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Tribal lactating mothers manifest more under nutrition in rural areas of Paschim Medinipur district of India

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Abstract

The lactation period is one of the most vital periods of a women's life and is a major source of concern in developing countries for its positive effect on the health and nutrition of children. Adequate nutrition during lactation is much more important for the good health of both the mothers and their offspring. But there is a little information about the nutritional status of the lactating mothers particularly among the tribal group. In this scenario, the present study was carried out to assess the nutritional status among lactating mothers belong to Santhal and non-tribal communities living in rural areas of Paschim Medinipur District. Nutritional status was evaluated from the body mass index (BMI), which was determined from the weight and height of each of the lactating mothers. The BMI of the Santhal lactating mothers ($19.27 \pm 3.02 \text{ kg/m}^2$) was significantly lower ($t=2.353$; $P<0.05$) than the non-tribal lactating mothers ($20.54 \pm 4.16 \text{ kg/m}^2$) while the prevalence of undernutrition was significantly ($\chi^2=5.999$; $P<0.05$) lower than the non-tribal population (39.29%) than the tribal population (50.00%). An intervention programs such as nutrition education may be emphasized during antenatal and lactation period to improve better health and nutrition outcomes.

Keywords: Body mass index; lactating mother; nutritional status; tribal

Introduction

The lactation period is one of the most crucial periods of a women's life. The nutritional status of the mothers has direct influence on the health and nutritional status of the infants. Thus the nutritional and health status of the lactating mothers has a significant public health importance particularly in the developing countries [1]. The lactating mothers are considered to be the vulnerable group as the nutrients demands are increased during this time though most of the mothers residing in the developing countries cannot meet this high demand of high quality nutrients. This may results the low quality breastfeeding that has both short term and long term impact on the health status of the children [2-4].

Adequate nutrition of the lactating mothers is an important factor for their health as well as for health of their offspring. Poor health of the pregnant mother, lactating mothers and their children have repercussions not only for them but also the whole society. Information regarding the nutritional status of the lactating mothers is urgently required for prioritizing, designing and initiating intervention programme aimed at improving maternal nutrition [5]. In this scenario the present study was carried out to evaluate the nutritional status of the lactating mothers living in rural areas of Paschim Medinipur District.

Materials and methods

Study nature and study design: This descriptive type cross-sectional community based study and the questionnaire was the tool for collecting data. The questionnaire was based on demographic information, anthropometric parameters.

Duration of the study: This study was conduct for two months period (November to December, 2017).

Human participants under study: 180 lactating mothers living in the rural areas of Paschim

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Medinipur district, West Bengal, India were included in this study. Each of the lactating mothers was identified by name and age. Lactating mothers were taken for investigation by systematic random sampling method.

Ethical consideration: The study is approved by the Institutional Research Ethics Committee. The researcher explained this study to the potential participants prior to the study. The anonymity of the participants is absolutely conserved. The researchers also obtained permission from the administrative authority and before the study written permission was obtained from the participants.

Inclusion and exclusion criteria: Only the competent, lactating mothers were included in this study. The probable participants who were suffering from significant health complication viz. diabetes, hypertension and chronic infectious diseases were excluded in the study.

Anthropometric Measurements: All anthropometric measurements were made by trained investigators using the standard techniques [6]. All the equipments were checked regularly to minimize random errors. Height was measured to the nearest 0.1 cm using Martin’s anthropometer. Body weight of lightly-clothed subjects was recorded to the nearest 0.5 kg on a weighing scale (Doctor Beliram and Sons, New Delhi, India). The weighing scale was set to zero before every measurement. For height and weight, individuals were requested to remove their shoes before taking measurements. Errors of measurements were computed and they were found to be within acceptable limits [7].

Body mass index (BMI) was computed using the following standard equations [8]:

$$BMI (kg/m^2) = Weight (kg) / height^2 (m^2)$$

Nutritional status was evaluated using internationally accepted World Health Organization BMI (kg/m²) guidelines [9]. The following cut-off points were used:

Underweight: BMI<18.5; Normal: BMI =18.5 – 24.9; Overweight: BMI > 25.0.

Statistical analysis: The statistical analyses were done by using the SPSS for Windows statistical software package (SPSS Inc., Chicago, IL, USA, 2001). Normally distributed data were tested by Kolmogorov-Smirnov test. Pearson’s chi square test is used to determine significant differences within categories. Student’s t test and ANOVA was applied to study the mean difference. The p value <0.05 is considered statistically significant.

Results

In the present study a total of 180 post-partum women living in the rural areas of Paschim Medinipur District were included in the study. Among the participants 96 lactating mothers belongs to tribal community. Their age ranged between 18 and 37 years with a mean of 23.34±3.55 years. Only 16 of them were illiterates and 29 of them were

educated upto primary school and 51 have the degree of middle school certificate or beyond (Data not shown). 63 of them lived in a joint family mainly composed of the couple with the husband’s parents and unmarried siblings. Majority of them had a vaginal delivery and most of the participants had the delivery at term (Data not shown).

Table 1 shows that weight among the Santhal and non-tribal lactating mothers were 44.12±7.35 kg and 47.64±9.67 kg respectively while the BMI of the Santhal and non-tribal lactating mothers were 19.27±3.02 kg/m² and 20.54±4.16 kg/m² respectively. This study indicated that the non-tribal lactating mother were significant heavier than that of the Santhal lactating mothers.

