



Study on Socio Cultural and Maternal Factors in Relation to LBW Babies and Their Immediate Outcome

Authors

Nasreen Ali¹, Budhia Majhi²

¹Junior Resident, ²Assistant Professor

Department of Pediatrics, M.K.C.G Medical College, Berhampur, Ganjam, Odisha-760004, India

Abstract

A baby's weight at birth is a strong indicator of maternal and newborn health and nutrition. Being undernourished in the womb increases the risk of death in the early months and years of a child's life. The incidence of low birthweight, defined as the proportion of newborns weighing less than 2,500 grams, is monitored through both health system surveillance and household surveys. In 2013, nearly 22 million newborns—an estimated 16 per cent of all babies born globally that year—had low birthweight. In south Asia it is as high as 28 per cent. At 28%, India had the third highest percentage of LBW newborns, behind only Mauritania (35%), Pakistan and Yemen (32% each).

The present study was conducted in the SNCU of MKCG medical college and hospital to evaluate the various socio cultural and maternal factors leading to low birth weight (LBW) babies and complication.

Keywords: Nutrition, Pregnancy complications, Literacy, LBW.

Introduction

A baby's weight at birth is a strong indicator of maternal and newborn health and nutrition. Being undernourished in the womb increases the risk of death in the early months and years of a child's life. India had the third highest percentage of LBW newborns as per global scenario. The prevalence of LBW in Odisha is 17% but some districts like Kandhamal have LBW as high as 42%.^[1] This study will help to know the incidence and causes of LBW in southern Odisha.

Socio-cultural and Maternal factors contributing factors for LBW are multifaceted and include factors such as maternal age, poor maternal nutritional status, and non-pregnant weight, gestational age, intervals between pregnancies, parity, educational status, violence during

pregnancy, lack of antenatal care (ANC) and very low socio-economic status. In India, low body mass index (BMI), short stature, anemia and/or other micronutrient deficiencies are known to increase the risk of giving birth to a baby with LBW. The nutritional status of a pregnant woman can be affected by many factors including low socio-economic status, higher parity and short inter-pregnancy interval. Women with low socio-economic status are more likely to have inadequate food intake, unhygienic housing and lack of sanitation, reduced ability to seek medical care and purchase medicine/supplements, which then affects the birth weight of their infants. The incidences of placenta previa and malpresentation increases with high parity and these complications may predispose a women to give birth to an infant

with LBW. Maternal nutrient stores may deplete as a result of short inter-pregnancy intervals thus may reduce the birth weight of an infant.

More effort is needed to identify women at risk of preterm labor and support them to give birth in a health facility that can offer extra care when needed, such as support for adequate feeding with breast milk, continuous skin to skin contact, antibiotics, and antenatal corticosteroids. To do this, it is critical that families, communities and health care workers value small babies so that they receive the life-saving care they need. To turn the tide on these preventable deaths, we need action across the spectrum of care from adolescence and preconception, pregnancy, the safe management of labor and delivery, and effective immediate and later postnatal care.

A safe and healthy start to life is at the heart of human capital and economic progress in every country, making care for small babies an essential investment in both the short- and long-term. As government leaders, civil society organizations, health workers, families, communities and other partners come together to enact change, we can prevent babies from being born too early and too small, and ensure that small babies get the critical life-saving care and nurturing they need.

Material and Methods

The study was conducted in the SNCU in year 2015-2017. The sample size was determined based on the prevalence of LBW in Odisha. Using 17% as prevalence and 10% as allowable error, using the formula $n=4PQ/D^2$ the sample size was calculated to be 1952. From which 106 fell under the exclusion criteria of multiple babies, still born or with congenital defects hence were excluded from the study. Total admissions 1846, It included 748 LBW babies admitted with weight less than 2.5 kg. Information such as name of mother, age, parity, pre-pregnancy weight, hemoglobin levels, bad obstetric history pre eclampsia, fetal distress, Socio-economic status, education and nutritional status were recorded. These results were compared with the rest 1098 babies with normal birth weight who were considered to be control.

