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Prevalence of Low Birth Weight Children in Rural Area of Jaipur District of Rajasthan

Mathur Surendra Mohan
Assistant Professor, Community Medicine, NIMS Medical College, Jaipur, Rajasthan.

Manohar Ravindra Kumar
Professor & Head, Community Medicine, NIMS Medical College, Jaipur, Rajasthan.

Brajesh Kumar
Assistant Professor, Community Medicine, NIMS Medical College, Jaipur, Rajasthan.

Hossain Samar
PG Resident, Community Medicine, NIMS Medical College, Jaipur, Rajasthan.

Abstract

Background: Low birth weight is a major public health problem in many developed and developing countries. In India 28% children born are estimated to be low birth weight as compared to only 4% in some developed countries. *Aims and Objectives*: To find the prevalence of LBW in the rural area and various factors affecting occurrence of LBW. *Material and Methods:* Present study was conducted in PHC Achrol, District Jaipur (Rajasthan), which is situated on the National highway 11 C. Record of 395 females was analyzed who were delivered in PHC Achrol, from 1st April 2015 to 31st March 2016 *Observations and Discussions:* In the present study, the prevalence of LBW was found to be 33.92%. Among the LBW babies, 39.55% were male children and 60.44%were the female children , Among the born babies in LBW, 66.41% were Hindu by religion and 33.58% were Muslim by religion. Among the, ANC care utilizing mothers, the prevalence of LBW was found in 15.38% children, while among those who were not utilizing ANC care, LBW children were 54.54%. Among the smokers mothers, the prevalence of LBW children were 63.21%, while among Non-smoker mothers, the prevalence of LBW was only 25.64%. Among the pre term born babies, prevalence of LBW was 88%. On the other hand, among the full term born babies, the prevalence of LBW was 30.27%. In mothers of less than 20 years of age, the prevalence of LBW was 83.33%, in mothers with age of 20-30 years group- the prevalence of LBW babies was 27.61%. In the above 30 years of age group, prevalence of LBW babies was 66.66% in the present study. As regard to parity, prime mothers were having LBW prevalence i.e. 13.15%. In the second para mothers, prevalence of LBW was 21.12% and at the same time, third and above para were having prevalence of LBW, 55.94%. Among the mothers with Hb level below 9 gm %, prevalence of LBW was 57.89%. Among mothers with 9-11 gm%, prevalence of LBW was 26.12% and mothers having Hb level more than 11 gm% were having 27.27% prevalence of LBW. *Conclusion*: Prevalence of LBW is pretty high in developing Asian countries like India, where illiteracy, ignorance and poverty is rampant. Among the various factors affecting prevalence important once are religion, high parity, poor nutrition of mother, anemia of mother, age of mother at the time of delivery, smoking, term of delivery, utilization of ANC care services etc.

Keywords: Low Birth Weight; Preterm; Parity; Anemia.

Introduction

Low birth weight is a major public health problem in many developed and developing countries . In India 28% children born are estimated to be low birth weight as compared to only 4% in some developed countries [1]. In India majority of LBW babies are due to foetal growth retardation, which in turn mostly due to maternal malnutrition and anaemia. Other causes usually attributed to it are mother's hard physical labor, infections, very young age, high parity, smoking, close birth intervals etc.

LBW is closely associated with fetal and Perinatal

Corresponding Author: **Mathur Surendra Mohan,** Asst Professor, Dept of Community Medicine, NIMS Medical College,Shobha Nagar, Jaipur-Delhi Highway, NH-11 C, Jaipur-303121, Rajasthan.
Email- drsmmathur@gmail.com

mortality and Morbidity, inhibited growth and cognitive development, and chronic diseases later in life. At the population level, the proportion of babies with LBW is an indicator of a multifaceted public–health problem that includes long term maternal malnutrition, ill health, hard work and poor health care in pregnancy. On an individual basis, LBW is an important predictor of newborn health and survival and is associated with higher risk of infant and childhood mortality [2].

