

## BIO-SOCIAL DETERMINANTS OF MOTHERS OF LBW BABIES AND ASSOCIATION OF THEIR HEALTH KNOWLEDGE REGARDING LOW BIRTH WEIGHT BABIES: A COMMUNITY BASED STUDY IN AN URBAN SLUM (DILAWARGANJ) NEAR MGM MEDICAL COLLEGE, KISHANGANJ, BIHAR

Shubhaditya Ray<sup>1</sup>, Anirban Roy Choudhury<sup>2</sup>, Rama Ram<sup>3</sup>, Manasi Chakraborty<sup>4</sup>, Jyoti Bikash Saha<sup>5</sup>, Arup Jyoti Rout<sup>6</sup>, Malvika Dubey<sup>7</sup>

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**ABSTRACT: BACKGROUND:** Low birth weight (LBW) is a major public health problem in developing countries including India. The epidemiological observations depicted that infants weighing lesser than 2500 g are approximately 20 times more likely to die than heavier babies, closely associated with the fetal and neonatal mortality and morbidity. The present study was undertaken with the objectives to find out the relevant socio-demographic and biological determinants of Low Birth Weight babies and to assess the degree of association between impact of health education and Low birth weight babies.

**METHODS:** A community based cross sectional study was conducted from May - August 2013 in Dilawarganj, an urban slum, the field practice area of Department of Community Medicine, MGM Medical College, Kishanganj, Bihar. Study population comprised of women in 3<sup>rd</sup> trimester of pregnancy belonged to DILAWARGANJ urban slum area. 100 mothers of low birth weight and normal birth weight babies at urban slum of Kishanganj (Among them 33 mothers had delivered LBW babies & 67 mothers had delivered normal babies) were selected and interviewed through house to house survey with the help of a pre-designed, pre-tested and semi-structured questionnaire. **RESULTS:** Among the socio-demographic factors that have been considered in the present study, it was observed that 51.5% mothers belong to age group 20 - 29, 84.8% mothers from Muslim community, 66.67% mothers were illiterate, 69.7% mothers were multipara, 75.76% mothers reside in a nuclear family 60.6% mothers were engaged in agricultural fields 66.67% belong to lower and poor socio-economic group. It was also observed that 84.85% mothers do not consume extra meals, 81.82% do not take adequate rest & sleep, 93.9% mothers take less than 100 IFA tablets, 69.7% mothers attend less than 3 ANC, 84.85% mothers practice exclusive breast feeding and 78.8% mother give vaccines to their babies. **CONCLUSION:** The study of LBW baby in Kishanganj, Bihar has highlighted the factors regarding high prevalence of LBW baby and identified socio-demographic profile and common existing problems. To combat these factors, better training to health care providers should be done and implementation of different policies by the government was needed.

**KEYWORDS:** determinants of low birth weight, low birth weight, socio-demographic profile, urban slum.

**INTRODUCTION:** Low birth weight (LBW) is a major public health problem in developing countries including India. The epidemiological observations depicted that infants weighing lesser than 2500 g are approximately 20 times more likely to die than heavier babies, closely associated with the fetal and neonatal mortality and morbidity.<sup>1</sup> It also leads to inhibited growth and cognitive development<sup>1</sup> and also associated with chronic diseases later in life.<sup>2</sup>

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According to World Health Organization (WHO), definition of “Low birth weight” is birth weight of newborn is 2500gm or less. The term “very low birth weight” refers to birth weight of newborn less than 1500gm. “Extremely low birth weight” refers birth weight of newborn 1000gm or less and the term “micropremie” refers when birth weight is below 500gm. The magnitude of low birth weight infants in developing countries is enormous. There are about one-third low birth weight babies in India with respect to total 22 million low birth weight infants in the world. Low birth constitutes 30% of live births in India.<sup>3</sup> practical cut-off for international comparison is based on epidemiological observations that infants weighing less than 2,500gm are approximately 20 times more likely to die than heavier babies. More common in developing than developed countries, a birth weight below 2,500gm contributes to a range of poor health outcomes.<sup>3</sup>

