



Research Article

DIETARY PATTERN AND NUTRITIONAL HEALTH OF FARM WOMEN IN MAHARASHTRA

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Abstract: Farm women perform multiple duties and carry out numerous works in house hold, farm and allied activities with minimum available energy. Most of farm women are the anemic, malnourished and have health problems due to insufficient nutrient intake. Farm women should be sustaining healthy and active life; she must take diet as per recommendation. The study was carried out 60 farm women of two Agro climatic-zones of Maharashtra, from central Maharashtra plateau zone Nanded districts and western Vidharbh Nagpur district in two age groups. Farmwomen were average 149 cm; average weight noted was 45 kg. The present study revealed that diet consumed by both the age group farm women in all the food group were notably inadequate with comparison of Recommended Dietary allowances for moderate working women. The diet of farm women was grossly deficient in major and micro nutrients such as protein, energy, CHO, Iron, Calcium, and Vit C. Statistically highly significant difference was observed between RDA and foodgroups and mean nutrient intake of selected farm women for both the age group. Therefore, Intervention on balanced diet program is very needful for improvement in nutritional status of farm women.

Keywords: *Balanced diet, Nutrient Intake, Food consumption*

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Introduction

Rural women are responsible for multiple labors, intensive and time-consuming work both inside and outside their house hold, home as well as farm work and inclusive of the essentially prevailing mental activity or dominant physical activity. In any activity requiring physical efforts, work is performed by farm women at the expense of energy.

Women are the food producers for the nation but majority of them are anaemic, malnourished and have health problems due to insufficient nutrient most of them involve in farm activities. Food is one of the basic necessities of life after air and water. Health of women is directly related to the wellbeing of the entire family. The literature indicates that rural women face higher risks of morbidity and mortality because of strenuous physical work [1]. Most of the developing countries including Pakistan are facing the problem of shortage of food and nutrition by both genders specially their females and most affected group. Poor nutrition among women is much more as it begins at infancy and continues throughout their life. She plays a pivotal role in the family not only as a home maker and caretaker of children but also bearer of children [2]. To overcome these problems daily diet of the women should be nutritious. Optimum nutrition can be attained only from proper intake of macro and micro nutrients. Nutritional status reflects the health of a person and influenced by the quality of food eaten and the ability of the body to utilize these foods to meet its needs [3]. An individual occupation has been shown to have as significant effect on the type of food consumed and hence their nutritional status and physical activity. Women health is atmost important as it reflects the health of family. Good health depends upon factors such as good food, good environment to live and work.

Keeping the above facts in mind, the present study was planned with the objective to assess the nutritional status of farm women

To evaluate the anthropometrics measurements of the selected women of Maharashtra State

To find out the food consumption pattern of the selected farm women involved in physical activities

To assess the nutritional profile of farm women.

Material and Methods

Study was conducted in two Agro climatic-zones of Maharashtra; from central Maharashtra plateau zone Nanded districts and western Vidarbha Nagpur district were selected. A sample of 60 farm women was selected randomly in two age groups I 20- 35 and II 36-50 years for nutritional status of farm women. Data was collected by administering the pre-tested interview schedule. All the respondents were interviewed personally by the investigator at work spot, which enabled her to get the first-hand information. Body height (cm) and weight (kg) were the two anthropometric measurements recorded for all the sample women by using standard procedures [4].

For this purpose, the farm women were asked which food items she consumed the day before. For whole day, i.e. from morning tea to dinner the food items she consumed were recorded. As per the advice of the nutritionist, total 6 important nutrients as energy, fat, protein, calcium, iron, and vitamin C were derived from the food items consumed by the respondents and the total nutrient intake by the respondent was calculated. The nutrient intake was compared with the standard nutrient requirement of the woman working as a farm woman as per the book, Nutritive Value of Indian Foods [5]. Nutritional status of farm women was assessed by recording anthropometric measurements, biochemical examination and food consumption pattern of farm women.