As per UNICEF Data [3] in 2013-an estimated 16% of all babies born globally that year- had LBW. Chan. Y, et al [4] revealed incidence of LBW in mainland China was 6.1%. In study of, Asphyxia of new born in east, central South Africa by Kinoti, SN [5]. Came out with overall incidence of LBW 13.9%. In a study by Karim E. [6] in Dhaka, Bangladesh, found about 21% of incidence of LBW. Determinants of LBW: a community based prospective cohort study by Hirve SS, et al [7], found the cumulative incidence of LBW 29%, in 45 villages in Pune district. Incidence of LBW babies is on rise in India as reported by Kanty Jones [8] in India Health News. Stating that nearly 20% of all babies born in India have birth weight of less than 2.5 kg.

Aims and Objectives

To find the prevalence of LBW in the rural area and various factors affecting occurrence of LBW.

Observations

Material and Methods

Present study was conducted in PHC Achrol, District Jaipur (Rajasthan), which is situated on the National highway 11 C. Record of 395 females was analyzed who were delivered in PHC Achrol, from 1st April 2015 to 31st March 2016. Area is mainly inhabitated by low caste and low socio-economic class, mostly unskilled labor. Consent from hospital ethical clearance was obtained to undergo present study. Non-probability (Purposive) sampling technique was used for this study. Results were subjected to statistical assessment to reach to conclusion.

Study Design

Cross-sectional retrospective study.

Criteria for Inclusion

All delivered females from 1st April 2015 to 31st March 2016.were included in present study.

Criteria for Exclusion

Referred cases who were serious, not manageable at PHC Achrol or required caesarian section were not included in present study.

Table 1: Distribution of children according to birth weight

Total No Children		Weight below 2.5 kg m		Weight above 2.5 kg m.	
No.	(%)	No.	(%)	No.	(%)
395	100	134	33.92	261	66.07

Table 2: Distribution of socio-demographic variables

Variables.	Characteristics.	Normal birth weight.		Low birth weight.		p- Value.
		No	(%)	No.	(%)	
Gender	Male(206)	153	38.73	53	13.41	< 0.001.
	Females.(189)	108	27.34	81	20.50	
Age group.	Less than 20yrs (30)	5	1.26	25	6.32	<0.001
	20 to 30yrs (344)	249	63.03	95	24.05	
	Above 30yrs (21)	7	1.77	14	3.54	
Religion	Hindu (316)	227	57.46	89	22.53	<0.001
	Muslim (79)	34	8.60	45	11.39	
Smoking	Smoker (87)	32	8.10	55	13.92	<0.001
	Non-Smoker (308)	229	57.97	79	20	

Table 3: Distribution of mothers according to utilization of anc care

	Normal Weight.		Low Birth Weight.	
	No.	(%)	No.	(%)
ANC Care Utilizing.(208)	176	44.55	32	. 8.10
ANC Care Not Utilizing.(187)	85	.21.15	102	25.82

$X^2 = 67.4$ df= 1 pd≤0.001

Table 4: Distribution of mothers according to term of delivery

	Normal weight Children		Low Birth Weight.	
	No.	(%)	No.	(%)
Preterm.(< 37 weeks) (25)	3	. 0.75	22.	5.56
Full term. (370) (>37 weeks)	258	.65.31	112	28.35
Total. (395)	261.	66.07	134	.33.92

X^2 = 34.8 df=1 pd≤0.001

Table 5: Distribution of mothers accoding to parity

Parity	Normal Weight Children.		Low Birth Weight.	
	No.	(%)	No.	(%)
Prime. (38)	33	.8.35	5	.1.26
Second Para.(172)	142.	35.94	30	7.59
Third Para & above (185).	86	.21.77	99.	25.06.

