



## Short Communication

### A Study on Knowledge and Practice of Nutrition Among Mothers and Risk of Low Birth Weight Baby- A Hospital Based Case Control Study

#### Summary:

Low birth weight (LBW) is a leading cause of perinatal and neonatal deaths, and one of the most important public health problems. According to NFHS-3, the prevalence rate of LBW babies in India is 21.5%. The study was conducted to assess the nutritional knowledge and practice among women during pregnancy and risk of having low birth weight babies. A Case-Control study was conducted at Obstetrics wards of Medical College Hospital, Kolkata. In this study 30 cases and 30 controls were selected from the women admitted in post-natal wards during 1 February to 31 March, 2014. Matching was done for age, haemoglobin level, and educational status. Among both cases and control, 60% of the mothers belonged to socio-economic class IV. No significant difference was observed in nutritional knowledge among cases and controls. Nutritional practice was adequate among 26.7% of controls and 16.7% of cases. Inadequate nutritional practice was a risk factor for LBW baby (OR:1.81, 95%CI:0.51,6.38).

**Key words:** Low birth weight, Nutritional knowledge, Nutritional practice, LBW risk

#### Introduction

Adequate and balanced nutrition during pregnancy is very essential for a healthy pregnancy and birth outcomes.<sup>1</sup>Deficiency of particular nutrients during pregnancy may contribute to

---

**Ishita Halder\*, ChandrashekharTaklikar\*\*, Kuntal Biswas\*\*\***

**\*M.sc (Applied Nutrition)**

**\*\*Assistant Professor, Public Health, All India Institute of Hygiene and Public, Kolkata**

**\*\*\*Registrar, Medical College and Hospital, Kolkata**

**Corresponding Author: Dr. ChandrashekharTaklikar,  
Email: shekhartaklikar@gmail.com**

suboptimal embryonic and foetal nutrition, impaired intrauterine growth and development, congenital malformation, severe pregnancy complication leading to LBW baby and preterm deliveries.<sup>2</sup> According to WHO definition, birth weight less than 2.5 kg is low birth weight (LBW).<sup>3</sup> LBW is a leading cause of perinatal and neonatal deaths, and one of the most important public health problems, particularly in developing countries.<sup>4</sup> Annually there are almost 23 million LBW babies worldwide per 121 million births.<sup>2</sup> According to NFHS-3 the prevalence rate of LBW baby in India is 21.5%.<sup>5</sup> Poor nutritional knowledge and practice of mother is one of the major associated factors.<sup>4</sup> Thus, a hospital based case-control study was conducted to find association, if any, between nutritional knowledge and practice of mothers and low birth weight babies.

## Materials and Methods

The Case-control study was conducted in the Obstetrics ward of Medical College Hospital, Kolkata. Study was approved by Institutional Ethics Committee of Medical College, Kolkata. Study population consisted of post-natal mothers and their babies admitted in the post-natal obstetrics wards. In this study 30 cases and 30 controls were selected from the women admitted in post-natal ward during 1 Feb to 31 March, 2014, which was determined by following formula.<sup>6</sup>

$$n = z^2_{\alpha/2} / [\ln(1-\epsilon)] [(1/P_1(1-P_1) + 1/P_2(1-P_2))]$$

Where,

$\epsilon$  = Precision = 80%

$P_1$  = Nutritional knowledge among mothers having LBW baby ( $P_1 = 27.5\%$ )<sup>7</sup>

$P_2$  = Nutritional knowledge among mothers having normal birth weight baby ( $P_2 = 90\%$ )<sup>7</sup>

Calculated sample size = 24. Sample size was rounded off to 30 cases and controls each.

