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# Dietary Pattern of Farm Women in a Chamarajanagar District of Karnataka State

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**ABSTRACT**

*India's food and nutrition problems continue to be formidable and malnutrition is still one of the crucial problems in the process of development. The magnitude of malnutrition and the ignorance about the relationship between food and health among a majority of the population. The main focus of the study was to assess dietary pattern of the farm women. Questionnaire was used for data collection from farm women (n=300) of Chamarajanagar district. Three hundred farm women were selected. A well-structured questionnaire was framed to gather the information on dietary pattern of the subjects was assessed by 24– hour diet recall method. The results revealed that, Pulses (31.70), milk and milk products (87.13), roots and tubers (45.10), GLV's (38.67), other vegetables (58.30), fruits (17.33), sugar (14.13) and fat (18.90) consumption is very low when compared to RDA whereas consumption of cereal is high when compared to recommended dietary allowances. The mean nutrient intake of energy (1809 kcal), protein (42.71 g), fat (20.84 g), fibre (15.28 g), iron (17.12 mg), β-Carotene (1345 µg) and Vitamin C(23.32 mg) were less when compared to the RDA except for calcium (757.45 mg). The results shows that with respect to nutrition adequacy calcium was found to be higher than recommended in subjects whereas remaining all other nutrients consumption was found inadequate.*

***Key words:*** *Food, Nutrients, Fibre, Calcium, Health, Vegetables.*

## INTRODUCTION

According to Food and Agriculture Organization (2011), women farmers account for more than quarter of the world's population. Women comprise, on an average 43 percent of the agricultural work force in developing countries, as farmers, agricultural workers and entrepreneurs, women constitute the backbone of India's agricultural and rural economy. They constitute approximately 50% of agricultural and livestock workers. In rural India, the percentage is as high as 84%. Doss[2] clearly showed that women comprise about 43% of the agricultural labour force globally. The mode of female participation in agricultural production varies with the landowning status of farm households. Their roles range from managers to landless laborers. Moktan & Mukhopadhay[6] found that farm women had participated in all identified agricultural activities to a great extent.

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There is no doubt that India has made substantial progress in human development during the post-independence period. Prior to independence, many people in the country were not even being able to dream of a square meal every day. However, as an attempt to boost the agricultural production by modernizing the technique of farming in the country, Green Revolution during 1960s contributed a great deal in solving the food problem and making the country self-sufficient in food. According to Measham and Chaterjee[5], Green Revolution provided a breathing spell for the country by achieving a balance between human numbers and food output. The overall nutritional status has definitely improved during last few decades. Still, more than half of Indian children under five years of age are moderately or severely malnourished, 30 percent of newborns are significantly underweight and 60 percent of Indian women are anemic and such manifestations of malnutrition are certainly unacceptable[5]. Thus it can be well said that improvements in nutritional status have not kept pace with progress in other areas of human development, at least when homogenous distribution is taken into consideration. In the words of Rousseau, "Where there is no mother, there can be no child. Their duties are reciprocal; and if they are badly fulfilled on one side, they will be neglected on the other". This quotation is very appropriate to the subject of adequate nutrition for each woman. The belief that a woman should eat better foods and more foods (farm women) is as old and has been held by both the extremes- laymen and scientists[9]. But there has been a gap between the thought and the action. This study aims at providing a database showing the exact picture of Chamarajanagar regarding dietary pattern. According to Swaminathan[11], good nutrition is a function of both economy and education. As revealed by Ronzio *et al.*[8], women are usually vulnerable to malnutrition for both social and biological reasons, throughout their life cycle. As children in some parts of the world, girls are discriminated against in access to health care, to food and education and in other ways. Reproductive aged women are subject to numerous stresses affecting the health and wellbeing. Elderly women in many societies are deprived too. Thus there exists an intergenerational cycle of growth failure for women. The present study is more concerned about farm women background variables affecting the food consumption practice, which in turn affects the nutritional status.

## MATERIAL AND METHODS

The present study was carried out to understand and analyze the dietary pattern of farm women involved in farm activities. The population was from lower middle class with agriculture being the major occupation. The study was conducted in Chamarajanagara district of Karnataka during the year 2015-16. Chamarajanagara district was purposively selected for the study, because it is one of the most backward districts of the Karnataka. Farm women aged between 20-40 years, engaged in household chores from agricultural families were selected by purposive random sampling (N=300).

**Diet Survey**

Baseline diet survey of the selected farm women was conducted by using 24 hour recall method for one day the sample size was 300. Standardized cups, vessels, paper discs and rubber balls were used to measure the food intake. Subjects were asked to recall the type of preparation made for breakfast, lunch, evening tea and dinner etc. for the previous day (other than feasting and fasting day). Information on amount of raw ingredients used for each preparation and also on the total cooked amount of each preparation was recorded in terms of standardized tools (standardization as per the procedure indicated by Bamji *et al*[1]. The average raw ingredients in all the meals consumed by each subject per day were calculated.

