International Journal of Health Sciences and Research
www.ijhsr.org ISSN: 2249-9571

Original Research Article

A Retrospective Study of Birth Weight and Their Risk Factors among Rural Women

Anju Ade[1], Brunda NK[2], Ramesh Patil [3]

[1]Professor, Department of Community Medicine, SVIMS, SPMC (W), Tirupati, Andhra Pradesh.
[2]Post-Graduate Student, Dept of Community Medicine, Navodaya Medical College, Raichur, Karnataka.
[3]Assistant Professor (Statistics), Ashwini Medical College, Solapur.

Corresponding Author: Anju Ade

Received: 12/06/2016 *Revised: 24/06/2016* *Accepted: 05/07/2016*

ABSTRACT

Background: Low birth weight (i.e. birth weight less than 2500g) is a major public health problem in many developing Countries. About 28 percent of babies born in India are LBW. [1] Birth weight is an important indicator of a child's vulnerability to the risk of childhood illness and chances of survival.
Objectives: 1.To finds out the incidence of low birth weight and to determine their risk factors among the births at tertiary health care centre.
Materials and Methods: The present study was the retrospective analysis of delivered cases in tertiary health care centre of north Karnataka. Data was retrieved from delivery register. Data was analyzed by using SPSS software.
Results: An analysis of 342 delivered cases revealed that, 47 (13.7%) of newborns were low birth weight babies. It was seen that maternal age and sex of the newborn, birth order of the baby and anaemic status of the mothers were found to be associated with low birth weight.
Conclusion: The incidence of low birth weight was 13.7%. Emphasis has to be laid on regular antenatal checkups and nutrition education of rural mothers to prevent anaemia and ill health of the mothers.

Keywords: Low birth weight, rural women, Retrospective study.

INTRODUCTION

Low birth weight (i.e. birth weight less than 2500g) is a major public health problem in many developing Countries. About 28 percent of babies born in India are LBW. [1] Birth weight is an important indicator of a child's vulnerability to the risk of childhood illness and chances of survival. Children whose birth weight is less than 2.5 kilogrammes, or children reported to be very small or smaller than average are considered to have a higher than average risk of early childhood death. Among children for whom birth weight was reported, 22 percent had a low birth weight. [2] LBW is the single most important factor in determining the survival chances of the child. Many of them die during the first year. The infant mortality rate is about 20 times greater for all LBW babies than for other babies than other babies. Many of them become victims of protein energy malnutrition and infection. LBW is thus an important guide to the level of care needed by individual babies. LBW also reflects inadequate nutrition and ill -health of the mother. There is a strong and significant positive correlation between maternal nutritional status and the length of pregnancy and birth weight. [3]

Its public health significance may be ascribed to numerous factors- its high

incidence; its association with mental retardation and a high risk of perinatal and infant mortality and morbidity; human wastage and suffering; the very high cost of special care and intensive care units and its association with socio-economic underdevelopment. [4]

The present study is the retrospective analysis of delivered cases in tertiary health care centre of north Karnataka.

Objectives: 1. to find out the incidence of low birth weight and to determine their risk factors among the births at tertiary health care centre.

MATERIALS AND METHODS

The present study was the retrospective analysis of delivered cases in tertiary health care centre of north Karnataka. Data was collected from delivery register. Information collected were regarding maternal age, parity, gestational age, blood group and haemoglobin level of the mother, adverse outcome of past pregnancy, birth order, birth weight and sex of the child etc. For study purpose, cases registered for a period of one year i.e. from January 2014 to January 2015 were taken. Data was analyzed by SPSS (16.0 Version). Association of risk factors under study was assessed by applying chi-square test.

RESULTS

The present study was the retrospective analysis of available data of registered cases in a tertiary health care facility of north Karnataka. Information on all pregnant women who came for pre-natal check-ups and who delivered a baby at this facility during the period January 2014 to January 2015 were included in the analysis. We investigated low birth weight and correlates of low birth weight like maternal age, caste, parity, blood groups and Hemoglobin (Hb) levels, any adverse outcome of past pregnancy, gestational age and sex of the baby at the time of delivery.

