



## ASSOCIATED MATERNAL MEDICAL RISK FACTORS WITH LOW BIRTH WEIGHT IN A DISTRICT OF GUJARAT, INDIA.

### Community Medicine

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### ABSTRACT

**Background:** Low birth weight (LBW) (<2500 g), is the strongest determinant of infant morbidity and mortality. The aim of this study was to find the association of medical illness in mother during pregnancy with low birth weight in newborn.

**Methods:** The present study design was a community based cross-sectional study. It was conducted in an urban area of Jamnagar, Gujarat from Jan to Dec 2016. The study population included 400 mothers and their newborns residing in the study area. The pregnant women were interviewed using predesigned and pretested structured questionnaire.

**Results:** The maternal medical illnesses found to be significantly associated with low birth weight of newborns in our study were Anemia (p 0.000), PIH (p 0.000), APH (p 0.001).

**Conclusion:** To conclude the present study Maternal medical illnesses including gestational hypertension, APH and Anemia were found significantly associated with LBW.

### KEYWORDS

Low birth weight, medical risk factors, maternal.

### INTRODUCTION

The low birth Weight is an index of our status of public health in general and of maternal health and nutrition in particular.<sup>1</sup> The birth weight of an infant, simple as it is to measure, is highly significant in two important aspects. In the first place it is strongly conditioned by the health and nutritional status of the mother and in the second place it is one of the most important determinant of the chances of the newborn to survive and to experience healthy growth and development.<sup>2,3</sup>

Low birth weight is defined by WHO as a birth weight less than 2500 g (5.5 pounds). (before 1976, the WHO definition was less than or equal to 2500 g), since below this value birth-weight-specific infant mortality begins to rise rapidly. This is based on epidemiological observations that infants weighing less than 2,500 g are approximately 20 times more likely to die than heavier babies.<sup>4</sup>

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Birth weight is affected to a great extent by the mother's own foetal growth and her diet from birth to pregnancy, and thus, her body composition at conception. There are many risk factors for LBW including maternal demographic, anthropometric, medical factors, paternal and fetal factors, environmental and nutritional factors, and lack of prenatal care.<sup>5</sup>

The present study is done to see the association of medical factors in mother during pregnancy and low birth weight.

### MATERIALS AND METHOD

The present study design was a community based cross-sectional study. It was conducted in an urban area of Jamnagar, Gujarat from Jan 2016 to Dec 2016.

**Study population:** The study population consisted of newborn babies (< 28 days) in urban areas of the study district born during the study period and information is sought from their respective mothers.

**Sample size:** Previous literature pertaining to low birth weight for study area was not available. So, by assuming 50% as prevalence of low birth weight, 95% confidence interval and 5% level of significance, the sample size was calculated by the Cochran's formula i.e.  $4pq/L^2$ ; where p = prevalence in consideration, q = 1 - p, L = relative error taken into consideration i.e. 10% of p. By applying the above formula, the sample size came out to be 384, which was rounded off to

400 study subjects.

**Sampling technique:** There were 19 wards in the study district, out of which 4 were selected randomly for the purpose of study. From each of the selected wards, 100 study subjects were selected consecutively till the desired sample was achieved.

**Data collection:** The study subjects were interviewed through house to house visit. Record of all antenatal mothers was obtained from the nearest anganwadi centre and were tracked for their delivery. The study subjects were informed about the purpose of study and their privacy and confidentiality was ensured. Data were collected with the help of an oral questionnaire by in person interview with the mother after obtaining an informed consent. Birth weight of an infant less than 2500 g (up to and including 2499 g), irrespective of gestation, was considered as low birth weight.

**Data analysis:** Collected data were compiled in Microsoft Excel sheet and analyzed using SPSS for Windows, subscription version. Results were expressed as mean ( $\pm$  S.D.), percentages and chi square test was applied to find association between the variables. The p-value less than 0.05 was taken as statistically significant with a confidence level of 95%.

### RESULTS

Table 1 shows distribution of the mothers on the basis of the having history of medical illness during pregnancy. Majority of the mothers 244 (61%) are anaemic. 5% and 3% of the mothers have history of hypertension and UTI respectively. Malaria, Dengue, thyroid and APH contribute only 3.4%

**Table 1 Distribution Of Mother's Having History Of Medical Illness During Pregnancy**

H/O Illness during last pregnancy	Frequency (N=400)	Percentage (%)
Anaemia	244	61
UTI	12	3
Hypertension	20	5
Malaria/Dengue	5	1.3
Thyroid	3	0.8
APH	5	1.3
Others*	7	1.8

\*Vomiting, Hypotension, amniotic fluid leak, etc.

