Original Research Article

**Dietary pattern and nutritional status among lactating women in North Karnataka**

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Received: 20 February 2020  
Revised: 05 April 2020  
Accepted: 06 April 2020

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**ABSTRACT**

**Background:** Women from low-income settings are considered as nutritionally vulnerable. This risk is augmented during pregnancy and lactation as food nutrient requirement increases. Lactating mothers are subjected to nutritional stresses which are further exaggerated by frequent pregnancies resulting in high maternal mortality and health risk for children. Attainment of millennium development goals (MDG) by our country is largely dependent on the health of mothers and children, which in turn is influenced by diet. Objective of this study was to assess the nutritional status and associated factors of lactating women. To assess diet pattern of lactating women

**Methods:** Cross-sectional study carried out for a period of three month by house to house visit in the urban field practice area of SDMCMSH, Dharwad. Taking prevalence of malnutrition among lactating mothers (15-49 years) as 50, sample size was calculated to be 100 using n=4pq/d²×d. Data analysed using the IBMSPSS 20.0.

**Results:** Majority of mothers were housewives and in the age group of 20-25 year. >80% of the participants did not take additional meals during lactation. >60% of women from low socioeconomic state were malnourished and >55% of women from high socioeconomic state but working is malnourished.

**Conclusions:** Dietary intakes of the lactating women are insufficient compared to national recommendations. Low socioeconomic condition and working status of mother are important predictors of malnourishment. Effective nutritional education of families and communities is recommended to improve dietary practices and result in adequate nutrition.

**Keywords:** Diet, Lactating mothers, Nutrition

**INTRODUCTION**

Women from low-income settings are considered as nutritionally vulnerable.¹ This risk is augmented during pregnancy and lactation as food nutrient requirement increases. Lactating mothers are subjected to nutritional stresses which are further exaggerated by frequent pregnancies resulting in high maternal mortality and health risk for children. As per the World Health Organization, the nutritional status of women of reproductive age is important, as effects of undernutrition are propagated to future generations. More than one-third of Indian women in the reproductive age group are in a state of chronic nutritional deficiency during the preconception period leading to poor health and likely resulting in low birth weight babies.² Attainment of millennium development goals (MDG) by our country is largely dependent on the health of mothers and children, which in turn is influenced by diet. Finally, a women’s health affects the household economic well-being, and as a woman with poor health will be less productive in the labor force. While malnutrition is prevalent among all
segments of the population, poor nutrition among women begins infancy and continues throughout their lifetime. It is reported that a lactating woman should produce about 700 to 800 ml of milk per day and this requires an extra energy need of about 500 calories per day. Women who are Severely malnourished have reduced lactation performance, thus, the quantity of milk produced depends a lot on the mother’s diet. The diet consumed by the mother will not only fulfill her own nutritional needs but will also enable her to produce enough milk for her infant.

Table 1: As per NHFS- 4 (2015-2016) survey (Karnataka key indicators).

| Nutritional status of adults (age 15-49 years) | NFHS-4 (2015-16) | NFHS-3 |
|-----------------------------------------------|-------------------|---------|
| Women whose body mass index (BMI) is below normal (BMI <18.5 kg/m²) 14 (%) | 16.2 | 24.3 | 20.7 | 35.4 |
| Men whose body mass index (BMI) is below normal (BMI <18.5 kg/m²) (%) | 14.2 | 18.4 | 16.5 | 33.9 |
| Women who are overweight or obese (BMI ≥25.0 kg/m²) 14 (%) | 31.8 | 16.6 | 23.3 | 15.3 |
| Men who are overweight or obese (BMI ≥25.0 kg/m²) (%) | 28.6 | 17.1 | 22.1 | 10.9 |

Energy or calorie needs during lactation are based upon the women’s basal metabolic rate, age, activity, how much breast milk is being produced, and other factor. While calorie is needed for milk production, the mother does not need to eat substantially more than she did in her pre-pregnancy state to sustain milk production.

Objectives
The objective of the study was to assess the nutritional status and associated factors of lactating women and to assess diet pattern of lactating women.

METHODS

Study design: Population based cross sectional study.

Study setting
Urban field practice area of SDM College of Medical Sciences and Hospital Dharwad, Karnataka, India.

Study participants
Lactating mothers (15-49 years) who gives consent for participating in the study, Urban field practice area of SDM College of Medical Sciences and Hospital Dharwad, Karnataka, India.

Data collection
House to house visit in the urban field practice area of SDM CMSH, Dharwad, using pre tested, semi structured questionnaire. Lactating women were examined for anthropometric measurement included recording of weight and height, and dietary pattern using 24 hours recall method in which respondent was asked to name approximate amounts the foods eaten during the previous day at each meal and between meals. The questionnaire covered demographic characteristics of the subjects. These are namely age, sex, occupation, education religious type of family and marital status.