X^2 =59.8 df=2 pd≤0.001

Table 6: Distribution of mothers according to HB level

HB Level.		Normal Weight Children.		Low Birth Weight.	
(%)	No.	No.	(%)	No.	(%)
Below 9 gm	95	40	10.12	55	13.92
9. to 11 gm	245	181	45.82	64	16.20
Above 11 gm	55	40	10.12	15	3.79

X^2 =32.1 df=2 pd≤0.001

Discussion

Birth weight of a live born infant of less than 2500 gm, regardless of gestational age is LBW. In the present study as shown in Table 1. Prevalence of LBW came out to be 33.92%. Prevalence of LBW varies from country to country, some developed one are having 4% while some Asian countries are with up to 35% prevalence. As per Unicef Data: Monitoring the situation of children and women current status updated April 16, Incidence of LBW is monitored through both health system surveillance and household surveys, in 2013-an estimated 16% of all babies born globally that year- had LBW. An epidemiological survey in LBW infants in China and analysis of full term LBW infants by Chan. Y, et al revealed incidence of LBW in mainland China was 6.1%. In study of, Asphyxia of new born in east, central South Africa by Kinoti, SN, came out with overall incidence of LBW 13.9%. In a study by Karim E.et al, in Dhaka, Bangladesh, while studying association between birth weight, socio-demographic variables etc found about 21% of incidence of LBW. A study by the Agency for Healthcare Research and Quality (AHRQ) found that 3.8 million births that occurred in the United States in 2011, approximately 6.1% were diagnosed with LBW. Approximately 1.3% were VLBW (<than 1500gms) [9]. Determinants of LBW: a community based prospective cohort study by Hirve SS, et al, found the cumulative incidence of LBW 29%, in 45 villages in Pune district. Incidence of LBW babies is on rise in India as reported by Kanty Jones in India Health News. Stating that nearly 20% of all babies born in India have birth weight of less than 2.5 kg. High prevalence of LBW could be explained in this particular area because of malnourished state mothers, anaemia and poor socio-economic profile of mothers.

As shown in Table 2, among the male born 38.73% were of normal weight and 13.41% LBW, at the same time among the female born children 27.34% children were normal weight and 20.50% LBW. Similar were the observations of Bharti P et al [10] in their study, Prevalence and causes of LBW in India. In a prospective study on some factors which influence the delivery of LBW babies in a developing country by Lawoyin. TO [11], found that mean birth weight of males, 3205g +/- 469 g, significantly higher than of females of 2991 g +/- 451 g.

As depicted in table among born babies, .Hindu born children were 57.46% normal weight and 22.52% LBW. On the other hand among the Muslim born children 8.60% were normal weight and 11.39% were LBW. This religious difference of prevalence could be because of low literacy, poverty, multiple pregnancies and ignorance of nutrition principles among the low socio-economic class of Hindus..Table also depicts out of all mothers, 8.10% were normal weight and 13.92% children LBW among the smoker group of mothers. On the other hand 57.97% were normal birth

weight and 20% children L BW among the non smoker mothers. While active maternal tobacco smoking has well established adverse perinatal outcomes such as LBW, that mothers who smokes during pregnancy are twice as likely to give birth to LBW infants. Review on the effect of passive maternal smoking , also called environmental tobacco exposure (ETS), demonstrate that increased risks of infants with LBW were more likely to be expected in ETS exposed mothers [13]. A majority of pregnant women in developing countries, where rate of LBW is high, are heavily exposed to indoor air pollution , increased relative risk translates into substantial population attributable risk of 21% ofLBW [14]. Table 2 also shows 1.26% were normal weight and 6.32% LBW in less than 20 yrs age group of mothers. Similarly 63.03% were normal weight and 24.05% LBW. In the 20 to 30 yrs age group of mothers. At the same time in the above 30 yrs age group 1.77% were normal weight and 3.54% LBW children. Karim E, et al in their study of association between birth weight etc also observed that LBW was more common in younger (<20yrs) and older (>30yrs). Hirve SS,et al, also observed that the unadjusted relative risks for LBW were significantly higher for maternal age less than 20 yrs. Similar were the observation of Lawoyin TO, et al, in A prospective study on some factors which influence the delivery of LBW babies in a developing country.

