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Study Of Risk Factors Associated With Low Birth Weight Among Newborns At A Tertiary Care Center.

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ABSTRACT

In India, it is possible that some risk factors that have raised major concern in the West, such as smoking among mothers, may not be operative in India. In our country where almost 70–80% births take place at home and peripheral hospitals, taking accurate birth weight is a problem due to unavailability of weighing scale and trained personnel. To determine maternal risk factors associated with low birth weight among newborns in a tertiary care center. Present study was a case control study. Mothers of Low birth weight babies delivered in a tertiary care centre were studied. Thus 2 groups were made cases and controls each having 300 respondents. semi structured, predesigned, pretested proforma was used to collect information from hospital-based records and mother and child protection card, if available and from mother. All data was analysed using SPSS software. Mean age among cases was 25.2+3.9 and among controls was 24.5 +3.2 years. Among both cases 93.66% and controls 83.6% the weight gain was <10 kgs. Odds ratio was 0.5. Pre-pregnancy screening, early antenatal booking and proper identification of high-risk mother needs to be strengthened and enforced in effort to reduce incidence of LBW infants. Effective health educations especially in promoting healthy wellbeing during prepregnancy care will help in detecting high-risk pregnancy that lead to LBW infants.

Keywords: low birth weight, pregnancy, high risk, neonate

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INTRODUCTION

Birth weight is an essential predictor of survival, growth and development of an infant. “According to the World Health Organization (WHO), Low Birth Weight (LBW) is defined as a birth weight of less than 2,500 grams at the time of birth, regardless of the gestational age”. The infant must be weighed within the first hour of life before the physiological postnatal weight loss occurs. Cases of LBW can either be caused by preterm delivery (28 to 37 weeks) or due to intrauterine growth restriction (small for gestational age babies, weighing <10th percentile [1]. Worldwide, 40–60% of new-borns mortality is due to LBW. Globally, an estimated 20 million infants are LBW representing 15.5% of all births, and almost all (95.6%) LBW infants are born in developing countries [2]. The magnitudes of LBW in developing countries (16.5%) tended to be double than that of developed countries (7.0%) [3]. In 2015, the incidence of LBW is found to be highest in South Asia (27%) than any other region in the world. The prevalence of LBW is almost stagnant in all regions of the world between 2000 and 2015 [4]. In India it is estimated that 30% of babies are LBW, with nearly half being born full. India alone accounts for 40% of low weight babies in the overall developing countries and more than half of those born in Asia. It has been estimated that half of all the perinatal deaths and one-thirds of all the infant deaths are a consequence of low birth weight. (5)

Aims and objectives

To determine maternal risk factors associated with low birth weight among newborns in a tertiary care center.

MATERIAL AND METHODS

Present study was a case control study carried out among Mothers of Low birth weight babies delivered in a tertiary care centre for a duration of 1 year. Thus 2 groups were made cases and controls each having 300 respondents.

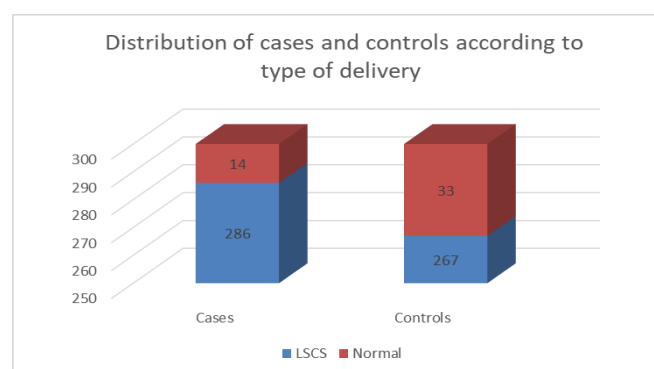
Inclusion criteria of controls: Mother whose baby had birth weight of 2500 grams or more.

Exclusion criteria: Multiple births/stillbirths, mothers unable to respond or seriously ill, mothers not willing to participate in this study, mothers whose babies having congenital anomalies. Informed consent is taken from participants before collecting data. Semi structured, predesigned, pretested proforma was used to collect information from hospital-based records and mother and child protection card, if available and from mother. All data was analysed using SPSS software.

