 gr and 3400 gr with a mean weight of 2.64 Kg. The incidence of LBW was 26.8%. The sociodemographic characteristics of the mothers with low birth weight and normal birth weight groups are shown in (Table 1).

Table 1. Socio demographic profile of study subjects

Sociodemographic characteristic	Low birth weight	Normal birth weight	p value
Age			
18-24	35	78	0.003
25-30	71	153	
> 30	28	135	
Educational Status			
Illiterate	43	101	0.012
Primary school	30	75	
High school	26	73	
Secondary and above	35	117	
Occupation			
Housewife	107	267	0.145
Employee	27	99	
Socioeconomic status			
Low	47	98	0.041
Medium	72	196	
High	15	72	
Parity			
Primiparous	55	113	0.005
Multiparous	79	253	
Interpregnancy interval			
< 18 months	66	106	<0.0001
> 18 months	68	260	
Antenatal visits			
< 3	35	39	<0.0001
3-6	84	228	
> 6	15	99	

The inter-pregnancy interval and the number of antenatal visits were having statistically significant association with low birth weight (p <0.01). It was observed that the incidence of low birth weight babies was higher in mothers with lower educational and socioeconomic status and there was a statistically significant association between the two (p<0.05). Maternal age was an important factor in low birth weight babies and the incidence of low birth weight decreased with increase in maternal age and the association was statistically significant (p<0.01). However, the low birth weight in relation to occupation was not statistically significant.

Overall about 45.6% of the mothers were found anemic and about 48.05% of the anemic mothers delivered low birth weight babies and the association was statistically significant (p<0.05) (Table 2). Hypertension and urinary tract infection were also having strong association with low birth weight (p<0.05). Iron and calcium supplementation during pregnancy also had a significant association with low birth weight (p<0.05). This data show significant positive effect of iron & calcium supplementation during pregnancy.

Table 2. Morbid factors during pregnancy

Morbid factors	Low birth weight	Normal birth weight	p value
Urinary tract infection			
yes	53	107	0.037
no	81	259	
Hypertension			
yes	32	51	0.012
no	102	315	
Anemia			
yes	74	154	0.011
no	60	212	
Iron and calcium supplementation			
yes	89	282	0.021
no	45	84	

4. Discussion

The birth weight observed in our study was between 1600 gr and 3400 gr with a mean weight of 2640 gr that was more or less comparable to the findings observed by Negi et al (6), with a mean birth weight of 2670 gr.

We observed the incidence of low birth weight of about 26.8%. Negi et al. (6) observed the incidence of 23.8% while Kamalados et al. (7) reported low birth weight incidence of 24.6%.

The incidence of low birth weight babies was higher in mothers with lower educational and socioeconomic status and there was a statistically significant association between the two.

Matin et al (8), Deshpande et al. (5) also reported significant association between socioeconomic status and maternal education with low birth weight.

The inter-pregnancy interval and the number of antenatal visits were having statistically significant association with low birth weight. Less than 18 months of inter-pregnancy interval and less than 3 antenatal visits was associated with higher incidence of low birth weight. Comparable significant association was reported by Negi et al (6).

Maternal age was an important factor in low birth weight babies and the incidence of low birth weight decreased with increase in maternal age and the association was statistically significant.

Matin et al. (8) observed significant association of maternal age with low birth weight however the study by Negi et al. (6) did not report any significant association between the two. No significant relation was observed between the occupation and low birth weight.

Overall about 45.6% of the mothers' were found anemic and about 48.05% of the anemic mothers' delivered low birth weight babies and the association was statistically significant. Matin et al (8), Deshpande et al. (5) also observed significant higher incidence of low birth weight in babies with anemic mothers.

Hypertension and urinary tract infection were also having strong association with low birth weight. Iron and calcium supplementation during pregnancy was associated with lower incidence of low birth weight and the association was significant. Matin et al. (8) also reported significant association between the two.

5. Conclusion

Proper health education with strengthening of health and antenatal services during pregnancy, along with over all socioeconomic development, are the very important steps to be taken to decrease the incidence of low birth weight.

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