Total numbers of women were 342. Most of the mothers were in 25-29 years age group, followed by 20-24 age group. Most of them belonged to other category 35.7%, followed by ST and SC. Most of the women were in second gravida 34.5 %, primigravida 28.1 % and most of them were full - term at the time of delivery i.e. 201 (58.8%)

As shown in Figure-1, among total number of newborns i.e. 342, proportion of low birth weight was found to be 47 (13.7%).

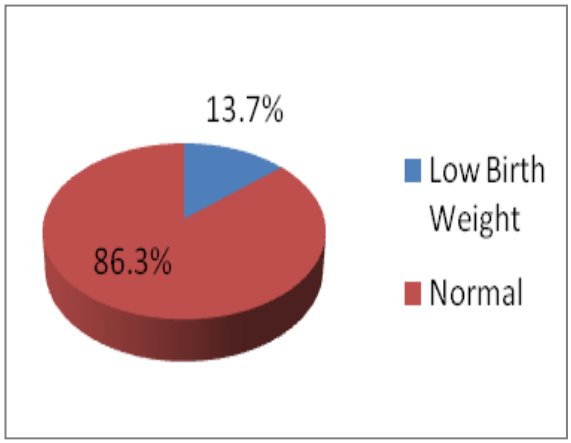

Figure 1: Birth Weight of the babies

Proportion of low birth weight was higher among children born to young mothers (age group 20-24 years) followed by 25-29 years age group as depicted in Table No 1.

Table No 1: Age of the mother and LBW

Age of the mother	Birth Weight	
	LBW	Percent (%)
<20	0	0
20-24	26	55.31
25-29	20	42.55
30-34	0	0
35-39	1	2.12
Total	**47**	**100**

In present study, among all, most of the babies born were females i.e. 173 (50.6%) and male babies born were 169 (49.4%) Also among all 47 low birth weight babies, proportion of the low birth weight was more among female newborns 30 (63.8%) as compared to males 17 (36.1%) as shown in Table No 2.

As shown in table No 3, as birth order increases, proportion of low birth weight decreases and found statistically significant (p=0.016).

Table No 4 depicts proportion of low birth weight infants were found more among anaemic mothers, with haemoglobin level less than 11gm/dl.

In this study, low birth weight was not associated with parity, gestational age, blood group, any adverse outcome of past pregnancy like abortions, previous death of the baby.

Table No 2: Sex of the foetus and LBW

Sex of foetus	Birth weight	
	LBW	Percent (%)
F	30	63.8
M	17	36.17
Total	**47**	**100**

Table No 3: Association of birth order and LBW

Birth order	Birth _Weight		Total
	Low Birth Weight	Normal	
1	20	85	105
2	19	103	122
3	6	81	87
4	1	21	22
5	1	4	5
6	0	1	1
Total	**47**	**295**	**342**

$\chi^2 = 5.80$, df= 1, p-value=0.016

Table No 4: Haemoglobin level of mother and LBW

Haemoglobin level	Birth Weight	
	LBW	Percent (%)
< 7	3	6.38
7-9	9	19.14
9-11	32	68.08
11-13	3	6.38
Total	**47**	**100**

DISCUSSION

This study assessed determinants of LBW among mothers who gave birth at tertiary health care centre of north Karnataka. Total numbers of women were 342. Most of the mothers were in 25-29 years age group, followed by 20-24 age groups. Most of them belonged to other category 35.7%, followed by ST and SC. Most of the women were in second gravida 34.5 %, primigravida 28.1 % and most of them were full - term at the time of delivery i.e. 201 (58.8%)

In present study, among total number of newborns i.e. 342, proportion of low birth weight was found to be 47 (13.7%). Among all, most of the babies born were females i.e. 173 (50.6%) and male babies born were 169 (49.4%). Among all 47 low birth weight babies, most of the low birth weight babies were females 30 followed by males.