Collected data was analyzed with help statistical techniques Viz arithmetic, mean, standard deviation. Correlation coefficient and Paired t test as well as test was applied

Table-2 Mean per cent adequacy of daily food intake by the selected farm women on the basis of age group. (Group-I and II)

Food stuff	RDA	Mean \pm SD		t value		P value	
		Group-I	Group-II	Group-I	Group-II	Group-I	Group-II
Cereals(g)	460	410 \pm 29.8	422 \pm 28.1	9.19	7.49	<.00001**	<.00001**
Pulses(g)	40	11 \pm 4	8.66 \pm 7.8	39.7	22.00	<.00001**	<.00001**
Vegetables Leafy / Roots and Tubers/ Other (g)	150	48.8 \pm 29.2	50.8 \pm 41	18.9	13.24	<.00001**	<.00001**
Fats and oil (g)	40	19.66 \pm 6	19.8 \pm 5.2	18.5	21.24	<.00001**	<.00001**
Fruits (g)	30	46.66 \pm 5.7	56.6 \pm 50.4	-1.79	2.89	0.082#	<.00001**
Meat & Poultry	30	2.5 \pm 7.6	3.3 \pm 10.9	19.8	13.40	<.00001**	<.00001**
Milk and Milk products	150	40.8 \pm 12.3	50.8 \pm 10	48.6	52.73	<.00001**	<.00001**
Sugar and J. Jiggery (g)	30	62.6 \pm 14.4	66.0 \pm 16.7	12.4	11.80	<.00001**	<.00001**
Nuts & oilseed(g)	30	11.16 \pm 4.9	9.33 \pm 8.4	21.05	13.33	<.00001**	<.00001**

**Statistically Highly Significant ($p < 0.001$), # Statistically Non-Significant ($p > 0.05$), (Test: Two Independent Samples T -Test)

Table-3 Mean per cent adequacy of daily nutrient intake by the selected Farm women on the basis of age group. (Group I & II)

Nutrients	RDA	(Mean \pm SD)		t value		p value	
		Group-I	Group-II	Group-I	Group-II	Group-I	Group-II
Protein	50(gm)	48.90 \pm 2.6	48.83 \pm 1.9	2.3	3.37	0.027*	0.0022*
Fat	20(gm)	34.46 \pm 7.2	32.78 \pm 6	11.0	11.4	<.00001**	<.00001**
Energy	2225 (kcal)	2094.6 \pm 65.1	2117.7 \pm 71	10.9	8.27	<.00001**	<.00001**
CHO	430(gm)	386.7 \pm 22.64	401.5 \pm 21.2	10.3	7.35	<.00001**	<.00001**
Iron	30(mg)	28.46 \pm 2.4	29.7 \pm 2.4	3.5	0.70	0.0014*	<.00001**
Calcium	400(mg)	220.4 \pm 28.5	220.3 \pm 28.3	34.5	33.77	0.0014*	<.00001**
Vit C	40(mg)	12.5 \pm 11.40	14.57 \pm 10	18.0	13.92	<.00001**	<.00001**

* Statistically Significant ($p < 0.05$), **Statistically Highly Significant ($p < 0.001$), (Test: Two Independent Samples T -Test)

Results and Discussion

[Table-1] indicates about anthropometric measurements of the selected 200 farm women. It can be observed that mean height of women under investigation was 149 cm while mean weight noted was 45 kg. When compared with mean height and weight of Indian women the present values of selected women were on lower side. This could be due to the type of food consumed by selected farm women because food consumption influences to the greater extent on the weight and nutritional status of population. Data on anthropometric measurements is in line with values given by Nag et al.[6].

Table-1 Anthropometric measurements of selected farm women

SN	The body Measurement of women farmer	Mean	SD
1	Height (cm)	149	17.08
2	Weight (kg)	45	9.48

Mean percent adequacy of daily food intake by the selected farm women on the basis of age: Group I&II

The mean food intake of the selected farm women their RDA and percent adequacy of the diet in relation to each food item was given in [Table-2]. The data indicates that the cereal consumption of farm women of group I and II was 410 \pm 29.84 and 422 \pm 28.1 which was less than recommended daily intake. Statistically highly significant difference between average cereal intake and RDA for both the group. This result in case of cereal is in line with Bhalariao [7]. The consumption of pulses was 11 \pm 4 and 8.66 \pm 7.8g. which was very less than RDA both grouped. The statistical analysis and t tests show a highly significant difference between RDA and daily intake of pulses where $p < .00001$.

