Research Article

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Dietary diversity among women in the reproductive age group in a rural field practice area of a medical college in Mandya district, Karnataka, India

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ABSTRACT

Background: Micronutrient malnutrition remains one of the largest nutritional problems worldwide. Monotonous diets based on starchy staples lack essential micronutrients and contribute to the burden of malnutrition and micronutrient deficiencies. Intake of diverse diet is a cost-effective strategy to overcome this problem. The objective of the study was to assess the dietary diversity among women in reproductive age group in a rural field practice area and to determine the nutritional status of the women in the reproductive age group.

Methods: A cross-sectional study was conducted for a period of 3months in the rural area. Women in reproductive age group were included in the present study. A pretested questionnaire was used to obtain the information regarding their socio-demographic profile and food consumed. Dietary diversity score was measured using the food and agricultural organization (FAO) guidelines. Weight, height and waist circumference of the participants were measured to determine their nutritional status.

Results: The mean age of the study subjects was 33.68 ± 9.27 years. Majority of them had dietary diversity score (DDS) and food variety score (FVS) score above 5 and 4 respectively. Mean BMI was 23.26 ± 4.31 kg/mt². Fifty percent of them had a Normal BMI range. One third ($28.6\% \pm6.5\%$) of them were malnourished. The mean waist circumference was 79.31 ± 10.58 cms. On application of logistic regression, those aged between 15-30 years had better odds of having DDS of 5 and above (aOR 2.348 CI 0.743-7.424). Subjects with normal BMI range also had better odds of having DDS of 5 and above (aOR 0.861 CI 0.154-4.799).

Conclusions: The study found most of the women in the reproductive age group were consuming a diverse diet and those subjects with better dietary diversity score had their body mass index in the normal range.

Keywords: DDS, FVS, Body mass index

INTRODUCTION

Nutrition is a main component of health and development. All people need a variety of foods to meet requirements for essential nutrients, and the value of a diverse diet has long been recognized. Dietary diversity is a qualitative measure of food consumption that reflects household access to a variety of foods, and is also a proxy for nutrient adequacy of the diet of individuals. Lack of diversity is a severe problem among poor populations in the developing world, where diets are based

predominantly on starchy staples which lack essential micronutrients and contribute to the burden of malnutrition and micronutrient deficiencies.^{2,3}

More specifically women in the reproductive age group and children are most vulnerable to malnutrition due to low dietary intakes, inequitable distribution of food within the household, improper food storage and preparation, dietary taboos, infectious diseases, and care.⁴ Poor health has repercussions not only for women but also their families. Women in poor health are more likely

to give birth to low weight infants. They also are less likely to be able to provide food and adequate care for their children. Finally, a woman's health affects the household economic well-being, as a woman in poor health will be less productive in the labour force.⁵

Because of the perceived importance of dietary diversity for health and nutrition of women, the present study was undertaken in assessing the dietary diversity and their nutritional status.

METHODS

A cross-sectional study was conducted over a period of 3 months from July to September 2015 in the rural field practice area of Adichunchangiri Institute of Medical Sciences, Mandya, Karnataka, India. A village with a population of 560 was selected randomly from the list of villages in the area. The village thus selected had 90 women in the reproductive age group. Those who did not give consent, those who were unavailable even after three successive visits and pregnant and lactating women were excluded from the present study. Thus a total of 77 women were included in the present study. A pretested questionnaire was used to obtain the information regarding their socio-demographic profile. Twenty four hour recall method was used to obtain the information on the food consumed and Dietary diversity was measured using the FAO (Food and Agricultural Organization) one day diversity questionnaire. The individual based dietary diversity questionnaire used included 9 groups of foods, which covers almost every food taken. In addition the questionnaire had a single question about any food or fast food consumed out of the house. We evaluated one usual day in the week except holidays.3

Anthropometric measurements including weight and height of participants were measured, using a digital electronic scale (range 0.1-150 kg) and a stadiometer (range 0-220 cm) respectively. Body Mass Index (BMI) was calculated using the formula (BMI= weight (kg)/height in m²). Based on their BMI cut-off values for adults, subjects were divided into four groups: overweight, obese, underweight and normal weight. Waist circumference was measured at the approximate midpoint between the lower margin of last palpable rib and the top of the iliac crest. All measurements were taken by one of the researchers to reduce the chances of error.

RESULTS

The mean age of the study subjects was 33.68±9.27 years (18-49 years). More than two third (70.1%) of the subjects had studied up-to high school and above. More than 60% of the subjects were homemakers and nearly 60% of them belonged to nuclear family (Table 1).

The mean BMI was 23.26 ± 4.31 kg/mt². The mean waist circumference was 79.31 ± 10.58 cms (Table 2).

Table 1: Distribution of the study subjects by their socio demographic variables.

Variables	N=77	Percentage
Education		
Illiterate	11	14.3
Primary	12	15.6
High School	31	40.3
Pre University College	17	22.0
Graduation and above	6	7.8
Occupation		
Government	10	13.0
Private	7	9.1
Housewife	49	63.6
Farmer	7	9.1
Student	4	5.2
Family type		
Nuclear	46	59.7
Joint	6	7.8
Three generation	22	28.6
Single	3	3.9

Table 2: Distribution of the study subjects by their body mass index.

Body mass index	N=77	Percentage
<18.5	11	14.3
18.5-24.99	39	50.6
25-29.99	22	28.6
>30	05	06.5

Table 3: Distribution of the study subjects according to their dietary diversity score.

