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ORIGINAL ARTICLE

Maternal Risk Factors Related with Term Low Birth Weight

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ABSTRACT

Introduction: Low birth weight (LBA) remains to be an important community health issue globally. There are many fetal and maternal factors that contribute to low birth weight. The risk factors of maternal side are socially and biologically related. Low birth weight mortality can be condensed if risk factors from maternal side are perceived primarily and treated through simple procedures.

Aim: This research was held to investigate maternal risk factors related with low birth weight.

Study Design: A record-based retrospective and case control study.

Place and Duration: In the Obstetrics and Gynecology department of Lahore General Hospital for six-months duration from 21st June 2021 to 20th December 2021.

Methods: A retrospective, document-based, case-control study was conducted. The collection of retrospective data was performed on the basis of medical records from the department of the Obstetrics and Gynecology. Afterwards the criteria of exclusion and reviewing the integrity of the records, 80 subjects in patients' group and 80 in control group were included with gestation age of more than 37-weeks. In Microsoft Excel; the data was entered and SPSS 23.0 was applied for data analysis. The chi-square test, student's t-test and odds ratio were applied to identify associated factors result in low birth weight.

Results: 80 cases and 80 control groups were examined in this study. The mothers mean age in the study group was 25.1 ± 5.2 years and 23.1 ± 4.28 years in the control group. The patients mean weight was 61.8±6.91 kg in the patient's group and 64.48±8.60 kg in the control group. The pregnancy-related diseases were noted 37.5% in the patient's group and 32.5% in the controls group.

Conclusion: Maternal factors such as socioeconomic status, haemoglobin, weight, and number of deliveries were related significantly with LBW. Maternal ailments, such as high blood pressure and diabetes, can result in a low birth weight.

Keywords: Low birth weight, Maternal factors.

INTRODUCTION

The WHO describes low birth weight as birth weight <2,500 g per birth, regardless of community, culture and region[1-2]. Low birth weight is a significant forecaster of the overall healthiness of the people and reproductive health. Low birth weight results in poor infant growth and is related with higher morbidity and mortality, chronic adult disease and mental retardation[3-4]. New-borns weighing <2499 g at birth have a 20-fold greater jeopardy of neonatal mortality than infants weighing >2500 g[5-6]. The prevalence of LBW in each population reflects socioeconomic development and is a good alternative to measuring the state of development of a country and can also be used as a good indicator of maternal nutritional status[7]. The effort that reduces the frequency of LBW is more effective in the 1st year of life as it is the significant contributor in infant mortality and morbidity[8]. The weight of a new-born baby is a universal and undeniable determinant of healthy infancy and childhood. LBW infants are at higher danger of infant and perinatal death[9]. In addition to increasing the risk of mortality, LBW is also related with longstanding morbidity and development problems in survivors. Known factors of preterm labor and fetal growth retardation are also believed to be related with LBW, such as inadequate maternal food intake and diseases, especially infections[10]. It is important for public health that LBW causes mental retardation and a high risk of perinatal and neonatal death and morbidity, and it is clear that LBW is responsible for high perinatal and neonatal mortality. LBW reflects maternal malnutrition and poor health[11]. LBW is the significant predictors of new-born death, particularly mortality in the 1st month of life. Low birth weight (LBA) remains to be an important community health issue globally. The World Health Organization approximates that about 25 million babies with low birth weight are born every year, and 500000 of them expire worldwide. The low-birth-weight prevalence in Pakistan was institute to be 24%[12]. There are many factors that contribute to low maternal and fetal birth weight. The risk factors of maternal side are socially and biologically related[13]. Low birth weight mortality can be condensed if risk factors from maternal side are perceived primarily and treated through simple procedures. This research was held to investigate maternal risk factors related with low birth weight.

METHODS

A retrospective, document-based, case-control study was conducted in the Obstetrics and Gynecology department of Lahore General Hospital for six-months duration from 21st June 2021 to 20th December 2021. The collection of retrospective data was performed on the basis of medical records from the department of the Obstetrics and Gynecology. Afterwards the criteria of exclusion and reviewing the integrity of the records, 80 subjects in patients' group and 80 in control group were included with gestation age of more than 37-weeks. Information about the child was extracted from the records, such as age, height, weight, socioeconomic level (SES), number of births, gestational age, pregnancy diseases, birth weight and gender. All babies born with birth weight < 2500 g were included in the cases, and children born with birth weight > 2500 g were counted in the control group. Deliveries with missing records have been excluded. Preterm births were excluded from the study. Still births and early deaths of new-borns were also excluded. In Microsoft Excel; the data was entered and SPSS 23.0 was applied for data analysis. The chi-square test, student's t-test and odds ratio were applied to identify associated factors result in low birth weight.

