DIETARY INTAKE AND NUTRITIONAL STATUS OF WOMEN IN RURAL GUNTUR DISTRICT

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ABSTRACT

Nutritional status of sixty women, who were either marginal farmers or landless agricultural workers were assessed by diet survey, anthropometry and estimation of haemoglobin levels. Diet survey carried out by the 24 hour recall method revealed adequate intake of calories and protein but low intake of micronutrients. While intake of vitamin C and the B vitamins were poor, iron and vitamin A were grossly deficient in the diet. Anthropometry showed heights and weights close to the mean height and weight values of Indian women. Body mass index was 22.5, indicating the absence of chronic energy malnutrition. Screening for haemoglobin levels showed that on the whole 93.4% of the women suffered from anaemia. However, micro nutrient malnutrition or "Hidden hunger" was very common with all micro nutrients especially iron, vitamin A, vitamin C and some extent the B-complex vitamins being grossly deficient.

KEYWORDS: Rural women, Nutritional status, Nutrient intake, BMI, Heamoglobin

INTRODUCTION

Rural women constitute an overwhelming majority of women in developing countries. In Guntur district 49.8% of the female population live in rural areas (Cencus, 2011). Women play multiple roles in a family, primarily as mothers and housekeepers and also equally important roles as wage earners, agricultural producers, nutrition providers etc. They are instrumental in the acquisition of food, its preparation, storage and distribution. However, very often they are subjected to malnutrition and form a group highly vulnerable to morbidity and mortality due to undernutrition. A women's health will be less productive in the labour force.

While malnutrition is prevalent among all segments of the population, poor nutrition among women begins infancy and continues throughout their life time (Chatterjee, 1990; Desai, 1994). The nutrition transition in low income countries is being recognized as an emerging crisis due to changing health profiles (Popkin, 1994). A classical example of changing health profile is evident from the nationwide surveys mapping the nutritional profile of women (NFHS, 2007). Information at the household level is important to understand the dietary patterns of women and to assess whether their nutritional requirements are met. Such data should be collected periodically so that agricultural strategies to bridge the gaps could be planned (Chittemma Rao, 1993). This study was conducted to assess the nutritional status and diet and nutrient intake of women farmers residing in rural area from Guntur District of Andhra Pradesh.

MATERIAL AND METHODS

The study was carried out in Vetapalem village near the vicinity of Guntur, Andhra Pradesh state South India as per the feasibility of the researchers and the availability of the sample. The subjects were 60 women (20-45 years of age group) belonging to families with marginal land holdings and working on their land or working in farms as agricultural labourers selected by random purposive random sampling.

A pre-tested semi structured questionnaire was administered to eligible women from each household to elicit information regarding their family, education, occupation and socio-economic status. Age of women was assessed using age of menarche, marriage, consummation of marriage and age of children by using calendar of important local events. Anthropometric measurements were taken by using Chattilon weighing scale, anthropometric rod and fibre glass tape by standard techniques (Agarwal, 1992) and compared with NCHS (1977) standards. Body mass index was calculated using height weight data and women were classified into different degrees of nutritional status using the cutoff levels suggested for Asian women (IOTF/WHO, 2000). Dietary assessment was done using frequency of food consumption and dietary intake survey was conducted for three days in a week, two week days and one weekend day. The data was collected in the combination of 24 hour recall method, type of food preparation, actual ingredients and quantities used were recorded. The data collected on the food was converted into raw foods (ICMR, 1996). The clinical signs were observed and noted as per the guidelines provided by Jelliffe (1966). Heamoglobin was assessed by the method of cyanmethemoglobin (Crossby *et al*., 1954). Percentages mean and standard deviation were calculated and compared with standards.

RESULTS AND DISCUSSION

General information of the subjects was shown in Table 1. Sixty subjects selected in the age group of 20-45 years with mean age 32.5 years.

