Original Article

Frequency and determinants of low birth weight in Allied Hospitals of Rawalpindi Medical College, Rawalpindi, Pakistan

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Objective: To determine the frequency and determinants of low birth weight (LBW) babies in the allied hospitals of Rawalpindi Medical College (RMC).

Methodology: In this cross sectional survey, a total of 120 mothers coming to Allied Hospitals of RMC, having babies up to the age of 6 months were enrolled by purposive sampling. Data were collected by a semi structured questionnaire, which asked information from mothers regarding their education, socioeconomic class and occupation. Questions were also asked about last child birth such as frequency of antenatal visits during that pregnancy, risk factors during pregnancy like hypertension, pallor, duration of pregnancy at time of delivery. Data were analyzed using SPSS v. 21.

Results: Frequency of LBW babies was found to be 27.4%. 10.83% mothers were educated up to graduate and above and 32% belonged to low socioeconomic class. 11.6% mothers had taken no antenatal visits. 31.6% mothers had hypertension, which was found to be a major factor determining LBW (p?0.00001). 8.3% children born were premature. Prematurity was significantly related with LBW (p? 0.0001).

Conclusion: LBW was high in low socioeconomic class and was significantly related with premature births and hypertension in mother during pregnancy. (Rawal Med J 201;43:98-101).

Key words: Low birth weight, hypertension, premature birth, socioeconomic class.

INTRODUCTION

According to WHO, Low Birth Weight (LBW) is defined as birth weight of a live born infant of less than 2.5 kg, regardless of gestational age. Globally, the prevalence of LBW is 15.5% and in each year, as many as 20.5 million LBW infants are born. Of these, 96.5% births take place in developing countries.[1] In Europe, only 6.45% babies are LBW whereas in South-Central Asia, 27.1% of all neonates are LBW babies.[2] In Pakistan, 19% new born infants are LBW, in Bangladesh 36%,[3] in India 30% and in USA 8%.[4]

LBW and preterm birth increases the risk of autism in infants by about two fold, more so for girls than for boys.[5] LBW among neonates can be either preterm i.e., born too early or Small-for-date i.e. weighing less than the 10th percentile weight for the duration of gestation. The latter group is more likely to suffer from intrauterine growth retardation which can be due to different maternal factors such as low socioeconomic and education status, maternal malnutrition/anemia, parity and close birth spacing, hard physical work during pregnancy and hypertension.[6] A study from Ghana showed higher prevalence of LBW babies rural set up in 43% cases, living in a poor community and lack of safe water supply.[7] LBW infants who survive often requires intensive care at birth, may develop chronic illnesses and later.[8]

A majority of pregnant women in developing countries, whose rate of LBW is high, are heavily exposed to indoor air pollution, increased relative risk translates into substantial population attributable risk of 21% of LBW.[9] Women with low BMI and anemia have been found to have infants with LBW as reported in studies from Turkey, Karachi, Larkana and Quetta.[10-13] The important role played by antenatal care in determining the outcome of pregnancy has also been documented in studies done in Pakistan and India. It was found that antenatal care users had better birth outcomes, higher baby weights and were also less likely to be

anemic. Moreover, educated women were more receptive to antenatal advice.[11,12] Even in low-risk mothers, the likelihood of LBW and obstetric complication was found to increase if the number of antenatal visits was less than three.[14] Socioeconomic status, by virtue of determining the nutritional and health status of mothers and acceptability of antenatal care is yet another determinant of the fate of the newborn.[15] The aim of this study was to find out the frequency and determinants of LBW in our setup.

METHODOLOGY

This cross sectional survey was carried out in mothers coming to gynecology OPD, labor rooms, pediatric nurseries and wards of the allied hospitals of RMC i.e. Holy Family Hospital, Benazir Bhutto Hospital and District Head Quarter Hospitals, Rawalpindi during a four months period from May to September 2014. A total of 120 mothers were selected using purposive sampling technique. Mothers having children up-to 6 months of age, seeking health care for themselves or for children were included in the study. Those mothers who did not know exactly the birth weight of their last child were excluded.