The consumption in leafy vegetables, roots and tubers and other vegetables were 48.83 \pm 29.2 and 50.8 \pm 41g which was very less percent than RDA. It was also statistically significant difference between consumed vegetables and recommended dietary intake $p < .00001$. Results were in agreement with the results of Uday Laxmi. Similarly, fats and oil requirement were met up to 50.85 percent. It was 46.66 \pm 5.70 which was less than RDA. It can be seen from the table that daily consumption of fruit was found 46.66 \pm 5.7 and 56.6 \pm 50. Most of farm women were working in fruit growing area and easy to get so they consume more fruit than RDA statistically highly significant between RDA and average intake of fruit for both the group. Most of farm women were vegetarian, they cannot take non vegetarian food due to poor economic conditions and it was observed that 2.5 \pm 7.6 and 3.3 \pm 10.9 g was the average consumption of meat and poultry which is less than RDA.

The consumption of sugar and jiggery for group I and II was 62.66 \pm 14.4 and 66.0 \pm 16.7most of farm women habitual of tea and they take 3-4-time tea in a day. They were like the very sweet tea so added more sugar in a tea the sugar percent

was slightly more than RDA i.e. it was statistically highly significant difference between RDA and average intake of sugar in group I&II.

It can be seen from the table that daily consumption of nuts and oilseed was found 11.16 \pm 4.9 and 9.33 \pm 8.49 it was less than RDA statistically highly significant difference between RDA and average intake of nuts and oilseed among group I.

Mean per cent adequacy of daily nutrient intake by selected farm women for age group I and II

Mean per cent adequacy of daily nutrient intake by the selected farm women for group I and II found that average protein consumption by farm women was 48.90 \pm 2.6 48.83 \pm 1.9.90 g was less than recommended level of 50 gm. The finding of the present study is in accordance with finding reported by Kang [8], Bellurker [9] and Ravi [10].

Who noticed that protein intake of the respondents was just adequate. The percent adequacy of calories was 2094.61 \pm 65.1 kcal and 2117 \pm 71 kcal it was lower than recommended intake. The calories gap observed in present study might be mainly due to low calories intake of their diet. Majority of farm women were farm labors and in low-income category. Recommended energy intake for moderately farm women workers is 2225 kcal. It was observed that intake of food of group II slightly higher than group I. The results are supporting to the result of Abdullah [11] who noticed in her study that the respondents were more chronic energy. Statistically highly significant difference was observed between RDA and average nutrient intake ($p < .00001$).

Fat is an important component of diet and serves number of functions in the body and it is concentrated source of energy. It can be seen from the [Table-3] that the fat intake of the farm women of group I and II was 34.46 \pm 7.2 and 32.78 \pm 6.1 gm which is little but higher than recommended intake (20gm). Statistically significant difference was observed between RDA and actual intake Fat is an important component of diet and serves a number of functions in the body. Fat provides palatability to the diet hence it is used widely for food preparation

Carbohydrate is one of the rich sources of energy which includes cereals, sugar, sweet, fruits, jiggery and honey. It is clear from the table that carbohydrate intake of farm women for Group I and II was found 386.7 \pm 22.64 and 401.5 \pm 21.2gms per day which is quite normal to recommended intake of CHO (430gms). Statistically highly significant difference was observed between recommended daily allowances and average consumption $p < .00001$. Iron is an essential micro nutrient for the formation of haemoglobin or red blood cells of blood and plays an important role in the carrying of oxygen. The iron intake of the selected farm women group I and II was found to be 28.46 \pm 2.4 and 29.69 \pm 2.4 mg. which was quite normal of the recommended intake of iron which is 30 mg per day.