Table 3 shows that among the ANC Care utilizing mothers 44.55 % had normal weight babies and only 8.10% had LBW babies whereas among ANC Care not utilizing mothers 21.51% were normal weight babies and 25.82% were having LBW babies. We can say in other words booked and not booked cases makes the difference. Main attention has been given in recent years to ways and means of preventing LBW through good prenatal care and intervention programmes, like ICDS, JSSY etc, rather than 'treatment' of LBW babies born later. Mavalankar DV et al [12] in their study of Risk factors for preterm and term LBW in Ahmedabad showed that low maternal weight, poor obstetric history, lack of antenatal care, clinical anaemia and hypertension were significant independent risk factors for both term and preterm LBW.

As shown in Table 4 full term children were 65.31% normal weight and only 28.35% were LBW delivered. On the other hand among the Preterm babies 0.75 % were normal weight and 5.56.% were LBW delivered babies. In a prospective study by, Lawoyin TO, 80% of LBW were full term (37-41 wks gestation) at delivery, while 20% were pre-term(<37 wks). These pre-term LBW babies weigh less than the 10th percentile for the gestational age, and are clearly the result of retarded intrauterine foetal growth.

Table 5 shows distribution of mothers according to parity. 8.35% normal weight children and 1.26% from LBW. were from prime group. 35.94% normal weight children and 7.59% LBW among second para In the third para and above group 21.77% were normal birth weight and 25.06% were LBW. Chances of LBW babies increases with increasing parity, similar were the findings of Hirve SS. et al, Bharati P. et al, and Mavalankar DV. et al.

Chakraborty. P. et al [15] in their study on Maternal autonomy and LBW in India, indicated importance of empowering women in India to combat the high incidence of LBW , because in India male dominating society male decides number of children , sex of children and gape between two children.

Table 6 shows 10.12% normal birth weight and 13.92% LBW in group of mothers with Hb level below 9gm %. Among the group of mothers with 9 to 11 gm% Hb, 45.82% were normal birth weight and 16.20% were LBW. At the same time 10.12% were normal birth weight and 3.79% LBW in the mothers group with Hb above 11gm% , indicating that anaemia increases the incidence of LBW babies. According to Sumithra Muthayya, nearly half the pregnant women still suffer from varying degree of anemia. According to Hirve SS. et al, in their study stated that Socio-economic status, non-pregnant weight, maternal height, and severe anemia in pregnancy had substantial attributable risk percent for LBW (41.4%, 22.9%, 29.5% and 34.5%, respectively)

Mavalankar DV et al, in their study stated that clinical anaemia and hypertension were significant independent risk factors for both term and preterm LBW.

Conclusion

Prevalence of LBW is pretty high in developing Asian countries like India, where illiteracy, ignorance and poverty is rampant. Among the various factors affecting prevalence important once are religion, high parity, poor nutrition of mother, anemia of mother, age of mother at the time of delivery, smoking, term of delivery, utilization of ANC care services etc.

LBW is one of the most serious challenges of MCH care of both developed and developing countries. Its public health significance may be ascribed to numerous factors-- its high incidence, its association with mental retardation and a high risk of prenatal and infant mortality and morbidity (half of all

perinatal and one-third of all infant deaths are due to LBW.), human wastage and suffering, the very high cost of special care and intensive care units and its association with socio-economic underdevelopment.

Incidence of LBW can be reduced if pregnant women 'at risk' are identified at ANC CLINICS and steps are taken to reduce the risk. Increasing food intake, supplementary feeding, distribution of Iron and folic acid tablet, fortification and enrichment of foods, control of infections and early detection and treatment of medical disorders. Making programs like ICDS, JSSY etc more lucrative and popular, will take care of problem. Proper socio-economic and environmental reforms are long term desired goals to get rid of LBW problem in future.

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