The data collected were entered in the SPSS PC format and validated for internal consistency. For categorical variables, significant differences in proportions between the cases and controls were identified by the finding out Odds ratio, 95% confidence level and P value from Chi square test.

Results

Out of 1846 admissions, 748 Babies were categorized as LBW babies this constitutes 40% of the total neonatal admissions. The female to male ratio was 1:1.68 and showing that male are more predispose. (Table 1) Among the 577 preterm 70% were appropriate for date. This indirectly hints towards major contribution of environmental factors on the growing fetus in the later half of pregnancy. Most of the babies (41%) were having a gestational maturity of 28 to 32 weeks .and belonged to mothers aged between 21 to 25 years. 71% of the low birth weight babies were results of pregnancy virtually receiving no or infrequent antenatal care. Majority of the mothers in this study were primipara. 40% of the mothers belonged to low SES. Illiterate mothers are at an increased risk of having LBW babies (60%). This is mainly due to lack of health awareness and poor receptivity of health facility. As the education of the mother increases, the incidence of LBW decreases. 67% of the mothers who gave birth to LBW babies had done some kind of heavy work during their gestation. The protein intake deficit is 50%. About 2/3rd of the LBW babies were outcome of pregnancies in mother weighing below 50 kg (Table 2). Hence maternal malnutrition is definitely a contributor to fetal malnutrition. Lower the hemoglobin of the mother, smaller the birth weight. Pregnancy complications like antipartum hemorrhage, pre eclampsia, severe anemia, threatened abortion and malaria directly contributes towards LBW prevalence (Table 3). The commonest neonatal problems encountered in LBW population were hyperbilirubinemia, followed by sepsis and asphyxia (Table 4). Incidence of both morbidity and mortality in LBW babies is more in male 56% and 23% respectively. The neonatal mortality

turned out to be 31% in the present series. Neonatal infection ranked one in the list of causes and perinatal asphyxia being the 2nd commonest cause (Table 5). Thus gender of the baby, preterm of gestation. gestational age (GA)<32 weeks,

maternal age (MA)<25 years, maternal weight (MW)<50 kg, primi parity, ANC<3, education of the mother<=10,low SES and heavy work load during pregnancy have high odds of LBW baby (Table 6).

Table 1.Sample Distribution According to Sex

	NBW(1098)	LBW(748)	Total(1846)
Male	636(34%)	469(25%)	1105
Female	462(25%)	279(15%)	741

Table 2.Sample Distribution of Average Nutrient Intake during Third Trimester in Comparison with RDA in Mothers of LBW Babies

Nutrients/Day	RDA	Intake	Deficit
Calorie(Kcal)	2175	1541	643(30%)
Protein(gm)	65	32	33(50%)
Calcium(mg)	1000	701	299(30%)
Iron(mg)	38	26	12(31%)
Folic acid	400	256	144(36%)
Fat(gms)	30	22	8(26%)

Table 3 Sample Distribution of Various Pregnancy Complications in LBW and its Statistical Importance

Complications	NBW(1098)	LBW(748)	Odds Ratio	95% Confidence Interval	P Value
APH	96	211	4.1011	3.1525 to 5.3353	P < 0.0001
No APH	1002	537			
Pre Eclampsia	85	108	2.0111	1.4885 to 2.7172	P < 0.0001
No Pre Eclampsia	1013	640			
Malaria	78	176	4.0237	3.0241 to 5.3537	P < 0.0001
No Malaria	1020	572			
Anaemia(<=10gm%)	317	508	5.2149	4.2631 to 6.3791	P < 0.0001
No Anaemia	781	240			
UTI	74	152	3.5291	2.6259 to 4.7429	P < 0.0001
No UTI	1024	596			
Thr. Abortion	67	110	2.6531	1.9277 to 3.6514	P < 0.0001
No Thr. Abortion	1031	638			

