Study on Association of Low Birth Weight in the Block of Bhagabanpur-1, West Bengal, India.

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Abstract: Low Birth Weight (Birth weight < 2.5kg) is major problem in developing countries like India. There are several causes of low birth weight are maternal malnutrition, teenage pregnancy, low interval between babies, lacking of health related awareness as well as health education etc, this study to finding out the factors association of low birth weight in the block of Bhagabanpur 1 of Purba Medinipur district of West Bengal State, India. Cluster Sapling was taken from mothers following health card, polio card, pregnancy record card and interviewing the others date in door to door visiting. Results shows, out of 286 samples, 12.24 % low birth weight, is associated with maternal BMI and hemoglobin value, educational qualification of parents, poor economical condition and number of family members of these families.

Key Words: low birth weight, risk factors of LBW, maternal factors.

I. Introduction

Pregnancy is also knows as gestation, can occurs by sexual intercourse or by any assisted reproductive technology, leads formation of embryo and delivered a baby. Pregnancy can be divided into three trimesters, each trimester of 90 days. Birth weight is the body weight at its birth. Low birth weight is a weight while at birth less than 2500 gm (WHO, 1992). There are two types of low birth weight e.g. Very low birth weight baby (VLBW): birth weight < 1,500 gm and Extremely low birth weight baby (ELBW): birth weight < 1,000gm (VLBW Infants, 2004). Bhagabanpur is at $22^{0}05'38"N87^{0}45'32"E$, total population are of two categories 222,677 rural and 11755 urban, out of 52 % male and 48 % female. In the CD Block 159 primary schools, 12 middle schools 9 high schools, 17 higher secondary schools, 1 general college and 3 primary health centers and 35 subentries (C.D Block Wise Primary Census Abstract Data, 2011 census). Low birth weight is common problems in India. The primary causes of low birth weight (LBW) are premature birth e.g. born < 37 weeks gestation, intrauterine growth restriction (IUGR), fetal cause due to fetal distress, multiple gestation, erythroblastosis foetalis, placenta prevail, abruption placenta, fetal abnormalities etc (Karen Gill, 2016). Maternal malnutrition is important cause of LBW specially due to deficiency of vitamin A , Fe, Zn, folic acid. The secondary causes of LBW include high maternal blood pressure, teenage pregnancy, inadequate rest and continued heard work in period of pregnancy, street, anxiety, smoking, acute and chronic infection during pregnancy and psychological factors (A South Asia Priority, 2002). Maternal factors include malnutrition is most common causes of LBW in different studies has been found. An estimation shows 14.6 percent babies born with low birth weight globally out of 20.5 million new born in 2015 (UNICEF-WHO data, 2019). This was found the overweight and obesity induced the risks of preterm babies, may cause of low birth weight babies (Sarah D McDonald et al, 2010). The most of sign of low birth weight are clinically, LBW babies not able to conserved and generate the heat due to decreased stores of brown fat and glycogen leads to hypothermia, respiratory distress syndrome (RDS), deficiency of oxygen at tissue level (Hypoxia), hypoglycemia, anemia, hyperbilirubinemia due to hepatic immaturity, hemorrhage or polycythemia, infection, neurological problems e.g. cerebral palsy and learning disabilities, hearing disability, sudden infant death syndrome (SIDS) due to obstruction in air ways of respiratory system (VLBW Infants, 2004). The preventive kinds are invented that utilized for management of low birth weight such as proper ventilation due to respiratory problems, dopamine treatment for cardiovascular problems e.g. hypotension, trophin feeding is important for nutrition of low birth weight babies. Physical activity level (PAL) measurement is very important, it may assured in first trimester of pregnancy for maintains of maternal weight, not maintain it leads low birth weight, seen in heavy or moderate working mother in pregnancy period give low birth weight babies than sedentary life holding mothers in South India (Sumithra Muthayya, 2009).

This study for finding out the maternal different factors, socio-economical factors link in association of low birth weight babies, already it was found the malnutrition is major problem for LBW in developing countries due to uncontrolled pregnancy or population, teenage pregnancy, low interval of two babies, lacking health education or awareness, lacking of antenatal visits, not enough intake of folic acid and vitamin B12, etc. Different studies have been found, but in West Bengal including in the block of Bhagabanpur 1 have no data with the cause of low birth weight babies, as a rural areas. The aims of the current study for finding out the cause of low birth weight in the block of Bhagabanpur 1 of West Bengal.

II. Method:

2.1 Study Participants

The participants are woman who had health card, polio card or pregnancy record card and the babies age of within 5yr. Many mothers (15 participants) have no records of them, are not selected in the study. Some of mothers are not interested due to personal problems or missing the data survival card. Finally 286 participants are selected in the study.

2.2 Sample Design

Bhagabanpur 1 has 10 gram panchayats, from each 40 participants are randomly accepted. Finally 286 samples are selected, data are collected from the participants in visiting random method using.

2.3 Study Design

First, in study place as well as in house, questioner the participants the social kinds e.g. name, age, religion, sanitary status, educational status of participants with her husband, etc and economical factors e.g. monthly income of family with family members, earning members of family are collected. Second step, following health or polio or pregnancy card different data – weight of baby after birth, maternal factors – hemoglobin value, blood pressure, weight of mother, no of antenatal visit, intake of folic acid, iron tablet, etc during pregnancy period are recorded. Third step, height (cm) of mother is measured by anthropometric rod which not recorded in polio card, the data utilized for measurement of BMI that is measuring parameters of nutritional condition of mother of pregnancy period.

