

Low Birth Weight: Ubiquity and Imminence

Gurmeet Singh Sarla* and Ashish Vadhera

Senior Registrar, 159 General Hospital, India

*Corresponding Author: Gurmeet Singh Sarla, Senior Registrar, 159 General Hospital, India.

Received: November 17, 2020; Published: November 29, 2020

Abstract

Background: World Health Organization defines Low birth weight as a birth weight of less than 2500 gm. Low birth weight babies have higher mortality, have impaired academic achievements, and increased risk of cardiovascular disease and diabetes.

Aim: This study aims to define low birth weight, estimate its prevalence and study its correlation with maternal age, weight, height and haemoglobin levels, gender of the baby, seasonal variations.

Results: 29 out of 200 (14.5%) of babies were found to have low birth weight (Chart 1). 20 out of 29 (68.96%) low birth weight babies were delivered by Caesarean section as compared to 9 (31.03%) babies who were born by normal delivery. Maternal age was analysed and it was observed that 9 patients (31.03%) aged less than 20 years, 8 patients (27.58%) were in the age bracket of 21 - 30 years and 12 patients (41.37%) belonged to the age group between 31 - 40 years (Chart 2). The sex of low birth weight babies was studied and it was observed that 20 (68.96%) low birth weight babies were females as against 9 (31.03%) male babies. 17 patients (58.62%) who delivered low birth weight babies were primigravidae as compared to 12 patients (41.37%) who were multigravidae. 3 patients (10.34%) had maternal weight of less than 50 kg, 17 patients (58.62%) had weight between 51 - 55 kg and 9 patients (31.03%) had weight of more than 55 kg. Maternal height was studied and it was observed that 23 patients (79.31%) had a height in the range of 151-160 cm and only 6 patients (20.68%) who delivered low birth weight babies had height measuring more than 160 cm. Haemoglobin levels of patients with low birth weight babies were observed to find that 5 patients (17.24%) had haemoglobin levels of less than 10 gm%, 12 patients (41.37%) had haemoglobin levels between 10.1 - 11 gm% and 12 patients (41.37%) had a haemoglobin level of more than 12.1 gm%. Analysis of seasonal variation amongst low birth weight babies was done and it was observed that 13 babies (44.82%) were born between March to May, 8 babies (27.58%) were born between the months of June to September and 8 babies (27.58%) were delivered between the months of October to February. 12 (41.37%) of the low birth weight babies were pre term whereas 17 babies (58.62%) delivered after full term.

Keywords: Low Birth Weight; Ubiquity and Imminence

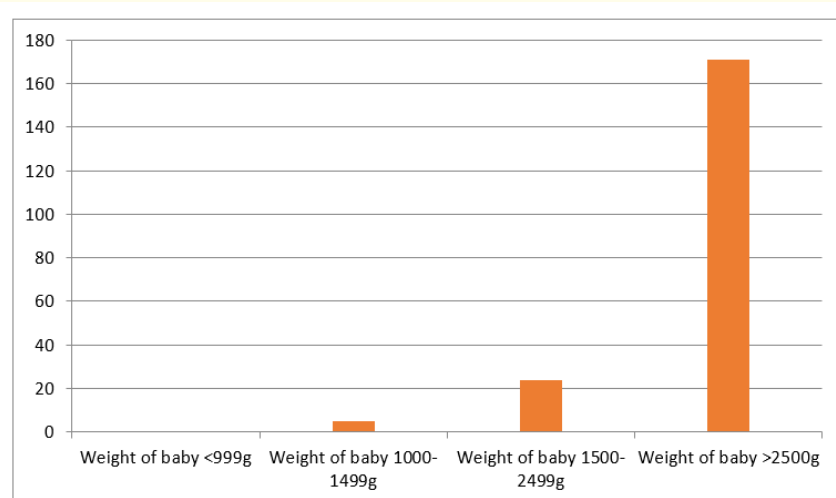


Chart 1: Prevalence of low birth weight babies.

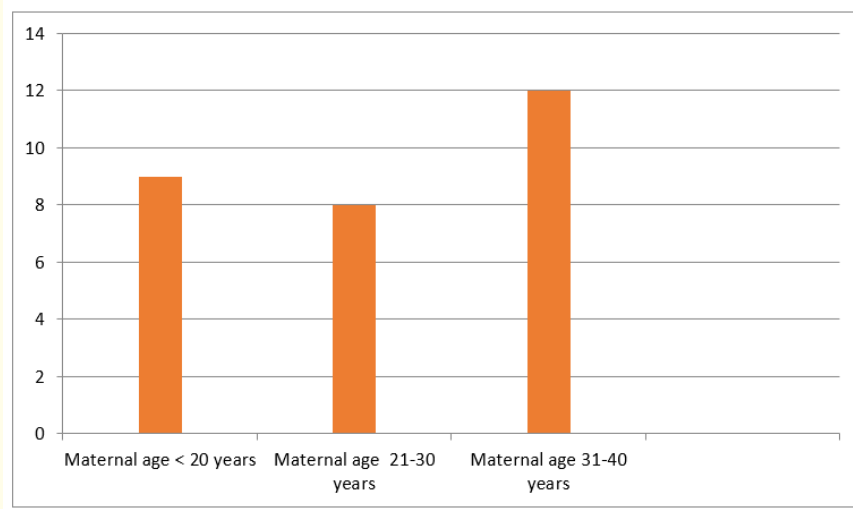


Chart 2: Chart depicting maternal age of those who had delivered low birth weight babies.