It is clear from the table that calcium intake of the farm women for I and II found was 220.3 ± 28.3 and 220.46 ± 28.56 mg which was less than the recommended level (400 mg). Statistically highly significant difference between recommended daily allowance and actual average consumption of both the group of farm women ($P=0.0014$), Vit. C is also called as ascorbic acid which is an essential nutrient for human as it locks the capacity to synthesis like many other animal species. It is usually found in fresh fruits and vegetables particularly green leafy vegetables. It can be seen from table.3 average intake of vitamin C for I and II found was 12.5 ± 11.40 14.57 ± 10 which is less than recommended daily intake of 40 mg. Consumption of fresh fruit and vegetable consumption is very less in farm women diet both the group. Statistically highly significant difference was observed between RDA and average consumption of Vit C in diet $p < 0.00001$.

Conclusion

The study also indicates that the diet of farm women from both the age groups was notably inadequate in comparison with recommended balanced diet in all food groups such as cereals, pulses, root and tuber, milk and milk products and nutrients protein(g), fat(g), energy(kcal) CHO(g), iron(mg), calcium(mg), and vit C (mg). Hence it is suggested that need to reframe their diet pattern by opening the new horizons of income generating activities and increasing opportunities for non-formal education.

Application of research: There is need to develop nutritional garden in rural area for vegetables fruits to improve nutritional status of farm women. Beyond staple foods, a healthy diet and diversified food basket containing balanced foods providing adequate amounts of energy, fat, protein and micronutrients is necessary.

Research Category: Nutritional Health of Farm Women

Abbreviation: CHO-Carbohydrates, RDA- Recommended Dietary Allowances

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Study area / Sample Collection: Central Maharashtra plateau zone Nanded districts and western Vidarbha Nagpur district

Cultivar / Variety / Breed name: Nil

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References

- [1] Swaminathan M.S. (1990) *Essentials of food and nutrition*, BAPPCO, Bangalore 1.
- [2] Nag P.K. (1986) *American Journal of Physical Anthropology*, 74 (2), 149-153.
- [3] Udaya Lakshmi K. and Babitha B. (2013) *Biolife*, 2(4), 1120-1124.
- [4] Jelliffe D. E. (1966) *WHO Geneva*, 94, 210-214.
- [5] Gopalan C. Ramsastri B.V. and Balasubramanyam S.C. (1989) *Nutritive Value of Indian Foods*, 2nd ed., 1. National Institute of Nutrition (ICMR). Hyderabad, 47-67.
- [6] Pant B. R. (2002) *The Indonesian Journal of Geography*, 34(1), 1-16.
- [7] Bhalerao V.S. (2002) *Ph. D. thesis submitted to Swami Ramanand Teerth Marathwada University, Nanded*, 2002.
- [8] Kang K. (1990) *Master's thesis, Punjab Agriculture University, Ludhiana, India*.
- [9] Bellurkar C.M. (2015) *I.J.Sci & Res*, (5), 570-574.
- [10] Ravi Y. and Ravindra U. (2017) *Int. J. Pure App.Biosci.*, 5(5), 1547-1552.
- [11] Abdulla, Anderson and Binkhed (1984) *Ame.J.Clin.Nutr.*, 40, 325-328.
- [12] Desai I. D. (1994) *Proceeding XIV International Congress of Nutrition Seou*, 297-301.
- [13] Mukopadhyay S. (1996) *Ind. J. Soc. Work*, 57, 327-331.
- [14] Pathak M. and Goswami P.C. (1989) *Ind. J. Nutr. Dietet.*, 26, 335-340.
- [15] Rawat A.S. (1995) *Mountain Research and Development*, 15(4), 311-322.
- [16] Upadhyay S., Kumar A. R., Raghuvanshi R.S. and Singh B. B. (2011) *Journal of Human Ecology*, 33(1), 29-34.
- [17] Vani G.B. and Usha Rani M. (2013) *American Int.J.Res.in Formal.App.Natural Sci.*, 2328-3777.
- [18] Vasta D.K. and Singh S.P. (2000) *Himachal Pradesh Krishi Vishva Vidhalaya, Palampur*.