According to NFHS, the proportion weighing less than 2.5 kgs is slightly higher in rural areas (23%) than in urban areas (19%) (2). In present study, among total number of newborns i.e. 342, proportion of low birth weight was found to be 47 (13.7%). In a study by Biswas R et al [5] found that, the incidence of LBW was 31.3%. Similarly in a study by, Choudhary AK et al, [6] found that, One hundred and five newborns (36.2%) had a birth weight lesser than 2500 g. Nirmalya Manna et al [7] reported (30.9%) infants were low birth weight (167/540) babies in their study. Similar findings were reported by other studies conducted in different places like Hirve S S et al [8] reported incidence of LBW 29%, Shriram V et al [9] reported 24.4% of newborns were LBW and Paneru et al [10] observed LBW 22.5% among newborns.

According to NFHS, [2] the proportion of low birth weight is greater among children born to young women (age at birth <20 years).Very young mothers also tend to be poorer and less educated. [11] Accordingly, the low birth weight was found in mothers belonging to age category of 20-24 years, followed by 25-29 years age group. Similarly in a study done by Nirmalya Manna et al [7] found that proportion of low birth weight babies were more than their normal counterpart in both the teenage mothers aged ≤ 19 yrs. and elderly mothers aged ≥40 yrs. Also similar findings were reported by other studies [8,9] Maternal age was identified as a significant determinant in a study by Chhabra p et al. [12]

In present study, among all most of the babies born were females i.e. 173 (50.6%) and male babies born were 169 (49.4%). Also among all 47 low birth weight babies, majority of the low birth weight babies were females ie 30, followed by males. Similarly in a study done at Nigeria, found that Low birth weight is higher in females (57.94%) as compared to

males (42.06%) [13] Similarly other studies also reported proportion of LBW higher for female newborns. [9,14]

The highest mortality is found among first born, and the lowest among those born second. [11] In present study, as birth order increases, proportion of low birth weight decreases and found statistically significant (p=0.016).On the contrary to this in a study conducted by Kaushal SK et al [15] found that proportion of low birth weight in case of birth order one was lower as compared to that for birth order 2-3.Also in a study by Nirmalya Manna et al [7] revealed that low birth weight babies were maximum (54.8%) for mothers who had 3 or more children followed by primipara mothers. Also a study by Bugssa et al [14] observed strong significant association between birth order and LBW (F= 89.24, P= 0.0001).

The current study found mother's level of hemoglobin is associated with low birth weight. Lower concentration of maternal hemoglobin is one of the risk factors for LBW among children as found by Sekhavat L et al in their study [16] A study by Sudesh Raj et al [17] depicted that mothers with hemoglobin level less than 11gm/dl and consumption of nutritious food during pregnancy were the determinants of LBW. Similarly in a study by Nirmalya et al, [7] proportion of low birth weight infants were found significantly more among anaemic mothers, and had obstetric complications. LBW was significantly higher among mothers with Hb less than 9 gm/dl [8] Similar findings were reported by other studies also [18,19]

In this study, low birth weight was not associated with parity, gestational age, blood group, any adverse outcome of past pregnancy like abortions. But in a study conducted by Paneru et al [10] reported that maternal blood group and gestation age at delivery were found to be the independent and significant bio-social factors predicting the LBW. Also a study by Bugssa et al [14] revealed that mothers with previous history of abortion had increased risk of giving birth to LBW.

CONCLUSION

The incidence of low birth weight was 13.7%. Emphasis has to be laid on regular antenatal checkups and nutrition education of rural mothers to prevent anaemia and ill health of the mothers.

ACKNOWLEDGEMENT

We thank health workers and ASHA worker who have extended their cooperation for the study.

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How to cite this article: Ade A, Brunda NK, Patil R. A retrospective study of birth weight and their risk factors among rural women. Int J Health Sci Res. 2016; 6(8):19-23.

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