RESULTS

Age distribution where majority cases were in age group of 25 to to 29 years (62%) and among controls majority were in 25 to 29 years age group (65%). Mean age and SD among cases was 25.2±3.9 and among controls was 24.5 ±3.2 years respectively. Lowest age group of mothers were from above 35 yrs. There were only 4 mothers in this age group were only 04 amongst cases and no mother was in this age group.

Graph 1: Distribution of cases and controls according to type of delivery



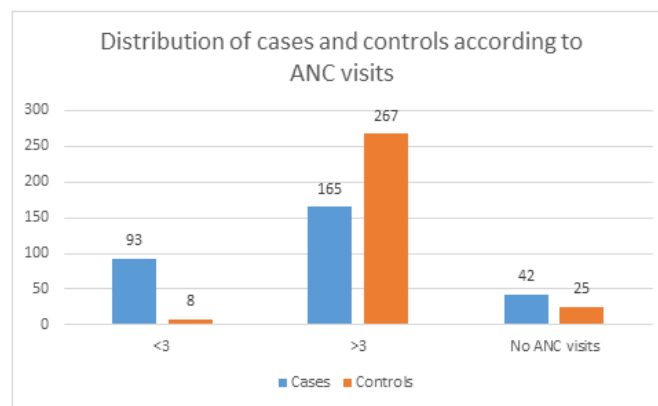
Type of delivery, where among cases 95.3% had normal delivery and among controls 89% had normal delivery. The knowledge and IEC about the advantages of carrying the deliveries at hospitals, has increased.

Table 1: Distribution of cases and controls according to ANC registration.

ANC registration	Cases	Controls
Yes	258(86)	275(91.33)
No	42(14)	25(8.33)
Total	300(100)	300(100)

Among both groups majority had ANC registration. (cases- 86%, controls -91.3%).IEC about early ANC registration whether belonging to rural/urban areas has been increased .Among cases 14%mothers were not registered ANC checkups, and 8.3% were from controls who had not registered anywhere.

Graph 2: Distribution of cases and controls according to ANC visits.



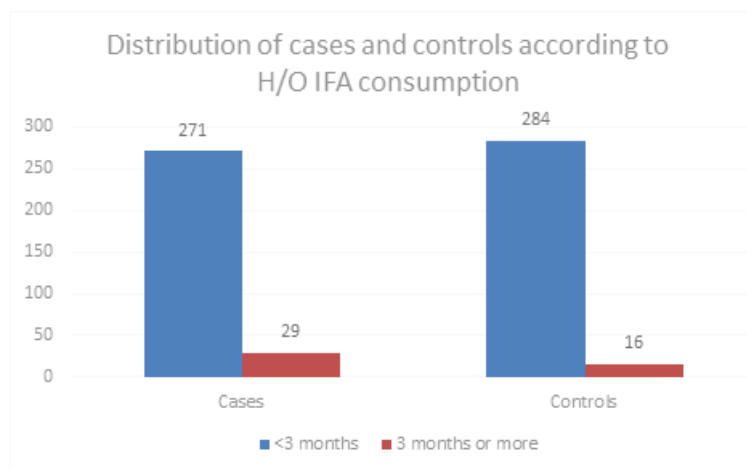
Among both groups cases 55% and controls 89% the ANC visits were > 3.Less than 3 ANC visits were from only 2.6% control groups .Among cases 14% had not done any ANC visits and 8.33% controls did not visited any hospital.

Table 2: Distribution of cases and controls according to weight gain

Weight gain in kgs	Cases	Controls
<10 kg	281(93.66)	251(83.66)
>10 Kg or equal to 10	19(6.33)	49(16.33)
Total	300(100)	300(100)
Mean	7.7	8.2
SD	0.4	0.7

Among both cases 93.66% and controls 83.6% the weight was <10 kgs. Less than 10 kgs weight gain in pregnancy were maximum amongst 93.6% cases, while 6.3% cases had gain in weight higher than 10 kgs. Among controls16.3% had weight gain higher than 10 kgs.