2.4 Statistical Analysis

The data of different parameters analysis as number and percentage. The chi-square test used as statistical multivariate analysis. The significant level is determine at $p = 0.05$.

III. Results and Discussion

The participants in Bhagabanpur 1 block, 286 mothers has babies of within age of 5yr, out of them low birth weight babies 35 (12.24%), age of mother at pregnancy above 20 year is more number than below 20 year of age. The hemoglobin level is low than normal in 2.10% participants. There are religion of two categories; hindu and muslin in the study is 91.95 % and 8.04%. respectively. There is totally sanitary system and house type are divide into kutcha and pucca shows 2.45% and 97.55 % respectively. There is labour categories man are more, service man very low than businessman. Most of mothers are housewife, monthly income of these family below 5000.00 per month is 38.46% and above 5000.00 per month is 61.54%. There is literate mothers are more than illiterate and fathers educational status is more in education of class - VIII level is 67.13%, at graduation level 2.79%, illiterate level is 3.85%.

The statistics shows that the association of LBW linking with maternal body mass index (BMI) hemoglobin value, occupation, educational qualification of parents, family size and monthly income. From the lacking of education as well as knowledge about health or health related education that effects birth weight. The hemoglobin value of mother at pregnancy period is important parameters or indicators of anemia that is cause of the deficiency of iron, vitamin B_{12} or folic acid in the foods during this period. The anemic condition may due to deficiency of vitamin C or digestibility disorders of GI tract. The lacking of vitamin and minerals is important due to cause of low birth weight baby. The lacking of monthly income as well as increased of family size that effects deficiency of food, deficiency of proper education, that cause of malnutrition is associated with low birth weight baby.

The result shows that age at pregnancy, height, weight of mother are not associated with LBW. The sanitary system, types of house, antenatal visits in pregnancy period are not associated with LBW.

Table 1: No, percentage and ratio between Normal weight and LBW babies of the participants

Characteristics	n	%	Ratio between Normal weight and LBW baby
Weight of baby			251 : 35 = 7.17 : 1
Normal weight baby	251	87.76	
Low birth weight(LBW) baby	35	12.24	

Table 2: Results of Descriptive Statics of Study Variables

	n	%	LBW	Normal	X^2	Result
Relation between LBW and maternal age at pregnancy						
< 20 year	93	32.52	16	76	3.35	Not Significant
>20 year	193	67.48	19	175		
Relation between LBW and Maternal Height						
<152 c.m.	108	37.76	16	92	1.07	Not Significant
>152 c.m.	178	62.24	19	159		
Relation between LBW and Maternal Weight						
< 50 k.g.	122	42.66	14	108	0.12	Not Significant
>50 k.g.	164	57.34	21	143		
Relation between LBW and Maternal Body Mass Index (BMM)						
<17.5 k.g./m^2 (Malnutrition)	31	10.84	9	22	49.46	Significant
18.50–24.99k.g./m^2 (Normal)	220	76.92	11	209		
>25 k.g./m^2 (Obesity)	35	24.48	15	20		
Relation between LBW and Maternal Hemoglobin value						
< 12 g.m./dl (Anemia)	277	96.85	31	246	8.97	Significant
>12 g.m./dl (Normal)	9	3.15	4	5		
Relation between LBW and No. of Antenatal visits						
<4	164	57.34	22	264	2.47	Not Significant
>4	122	42.66	13	273		
Relation between LBW and Educational qualification of Father						
Illiterate	11	3.85	8	3	57.87	Significant
Class - VIII	123	43.01	19	104		
M.P	63	22.03	2	61		
H.S	12	4.20	3	9		
Graduation	22	7.69	3	19		
Masters	55	19.23	0	55		
Relation between LBW and Maternal Educational qualification						
Illiterate	55	19.23	29	26	103.9	Significant
lliterate	231	80.77	6	225	4	
Relation between LBW and Occupation of Father						
Business	58	20.28	4	54	7.19	Not Significant
Service	5	1.75	1	4		
Labour	115	40.21	21	94		
Others	108	37.76	9	99		
Relation between LBW and Occupation of Mother						
Housewife	269	94.06	26	243	27.88	Significant
others	17	5.95	9	8		
Relation between LBW and Religions						
Hindu	263	91.96	27	236	11.84	Significant
Muslim	23	8.04	8	15		
Relation between LBW and Family Size (No. of family members)						
<5	271	94.76	29	242	11.36	Significant
>5	15	5.24	6	9		
Relation between LBW and Sanitary system						
Presence	280	97.90	34	246	1.12	Not Significant
Absence	6	2.10	1	5		
Relation between LBW and Type of house						
Kutcha	7	2.45	2	5	1.78	Not Significant
Pucca	279	97.55	33	246		
Relation between LBW and Monthly income of the family						
<5000.00	110	38.46	19	91	4.22	Significant
>5000.00	176	61.54	16	160		

IV. Conclusion

The low birth weight baby is associated with different maternal factors, out of them malnutrition of mother is most important factors for it, but this is important the cause of malnutrition due to several factors such as lack of health education, awareness of health related factors and low economical condition. This result in block Bhagabanpur 1 shows that the cause of LBW is associated with deficiency of proper health education or nutritional education, low economical condition and increased family members, so it is clear malnutrition is remarkably factors of low birth weight baby in the block of Bhagabanpur 1, that can be prevented throughout proper education, balanced died in pregnancy, control of family size, increasing family income or earning members.

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