Table 2 shows association of maternal medical illness during pregnancy with low birth weight. Out of 248 women who were anaemic, 65(26.2%) had low birth babies and this association was found to be statistically significant (p=0.000). In 12 women who had

UTI, 7(58.3%) had LBW babies.(p=0.001). Out of 7 women who had other illness like vomiting, hypotension, amniotic fluid leak etc during pregnancy,4(57.1%) had LBW babies.(p=0.012)

Out of 20 women who were hypertensive, 11 (55%) gave birth to low

birth weight newborns compared to those who were normotensive. Thus, high blood pressure was associated with lower birth weight of newborn (p = 0.000). In our study high percentage of LBW (80%) was seen in mother who had antepartum haemorrhage during pregnancy and the association was significant (p=0.001).

**Table 2 Association Between Mother's H/o Illness During Last Pregnancy And Birth Weight Of Newborn(n=400)**

H/O Illness during last pregnancy	Birth weight <2.5		Birth weight ≥2.5		Total		TEST of Significance	P Value
	n	%	n	%	n	%		
Anaemia	65	26.2	183	73.8	248	61	17.182	0.000
UTI	7	58.3	5	41.7	12	3	11.620	0.001
Hypertension	11	55	9	45	20	5	16.505	0.000
Malaria/Dengue	2	40	3	60	5	1.3	1.310	0.252
Thyroid	1	33.3	2	66.7	3	0.8	0.352	0.553
APH	4	80	1	20	5	1.3	11.597	0.001
Others*	4	57.1	3	42.9	7	1.8	6.285	0.012

\*Others include vomiting, hypotension, amniotic fluid leak etc.

## DISCUSSION

Majority of the mothers 244 (61%) are anaemic. 5% and 3% of the mothers have history of hypertension and UTI respectively. Malaria, Dengue, thyroid and APH contribute only 3.4%

6.99%, 8.67% and 20.41% of pregnant women had significant illness during pregnancy in other studies<sup>6,7,8,9</sup>. The incidence of medical illness noted in these studies is higher because they were conducted in hospitals. The incidence of pregnancy induced hypertension in general population is 5-15%<sup>9</sup>. In a study conducted in urban slum communities of Delhi, 1.8% of pregnant women had preeclampsia<sup>10</sup>. A study carried out in Karnataka, 0.4% of pregnant women had high blood pressure<sup>11</sup>. Similar results were shown in a study done in east delhi where majority (88.8%) of the mothers had no health problem during their pregnancies while 4% had hypertension, 1.4% had diabetes and one mother suffered from tuberculosis.<sup>12</sup>

Out of 20 women who were hypertensive, 11 (55%) gave birth to low birth weight newborns compared to those who were normotensive. Thus, high blood pressure was associated with lower birth weight of newborn (p = 0.000). The risk of having a LBW baby was found to be relatively higher among mothers that had hypertension in pregnancy and antepartum haemorrhage (APH) as well as primiparous mothers. This is consistent with the findings from studies in other African countries<sup>(13,14,15)</sup> Hypertension was found to be significantly associated with low birth weight babies in this study. The same was documented by Aghamolaei et al<sup>16</sup> also support our study that bleeding during pregnancy was found to be significantly associated with LBW babies.

In our study high percentage of LBW (80%) was seen in mother who had antepartum haemorrhage during pregnancy and the association was significant (p=0.001). In 12 women who had UTI, 7(58.3%) had LBW babies.(p=0.001). out of 7 women who had other illness like vomiting, hypotension, amniotic fluid leak etc during pregnancy, 4(57.1%) had LBW babies.(p=0.012) Out of 248 women who were anaemic, 65(26.2%) had low birth babies and this association was found to be statistically significant(p=0.000)

A study done by Suman kumara et al confirms the influence of obstetrical medical diseases factors which could have a role in increasing the risk of adverse outcomes. Risk Factors are Parity, Birth Interval, Antenatal Visits, TT Immunization, Previous Obstetric History and Present Medical Diseases during Pregnancy especially Anemia, PIH, Diabetes, HIV.<sup>17</sup> The above findings are consistent with results of our study.

Maternal medical risk factors including gestational hypertension, and anemia were found significantly associated with LBW.. Gestational hypertension leads to reduce uteroplacental flow, which increases the risk of LBW. GDM can lead preterm labor and other complications as well.<sup>18,19,20</sup> A large number of epidemiological and biological evidence support this fact.

Better pregnancy outcome can be expected by providing adequate antenatal care and nutrition, effective management of complications.

## CONCLUSION:

To conclude the present study Maternal medical illnesses including gestational hypertension, APH and Anemia were found significantly

associated with LBW. Strengthening of the referral services, screening of all pregnant women and timely referral of women with high risk factors is recommended.

**Conflict of interest** - None.

**Source of Funding** - None.

**Ethical clearance** - Ethical clearance taken from Institutional Ethical Committee.

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