Low birth weight babies are of two types, a) Firstly pre-term; those are born before 37 weeks of gestational period. A “preterm baby” is expected to born with low birth weight. b) Secondly IUGR babies; includes those babies who have intrauterine growth retardations. These babies are undernourished (or small) for a given gestational periods (Dates) so they are also called “small for gestational age” (SGA) or “small for dates” (SFD) babies.<sup>4</sup>

There are so many risk factors in the mothers that may contribute to low birth weight include, increased parity, multiple pregnancies, history of previous low birth weight infants, maternal infection (TORCHS), poor nutrition, short stature, heart disease or hypertension, drug addiction, alcohol abuse and insufficient prenatal care. With specific interest to the environmental factors like smoking, lead exposure and other types of air pollutions.<sup>5</sup> A baby’s low birth weight can result from an infection during pregnancy. The mother has or poor blood flow to the uterus. Smoking, drinking, using drugs, and poor nutritional habits also can contributing to low birth weight, Hein says.<sup>6</sup>

The predisposing causes of poor uterine blood flow are high altitude, increase in the parity, twin baby, overwork, fatigue, mental tension, and maternal illness like toxemias, ant partum hemorrhage, anemia and chronic infections.<sup>7</sup>

A study was conducted in 2007 on incidence of low birth weight of neonates and the influencing factors that showed that the main factors resulting low birth weight in neonates are maternal literacy rate, nutritional status of the mother, body mass index before pregnancy, weight gain during pregnancy, age of the mother at the time of conception, multiple birth, gestation syndrome and nutrition instruction.<sup>8</sup>

Low Birth Weight (Birth weight <2.5kg) has been emerging as a problem of constant worry in the world, especially in developing countries like India. The causes are multifactorial. Most of the causes can be prevented with simple measures.<sup>9</sup>

Globally, more than 20 million infants are born with low birth weight. The number of low birth weight babies is concentrated in two regions of the developing world: Asia and Africa. Seventy-two per cent of low birth weight infants in developing countries are born in Asia where most births also take place, and 22 per cent are born in Africa. India alone accounts for 40 per cent of low birth weight births in the developing world and more than half of those in Asia. There are more than 1 million infants born with low birth weight in China and nearly 8 million in India (2004). Latin America and the Caribbean, and Oceania have the lowest number of low birth weight infants, with 1.2 million and 27,000, respectively.<sup>10</sup>

According to a study by the Ministry of Health of the Union Government, 30 per cent of the infants born in India were Low Birth Weight Babies, 10 per cent were less than 2 kg, three per cent weighed less than 1.5kg, and 0.7 per cent weighed less than one kg. The mortality rate among the low

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birth weight babies is unacceptably very high. As mothers, mostly in rural areas are illiterate so they are not utilizing the healthcare facilities which are available in the hospital so this leads to intra-uterine growth retardation and then low birth weight babies.<sup>11</sup>

In India, according to National Family Health Survey-3 (2010), prevalence of low birth weight babies is 21.5%.<sup>12</sup> Low birth weight is a major cause of infant mortality & is considered as a sensitive index of nation's health and development. The frequency of low birth weight babies has for long served as one of the important indicators of quality of reproductive performance.<sup>13</sup> Across the world, neonatal mortality is 20 times more likely for low birth weight babies compared to normal birth weight babies. Weight at birth is directly influenced by general health status of the mother.<sup>14</sup>

Incidence of low birth weight babies in some states of India are Kolkata-28.6%, Ahmadabad-61.2%, Punjab-21.3% (2008). In Karnataka, prevalence of low birth weight babies is 23% in the year 2009.