Graph 3: Distribution of cases and controls according to duration of IFA consumption



Graph 3 shows that 94.6% cases and 90.3% controls of ANC mothers consumed IFA tablets for <3 month. The successful IFA supplementation had been done to 6.3%cases and 9.6% controls.

Table 3: Association of Risk factors for low-birth-weight neonate

Parameters	Cases	Controls	Odds ratio	CI (OR)	P value
ANC visits					
Yes	258(86)	275(91.66)	0.55	0.3 - 0.9	0.02
No	42(14)	25(8.33)			
Place of ANC registration					
Government	275(91.66)	278(92.66)	0.8	0.4- 1.5	0.6
Private	25(8.33)	22(7.33)			
IFA tablet consumption					
Less than 3 months	284(94.66)	271(90.33)	0.5	0.2- 0.9	0.04
More than 3 months	16(5.33)	29(9.66)			
Td immunization					
Complete	284(94.66)	291(97)	1.8	0.7- 4.1	0.1
Incomplete	16(5.33)	09(03)			
Weight gain during pregnancy					
<10 kg	281(93.66)	251(83.66)	2.88	1.6- 5.0	0.0002
>10 Kg	19(6.33)	49(16.66)			

Positive statistical significance was seen for ANC visit, IFA tablet consumption, and Weight gain during pregnancy.

DISCUSSION

Age distribution where majority cases were in age group of 25 to to 29 years (62%) and among controls majority were in 25 to 29 years age group (65%). Mean age and SD among cases was 25.2±3.9 and among controls was 24.5 ±3.2 years respectively. Lowest age group of mothers were from above 35 yrs. There were only 4 mothers in this age group were only 04 amongst cases and no mother was in this age group.

Study by Zahar K et al [6] showed that most mothers in the case (71.7%) and control (81.2%) groups aged 35-35 years and OR was 0.3. Ravi Kumar Bhaskar et al [7] showed that mean age among cases was 24.07 and controls 23.38 years. In this study, maternal age had no significant association with LBW which is consistent with studies conducted by Mavalankar et al [8]. In India and Fikree and Berenes [9] in Pakistan. But, in contrast, Yadav et al [10] and Joshi et al [11] found more risk of delivering LBW

babies by teenage mothers. ANC registration, where among both groups majority had ANC registration. (cases- 86%, controls -91.3%). Gajbhiye A (2018) [11] showed that 87% had ANC registration.

Majority among cases 67.66% and controls 84.3% did the registration in government hospital. Odds ratio was 0.8. Imaad Mohammed Ismail et al [12] showed that 76.4% cases and 91.8% of controls registered at private hospital. Among both cases 93.66% and controls 83.6% the weight gain was <10 kgs. Odds ratio was 2.88. Mollar et al. have shown in African women with a total pregnancy weight gain of 6 kg that maternal weight within 24 hours postpartum was equal to weight at 14 weeks of gestation [13]. As mean weight gain during pregnancy in India was only about 6 kg in a study by Anderson [14], it is felt that postpartum weight closely reflects prepregnancy weight in our population. Therefore, postpartum BMI closely reflects prepregnancy BMI.

94.6% cases and 90.3% controls of ANC mothers consumed IFA tablets for <3 months. Odds ratio was 0.5. Ravi Kumar Bhaskar et al ⁽⁷⁾ showed that among both groups tablets were taken >3 months. Similarly, iron and folic acid supplements during pregnancy had a significantly lowering incidence of LBW, in agreement with a study from Bangladesh. Iron-alone supplementation could protect against low birthweight as compared to multiple micronutrients supplementation [15].

CONCLUSION

According to the results, LBW is related to several factors, therefore, it is a multifactorial phenomenon. ANC visits, IFA tablet consumption, Weight gain during pregnancy, etc are the factors associated with LBW. Therefore, raising public awareness, counseling pregnant mothers, and providing nutritional counseling, regular referral to health homes to receive health care in order to prevent preterm births can be effective in reducing the risk of birth of LBW infants. Therefore, the importance of pre-pregnancy screening, early antenatal booking and proper identification of high-risk mother needs to be strengthened and enforced in effort to reduce incidence of LBW infants. Effective health educations especially in promoting healthy wellbeing during prepregnancy care will help in detecting high-risk pregnancy that lead to LBW infants.

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