Sample size
Taking prevalence of malnutrition among lactating mothers (15-49 years) as 50, sample size was calculated to be 100 using n=4pq/d²d. Total line list of lactating mothers in the urban field practice area was collected from ICDS teachers, out of total 400 lactating mother line list 100 were selected using systematic sampling method every 4th lactating mothers were selected.

Study duration
Three-month July 2014 to September2014.

Data analysis
The data was entered using Epi data, version 3.1 and analyzed using the statistical package for social sciences (SPSS), version 20.

Descriptive statistics like percentages and proportions were applied. Chi-square test was applied to find out the association between two or more attributes. The one sample t-test is used to test the statistical difference between a sample mean and a known or hypothesized value of the mean in the population. A p value of <0.05 was considered to be the criteria for statistical significance SPSS 20.0.

RESULTS
Table 2 shows the age wise distribution of study subjects, it was found that majority of study subjects were in the age group of 20-25 years 63%.

Figure 1 shows in present study majority of study subject were in the BMI of <18.5 and 18.5-22.99.

Figure 2 shows diet pattern of lactating women shows that more calories intake was seen during dinner when compare to breakfast.
Table 2: Socio-demographic profile of lactating mother.

| Variable                      | Frequency (n=100) |
|-------------------------------|-------------------|
| **Age (in years)**           |                   |
| <20                          | 11                |
| 20-25                        | 63                |
| 25-30                        | 24                |
| >30                          | 2                 |
| Total                        | 100               |
| **Education**                |                   |
| Illiterate                   | 15                |
| Primary school               | 12                |
| High school                  | 29                |
| Secondary                    | 21                |
| Graduate                     | 21                |
| Postgraduate                 | 2                 |
| Total                        | 100               |
| **Husband occupation**       |                   |
| Unemployed                   | 3                 |
| Agriculturist                | 18                |
| Labourer                     | 35                |
| Businessman                  | 27                |
| Others                       | 17                |
| Total                        | 100               |
| **Religion**                 |                   |
| Hindu                        | 53                |
| Muslim                       | 38                |
| Christian                    | 6                 |
| Others                       | 3                 |
| Total                        | 100               |
| **Type of family**           |                   |
| Nuclear                      | 43                |
| Joint                        | 33                |
| Three generation             | 24                |
| Total                        | 100               |

Table 3: Association of socio-demographic variables with the nutritional status (BMI).

| Variable          | BMI<18.5 | BMI>18.5 | Pearson chi-square |
|-------------------|----------|----------|--------------------|
| **Occupational status** |          |          |                    |
| House wife        | 40       | 40       | 7.997              |
| Working women     | 3        | 17       | 0.005 (Fisher's test) |
| **Educational status** |        |          |                    |
| Illiterate        | 10       | 20       | 1.634              |
| Literate          | 33       | 37       | 0.201              |
| **Family size**   |          |          |                    |
| 2-5 members       | 21       | 23       | 0.716              |
| >5 members        | 22       | 34       | 0.397              |

Table 4: One sample t-test to compare sample mean with RDA standard.

| Test value= 2500 | N | Mean | SD  | Std. error |
|------------------|---|------|-----|------------|
|                  | 100| 1896.09 | 252.95 | 25.29      |

**Table 3** shows that when compare socio-demographic variables (occupation) with the nutritional status (BMI) was found to be statistically significant with (p=0.005).

**Table 4** in present study average kcal intake of lactating mother 1896.09. When compare with sample mean (1896.09 kcal) with recommended daily allowances i.e. 2500 kcal significant association with p value <0.001.
DISCUSSION

Age wise distribution of study subjects, it was found that majority of study subjects were in the age group of 20-25 years was 63%, in Kashmir study done by Khan et al shows 32.7% were in the age group of <25.

BMI of study subject were in the value of <18.5 and 18.5-22.99, a study done by Malhotra et al shows, 28% were had normal BMI i.e. 18.5 kg/m²-22.5 kg/m², 44% were little overweight i.e. BMI between 22.5 kg/m²-25 kg/m² and 16% were obese i.e. BMI >23 kg/m². In present study (BMI <18.5 kg/m²) among the lactating mothers was 43%. Similar study conducted in Andhra Pradesh shows 60% and similar study conducted in Kashmir shows 45.5% and Similar study conducted in Ethiopia shows 25%. Diet pattern of lactating women shows that more calories intake was seen during dinner when compare to breakfast. Furthermore, research are required to determine protein, micro and macro nutrients deficiency.

Recommendations

- Effective nutritional education of families and communities is recommended to improve dietary practices and nutrition.
- Furthermore, research is required to determine the factors impeding the transfer of health and nutrition education in to action research is required to determine protein, micro and macro nutrients deficiency.
- As well as to assess the dietary adequacy of the lactating mothers in the study area.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Xavier AU, Amgiasvasanth AM. Dietary pattern and nutritional status among lactating women in North Karnataka. Int J Community Med Public Health 2020;7:1875-9.