RESULTS

The study included 80 patients and 80 matched controls. Cases and controls were matched for factors such as maternal age, gestational age, maternal height, child's sex, mode of delivery, and number of prenatal visits. A comparison of some maternal characteristics used for matching in cases and controls are shown in Table 1.

The mothers mean age in the study group was 25.1 ± 5.2 years and 23.1 ± 4.28 years in the control group. The patients mean weight was 61.8±6.91 kg in the patient's group and 64.48±8.60 kg in the control group. Most LBW children, 58

(72.5%), had 2-2.5 kg of birth weight, while the remaining 22(27.5%) had a birth weight below 2500 g.

There was a significant difference between weight and haemoglobin values in the cases and controls (Table 2).

Table 3 lists several other risk factors related with LBW. In this study, it was observed that there is a risk of LBW if the mother's weight is below 60 kg at the full-time delivery. In addition, maternal hypertension, diabetes, coronary artery disease, etc. if they have diseases; LBW risk was high. Primipara also had a jeopardy of having babies with LBW.

Table-1: shows basic variables Comparison of mothers between patients' group and control group

Variables	Patients group(n=80)	Control group(n=80)	t value/ ϰ 2 values	P value
Age	25.1 ± 5.2	23.1 ± 4.28	t=0.640	0.49 NS
Height	160.1±7.08	158.2±4.51	t=1.81	0.06 NS
Normal delivery	30	60	χ^2 =0.049	0.79 NS
>3 ANC visit	60	70	χ^2 =0.14	0.89 NS

Table-2: shows Maternal weight and HB between patients' group and control group

Variables	Patients group(n=80)	Control group(n=80)	t value	P value
Weight in Kg	61.8±6.91	64.48±8.60	2.25	0.03
Haemoglobin gm%	10.2±1.54	12.8±2.08	2.86	0.05

Table-3: shows the Maternal risk factors for low birth weight

Variables	Patients group(n=80)	Control group(n=80)	Odds ratio (95% CI)	P value (Chi-square)
Weight of mother (<60 Kg)	32	21	2.40 (1.19-5.10)	0.011
Maternal diseases	30	18	2.15 (1.10-4.22)	0.021
Primipara	39	26	2.08 (1.09-4.15)	0.020
Anemia in mother	21	14	2.28 (1.15-5.01)	0.022

DISCUSSION

According to UNICEF estimates, every third new-born baby (30%) in Pakistan is LBW. The NFHS -3 reports that 21.5% of all babies are LBW.[14] A Kerala study found 18% of babies with low birth weight. In the current case-control study, maternal body weight, number of deliveries, and hemoglobin levels were related significantly with low birth weight[15]. Kramer identified 43 LBW determinants in his LBW meta-analysis[16]. Kramer and Deshpande have shown that maternal nutritional status is an important determinant of birth weight[17-18]. In this study, mothers weighing less than 60 kg at birth were 2.39 times more expected to give birth with low weight. Weight gain during pregnancy could have been a better factor but could not be investigated due to a lack of information. Likewise, the effect of spacing could not be investigated[19-20]. Maternal haemoglobin is a surrogate indicator of the mother's overall nutrition and therefore low maternal haemoglobin is an important risk factor for LBW[21]. In this analysis, this relationship was restored as shown in previous studies. The substantial relationship between low SES and low infant birth weight found in this study was also consistently observed in previous studies. The incidence of LBW was significantly higher among primiparous mothers and decreased up to the value of parity 4[21-22]. Agarwal et al. and Kour et al. reported results similar to our study. Maternal diseases such as diabetes mellitus and high blood pressure are significant risk factors for low birth weight. Many studies report similar results[23-24].

CONCLUSION

Birth weight is an imperative factor in infant and neonatal morbidity and mortality. Low birth weight babies are further probable to suffer from debilities such as poor growth and developmental delay. Maternal factors such as socioeconomic status, weight, hemoglobin, and birth rate are important low birth weight risk factors. Maternal diseases, such as high blood pressure and diabetes, can result in a low birth weight.

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