Original Research Article

A cross sectional study on socio-demographic and maternal factors associated with low birth weight babies among institutional deliveries in a tertiary care hospital, Hyderabad, Telangana

M. Sheeba Apoorva[1]*, Vimala Thomas[2], B. Kiranmai[3]

Department of Community Medicine, [1]Bhaskar Medical College, Rangareddy Dist, [2]Gandhi Medical College, Hyderabad, [3]Osmania Medical College, Hyderabad, Telangana, India

*Correspondence:
Dr. M. Sheeba Apoorva,
E-mail: sheebaapoorva@gmail.com

ABSTRACT

Background: Birth weight is an important indicator of new born growth, survival and psychosocial development. Globally, more than 20 million are born with low birth weight (LBW) and the prevalence of low birth weight in India is 20%. The study was conducted to find the proportion of low birth weight and the factors influencing the weight of the baby.

Methods: A cross sectional study was conducted at Gandhi hospital, Telangana from September to November, 2015 using a semi structured questionnaire among 204 postnatal mothers.

Results: Out of 204 live births, 26% were found to be low birth weight. About 44.4% LBW babies are born to teenage mothers and 70% among the mothers with height less than 140 cms. Of the pre-term babies, nearly half of the babies (49.3%) were low birth weight. Around 30.3% of LBW was found with an inter-pregnancy interval of <2 years. About 41.2% of the mothers having complications had low birth weight babies.

Conclusions: Nearly one fourth of the newborns were low birth weight. Gender of the child, socioeconomic status, education, gestational age, inter pregnancy interval, medical complications were found to affect the birth weight.

Keywords: Birth weight, Low birth weight, Maternal factors

INTRODUCTION

Low birth weight (LBW) is an indicator of foetal growth. It is a prospective marker of child growth and development and a retrospective marker of maternal health status and nutrition. LBW is defined as the weight at birth less than 2500 grams.[1] Ideally, the birth weight is to be recorded in the first hour of life as the new born tend to lose weight in the next 10 days period after birth.

Undernourishment, apart from increasing the risk of mortality, also associated with increased risk of infectious disease due to impaired immunity, reduced muscle strength, cognitive disabilities and occurrence of chronic diseases in later life. Globally, 22 million babies are born low birth weight with higher incidence in south Asian region. It is estimated that 1 in 4 new-borns in south Asia are LBW.[2]

In India, the prevalence of LBW is nearly 20%.[3] LBW is the most important indicator of infant mortality especially within the first month of life. Early recognition of risk factors and their management will reduce the incidence of low birth weight. This study was undertaken to assess the proportion of low birth weight, the socio demographic

and maternal factors affecting the birth weight of the baby.

Objectives

1. To estimate the proportion of LBW babies among institutional deliveries.
2. To determine the socio demographic and maternal factors influencing the birth weight of the new born.

METHODS

A hospital based cross sectional study was conducted from September to November 2015 at Gandhi hospital, a tertiary care teaching hospital in Hyderabad, Telangana. The data was collected from the postnatal mothers with live births and those who gave consent to participate were included in the study. The information was collected using a pre-designed semi structured questionnaire which includes socio demographic and maternal factors. The birth weight of the baby was recorded from medical records where weight was recorded within 1st hour of life. The data was analysed using MS excel, Epi info and SPSS version 21.

RESULTS

Out of 204 live births, 53 (26%) were low birth weight (LBW) babies and 151 (74%) had birth weight ≥2.5 kg (NBW). The mean birth weight of the babies was found to be 2.7±0.51 kg (Figure 1).

Of the total newborns, 110 (53.9%) were males and 94 (46.1%) were females. Most respondents belong to urban area 145 (71%). About 39.7% of the newborns were born to mothers of nuclear families. Majority (79.9%) of the study participants were Hindus followed by 12.7% Muslims and 7.4% Christians. Around 61.3% of the mothers belong to class IV and class V according to Modified Kuppuswamy classification. It was observed that gender and socioeconomic status were associated with occurrence of low birth weight babies. Other factors like area of residence, type of family, religion had no statistically significant association with low birth weight (Table 1).
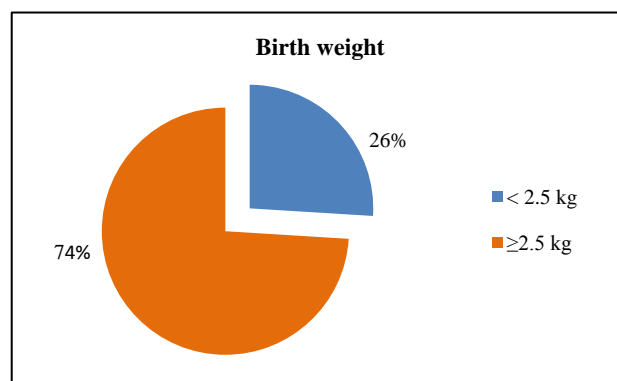
Figure 1: Proportion of low birth weight babies.