Women admitted in the Post-natal wards during the study period and fulfilling the inclusion and exclusion criteria were included in the study. Case was defined as mother having LBW baby. Control was defined as mother having normal birth weight baby. Cases and control were matched for age, hemoglobin level, education and birth order. Only full term normal vaginal delivery cases that were willing to participate were included in the study. Twin deliveries,

preterm deliveries and any other complicated cases were excluded from the study. Data were collected by using structured interview schedule. The Schedule comprised of information regarding demographic variables, nutritional knowledge during pregnancy and nutritional practice during pregnancy. Information regarding birth weight of newborns, hemoglobin level of mothers, mode of delivery, complications and other biochemical parameters was obtained from hospital records. Socio-economic status was assessed by 'Modified Kuppuswamy's scale-2013'<sup>8</sup>

Cases and controls were categorized as having adequate knowledge and practice if they had  $\geq 75\%$  correct responses to the questions and inadequate knowledge and practice if they had  $< 75\%$  correct responses to the questions. Data were entered into Microsoft-excel sheet and analyzed using SPSS version 20.

## Results

Mean age (yrs.) of cases and controls was  $21.2 \pm 2.25$  and  $21.9 \pm 2.29$  respectively. Among cases mean birth weight (kg) was  $2.12 \pm 0.361$  whereas, among controls it was  $2.86 \pm 0.331$  (Table 1). Majority of the mothers among cases and controls belonged to socio-economic class IV. Family size and religion was equally distributed among the cases and controls. No association of birth weight was observed with religion, socioeconomic status, family size, gravida and age at marriage (Table 2).

**Table 1: Distribution of age, birth weight of baby and haemoglobin level among cases and controls**

| Characteristics           | Cases<br>Mean (SD)  | Controls<br>Mean (SD) |
|---------------------------|---------------------|-----------------------|
| Age of mothers (yrs.)     | 21.2( $\pm 2.25$ )  | 21.9( $\pm 2.29$ )    |
| Birth weight of baby (kg) | 2.12( $\pm .361$ )  | 2.86( $\pm .331$ )    |
| Haemoglobin level (gm%)   | 11.21( $\pm 1.58$ ) | 11.16( $\pm 1.18$ )   |

**Table 2: Socio-demographic characteristics of cases and controls**

| Characteristics              | Cases)<br>No. (%) | Controls<br>No. (%) | OR (95 % CI)     |
|------------------------------|-------------------|---------------------|------------------|
| <b>Religion</b>              |                   |                     |                  |
| Hindu                        | 13(43.3)          | 15(50)              | 0.76 (0.27,2.11) |
| Muslim                       | 17(56.7)          | 15(50)              |                  |
| <b>Socioeconomic status*</b> |                   |                     | 0.86(0.30,2.46)  |

|                        |           |          |                 |
|------------------------|-----------|----------|-----------------|
| Class II and III       | 11 (26.7) | 12(40)   |                 |
| Class IV               | 19(63.3)  | 18(60)   |                 |
| <b>Gravida</b>         |           |          |                 |
| Primigravida           | 25(83.3)  | 20(66.9) | 2.5(0.73,8.50)  |
| Second-gravida         | 5(16.7)   | 10(33.3) |                 |
| <b>Family Members</b>  |           |          |                 |
| >4 members             | 16(53.3)  | 21(70)   | 0.49(0.17,1.41) |
| ≤4 members             | 14(46.7)  | 9(30)    |                 |
| <b>Age at Marriage</b> |           |          |                 |
| <18 years              | 10(33.3)  | 6(20)    | 2.0(0.61,6.46); |
| ≥18 years              | 20(66.7)  | 24(80)   |                 |

\*SE status assessed by Modified Kuppaswamy's scale -2013

**Table 3: Nutritional knowledge among mothers**

| Nutritional knowledge                           | Cases<br>No.(%) | Controls<br>No. (%) |
|---|-----------------|---------------------|
| Inadequate knowledge<br>(<75% correct response) | 28(93.3)        | 30(100)             |
| Adequate knowledge<br>(≥75% correct response)   | 2(6.7)          | 0                   |
| <b>Total</b>                                    | <b>30(100)</b>  | <b>30(100)</b>      |