Introduction

The birth weight of an infant is the first weight recorded after birth taken within the first few hours after birth. World Health Organization defines Low birth weight as a birth weight of less than 2500 gm [1]. There are two more entities viz. very low birth weight when the birth weight is < 1500 gm and extremely low birth weight when the birth weight is < 1000 gm [1]. Pre term birth and intrauterine growth retardation may lead to low birth weight and 15 - 20% of births are low birth weight. Low birth weight has an inverse relationship with socioeconomic status and it is important to study low birth weight because it is a valuable public health indicator of maternal health, healthcare delivery, nutrition and poverty. Low birth weight babies have a 20 times greater risk of dying as compared to those with birth weight of more than 2.5 kg [2], have impaired academic achievements, and increased risk of cardiovascular disease and diabetes. Infants with low birth weight are not capable of adapting themselves outside the womb and are at a greater risk of mortality [3].

Aim

This study aims to define low birth weight, estimate its prevalence and study its correlation with maternal age, weight, height and haemoglobin levels, gender of the baby, seasonal variations. Association between low birth weight and Caesarean section, Primigravidae and preterm babies was also studied.

Results

29 out of 200 (14.5%) of babies were found to have low birth weight (Chart 1). These values are comparable to the Indian figures of 20% LBW [4]. 20 out of 29 (68.96%) low birth weight babies were delivered by Caesarean section as compared to 9 (31.03%) babies who were born by normal delivery. Low birth weight is one of the causes of adverse pregnancy outcomes in both premature and full-term infants and increases the rate of Caesarean section [5].

Maternal age was analysed and it was observed that 9 patients (31.03%) aged less than 20 years, 8 patients (27.58%) were in the age bracket of 21 - 30 years and 12 patients (41.37%) belonged to the age group between 31-40 years (Chart 2). A study by Mondal has shown a correlation between risk of low birth weight in mothers under 19 and over 35 years of age [6].

The sex of low birth weight babies was studied and it was observed that 20 (68.96%) low birth weight babies were females as against 9 (31.03%) male babies. A Japanese study revealed a significant association between low birth weight and female baby [7].

17 patients (58.62%) who delivered low birth weight babies were primigravidae as compared to 12 patients (41.37%) who were multigravida.

3 patients (10.34%) had maternal weight of less than 50 kg, 17 patients (58.62%) had weight between 51-55 kg and 9 patients (31.03%) had weight of more than 55 kg.

Maternal height was studied and it was observed that 23 patients (79.31%) had a height in the range of 151 - 160 cm and only 6 patients (20.68%) who delivered low birth weight babies had height measuring more than 160 cm.

Haemoglobin levels of patients with low birth weight babies were observed to find that 5 patients (17.24%) had haemoglobin levels of less than 10 gm%, 12 patients (41.37%) had haemoglobin levels between 10.1-11 gm% and 12 patients (41.37%) had a haemoglobin level of more than 12.1 gm%.

Analysis of seasonal variation amongst low birth weight babies was done and it was observed that 13 babies (44.82%) were born between March to May, 8 babies (27.58%) were born between the months of June to September and 8 babies (27.58%) were delivered between the months of October to February. The large annual temperature range may contribute to the low birth weights during summer months [8].

12 (41.37%) of the low birth weight babies were pre term whereas 17 babies (58.62%) delivered after full term.

Discussion

Low birth weight may be because of preterm or intrauterine growth restriction or both. 2500 g is the cut-off which defines low birth weight. Low birth weight is a risk factor for increased perinatal mortality and adverse infant outcomes. It is one of the major determinants of perinatal survival, infant morbidity, and mortality [9]. Deaths in low birth weight babies is 20 times higher than among infants of normal weight [10] and it is the most important indicator of infant mortality during the first few months of life [11].

Maternal age less than 20 years is commonly associated with low birth weight [12]. Teenage pregnancy and history of abortion has also been observed to be associated with low birth weight [13]. Similarly unwanted and unplanned pregnancies have been seen to be associated with low birth weight [14].

Maternal nutritional status, maternal weight, gestational age, pre-eclampsia, intervals between pregnancies, parity, multiple births, educational status, lack of antenatal care (ANC) and low socio-economic status have all been studied to have a correlation with low birth weight [15]. Short stature, anaemia and/or micronutrient deficiencies in mothers is also associated with low birth weight [16]. Low socio-economic status leads to inadequate food intake by the pregnant woman, lack of hygiene and sanitation, restricted access to medical care and iron and folic acid supplementation during pregnancy leading to low birth weight [17]. Lack of education of mother is also associated with low birth weight because illiteracy leads to indulgence in smoking, drug or substance abuse [18].