Goldenberg, in 1994 says, low birth-weight is a major determinant of perinatal illness, disability and death. It accounts for the vast majority of perinatal mortality and more than 50% of long-term neurologic morbidity such as cerebral palsy. On another study in 2007, Behrman and Butler says babies weighing less than 2.500kg are more likely to suffer from a variety of health and developmental problems including respiratory, gastro-intestinal, hearing, sight, immunologic, cognitive, behavioural, social, emotional, health and growth. These issues come with considerable emotional and economic cost to their families and have a considerable economic impact on public services. Low birth-weight babies also carry a 40 times greater risk of neonatal death.<sup>15</sup>

This community based cross-sectional study was conducted in an urban slum of Kishanganj (Dilawarganj), which is situated near Mata Gujri Memorial Medical College and LSK Hospital. The area of study was specifically chosen adjacent to the MGM hospital hence that effective, controlled, and free services could be provided to the beneficiaries. The area is served by an auxiliary nurse midwife (ANM) from urban family welfare center and Anganwadi worker (AWW) of urban integrated child development services (ICDS) program. Study population comprised of women in 3<sup>rd</sup> trimester of pregnancy belonged to Dilawarganj urban slum area.

Inclusion criteria for the study population were pregnancy with completed 6<sup>th</sup> months, agreed to follow the intervention protocol during 3<sup>rd</sup> trimester and supposed to be delivered at M.G.M. Medical College & LSK Hospital (Newborn birth weight would be recorded within 24h; documentary proof of LBW was birth weight recorded in discharge certificate of the mother after delivery of the baby). Pregnant women with complications such as high-blood pressure, diabetes, Urinary Tract Infection (UTI), and hemoglobin level lower than 8 g% were excluded from the study because these complications per-se would have contributed to LBW; therefore, would have acted as the confounding factors and would have affected the effect of interventions. In our study, only 15 such cases were excluded.

### AIMS & OBJECTIVES:

1. To find out the relevant socio-demographic and biological determinants of Low Birth Weight babies.
2. To assess the degree of association between impact of health education and Low birth weight babies.

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### MATERIALS AND METHODS:

**Source of Data:** Mothers of the said urban slum of community near MGM Medical College & LSK Hospitals at Kishanganj, Bihar, who had delivered during the study period.

**Type of Study:** Community based cross-sectional study.

**Method of Data Collection:** By face to face interview with pre designed, pre tested, semi structured proforma.

**Variables:** Socio-demographic profile of mothers of low Birth weight babies. Health Knowledge.

**Sampling Technique:** Convenient sampling.

**Sample Size:** 100 mothers of low birth weight and normal birth weight babies at urban slum of Kishanganj. (Among them 33mothers had delivered LBW babies & 67 mothers had delivered normal babies)

### Inclusion Criteria:

- Mothers who were supposed to be delivered during the study period & interested to participate in the study.

### Exclusion Criteria:

- Mothers who were known to have physical disorder like vision and hearing impairment.
- Mothers who were not interested to participate in the study.

**Duration of the Study:** 16 weeks. (May 2013 to August 2013)

**Tool for Data Collection:** Tool consists of two parts;

- Part 1: Information regarding socio-demographic variables.
- Part 2: Structured interview schedule to assess level of knowledge.

### PLAN FOR STATISTICAL ANALYSIS:

**Statistical Analysis:** Frequency, percentage, chi-square and P-value will be used to explain demographic variable. The analyzed data will be presented in the form of tables, diagrams and graphs.

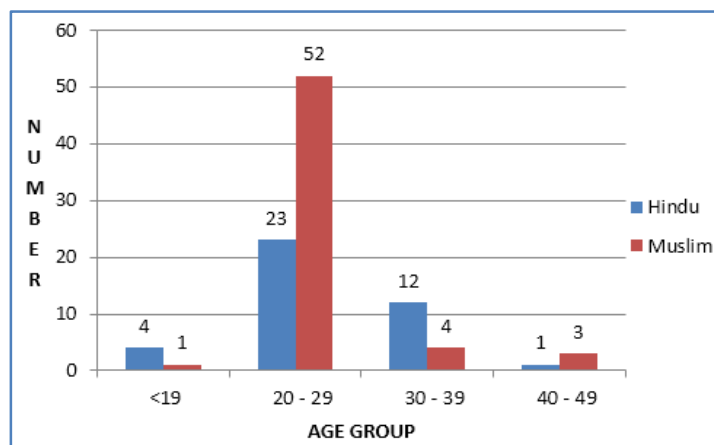
### RESULTS AND ANALYSIS:

Age in years	Number (Hindu)	Number (Muslim)	Total
<19	4	1	5
20 - 29	23	52	75
30 - 39	12	4	16
40 - 49	1	3	4
<b>Total</b>	<b>40</b>	<b>60</b>	<b>100</b>

**Table 1: Distribution of the mothers according to religion vs age group**

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**Comment:** Table 1 shows, majority of the mothers of LBW babies belong to 20–29 years of age group in both religion.