The mean age of the mothers was found to be 23.33±3.01 years. The higher proportion of low birth weight babies were born to teenage mothers (44.4%) followed by 31.7% among the mothers in the age group of 20-24 years (Figure 2).

**Table 1: Distribution of socio demographic factors among the newborns.**

Sociodemographic factors	LBW (n=53) No. (%)	NBW (n=151) No. (%)	Total (n=204) No. (%)	Chi square, p value
Gender				
Male (n=110)	22 (20)	88 (80)	110	χ^2=4.44 p<0.05
Female (n=94)	31 (33)	63 (67)	94	
Area of residence				
Urban (n=145)	33 (22.8)	112 (77.2)	145	χ^2=2.706 p>0.05
Rural (n=59)	20 (33.9)	39 (66.1)	59	
Type of family				
Nuclear (n=81)	21 (26)	60 (74)	81	χ^2=0.23 p>0.05
Joint (n=66)	16 (24.2)	50 (75.8)	66	
Three generation (n=57)	16 (28)	41(72)	57	
Religion				
Hindu (n=163)	41 (25.2)	122 (74.8)	163	χ^2=0.49 p>0.05
Muslim (n=26)	7 (26.9)	19 (73.1)	26	
Christian (n=15)	5 (33.3)	10 (66.7)	15	
Socioeconomic status (modified Kuppuswamy classification)				
Class I,II,III (n=79)	12 (15.2)	67 (84.8)	79	χ^2=7.806 p<0.01
Class IV,V (n=125)	41 (32.8)	84 (67.2)	125	

P<0.05 – significant; p<0.01 – Highly significant.

Table 2: Maternal factors affecting the birth weight.

Maternal factors	LBW (n=53) No. (%)	NBW (n=151) No. (%)	Total(n=204) No.	Chi square, p value
Mother's education				
<10th class (n=101)	34 (33.7)	66 (66.3)	101	χ^2=6.14 p<0.05
≥10th class(n=103)	19 (18.5)	85 (81.5)	103	
Mother's Occupation				
Working (n=76)	24 (31.6)	52 (68.4)	76	χ^2=1.97 p>0.05
Unemployed (n=128)	29 (22.7)	99 (77.3)	128	
Height of the mother				
<140 cms (n=10)	7 (70)	3 (30)	10	χ^2=10.6 p<0.01
≥140 cms (n=194)	46 (23.7)	148 (76.3)	194	
Gestational age at delivery				
<37 weeks i.e. pre-term (n=67)	33 (49.3)	34 (50.7)	67	χ^2=28.1 p<0.01
≥37 weeks (n=137)	20 (14.6)	117 (85.4)	137	
Number of antenatal visits				
<4 visits (n=26)	12 (46.2)	14 (53.8)	26	χ^2=5.57 p<0.05
≥4 visits (n=178)	43 (24.2)	135 (75.8)	178	
Inter pregnancy interval				
<2 years (n=95)	31 (32.6)	64 (67.4)	95	χ^2=4.09 p<0.05
≥2 years (n=109)	22 (20.2)	87 (79.8)	109	
Maternal Haemoglobin before delivery in gm%				
<11 (n=99)	34 (34.3)	65 (65.7)	99	χ^2=6.99 p<0.01
≥11 (n=105)	19 (18)	86 (82)	105	
Complications during pregnancy (Pregnancy induced hypertension, infections, Heart disease)				
Present (n=80)	33 (41.2)	47 (58.8)	80	χ^2=15.96 p<0.01
Absent (n=124)	20 (16.1)	104 (83.9)	124	

