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The relationship between neonates Low Birth Weight (LBW) and maternal parity and addiction in Varanasi, India

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ABSTRACT

The study is an approach to find out the relationship between low birth weight and maternal parity in view of habit of addiction to tobacco and smoking. Two hundred pregnant women, with less than 60 days pregnancy, were registered and followed from Government hospitals in Varanasi. LBW baby and mother pairs were studied after excluding multiple births, normal birth weight and complicated pregnancies. Parity and addiction were interviewed at the time of registration. Simple correlation co-efficient (product moment) was computed to find the relationship between maternal parity and LBW. Further ANOVA was used to examine the difference between parity groups (0, 1, 2) with respect to LBW. The relationship between maternal addiction to tobacco and smoking was computed according to point bi-serial method. Overall occurrence of LBW babies was found to be 26%. Significant positive correlation was computed between low birth weight and maternal parity. However, significant negative correlation was seen between LBW and maternal addiction. In addiction, there was significant difference in LBW between different parity groups.

Key words : LBW, Maternal parity, Relationship, Addiction

Low birth weight (LBW) has been defined by World Health Organization (WHO) (1992) as weight at birth less than 2500 grams (5.5 pounds). More common in developing than developed countries, low birth weight contributes to a range of poor health outcomes. It contributes substantially to neonatal, infant and childhood mortality as well as to morbidity (Wilcox and Skaeven, 1992).

It remains an unresolved important concern in India, where the LBW rate is 30% (UNICEF, 2004). Infants with LBW have morbidity and mortality from infection of disease, malnutrition, growth failure and are also more likely to have abnormal cognitive development, neurological impairment and poor school performance (Mc Cormick *et al.*, 1990). These babies are at greater risk of cardiovascular disease, hypertension and diabetes in adult life (Suzuki *et al.*, 2000).

The LBW is a consequence of either preterm (< 37 weeks of gestation) delivery or intrauterine growth retardation or of both (WHO, 1984). The causes of LBW are multifactorial (Kamaladoss *et al.*, 1992). It is associated with maternal haemoglobin status, socio-economic status, height, birth interval, tobacco exposure, maternal age, body mass index, parity, (Deshmukh *et al.*, 1938) and maternal smoking (Chiolero *et al.*, 2005).

In view of above cited observations, there is need of further studies for better understanding of complex interrelationship between mother and foetus, in order to make improvement in antenatal recommendations, foetal health and to decrease the rate of neonatal mortality and morbidity.

The purpose of the present study was to (i) to find out the relationship between maternal parity and LBW of babies and (ii) to analyse the relationship between maternal addiction relating to smoking, tobacco exposure and LBW of babies. Parity here denotes the number of previous pregnancies beyond the period of viability.

METHODOLOGY

Few Government hospitals were selected on the basis of purposive sampling technique, which served the needs of the experimental subjects belonging to all socio-economic status. A total of 200 pregnant women, with less than 60 days pregnancy, were registered and followed up. Pairs of LBW baby and mother were selected after excluding multiple births, normal birth weight and complicated pregnancies.

Interview schedule was prepared and administered at the time of registration to know the history of previous pregnancies regarding, number of live births, abortion, death of any child after birth, still birth, in addiction to maternal addiction to smoking and tobacco chewing.

Simple correlation co-efficient was computed following product moment formula, to find out the relation between maternal parity and LBW. Further, the analysis of variance was carried out in order to examine the difference between parity groups (0, 1, 2) with respect to LBW. In this regard the relationship between maternal

addition and LBW of babies was computed according to point biserial method.

RESULTS AND DISCUSSION

Overall occurrence of LBW babies was found to be 26% and the mean LBW of neonates was accounted 1.88 kg (Table 1). Two women delivered twins and there were three still births. Out of 52 (26%) LBW baby and mother pairs, 63.46% were nulliparous at the time of registration and 55.77% were addicted to tobacco and smoking.

Table 1 shows correlation between maternal parity and LBW. It can be seen that there was significant positive correlation *i.e.* birth weight increased with increasing parity.

Table 1 : Correlation between maternal parity and LBW

Variable	Number	Mean	SD	Standard error of mean (SEM)	Coefficient of correlation	Interpretation
LBW (kg)	52	1.88	0.45	0.10	0.49**	**,p = 0.01
Parity	52	0.52	0.75	0.06		

The distribution of LBW according to parity (0, 1, 2) is presented in Table 2, indicating that highest percentage of LBW babies (63.46%) belonged to the mothers who were nulliparous (parity = 0) at the time of registration and the lowest mean LBW (1.73) also belonged to nulliparous.

Table 3 shows that difference between parity groups (0, 1, 2) in respect to LBW. It can be seen that f_{tab} for (2.49) df at 1% level of significance was greater than f_{cal} (=7.699) therefore there was significant difference in LBW between different parity groups.

The correlation between LBW and maternal addiction is shown in Table 4. There was significant negative correlation (r_{pbis} = - 0.36) between maternal addiction and low birth weight.

The Present study showed that the rate of LBW infants decreased significantly with increasing parity *i.e.* the birth weights increased with increasing parity. This was consistent with results from a number of other studies (Deshkukh *et al.*, 1998, Gaurav *et al.*, 2003).

The risk of delivery LBW was higher in women who had history of tobacco chewing and were also exposed to passive smoking. The most widely accepted explanation is that, smoking causes foetal hypoxia by increasing carboryhemoglobin levels, attenuating blood oxygen unloading to foetal tissue and reducing maternal blood supply to the placenta. Various studies emphasized that passive smoking and tobacco chewing reduce birth weight (Conter *et al.*, 1995, Goel, *et al.*, 2004, Chiolero *et al.*, 2005) of the new born.

Table 2 : Distribution of L.B.W. according to parity

Parity	LBW (kg)		
	frequency (n)	Percentage (%)	Mean
0	33	63.46	1.73
1	11	21.15	2.08
2	8	15.38	2.27

Conclusion :

The results of this study suggest that for reducing LBW, the strategy needs to focus attention on nutrition education to primigravida. The maternal addiction to tobacco chewing and smoking are significantly associated with intrauterine growth retardation, therefore tobacco chewing and exposure to passive smoking should be

Table 3 : Difference between parity groups in respect to L.B.W.

Source of variation	LBW (kg)				
	Sum of Squares (SS)	degree of freedom (df)	Mean Sum of Squares (MSS)	'F' value	Interpretation
Between parity groups	2.46	2	1.23	7.699**	**, p = 0.01
Within parity group	7.82	49	0.16		

$F_{tabulated}$ = 3.150 for (2, 49) df.

Table 4 : Correlation between LBW and maternal addiction

Variable	LBW (kg)					
	Frequency (n)	Percentage (%)	Mean (M_p and M_q)	Proportion (p,q)	Coefficient of correlation (r_{Pbis})	Inference
Addicted omen	29	55.77	1.74	0.56	- 0.36**	**, p = 0.01
Non-addicted women	23	44.23	2.06	0.44		

discouraged.

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