	Birth weight <2.5Kg (n=33)	Birth weight >2.5Kg (n=67)	$\chi^2, DF$	P- Value
Age of the mothers (yrs):				
<19	2 (6.06)	3	12.467, DF=3	p=0.00594 (p<0.05)
20-29	17 (51.52)	58		
30-39	11 (33.33)	5		
40-49	3 (9.09)	1		
Religion:				
Hindu	5 (15.15)	35	12.671, DF=1	p=0.00037 (p<0.05)
Muslim	28 (84.85)	32		
Educational status of mother:				
Illiterate	22 (66.67)	37		
Just literate	6 (18.18)	18		
Up to primary	1 (3.03)	7		
Secondary	4 (12.12)	3		
HS & above	0	2		
Parity:				
Primipara	10 (30.3)	30	1.93, DF=1	p=0.1647 (p>0.05)
Multipara	23 (69.7)	37		
Family type:				
Nuclear	8 (24.24)	26	2.09, DF=3	p=0.1482 (p>0.05)
Joint	25 (75.76)	41		
Occupation of the mothers:				
Housewife	6 (18.18)	37	14.448, DF=3	p=0.00235 (p<0.05)
Agricultural worker	20 (60.61)	15		
Daily labour	6 (18.18)	14		
Service	1 (3.03)	1		
Socio-Economic Status of the mothers:				
Upper high >Rs.10000	0	5		
High Rs.5000-Rs.9999	1 (3.03)	11		

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Upper-Middle Rs.3000-Rs.4999	6 (18.18)	7		
Lower Rs.1500-Rs.2999	13 (39.4)	17		
Poor Rs.500-Rs.1499	9 (27.27)	14		
Very poor <Rs.500	4 (12.12)	13		

**Table 2: Bio-Social Determinants of LBW Babies**

(FIGURES IN THE PARENTHESES INDICATE PERCENTAGES)

	<b>Birth weight &lt;2.5Kg (n=33)</b>	<b>Birth weight &gt;2.5Kg (n=67)</b>	<b><math>\chi^2</math>,DF</b>	<b>P- Value</b>
Consumption of extra meals: Yes No	5 (15.15) 28 (84.85)	27 40	6.425,DF=1	p=0.0112 (p<0.05)
Adequate rest & sleep (10 hours): Yes No	6 (18.18) 27 (81.82)	41 26	16.421,DF=1	p=0.00005072 (p<0.05)
Number of consumed IFA tablets: <100 tablets >100 tablets	31 (93.94) 2 (6.06)	20 47	36.34,DF=1	p=0.00000 (p<0.05)
Number of ANC: <3 ANC >3 ANC	23 (69.7) 10 (30.3)	15 52	56.492, DF=3	p=0.00000 (p<0.05)
To keep the baby warm: Yes No	22 (66.67) 11 (33.33)	29 38	4.838,DF=1	p=0.0275 (p<0.05)
Exclusive Breast Feeding done: Yes No	28 (84.85) 5 (15.15)	50 17	1.346, DF=1	p=0.2459 (p>0.05)
Vaccination of the baby done: Yes No	26 (78.79) 7 (21.22)	39 28	4.116, DF=1	p=0.0424 (p<0.05)

**Table 3: Degree of Association between Impact of Health Education and Low Birth Weight**

(FIGURES IN THE PARENTHESES INDICATE PERCENTAGES)

**CONCLUSION:** This study was comprised of mothers of low birth weight babies in urban slum of community near MGM Medical College & LSK Hospitals at Kishanganj, Bihar:

- 51.52% of LBW babies belong to mothers of 20–29 years of age followed by 33.33% belong to 30-39 years of age; which was shown to be statistically significant.