Dietary diversity score	N=77	Percentage
3	1	1.3
4	17	22.1
5	39	50.6
6	1	1.3
7	16	20.8
8	2	2.6
9	1	1.3

Table 4: Distribution of the study subjects according to their food variety score.

Food variety score	N=77	Percentage
4	39	50.6
5	30	39
6	8	10.4

Thirty nine (50.6%) of them had a DDS score of 5. 50% of them had FVS score of 4 (Table 4).

Table 5: Distribution of the study subjects according to the food groups consumed.

Food group	N=77 (%)
Starchy staples	77(100)
Dark green leafy vegetables	30 (39)
Other vitamin A rich fruits and vegetables	37(48.1)
Other fruits and vegetables	74(96.1)
Organ meat	3(3.9)
Meat and fish	22 (28.6)
Eggs	2(2.6)
Legumes, nuts and seeds	66(85.7)
Milk and milk products	75(97.4)

Table 6: Distribution of the study subjects according to their dietary diversity.

Food variety score	N=77 (%)
Cereals	77(100)
Vegetables	73 (94.8)
Fruits	26(33.8)
Meat and nuts	24 (31.2)
Milk and milk products	75(97.4)
Fat, oil and sweets	77(100)

The subjects with waist circumference of 0.85 cm and above had better odds of having DDS score of 5 and above (aOR= 1.713). The subjects with DDS score of 5 and above had better odds of remaining in the normal BMI range (aOR=1.934).

DISCUSSION

The underlying principle of promulgating a variety of foods in the diet will ensure an adequate intake of essential nutrients and hence promote good health. Individual dietary diversity scores have promised as a rapid and efficient means to estimate nutrient adequacy of the diet. For example, health professionals can do a quick 24-hour recall with the respondent to ascertain DDS over the previous 24 h.

Our study included women in the reproductive age group (15-49 years) in the study area, in assessing their dietary diversity score (DDS), Food variety score (FVS) and anthropometric measurements as they are one of the most vulnerable groups in having nutrient deficiency at various levels of their life cycle. Our study conducted on women in the reproductive age group with the mean age being 33.68±9.27 years (ranged 18-49 years). Most of the women (59.7%) belonged to nuclear family. The mean height and weight being 153.57±4.91 cm and 54.89± 11.52 kg respectively.

Mean BMI was 23.26±4.31 kg/mt². 50% of them had a Normal BMI range (18.5-24.99kg/mt²). One third (28.6% + 6.5%) of them were malnourished (Overweight + Underweight). The mean waist circumference was

79.31±10.58cms. More than half of them had a DDS score of 5.50% of them had FVS score of 4. More than two third (76.6%) of the subjects had a DDS of 5 and above. All the study subjects (77 i.e. 100%) had FVS score of 4 and above. On application of logistic regression those aged between 15-30 years had better odds having DDS of 5 and above (aOR 2.348 CI .743-7.424). Subjects with DDS of 5 and above had a better odds of having their BMI in the normal range (aOR 0.861 CI 0.154-4.799).

In a study conducted by Taruvinga et al, in South Africa, more than 70% of the study rural subjects had household DDS of 4 and above in a scale of 12. This finding is similar to the one in our study but subjects in our study were women in the reproductive age group and their dietary diversity was assessed using individual dietary diversity score, which is a better measure of the same.⁶

In a study by Veena et al, conducted among women between 30 to 60 age group in an urban slum near Hyderabad showed their mean (± SD) height, weight and body mass index (BMI) were 149.1±5.49 cm, 49.2±9.85 kg and 22.1±3.99 kg/mt², respectively. This finding is similar to the one in our study except the fact that urban slum population is a mixture of people from different locality thus showing the minor variations.⁷

In a report published by Vinay Kumar et al, in the year 2012, the nutritional status of Indian women is inadequate: 33% of married women (aged 15–49 years) are too thin (i.e., BMI <18·5 kg/m²). This is in contrast to the findings from our study which found 14.3% of women in the reproductive age group having BMI below 18.5kg/mt². The reason for this difference might be the fact that the most of the women in our study belonged to the nuclear family and hence a better standard of living.⁸

In a study by Goswami et al, the mean height, weight and BMI was 152.88cm, 52.88kg and 22.36kg/mt². These findings are similar to the results in our study.⁹

In a analyses done by Bentley et al, more than 37% of rural Indian women had a low BMI ($<18.5 \text{ kg/m}^2$) and 7.3% a BMI $>25 \text{ kg/m}^2$ (overweight or obese), compared with 12.1% and 37% of women living in large urban areas with low and high BMI, respectively. Our study findings deviate slightly from the above findings as the subjects in our study belong to different socioeconomic status as it's a mixture of local residents of that village and the workers of the medical institute who have resided because of the proximity to the institution. 10

In a study done in Iran among adolescent girls, most of them aged between 15-16 years, the mean and SD of the dietary diversity score was 6.81 ± 1.75 . The anthropometric measurements of the subjects were in a healthier range compared to our study as the subjects included in that study were young, most of them in the age group of 16 years. 1

In a study by Hedwig et al, Using a mean DDS of 4 to define poor dietary intake and because of lack of national dietary data on adults, the findings of this study revealed that 19.6% of the women had a dietary score (DDS) less than four indicating a poor dietary diversity, while 55.4% consumed less than the average number of foods consumed by the group. This is very much similar to the findings in our study which showed 23.4% of the subjects with DDS score below 5 and those aged between 15-30 years had better odds having DDS of 5 and above. 11

CONCLUSION

The study found most of the women in the reproductive age group were consuming a diverse diet and those subjects with better dietary diversity score had their body mass index in the normal range.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

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