Maternal height also has a bearing on baby being low birth weight. Short statured mothers have low birth weight babies and the cut off in height of Indian mothers have been established at 145 cm [19]. The relationship between maternal haemoglobin level and birth weight has also been proven and low maternal haemoglobin has been established to be associated with low birth weight [20].

Conclusion

The prevalence of low birth weight in this study has been estimated to be 14.5% which is comparable to the values in other Indian studies of about 20%.

Low birth weight was more often seen in babies delivered by Caesarean section as compared to babies who were born by normal delivery. Low birth weight is one of the causes of adverse pregnancy outcomes in both premature and full-term infants and increases the rate of Caesarean section.

A correlation has been confirmed between risk of low birth weight in mothers below 20 years and above 35 years of age. Teenage pregnancies, unwanted and unplanned pregnancies have more chances of delivering low birth weight babies.

Female babies have been more often found to have low birth weight in comparison to male babies.

Primigravidae have been observed to more frequently deliver low birth weight babies as compared to multiparae mothers.

Maternal malnourishment, short stature, low socio economic status, poor education of mother, anemia, lack of basic hygiene and sanitation facilities and ante natal care have all been associated with low birth weight.

Bibliography

1. Organization WH. "International statistical classification of diseases and related health problems, tenth revision, 2nd edition". *World Health Organization* (2004).
2. Badshah S., *et al.* "Risk factors for low birthweight in the public-hospitals at Peshawar, NWFP-Pakistan". *BMC Public Health* 8 (2008): 197.
3. Hockenberry MJ and Wilson D. "Wong's nursing care of infant and children". eighth edition. Mosby Elsevier 1 (2007): 376-378.
4. Bharati P., *et al.* "Prevalence and causes of low birth weight in India". *Malaysian Journal of Nutrition* 17.3 (2011): 301-313.
5. Chen Y., *et al.* "Delivery modes and pregnancy outcomes of low birth weight infants in China". *Journal of Perinatology* 36.1 (2016): 41-46.
6. Mondal B. "Low Birth weight in relation to sex of baby, maternal age and parity: A hospital based study on Tangsa tribe from Arunachal Pradesh". *Indian Medical Association* 96 (2002): 362-364.
7. Terada M., *et al.* "Effects of Maternal Factors on Birth Weight in Japan". *Journal of Pregnancy* (2013): 5.
8. Chodick G., *et al.* "Seasonality in birth weight: review of global patterns and potential causes". *Human Biology* 81.4 (2009): 463-477.
9. Singh G., *et al.* "Maternal factors for low birth weight babies". *Medical Journal Armed Forces India* 65.1 (2009): 10-12.
10. Ezugwu E., *et al.* "O282 Low birth weight babies at a tertiary hospital in Enugu, South East Nigeria". *International Journal of Gynecology and amp; Obstetrics* 107 (2009): S173.
11. Ryan CA., *et al.* "Trend analysis and socio-economic differentials in infant mortality in the Southern Health Board, Ireland (1988-1997)". *Irish Medical Journal* 93.7 (2000): 204-206.
12. Sharma SR., *et al.* "Low birth weight at term and its determinants in a tertiary hospital of Nepal: a case-control study". *PLoS ONE* 10.4 (2015): e0123962.

13. Brown JS, *et al.* "Previous abortion and the risk of low birth weight and preterm births". *Journal of Epidemiology and Community Health* 62.1 (2008): 16-22.
14. Teklehaimanot N, *et al.* "Prevalence and factors associated with low birth weight in axum and laelay maichew districts, North Ethiopia: a comparative cross sectional study". *International Journal of Nutrition and Food Sciences* 3.6 (2009): 560-566.
15. Hosain GM, *et al.* "Factors associated with low birth weight in rural Bangladesh". *Annals of Tropical Paediatrics* 52 (2006): 87-91.
16. Som S, *et al.* "Effect of socio-economic and biological variables on birth weight in Madhya Pradesh". *Malaysian Journal of Nutrition* 10 (2004): 159-171.
17. Ohlsson A and Shah P. "Edmonton: Institute of Health Economics (IHE). Determinants and prevention of low birth weight: A synopsis of the evidence (2008).
18. Khatun S and Rahman M. "Socio-economic determinants of low birth weight in Bangladesh: A multivariate approach". *Bangladesh Medical Research Council Bulletin* 34 (2008): 81-86.
19. Mumbare SS, *et al.* "Maternal risk factors associated with term low birth weight neonates: A matched-pair case control study". *Indian Pediatrics* 49 (2012): 25-28.
20. Hirve SS and Ganatra BR. "Determinants of low birth weight: A community based prospective cohort study". *Indian Pediatrics* 31 (1994): 1221-1225.

Volume 3 Issue 12 December 2021

©All rights reserved by Gurmeet Singh Sarla and Ashish Vadhera.