Table 1: Difference in anthropometric parameters among the tribal and non-tribal lactating mothers

Indices	Santhal	Non-tribal	t test
	N=96	N=84	
Age (years)	23.34±3.55	24.21±4.02	t=1.542; P>0.05
Height (cm)	151.30±7.13	152.53±7.66	t=1.113; P>0.05
Weight (kg)	44.12±7.35	47.64±9.67	t=2.766; P<0.01
BMI (kg/m ²)	19.27±3.02	20.54±4.16	t=2.353; P<0.05

While studying the effect of maternal age on the BMI of the lactating mothers belonging to tribal and non-tribal communities, it was found that maternal age plays a significant role in the maternal nutrition (BMI) among the non-tribal lactating mothers (F=4.532;P<0.05) but no such relationship was found in the tribal group (Fig 1).

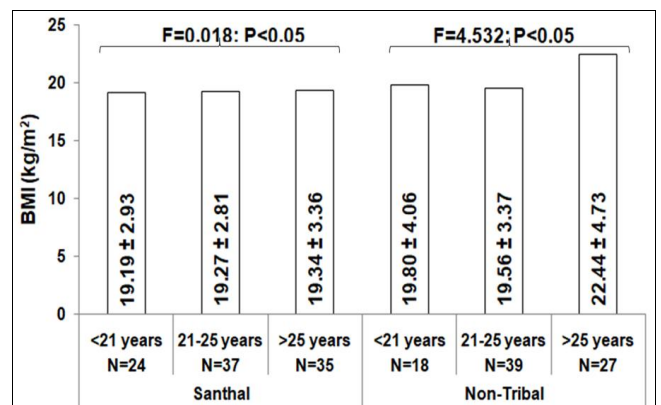


Fig 1: Effect of maternal age on the BMI of the lactating mothers belonging to tribal and non-tribal communities

Table 2 shows the effect of ethnicity on the nutritional status of the lactating mothers. This study clearly indicated that the prevalence of undernutrition was much lower among the non-tribal population (39.29%) than the tribal population (50.00%) while in case of overweight non-tribal lactating mothers were more affected (19.05%) than the tribal lactating mothers (7.29%). This study showed a significant difference in the nutritional status among the tribal and non-tribal lactating mothers (χ²=5.999; P<0.05).

Table 2: Effect of ethnicity on the nutritional status of the lactating mothers

Nutritional status	Santhal N=96	Non-Tribal N=84	Total N=180	Chi-square test
Underweight	48 (50.00)	33 (39.29)	81 (45.00)	χ ² =5.999; P<0.05
Normal Weight	41 (42.71)	35 (41.67)	76 (42.22)	
Overweight	7 (7.29)	16 (19.05)	23 (12.78)	

Data represented as N (%)

Discussion

It is well known that BMI is a factor of body weight and height. Changes in two of factors supports two different physiological condition, one may be stunting during early ages and which may be during adolescence period and another may be during matured or adult stage. The first one may result stunting and the second condition is the wasting. Here in the current study we noticed that anomalies in the BMI is the result of wasting condition. This studies suggest that chronic condition of nutritional impairment results in the low BMI and possibly wasting situation in the tribal group with comparison to the non-tribal groups. The nutritional supplementation in these tribal is a prime requirements to recover the health status in this groups.

From the bar diagram (Fig 1) it is noticed that all the age groups are having lower BMI in the tribal Santal group with

comparison to that of non-tribal groups and that may explain that consistent nutrition lacking might be contributed by their socio-economic status and educational and social exposure. But studies are needed to categorize even higher age groups. Interactive role of undernutrition in process of ageing and senescence processes need to be evaluated.

The prevalence of undernutrition among the lactating mothers was 45.00% while comparing previous studies conducted in India, it was noted that Lenka & Patro ^[10], Khan & Khan ^[11], Mallik *et al.* ^[5] and Bairwa *et al.* ^[12] found lower prevalence of underweight among the lactating mothers than the present study. Another study of conducted by Rao *et al.* ^[13] in nine states viz. Andhra Pradesh, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu and West Bengal of India had higher prevalence of undernutrition than present study [Table 3].

Table 3: Indian scenario of undernutrition among the lactating mothers

Place	Population	Undernutrition (Percentage)	Source
Khurda District, Odisha	Rural	6.0	Lenka & Patro ^[10]
Jammu, Kashmir and Ladakh	Rural, urban and tribal	16.9	Khan & Khan ^[11]
Kolkata, West Bengal	Attending Antenatal Clinic	28.4	Mallik <i>et al.</i> ^[5]
Baran District, Rajasthan	Shariya tribes	38.3	Bairwa <i>et al.</i> ^[12]
Andhra Pradesh, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu and West Bengal	Tribal	58	Rao <i>et al.</i> ^[13]
	Rural Non-Tribal	40	
West Bengal (Present Study)	Santhal	50.00	
	Non-Tribal	39.29	

Conclusions

The prevalence of underweight among the lactating mothers was found to be high and the tribal lactating mothers were more affected to undernutrition. The routine anthropometric measurements may be practiced for the pregnant and lactating mothers and also implementation of a large scale nutrition education programme during antenatal and lactation period may be fruitful to improve the health and nutrition condition.

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