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- 84.85% babies were born with LBW whose mothers belonged to Muslim community which was statistically significant.
- 69.7% babies were born with LBW whose mothers were multipara compared to primipara (30.3%). The difference between primipara and multipara cases was found to be statistically significant.
- 75.76% LBW babies born whose mothers belong to joint family. This was not a statistical significant data.
- 60.6% babies were born with LBW whose mothers were engaged in agricultural fields followed by 18.18% LBW babies whose mothers were housewife and daily labour.
- 84.85% babies were born with LBW whose mothers did not taken extra meals as a diet in antenatal period where as 15.15% babies were born with LBW whose mothers had taken extra meals.
- 81.82% babies were born with LBW whose mothers did not taken adequate rest and sleep in antenatal period where as 18.18% babies were born with LBW whose mothers had taken adequate rest and sleep.
- 94% babies were born with LBW whose mothers had consumed <100 IFA tablets in antenatal period where as only 6% babies were born with LBW whose mothers had consumed >100 IFA tablets.
- 69.7% babies were born with LBW whose mothers attended <3 ANC where as 30.3% babies were born with LBW whose mothers had attended >3 ANC.
- 66.67% babies were born with LBW who were kept warm by wrapping with warm clothes where as 33.33% babies were born with LBW who were not wrapped by warm clothes.
- 84.85% babies were born with LBW whose mothers offered breast milk as feeding to their babies where as 15.15% babies who were born with LBW did not offered breast milk by their mothers.
- Primary vaccines were given to 78.79% babies who were born with LBW where as 21.21% LBW babies did not receive any vaccines.

### RECOMMENDATION:

1. Development and implementation of awareness generation programme regarding child health morbidity and mortality. This can be accomplished by intensive IEC campaigns and counselling at community and at health facility level. Involving mass media in extensive campaign regarding prevention of Low Birth Weight.
2. Emphasizing prevention of delivery of LBW babies (premature baby and IUGR baby) by taking iron folic acid preparation, extra meals, adequate rest and sleep, at least 3 or more Ante Natal Checkup. Avoid home delivery by unskilled persons.
3. ASHA should be more active to ensure consumption of IFA preparation, adequate ANC, promotion of institutional delivery.
4. Knowledge regarding prevention of delivery of LBW babies and care of LBW babies should be enough. (To keep the baby warm, promotion of exclusive breast feeding, vaccination etc.)

### LIMITATIONS OF THE STUDY:

1. Availability of low birth weight babies at the period of study.
2. Infants who were born at home are not included in the study because most of those born at home, birth weight were not available.

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**AUTHORS:**

1. Shubhaditya Ray
2. Anirban Roy Choudhury
3. Rama Ram
4. Manasi Chakraborty
5. Jyoti Bikash Saha
6. Arup Jyoti Rout
7. Malvika Dubey

**PARTICULARS OF CONTRIBUTORS:**

1. Post Graduate Trainee, Department of Community Medicine, MGM Medical College & LSK Hospital, Kishanganj, Bihar.
2. Post Graduate Trainee, Department of Community Medicine, MGM Medical College & LSK Hospital, Kishanganj, Bihar.
3. Professor & HOD, Department of Community Medicine, MGM Medical College & LSK Hospital, Kishanganj, Bihar.
4. Professor, Department of Community Medicine, MGM Medical College & LSK Hospital, Kishanganj, Bihar.

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5. Professor, Department of Community Medicine, MGM Medical College & LSK Hospital, Kishanganj, Bihar.
6. Post Graduate Trainee, Department of Community Medicine, MGM Medical College & LSK Hospital, Kishanganj, Bihar.
7. Post Graduate Trainee, Department of Community Medicine, MGM Medical College & LSK Hospital, Kishanganj, Bihar.

**NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:**

Dr. Shubhaditya Ray,  
Post Graduate Trainee,  
Department of Community Medicine,  
MGM Medical College & LSK Hospital,  
Kishanganj, Bihar.  
E-mail: shubhaditya.ray@gmail.com

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