Table 4.Sample Distribution of Morbidity Pattern in LBW

Complications	Male(416)	Female(204)	Total
Sepsis	101	60	161(26%)
Asphyxia	85	51	136(22%)
Hyperbilirubinemia	167	74	241(39%)
Pneumonia	12	60	18(3%)
RDS	34	8	42(7%)
Hypoglycemia	12	2	14(2%)
Hypothermia	5	3	8(1%)

Table 5.Sample Distribution of Mortality Pattern in LBW

Causes	Male(172)	Female(67)	Total(239)
Asphyxia	48	22	70(29%)
Infection	54	42	96(40%)
Hypothermia	12	8	20(8%)
RDS	30	12	42(18%)
NEC	2	0	2(1%)
Unknown	5	4	9(4%)

Table 6.Showing Various Risk Factors of LBW and their Statistical Relation

Risk Factors	Case(LBW)	Control (NBW)	Odds Ratio(OR)	95% Confidence Interval(CI)	P Value
Sex(M/F)	469 279	636 462	1.2211	1.0092-1.4775	0.0399
Term(P/T)	577 171	495 603	4.1105	3.3386-5.0608	<0.0001
GA(<32/>32)	317 431	308 790	1.8865	1.5509-2.2947	<0.0001
MA(<=25/>25)	487 261	456 642	2.6270	2.1672-3.1843	<0.0001
MW(<=50/>50)	573 175	414 684	5.4097	4.3908-6.6651	<0.0001
Parity(Primi/Multi)	471 277	193 905	7.9732	6.4315-9.8845	<0.0001
ANC(<3/>=3)	529 219	403 695	4.1657	3.4118-5.0863	<0.0001
SES(Low/Not)	305 443	444 654	1.0141	0.8393-1.2253	0.8845
Education(<=10/>10)	642 106	764 334	2.6478	2.0778-3.3741	<0.0001
Work Loa(Heavy/ Normal)	503 245	290 808	5.7203	4.6681-7.0096	<0.0001

Discussion

In our study the appropriate statistical test showed the significant correlation coefficient ($P=0.03$) between these opines LBW outcome is more in male when compared to female. Which is against the general observation that females have lower birth weight compared to males^[2]. The average nutrients intake per day is significantly less in all categories but protein intake is less by 50%, mostly due to cultural belief of not taking non vegetarian diet on various occasions. Thus reducing protein rich diet in pregnancy which promotes optimum fetal growth. A study by Anisa M. Durrani et al in Effect of maternal dietary intake on the weight of the newborn in Aligarh city, India^[3] concluded that the dietary intake

during all trimesters of pregnancy were significantly associated with the birth weight. In a study by Helen L. Guyatt in Impact of Malaria during Pregnancy on Low Birth Weight in Sub-Saharan Africa^[4] which showed that malaria during pregnancy can result in low birth weight (LBW), an important risk factor for infant mortality which was also seen in our study. The study by D.Saminathan et al in Incidence, Mortality Pattern, and Outcome of Low Birth Weight Babies Admitted in a Rural Tertiary Care Center: A Retrospective Study^[5] observed that only 6.72% (241) babies died. Thus proving that timely intervention, better awareness and interaction with obstetricians, timely resuscitation by trained personnel, adequate manpower, use of

antenatal steroids, surfactant, continuous positive airway pressure ventilation, and close monitoring of LBW babies results in better outcome.

Maternal and intrauterine environmental factors play a great role in the genesis of LBW babies in a large percentage of cases and most of these factors can be prevented by proper ANC, good nutrition, immunization and health education to mother. In view of its importance, birth weight has been included as one of the twelve basic health indicators recommended by WHO.

Conclusion

The high incidence of LBW babies is directly related to the maternal factors like young age and primiparity, multiparity, gestational age and amount of workload during pregnancy, illiteracy, poor nutrition, lack of antenatal care and pregnancy complications. Hence proper measures like discouraging early marriage, thrust on female literacy, health education for all; so that we can build up a nutritionally sound adolescent girl and an expectant mother.

Reference

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