The schedules were properly sorted out after verification and serially numbered. Data on intake of foods- cereals, pulses, vegetables etc. evaluated. Using the quantity of foods consumed per day nutrient intake for calories, protein, fat, fibre, calcium, iron, carotene and vitamin C per day was calculated[4]. These figures were compared against the (RDA, 2010) to provide a measure of adequacy or inadequacy of food and nutrient consumption.

$$\% \text{ adequacy} = \frac{\text{Intake of each nutrient}}{\text{Recommended allowances}} \text{x } 100$$

## RESULTS AND DISCUSSION

It is important to have a detailed knowledge regarding the diets actually eaten by the

respondents both for assessing their nutritional adequacy and taking steps for correcting deficiencies in the diets. In the present study, ICMR's 24 hour recall method was used to gather information about foods consumed in one day, further each woman was interviewed about the dietary pattern, frequency of food preparation, frequency of food intake, the quality and quantity of food consumed was taken. Standardized vessels were used to know the actual amount of food consumed by the individual. The cups were standardized both for volume and raw equivalents for easy estimation. Since the individual shares some amount of the total cooked amount of each preparation for the family as a whole, information was obtained for the family and individual.

Data on the recipes and raw amounts of each ingredient used for the preparation by the family was obtained. The total cooked amount and individual intake was assessed by exhibiting the standardized cups before the housewives. Based on this data, raw equivalents of food items and nutritive value of food was calculated.

The way in which individuals or a group of individuals, in response to social and cultural pressures, select, consume and utilize portions of the available food supply is called as food or dietary habit. The food habits of farm women showed (Table 1) that most of the farm women were non-vegetarians by habit *i.e.,* 56.33 per cent followed by 43.67 per cent in vegetarian group. Food from animal source was being consumed once in a week by farm women *i.e.* 45.33 per cent, followed by 8.00 per cent of farm women consumed weekly twice and 3.00 per cent of farm women consumed non-vegetarian food weekly thrice. It was observed that, 71.33 per cent of them used to have three meals per day and 28.67 per cent of them used to have two meals per day and they used to skip their breakfast because of heavy work load. More than fifty per cent (57%) of the respondents used to prepare meals two times per day and used to have same food for breakfast and lunch or lunch and dinner. These findings were in line with the observation of Shree Tulasi[10] and Vijayalaxmi *et al.*[13], who found more number of non-vegetarian women in their study area.

**Table 1: Food consumption pattern of the farm women (n=300)**

| Food consumption pattern | Category | No. | % |
|---|---|---|---|
| Food habits | Vegetarian | 131 | 43.67 |
| | Non- Vegetarian | 169 | 56.33 |
| Frequency of non-veg consumption | Weekly thrice | 09 | 3.00 |
| | Weekly twice | 24 | 8.00 |
| | Weekly once | 136 | 45.33 |
| Meals consumed per day | Twice | 86 | 28.67 |
| | Thrice | 214 | 71.33 |

The mean consumption of different food stuffs from farm women are depicted in Table 2. Here it showed that pulses (31.70), milk and milk products (87.13), roots and tubers (45.10), GLV's (38.67), other vegetables (58.30), fruits (17.33), sugar (14.13) and fat (18.90) consumption is very low when compared to RDA whereas consumption of cereal is high when compared to recommended dietary allowances**.** The statistical analysis ''Z' test showed a highly negative significant difference at one per cent level for the intake of pulses, milk and milk products, roots and tubers, green leafy vegetables, other vegetables, fruits and sugar. But cereals showed a highly positive significant difference at one per cent level.

Farm women were consuming more cereals when compared to all other food groups and it was more than RDA. The

consumption of pulses, green leafy vegetables and other vegetable was fair. Milk consumption was very less when compared to RDA and so also with fruits and flesh foods. This trend may be due to the socio economic condition of the subjects as cereals are available at cheaper rate compared to other commodities so leads to higher consumption of the same. Moreover the farm women may not have the awareness of nutritional importance of these protective and protein rich groups.

The findings are in line with study of Vani *et al.*[12], who reported that that the mean food intake of the families for cereals was 504.3± 76.2g, pulses 11.3±26.9g, roots & tubers 44.2 ± 27.2g, green leafy vegetable 29.2±45.4g, other vegetables 65.6±4.9g fruits 81.9± 24.3g, milk & milk products 55.5±27.8g, fats/oils 20.2±10.3 and Sugar 14.9±5.1g per adult consumption unit. The mean per cent adequacy was highest for cereals (120.1%) and lowest for milk (18.5%).