p<0.05 – significant; p<0.01 – Highly significant.
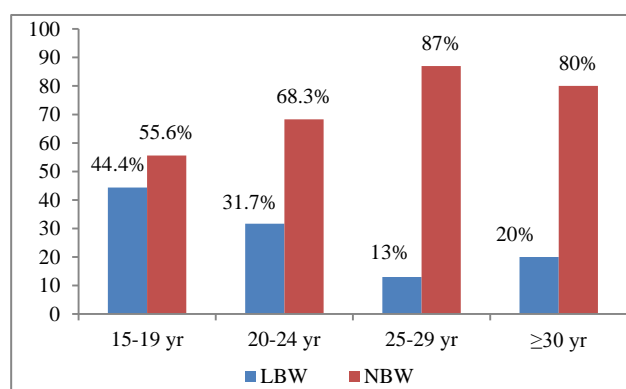
Figure 2: Proportion of low birth weight babies according to maternal age.

Among the maternal factors, mother's education less than 10th class, height of the mother less than 140 cms, pre term deliveries, number of antenatal visits, inter pregnancy interval less than 2 years and maternal haemoglobin <11 gm% are found to be statistically significant (Table 2).

DISCUSSION

In the present study it was found that 26% of the newborns were low birth weight. This finding is similar to a study conducted by Paliwal et al in Jaipur where 27.7% were LBW babies.[4] And in a study conducted by Yadav et al where LBW prevalence was 21.56%.[5] Whereas it was 11.67% in a study conducted in Tamil Nadu.[6]

The socio-demographic factors, female gender and low socioeconomic status were found to be associated with LBW in the present study. The type of family, religion & urban/rural area, did not show statistical significance. Findings differed from a study conducted in west Bengal where family type and religion were statistically significant.[7]

The mean age of the mothers was found to be 23.33±3.01 years in the present study and it was 22.7±2.92 years according to a study conducted by Deshpande et al.[8]

The present study findings were similar to a study conducted by Thomre et al where gestational age at delivery, number of antenatal visits and inter pregnancy interval were found to be statistically significant.[9]

The influence of maternal education and anaemia during pregnancy on LBW was statistically significant in the present study and these findings were concurrent to a study in Tamil Nadu.[10]

CONCLUSION

Delayed child bearing, avoiding close birth spacing, universal coverage of adequate antenatal care, early recognition of maternal complications are essential for reducing the occurrence of LBW in newborns. Hence, there is a need to strengthen health education services at the level community for early identification and timely intervention for better outcome.

REFERENCES

1. United Nations Children's Fund and World Health Organization, Low Birthweight: Country, regional and global estimates. UNICEF, New York, 2004.
2. UNICEF– Current status and progress. October 2014. Available at: https://data.unicef.org/topic/ nutrition/low-birthweight/. Accessed on 3 June 2018.
3. Bharati P, Pal M, Bandyopadhyay M, Bhakta A, Chakraborty S, Bharati P. Prevalence and causes of Low birth weight in India. Malays J Nutr. 2011;17(3):301-13.
4. Paliwal A, Singh V, Mohan I, Choudhary RC, Sharma BN. Risk factors associated with low birth weight in newborns: a tertiary care hospital based study. IJCRR. 2013;5(11):42-8.
5. Yadav DK, Chaudhary U, Shrestha N. Risk Factors Associated with Low Birth Weight. JNHRC. 2011;9(2):159-64.
6. Dandekar RH, Shafee M, Sinha SP. Prevalence and Risk factors affecting low birth weight in a district hospital at Perambalur, Tamil Nadu. Global J Med Pub Health. 2014;3(2):1-5.
7. Manna N, Sarkar J, Baur B, Basu G, Bandyopadhyay L. Socio-Biological Determinants of Low Birth Weight: A Community based study from rural field practice area of Medical College, Kolkata, West Bengal. J Dent Med Sci. 2013;4(4):33-9.
8. Deshpande JD, Phalke DB, Bangal VB, Peeyuusha D, Bhatt S. Maternal risk factors for low birth weight neonates: a hospital based case-control study in rural area of western Maharashtra, India. National J Community Med. 2011;2(3):394-8.
9. Thomre PS, Borle AL, Naik JD, Rajderkar SS. Maternal Risk Factors Determining Birth Weight of Newborns: A Tertiary Care Hospital Based Study. Int J Recent Trends Sci Tech. 2012;5(1):3-8.
10. Kandhasamy K, Singh Z. Determinants of low birth weight in a rural area of Tamil Nadu, India: a case–control study. Int J Med Sci Public Health. 2015;4(3):376-80.