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Incidence & Risk factors for Low birth weight, Very Low birth weight & Extremely Low birth weight babies in Western Rajasthan

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Abstract

Introduction: To find out the incidence of Low birth weight babies and assess the various risk factors responsible or contributing the production of Low birth weight, Very low birth weight, Extremely low birth weight babies

Materials and Method: Babies with birth weight 2500 grams or below were included in the study. The detailed maternal history including complications during pregnancy and all parameters of included babies like gestational age of newborn (assessed by modified perkin's criterion) were noted in predesigned proforma.

Results: The incidence of Low birth weight (LBW), Very low birth weight (VLBW) and Extremely low birth weight (ELBW) babies was 30.725%, 2.72% and 0.89% respectively. Maximum number of mothers who delivers LBW, VLBW and ELBW babies were belonged the age group of 20-35 years. We found that mothers with 2nd and 3rd parity had better birth weight (37.4%) in LBW group, as compare to primipara (32.2%) and grand multipara (30.5%). Mothers with PIH had delivered the maximum numbers of LBW babies.

Conclusion: There was increased risk of delivering LBW babies in teenage pregnancy, primipara, grand multipara, mothers with anemia, APH, PIH and Chronic UTI.

Keywords: LBW babies, Maternal age, Parity

Introduction

Low birth weight (LBW) is the term used to define infants who are born too small, and preterm birth is the term used to define infants who are born too soon. Today's big baby is tomorrow's healthy adult. Key note was given in international conference on "Perinatal Programming".[(1)]

According to WHO expert group on prematurity any neonate weighing 2500 gms or less than at birth is termed as low birth weight whether it is pre-term or term. Very low birth weight babies (VLBW) are those weighing less than 1500 gms Extremely low birth weight infants (ELBW) mean birth weight less than 1000 gms.[(2)]

The incidence of low birth weight is estimated to be 15% worldwide with a range of 3.3 -3.8% and are mostly in developing countries.[(3)] About 7-10 million low birth weight babies born annually in India, which constitute 30-40% of total babies born in different part of India.[(4)]

Complications of pregnancy like toxemia of pregnancy, antepartum hemorrhage, acute and chronic medical illness, like Anemia, chronic UTI, Tuberculosis, diabetes mellitus, which have adverse effects on the fetal growth and responsible for causing low birth weight babies.

A study is planned in the Department of Pediatrics, Umaid Hospital RIMCH, Dr. S.N. Medical College, Jodhpur to know the incidence of low birth weight babies and to assess the various risk factors which are either responsible or contributing in causing the LBW, VLBW and ELBW babies.

Materials and Method

The present study was conducted in the Department of Pediatrics, Umaid hospital for women and children, RIMCH, Dr. S.N. Medical College, Jodhpur.

The sample was selected from 8266 consecutive live born babies delivered in the hospital from 1st April 2005 to 31st October 2005. All babies who were 2500 gms or below at birth were included in the study. All parameters of baby weighing 2500 gms or below and detailed maternal history were recorded in predesigned proforma.

Exclusion Criteria

1. IUD babies
2. Still born babies

Maternal Data: Detail of maternal history was taken from maternal case sheet & recorded on proforma. Antenatal complication like pregnancy induced hypertension, eclampsia and pre-eclampsia, antepartam hemorrhage & postpartum hemorrhage were also inquired about.

Any illness during pregnancy or before pregnancy like diabetes, Anemia, T.B. or any chronic illness like, Asthma, Epilesy, RHD and a history is taken for any medication given in pregnancy period for these illness were recorded on proforma.

Socio economic status was determined by modified method of kuppaswami.[(5)]

New Born Babies Data: Data regarding new born baby was taken from labour room operation theater and from post-natal wards and are entered in predesigned proforma. Gestational age of baby was determined by

last menstrual period/ expected date of delivery or by ultra-sonography examination of mother in labour room or by Modified Perkin's criteria.[6]

Statistical Analysis: Chi-square (x2) test was offered in order to evaluate the significance of difference between two proportions.

Results

The present study was conducted in the Department of Pediatrics, Regional institute of Maternal and Child Health, Umaid Hospital for women and children, Dr. S.N. Medical College Jodhpur from 1 April 2005 to 31 Oct. 2005.