Data were collected by means of a semi structured questionnaire, which was entirely noninvasive. Data were taken by researchers after taking verbal and written consent from respondent and confidentiality was ensured. There was no physical or psychological harm brought to the participants. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee. Questionnaire included the educational status, socioeconomic class and occupation of mothers. Similarly questions were asked from mothers regarding birth weight of their last child, duration of pregnancy at time of delivery, history of antenatal visits, risk factors like hypertension, pallor during pregnancy. Data were analyzed using SPSS version 21.

RESULTS

Out of 120 mothers, 33 had LBW babies (27.5%) and 87 were normal birth weight babies (73.5%). Our study showed that 99.17% mothers were housewives and remaining only 0.83% was from working class. We found that 8.3% children born were premature; 80% of these premature babies were LBW, as compared to babies delivered at full term (p?0.0001) (Table 1).

Table 1. Duration of pregnancy and birth weight (n=120).

Birth weight	Duration of pregnancy	
	Premature (n=10)	Full term (n=110)
Low birth weight	8 (80. 00%)	25 (22.72%)
Normal birth weight	2 (20.00%)	85 (77.27%)

Table 2. Hypertension in mother and birth weight (n=120).

Birth weight	Hypertension in mother	
	Yes (n=38)	No (n=82)
Low birth weight	23 (60.5%)	10 (12.2%)
Normal birth weight	15 (39.47%)	72 (87.8%)

Table 3. Education of mothers and birth weight (n=120).

Birth weight	Education of mothers		
	Illiterate (n=45)	Secondary (n=62)	Graduate (n=13)
Low birth weight	15(33.33%)	16(25.80%)	2(15.38%)
Normal birth weight	30(66.66%)	46(74.19%)	11(84.61%)

Table 4. Socioeconomic status of mother and birth weight of baby.

Birth weight	Socioeconomic status of mother		
	Low income	Middle Income	High income
Low	26(32.1%)	7(19.44%)	0(0.0%)
Normal	55(67.9%)	29(80.56%)	3(100%)

Table 5. Antenatal visits and birth weight of baby.

Birth weight	Antenatal visits		
	Regular (n=84)	Irregular (n=21)	No visits (n=14)
Low	22 (25.8%)	4 (19.04%)	7 (50.0%)
Normal	52.5 (74.11%)	7 (80.95%)	7 (50.0%)

Table 6. Paleness of mother and birth weight (n=120).

Birth weight	Pallor of mother	
	Pale (n=54)	Not pale (n=66)
Low birth weight	18 (33.33%)	15 (22.72%)
Normal birth weight	36 (66.66%)	51 (77.27%)

In our study, 31.6% mothers had hypertension, which was found to be a major factor determining LBW (p?0.00001) (Table 2). Only 10.83% mothers were educated up-to graduate & above and majority of them and 81 out of 120 belonged to low socioeconomic class. There was no significant relationship found between LBW and education (p?0.4) or LBW and socio-economic status (p-?0.2) using chi-square test (Table 3 and 4). Our study showed that 11.6% mothers had no antenatal visits. 50% of them had LBW babies (Table 5). This relation between LBW and antenatal visits was non-significant (p? 0.1). We also compared LBW among mothers who were pale during their pregnancy with anemia or those without pallor (Table 6). This comparison was also non-significant (p? 0.19).

DISCUSSION

In the present study, the frequency of LBW babies was found to be 27.5%. The prevalence of LBW varies widely over different regions and populations. The prevalence of LBW was reported from Karachi to be 11.98%. In a similar study from Combined Military Hospital, Quetta, out of 114 patients, 12 patients (10.5%) delivered LBW babies.[10] In Karnataka, India, prevalence of LBW babies was found to be 22.9% recorded in a study at a Primary Health Centre in rural Karnataka.[15] The prevalence in our study is relatively higher because Holy Family Hospital is located in a Middle class locality with the majority of patients being referred from peripheral areas and since treatment is virtually free, those who cannot afford good nutrition and adequate facilities are catered at this tertiary care facility.