Calcium is an important nutrient for powerful muscle contraction, bone structure maintenance; nerves signaling are calcium dependent physiological processes. All farm women intake of calcium was found to be high as observed by dietary calculation. This may be due to the intake of non-vegetarian meal - fish food items often and the consumption of ragi, which is the staple food in this region. Average vitamin C intake in farm women was found to be 23.32 mg which was low compared to RDA. This may be due to the less consumption of fruits especially citrus fruits.

**Table 2: Average food intake of farm women (n=300)**

| Food groups (g)/day | RDA# | Actual intake Mean ± SD | % adequacy | 'Z' test |
|---|---|---|---|---|
| **Cereals** | 330 | 378.03 ± 47.48 | 114.56 | 5.541** |
| **Pulses** | 75 | 31.70 ± 9.74 | 42.27 | -20.542** |
| **Milk and Milk products** | 300 | 87.13 ± 18.33 | 29.04 | -63.601** |
| **Roots and Tubers** | 200 | 45.10 ± 9.57 | 22.55 | -88.642** |
| **GLV** | 100 | 38.67 ± 14.02 | 38.67 | -23.969** |
| **Other vegetables** | 200 | 58.30 ± 11.56 | 29.15 | -67.113** |
| **Fruits** | 100 | 17.33 ± 7.70 | 17.33 | -58.782** |
| **Sugar** | 30 | 14.13 ± 4.40 | 47.11 | -19.751** |
| **Fat** | 25 | 18.90 ± 3.80 | 75.60 | -8.793** |

# RDA 2010 ** Significant at the 1% level

Lowest per cent adequacy was found in the intake of β- Carotene i.e., 1345 µg against 4800 µg RDA. This may be due to the less consumption of yellow and orange fruits, vegetables and milk and milk products. The probable reason for the inadequate intake of quantity and quality of pulses, milk and milk products, roots and tubers, fruits and vegetables, sugar, fats and oil was due to lack of nutrition knowledge, low purchasing power and non-availability of required food article at the living place. The above results are in line with findings of Revanna[7] who reported that the mean intake of calcium (539.01mg) was high than the RDA in the study subjects.

**Table 3: Nutrient intake of the farm women (n=300)**

| Nutrients | RDA# | Mean ± SD | % adequacy | 'Z' test |
|---|---|---|---|---|
| **Energy (Kcal)** | 2230 | 1809.73 ± 193.10 | 81.15 | -20.648** |
| **Protein (g)** | 55 | 42.71 ± 6.63 | 77.65 | -17.600** |
| **Fat (g)** | 25 | 20.84 ± 5.61 | 83.34 | -7.043** |
| **Fibre (g)** | 30 | 15.28 ± 4.72 | 50.95 | -29.576** |
| **Calcium (mg)** | 600 | 757.45 ± 201.53 | 126.24 | 7.412** |
| **Iron (mg)** | 21 | 17.12 ± 6.57 | 81.53 | -5.601** |
| **β-Carotene (µg)** | 4800 | 1345 ± 593.49 | 28.04 | -55.217** |
| **Vitamin C (mg)** | 40 | 23.32 ± 9.77 | 58.31 | -16.199** |

** Significant at the 1% level

The nutrients are chemical substances which are present in the food we eat daily. The nutrients include energy, protein, fat, vitamins and minerals. The diet consumed by the farm women was obtained by using 24 hour recall method, as this method was found to be suitable for obtaining the mean nutrient intake of a group when large number of subjects was used. The percentage of adequacy and deficit were also calculated.

The quantity of nutrient intake was consumed by the farm women were recorded during study period, and the mean nutrient intake was compared with recommended dietary allowances of farm women as depicted in Table 3. The mean nutrient intake of energy (1809 kcal), protein (42.71 g), fat (20.84 g), fibre (15.28 g), iron (17.12 mg), β-Carotene (1345 µg) and Vitamin C (23.32 mg) were less when compared to the RDA except for calcium (757.45 mg). The mean per cent adequacy of the farm women for calcium was 126 per cent whereas the adequacy for energy, protein, fat, fibre, iron, carotene and vitamin C was 81, 77, 83, 50, 81, 28 and 58 respectively, which were found to be below the RDA. The statistical analysis showed a highly negative significant difference at one per cent level for the intake of energy, protein, fibre, calcium, iron, β-carotene and vitamin C.

## CONCLUSION

This study on dietary pattern of farm women results shows that Pulses, milk and milk products, roots and tubers, GLV's, other vegetables, fruits, sugar and fat consumption is very low when compared to RDA whereas consumption of cereal is high when compared to recommended dietary allowances, with respect to nutrition adequacy calcium was found to be higher than recommended in subjects whereas remaining all other nutrients consumption was found inadequate. Average intakes of both macro and micronutrient except calcium.

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