A total number of 8266 consecutive live birth babies were enrolled during study period with M:F 0.93:1. A total number of 2542 Low birth babies were delivered, out of which 28% LBW 1.8% VLBW and 0.9% were ELBW. The incidence of LBW, VLBW and ELBW babies was 30.725%, 2.72% and 0.89% respectively (Table 1). 80% LBW babies were more than 1.8 Kg. and they do not need any special care.

Maximum mothers who deliver LBW babies belong to the age group of 20-35 years (87.07%). In LBW group maximum number of babies were delivered by mother aged 20-35 years (88.3%) followed by <20 years (10.4%) (P<0.05, CHX 2 11.6), whereas in VLBW group maximum number of babies were again delivered by mother aged 20-35 years (74.8%), followed by teen aged mothers (<20 years) (23.8%) (P<0.001). In ELBW group maximum number of babies were delivered in age group 20-35 years (59.5%), followed by teen aged mothers (21.6%), (P<0.01) but the percentage of ELBW babies delivered by mother's age > 35 years has been considerably increased (18.9%) (Table 2).

We found that mothers with 2nd and 3rd parity had better birth weight (37.4%) in LBW group, as compare to primipara (32.2%) and grand multipara (30.5%) (P<0.01, CHX2 - 7.4). In VLBW group maximum babies were delivered by mothers with 2nd and 3rd parity (43%) followed by multipara mothers (31.8%) (P<0.04). In ELBW group there was no definite pattern seen (Table 2).

Complications of pregnancy seen in our study were PIH (17.93%) followed by APH (2.95%) and P.P.H. (1.14%). In LBW, VLBW and ELBW group maximum babies were seen in PIH mothers i.e. 13.7%, 71.5% and 41.9% respectively followed by mothers with history of APH (Table 2).

When we compare birth weight pattern of LBW babies with medical illness of mother during pregnancy we found that mother with major system illness had poor birth weight i.e. RHD, UTI as compare to minor illness like anemia. In LBW group maximum percentages of babies were delivered by anemic mothers (21.5%) followed by chronic UTI (2.3%). In ELBW group maximum babies were delivered again by mothers having anemia (54.3%) followed by RHD (7.9%). In ELBW group maximum babies were delivered by mothers having anemia (31.1%), followed by Chronic UTI (10.8%) (Table 3).

Table 1: Demographic Characteristics of the Study Subjects

	Total (n=8266) (%)	**Male (n=3988) (%)**	**Female (n=4278) (%)**	**Incidence**
Normal Weight >=2.5 kg	5724 (69.3)	2773 (69.5)	2951 (69.0)	
Low Birth Weight 1.50-2.49 kgs	2317 (28.0)	1112 (27.9)	1205 (28.2)	30.725%
Very Low Birth Weight 1.00-1.49kgs	151 (1.8)	69 (1.7)	82 (1.9)	2.721%
Extremely Low Birth Weight < 1.0kg	74 (0.9)	34 (0.9)	40 (0.9)	0.89%

Table 2: Low Birth Weight & Correlation with Maternal Factors

Birth Weight	**Maternal Age**			**Parity**			**Complication of Pregnancy**		
	< 20	**20-35**	**> 35**	**1**	**2-3**	**4+**	**PIH (n=456) (%)**	**APH (n=75) (%)**	**PPH (n=36) (%)**
Low Birth weight (n=2317) (%)	240 (10.4)	2044 (88.3)	33 (1.4)	746 (32.2)	865 (37.4)	706 (30.5)	317 (13.7)	57 (2.5)	28 (1.2)
Very Low Birth Weight (n=151) (%)	36 (23.8)	113 (74.8)	2 (1.3)	38 (25.2)	65 (43.0)	48 (31.8)	108 (71.5)	12 (7.9)	7 (4.6)

Extremely Low Birth Weight (n=74) (%)	16 (21.6)	44 (59.5)	14 (18.9)	22 (29.7)	34 (45.9)	18 (24.3)	31 (41.9)	6 (8.1)	1 (1.4)

Table 3: Relationship of Maternal Illnesses and Low birth Weight

Maternal Illness	Low birth weight (LBW)	Very Low Birth weight (VLBW)	Extremely Low birth weight (ELBW)
Anaemia (n=603)	498(21.5%)	82(54.3%)	23(31.1%)
Tuberculosis (n=41)	32(1.4%)	7(4.6%)	2(2.7%)
Chronic urinary tract infection (n=66)	54(2.3%)	4(2.6%)	8(10.8%)
Rheumatic heart diseases (n=30)	17(0.7%)	12(7.9%)	1(1.4%)
Diabetes (n=8)	8(0.3%)	0(0%)	0(0%)

Discussion

The average birth weight of an Indian baby, born at full term is about 2800 grams. While in affluent countries it is 3000 grams. Usually, a birth weight of 1800 grams is used as cut-off point for providing special neonatal care.[7]

The purpose of this study was to find out the magnitude of the problem and to study the possible risk factors responsible for Low Birth Weight babies, in our Institute which caters Western Rajasthan.

