

## LOW BIRTH WEIGHT AND MATERNAL RISK FACTORS

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### Abstract:

**Objectives :** To study the socio-economic and maternal risk factors associated with low birth weight babies and to measure the strength of association.

**Study Design :** Hospital based case-control study.

**Setting :** Shri Sayajirao General Hospital, Vadodara.

**Sample size :** 312 cases and 312 controls.

**Participants :** Cases :- Mothers who delivered single, live baby less than 2500 gms i.e. low birth weight.

Controls:- Mothers who delivered single live baby more than 2500 gms.

**Study Variable :** Maternal age, literacy, anaemia, outcome of last pregnancy.

**Statistical Analysis :** Chi-square test and odd's ratio.

**Result :** Among cases, 14.5% mothers had age less than 20 yrs as compared to 7.3% mothers in control group. 68.6% mothers amongst cases were illiterate against 46.5% mothers in control group. 53.8% mothers had haemoglobin level 10gm% or less amongst cases and no statistically significant difference was found between low birth weight and outcome of last pregnancy.

**Conclusion :** The maternal risk factors associated with low birth weight in mothers attending S.S.G. hospital age maternal anaemia (OR 2.66), illiteracy (OR 2.51), maternal age less than 20 yrs. (OR 2.08). No association was found between low birth rate and outcome of last pregnancy.

### Introduction :

Birth weight is considered to be one of the important and reliable parameter in evaluation of foetal and neonatal well being. It is the most decisive factor in the chances of infant survival.

The World Health Organization (1993) has defined low birth weight, as new born weighing less than 2500-gm. within first hour of life. Low birth weight babies are five to six times more likely to die during perinatal period and three times more likely to die during infancy as compared to normal birth weight babies<sup>6</sup>.

Prevalance of low birth weight in India is 30%, which is very high when compared to 4-5% in developed countries<sup>5</sup>.

The etiology of this problem is not well understood. Many etiological factor have been held responsible. Studies correlating low birth weight to maternal & bio social factors are available, however not many studies have measured the strength of association between maternal factor & low birth weight.

The present case-control study was therefore designed with an objective to study the association between some maternal factors and low birth weight and to quantify the association.

### Material and Methods :

The present case-control study was carried out in department of obstetric & Gynaecology, Shri Sayaji rao General hospital, Vadodara by interviewing and examining the postnatal mothers for a period of 6 months i.e. from Dec 98 to May 99.

For the purpose of study World Health Organisation (W.H.O.) Criteria of low birth weight was taken. Case were the mothers who delivered single, live baby less than 2500 gm. i.e. low birth weight baby and control were the mothers who delivered single, live baby weighing 2500 gms or more i.e. normal birth weight baby.

Following mothers were excluded from the study mothers (1) Multiple births (2) Major congenital malformed baby, (3) Still births. Information obtained was filled up in pretested proforma. Data collected was entered and analysed with the help of computer package.

**Result :**

**Table I : Distribution of low birth weight babies according to birth weight**

Birth weight (in gms.)	Number	Percentage
Less than 1500	13	4.17
1500-1999	57	18.27
2000-2499	242	77.56
Total	312	100

Amongst low birthweight babies, 77.56% babies had birth weight between 2000-2499 gms. 18.27% had birth weight between 1500-1999 gms and 4.17% below 1500gms.

**Table II : Low birth weight and maternal age**

Maternal Age	Case		Control		Total	
(in years)	No.	%	No.	%	No.	%
Less than 20	45	14.5	23	7.3	68	10.9
20 to 34	265	83.9	279	89.4	541	89.9
35 or more	05	1.6	10	3.3	15	2.4
Total	312	100	312	100	624	100

The table II shows that among cases 14.5% mothers had age less than 20 yrs as compared to 7.3% mothers in control group. The difference was found to be statistically significant ( $p < 0.01$ ). The odd's ratio for low birth weight with maternal age as risk factor was 2.0 with 95% confidence interval being 1.19 to 3.66.

**Table III : Low birth weight and maternal education**

Maternal Education	Case		Control		Total	
	No.	%	No.	%	No.	%
Illiterate	214	68.6	145	46.5	359	57.5
Literate	98	31.4	167	53.5	265	42.5
Total	312	100	312	100	624	100

The above table shows that among cases 68.8% mothers were illiterate whereas among controls 46.5% mothers were illiterate. The difference was found to be statistically significant ( $p < 0.001$ ) and odd's ratio was found to be 2.5 with 95% C.I. being 1.81 to 3.49.

**Table IV : Low birth weight and maternal anaemia**

Maternal haemoglobin	Case		Control		Total	
(in gm. %)	No.	%	No.	%	No.	%
10 or less	236	75.6	168	53.8	404	64.7
More than 10	76	24.4	144	46.2	220	35.3
Total	312	100	312	100	624	100



The above table shows that among cases 75.6% mothers had haemoglobin level 10gm% or less as compared to 53.8% mothers in control group. The

difference was found to be statistically significant ( $p < 0.001$ ). The odd's ratio with maternal anaemia ( $Hb \leq 10gm\%$ ) as risk factor was 2.66 (C.I. 87 to 3.80).

**Table V : Low birth weight and outcome of last pregnancy**

Outcome of last Pregnancy	Case		Control		Total	
	No.	%	No.	%	No.	%
Unfavourable	37	20.7	31	15.1	68	17.7
Favourable	142	79.3	174	84.9	316	82.3
Total	312	100	312	100	624	100

Table V shows that among cases 20.7% mothers had unfavourable outcome in last pregnancy as compared to 15.1% among control group. The difference was not found to be statistically significant ( $p > 0.05$ ).

#### Discussion :

The study reveals maternal age less than 20 yrs and maternal illiteracy as risk factor for low birth weight which was also observed in many other studies<sup>1,3,5</sup>. Young adolescent who have not completed growing are likely to have weight for height less than older women and may consume fewer calories & other nutrients. Maternal education, an indicator of socio- economic status is an indirect causal risk factor. No association was found between literacy levels of mothers and low birth weight in some studies<sup>3</sup>.

In the present study maternal anaemia (haemoglobin  $< 10gm\%$ ) is found to be risk factor for low birth weight which is also documented in many other studies<sup>2,4</sup>. Anaemia, especially if severe, impairs oxygen delivery to the foetus and interferes with normal intra uterine growth or pregnancy duration.

The present study did not reveal any association between unfavourable outcome of last pregnancy & low birth weight. This could be because of small sample size.

#### Conclusions :

The present study suggest that the the maternal risk factors associated with low birth weight for mother's attending S.S.G. hospital are maternal anaemia (OR-2.66), illiteracy (OR-2.51), age less than 20 yrs (OR-2.08).

No association was found between low birth weight and unfavourable outcome of last pregnancy.

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