All the women were married and their family size on average was five. The women belonged to agricultural family with 24 % of landholding and 76% were landless agricultural labourers working on other's land. The educational level of the subjects showed that most of them were illiterate (43.5%) followed by primary school level (35%) and secondary school level (21.6%). Similar finding were observed among rural and tribal women in India (Mallikarjuna Rao *et al.,* 2010).

Table 1: General information of the subjects

S.No	General information variables	Mean No (%)
1.	No of subjects	60
2.	Age (Years)	32.5
3.	Family size	5
4.	Land holding	14 (24)
5.	landless	46(76)
	Level of education	
6.	i. Illiterate	26 (43.4)
	ii. Primary	21(35)
	iii. Secondary	13(21.6)

The mean food intake of subjects, their RDA and the percent adequacy of the diet in relation to each food item was given in Table 2. The data indicates that the cereal consumption was more than the RDA i.e. 125.7 percent. Similarly the fats and oils requirement was met up to 102 percent and the usage of pulses was up to 44 percent of requirement .There was a deficiency in the consumption of milk and milk products, sugars jaggery as well as fruits by about 50%. However vegetable and poultry consumption was lowest, being even less than half of the requirement (25-40 %). Among vegetables, intake of other vegetables was very less. This low intake of fruits, vegetables was reflected in terms of poor micronutrient intake of the subjects.

Intake of all the nutrients of the subjects was lower than the RDA. The percent adequacy of calories and protein were 94.30 and 89.09. Other nutrients like B complex vitamins in diet ranged from 50-77% were met when compared with RDA (Table 3). Though dairy was common and

plenty of milk was available, the deficiencies seem to occur because of sale of milk and less consumption by family members. The most deficient nutrients in the diet were vitamin A (36%) and iron (47.4%) because of poor consumption of green leafy vegetables as well as fruits was the main reason for low dietary intake of these vital nutrients. Dietary deficiency of vitamin C could be one factor resulting in poor absorption of iron and therefore it leads to anaemia. Studies by other researchers, it is evident that protein and energy were met by the diet were about 80% of rural women (Naidu *et al.,* 1991).

Table 2: Mean food intake of subjects per day

Food group	RDA*	Mean ± SD	% Adequacy
Cereals	330	415 ±72.32	125.7
Pulses	75	33 ± 39.97	44
Roots & Tubers	200	60 ± 52.35	30
Green leafy vegetables	100	40 ± 46.5	40
Other vegetables	200	50 ±42.26	25
Fruits	100	68 ±70.55	68
Milk & Milk products	300	147.5± 46.64	49.3
Sugar & Jaggery	30	15.9 ± 18.77	51
Fat & Oils	25	26 ±17.24	102
Fleshy foods	125	17 ±29.43	13.6

*ICMR (2010)

The data obtained from table 4, it was seen that (16.7%) members had normal weight for height while those above normal (43.3%) and below normal (40%) were almost equal.

The mean height was 153 cm and mean weight of the subjects was 53.5kg.The mean height and weights of subjects were higher when compared to the values for average Indian women. ICMR (1991) showed the mean weight of rural Indian women as 44.3 kg. That, weight is closely associated with socio-economic status was clearly focused from the data of NNMB collected for men and women belonging to different levels of socio-economic status.

Table 3: Mean nutrient intake of the subjects

Nutrient	RDA*	Mean	% adequacy
Protein (g)	55	49.0 ±7.24	89.09
Calories	2230	2103 ±189.13	94.30
Calcium (mg)	600	369.67 ±28.54	61.61
Iron (mg)	21	9.97 ±1.84	47.47
Vitamin A (µg)	600	216.10 ± 49.21	36.0
Thiamine (mg)	1.1	0 .75 ± 0 .17	68 .2
Riboflavin(mg)	1.3	0 .67 ± 0 .15	51.5
Niacin (mg)	14	10 .86 ± 0 .78	77. 6
Vitamin C (mg)	40	25. 75 ± 5. 37	64. 4

*ICMR (2010)

The normal BMI of the subjects were 9 (15%), 28 (46.5%) were above normal, 19(31.5%) were overweight and 4(6.5%) were below normal (Table 5). The mean BMI of the subjects was 22.49 i.e. above normal. This data indicates that there is no chronic energy malnutrition among the subjects. Previous data on calorie and protein consumption also indicated that requirements were met. However this data is slightly different from data reported by Naidu *et al.* (1991).