Out of 8266 consecutive live birth babies' 2542 babies was low birth weight (according to WHO definition). The incidence of Low birth weight babies in our study was 30.725% (Table 1). According to United nation children fund New York 2004 the incidence of LBW babies was comparable to that of our study. In developing country i.e. like India incidence of LBW babies were 30%, Bangladesh 30%, Bhutan 15%, Maldives 22%, Myanmar 15%, Nepal 21%, Pakistan 19%, and Srilanka 22% in 2004.

The increased incidence of LBW babies in developing countries are probably due to poor socioeconomic status, large population, illiteracy, poor educational states and other environmental factors are operating which are responsible for causing LBW babies.

Figures in our study have shown that teen aged pregnancy and maternal age more than 30 years had adverse effects on birth weight of babies. Sainba et al[8] and Srivasta et al[9] found in their studies that as the maternal age increases birth weight also increases up to the age of 25-30 years and after that it start decreasing which has been also notice in our study. David and Lucile[10] of Packard foundation noticed that maternal age less than 20 years and more than 30 years is a risk factor for occurrence of LBW babies. According to Washington state department of health,[11] LBW babies born to mother less than 20 years of age and older than 34 years had a significant increased risk of delivering LBW babies as compare to women of 25-29 years.

Pregnancy outcome including birth weight and weight for gestational age are less favorable among adolescent and women over 30 years of age, as the young adolescents who have not completed growing are likely to have a lower weight and height than older mother and may compete for calories and nutrients with her fetus and more over their pregnancy are often unwanted or unplanned & they are often late in seeking antenatal Care.[12]

In our study it has been shown that primipara and grandmultipara mothers were having increased chances of having LBW babies as compare to mothers with 2nd and 3rd parity and this association is statistically significant. Dhall K. and Bugga et al[13] in their study found that first born babies were significantly lighter in weight that IInd born babies after that the birth weight decrease in para 3,4 and 5th and above.

Primipara and Multipara mothers have adverse effects on their fetus in respect to weight as well as in their weight for gestational age as primipara mothers had more chances of complication on pregnancy i.e. Anemia, PIH, etc. and grand multipara women had more chances of having PPH, anemia, effects of repeated pregnancies and other age related complication.

The maximum reduction in birth weight seen in PIH mothers may be because of its adverse effects on placental circulation. The babies delivered by PIH mothers were predominantly SGA because PIH had chronic adverse effects on fetal growth, whereas in APH fetal growth is affected in latter part of their pregnancy. So baby delivered by APH mothers are mostly appropriate for gestation age but these are usually premature.

Srivastava et al[14] reported a high association of pre-eclampsia and eclampsia with occurrence of LBW babies. Aris and Tomich et al[15] in their study of 355 live born babies weighing between 600 gm to 1250 gms found pre term labour in 30%, maternal and fetal complication in 35% which includes multiple

pregnancies, hypertensive disorder, congenital malformation, abruptio-placenta, and placenta previa.

Guha et al[16] in their study of 210 mothers found anemia (20%) followed by chronic hypertension, eclampsia and preeclampsia which together accounted for 10.95% of cases, RHD account for 2.86%, Placenta previa in 2.38%, APH in 3.38%, congenital malformation in 5.24%. In our study 49.05% cases had no maternal and fetal abnormality.

In our study similar to Guha et al it has been observed that anemia was responsible for causing maximum reduction in birth weight followed by chronic UTI and RHD.

For prevention of occurrence of LBW babies in community there should be awareness programme for parents and grandparents about the knowledge of LBW babies and these should be delivered through multimedia, IEC department, Social welfare department and heath department. Such programmers should deal with improving the maternal nutrition and awareness of mothers about risk factors which are responsible for coursing LBW babies.

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