LBW and prematurity were found to be significantly related with each other in our study (p=0.05). Prematurity has been recognized as an important determinant of LBW in other studies also.[5] Hypertension during pregnancy was another factor that was significantly related with LBW infants (p<0.05) in our study. In our study, 31.6% of mothers had hypertension and 60.5% of these mothers gave birth to LBW babies. Hypertension and LBW were also significantly related in another study from Karachi.[16]

We found that 46 out of 87 babies with weights >2.5 kg belonged to mothers with better education than those who had LBW (<2.5 kg). Better educated mothers are more likely to regularly attend antenatal visits and follow the doctor's instructions regarding nutrition, hygiene and immunization during pregnancy.[11]

Although the relationship of number of antenatal visits and LBW frequency did not turn out to be significant in our study, there was no history of antenatal visits in 14 out of 112 patients and 50% of these women had LBW babies. The lack of antenatal care puts the life of both mother and baby at risk. On the other hand, in a study from Pakistan Institute of Medical Sciences, Islamabad, less than three antenatal visits were found to increase the likelihood of LBW births.[13] There were few limitations to this study along with some confounding factors like small sample size due to missing or unreported cases, which will be dealt with in future research work.

CONCLUSION

This study showed a high incidence of low birth weight in our setup and major factors that were found to be significantly related with low births were hypertension during pregnancy and premature birth.

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REFEFRENCES

1. WHO. Maternal, newborn, child and adolescent health. http://www.who.int/maternal_child_adolescent/topics/newborn/care_of_preterm/en/. [accessed on 20/5/2015]
2. WHO. Guidelines on Optimal feeding of low birth weight infants in low-and middle-income countries 2011 http://www.who.int/maternal_child_adolescent/documents/9789241548366.pdf?ua=1 [accessed on 20/5/2015]
3. Bangladesh Demographic and Health Survey (2011), Preliminary report, National Institute of Population

Research and Training Dhaka, Bangladesh April 2012. http://www.measuredhs.com/pubs/pdf/PR15/PR15.pdf
4. United Nations Children's Fund and World health Organization, Low Birth Weight: country, regional and global estimates. Unicef, New York, 2004.
5. Park K. Park's textbook of Preventive and Social Medicine. 21st ed. India: Banarsidas Bhanot; 2011.
6. Kayode GA, Amoakoh-Coleman M, Agyepong IA, Ansah E, Grobbee DE, Klipstein-Grobusch K. Contextual risk factors for low birth weight: a multilevel analysis. PLoS One 2014; 9(10):e109333.
7. Nusrat U, Karim SA, Nasim A. Comparison of Fetal Birth Weight Between Anaemic and Non Anaemic Pregnant Women. Ann Abbasi Shaheed Hosp Karachi Med Dent Coll 2014;19:85-90.
8. Oya Yucel, Nursan Dede Cynar. Maternal risk factors affecting newborn parameters. Pak J Med Sci 2009;25:386-90.
9. Bhatti A, Naz S, Majid E, Bhatti N. Maternal risk factors associated with low birth weight babies. Med Channel 2010;16:334-8.
10. Urooj U, Ansari A, Baqai S. Pregnant women with low BMI (<19); frequency of preterm labour and low birth weight. Professional Med J 2011;18:592-7.
11. Zaman T, Khan SA. Perinatal outcomes in antenatal service users versus non-users in an insured population of Northern Punjab, Pakistan. Pak J Public Health 2012;2:53-8.
12. Kader M, Perera NK. Socio-economic and nutritional determinants of low birth weight in India. N Am J Med Sci 2014;6:302-8.
13. Tasnim N, Mahmud G, Arif MS. Impact of reduced prenatal visit frequency on obstetric outcome in low-risk mothers. J Coll Physicians Surg Pak 2005;15:26-9.
14. Aftab S, Ara J, Kazi S, Deeba F. Effects of poverty on pregnant women Pak J Med Res 2012;51:05-9.
15. Metgud CS, Naik VA, Mallapur MD. Factors affecting birth weight of a newborn--a community based study in rural Karnataka, India. PLoS One 2012;7(7):e40040.
16. Shams S. Low birth weight: frequency and association of maternal factors. Pak Peds J 2012; 36:192-8.