Table 4: Mean anthropometric measurements of the subjects

Age	No.	Height (Cm) Mean ±SD	Weight (Kg) Mean ±SD	NCHS Ht(Cm)	Wt(Kg)	Difference Ht(Cm)	Wt(Kg)
25-40	60	153 ± 3.2	53.5 ± 5.01	163.7	56.6	-10.7	-3.1

While the problem of under nutrition was not mitigated to a large extent, it coexists along with over nutrtion in countries such as India (Reddy, 2008).
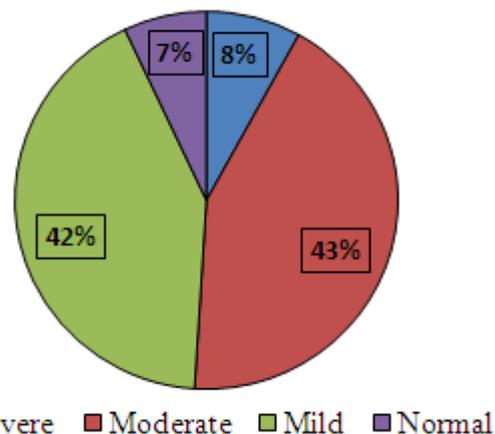
Table-5: BMI of the subjects.

S.NO	Range	No. of women	Percentage %
1.	Normal (18-20)	9	15
2.	Above normal(20-25)	28	46.5
3.	Over weight (25-30)	19	31.5
4.	Below normal(<18)	4	6.5

Table -6: Mean haemoglobin level of subjects

Degree of * Anaemia	Mean Hb g/dl	No.of women	% Prevalence
Severe (<8.0)	7.83±0.16	5	8.3
Moderate (8.0-9.9)	8.95±0.63	26	43.3
Mild (10-11.99)	10.85±0.55	25	41.7
Normal (≥12.0)	12.46±0.42	4	6.6
Total	8.01	60	100

From the figure 1, it is clear that, of the 60 women screened for anaemia, 56(93.3%) were anaemic. Majority of them (43.3%) were moderately anaemic followed by mildly anaemic (41.7%) and severely anaemic (8.3%) respectively. Only 4 (6.6%) had normal haemoglobin levels. The mean haemoglobin level of entire group ranges between 7.8 to 12.5g/dl (Table 6). Anaemia is more common among populations where economic and social deprivation prevail (WHO, 1992) data indicates that in India nearly 65% of adult women were anaemic.

Figure-1. Prevalence of aneamia

Table 7: Occurrence of clinical signs of deficiencies

Clinical	No.of women	% prevalence
Anaemia	29	48.3
Chelosis	7	11.6
Stomatitis	16	26.6
Bleeding gums	18	30
Dental mottling	16	26
Dental caries	18	30

Clinical signs of the subjects are shown in table 7. The prevalence of anaemia was about 29 (48.3%) and it was the most commonly occurring deficiency. Other clinical signs of deficiency present were bleeding gums 18(30%), dental caries 18(30%) followed by stomatitis 16(26%) and the least common clinical symptom was chelosis 7(11.6%). The present results were in concurrent with the results of Mallikarjuna Rao *et al.,* (2010).

CONCLUSION

This study on the nutritional status of women in rural Guntur district showed that both energy and protein intake were sufficiently high to maintain a good body mass index. In this aspect, the women were far better than the average Indian rural women. However, micro nutrient mal nutrition or" Hidden hunger" was very common with all micro nutrients especially iron, vitamin A, vitamin C and some extent the B-

complex vitamins being grossly deficient. Nutrition awareness programmes supported by supplementation and fortification of foods would go a long way to overcome these problems.

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