**Table 4: Nutritional practice among mothers**

| Nutritional practice                           | Cases<br>No. (%) | Controls<br>No. (%) | OR<br>(95% CI)  |
|--|------------------|---------------------|-----------------|
| Inadequate practice (<75%<br>correct response) | 25(83.3)         | 22(73.3)            |                 |
| Adequate practice<br>(≥75% correct response)   | 5(16.7)          | 8(26.7)             | 1.81(0.51,6.38) |
| <b>Total</b>                                   | <b>30(100)</b>   | <b>30(100)</b>      |                 |

Both cases and controls had inadequate nutritional knowledge (Table 3). Adequate nutritional practice was observed to be slightly higher in controls than cases. Inadequate nutritional practice was a risk factor for LBW babies (OR: 1.815, CI: 0.51, 6.38) (Table: 4)

## Discussion

There was no significant risk of low birth weight baby and demographic variables like age at marriage, socioeconomic status, family size, religion and gravida. It was found that overall nutritional knowledge was inadequate among cases and controls. Study conducted in Lao, PDR8 documented that, 27.2% women having LBW had adequate nutritional knowledge whereas, 78.9% women having normal birth weight had adequate nutritional knowledge (OR:10.1).

It was found that 16.7% and 26.7% women had adequate nutritional practice among cases and controls respectively. Women with inadequate nutritional practice had 1.81 times risk of having LBW baby (OR:1.81 CI: 0.51, 6.38). Adequate nutritional practice was observed in 48.9% women having LBW babies whereas, among women having normal birth weight baby it was 89.4% in Lao PDR8 study (OR: 2.9).

## Conclusion

Nutritional knowledge during pregnancy among mothers has no effect on birth weight of the baby. Inadequate nutritional practice during pregnancy is a risk factor for LBW baby.

## Acknowledgement

We are very much thankful to Dr. Debnath Chaudhuri, Head of the Dept. of Biochemistry and Nutrition, All India Institute of Hygiene and Public Health, Kolkata for giving the opportunity to carry out the research work. We would also like to thank Principal, Medical College and Hospital, Kolkata for providing cooperation to conduct the study.

## References

1. Bawadia HA., Al-Kuranb O, Al-Bastonia LA, Tayyemc R F, Jaradatd A, Tuurie G, Al- Beitawif SN, Al-Mehaisenb LM. Gestational nutrition improves outcomes of vaginal deliveries in Jordan: an Epidemiologic screening. *Journal of Nutrition Research*, 2010, 30 (2):110–117.
2. Roudbari M, Yaghmaei M, Soheili M. Prevalence and risk factors of low-birth- weight infants in Zahedan, Islamic Republic of Iran. *East Mediterranean Health Journal*, 2007, 13 (4): 838-45.

3. Centers for Disease Control and Prevention. International notes update: Incidence of low birth weight. In *Morbidity and Mortality Weekly Report (MMWR)*.pp. 459–460, 1984, CDC, Atlanta.
4. Louangpradith, Yoshitoku Yoshida, Md. Harun-Or- Rashid, Junichi Sakamoto, Factors Affecting Low Birth Weight At Four Centrals Hospitals In Vientiane, Lao PDR, *Nagoya J. Med. Sci.* 72.51-58,2010.
5. IIPS, Mumbai. National Family Health Survey -3 (NFHS -3), 2005-06: India: Volume-1. 225-26.p
6. Indrayan A *Medical Biostatistics*, 2nd edition, Chapman & Hall/ CRC Biostatistic series.2013.p 465
7. Viengsakhone L, Yoshida Y, Or- Rashid M, Sakamoto J. Factors Affecting Low Birth Weight at Four Centrals Hospitals in Vientiane, Lao PDR, *Nagoya J. Med. Sci.* 2010 72.51-58.
8. Vijaya K , Ravikiran E. Kuppaswamy's Socio-economic Status Scale-Updating Income Ranges for the Year 2013 . *National Journal of Research in Community Medicine*. Vol. 2. Issue 2. July-Sep. 2013 (079-148)