

Daily Food Intake and Nutrient Intake by the Farm Women

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Abstract- Women invariably perform the duties of both employees and the housewives. This dual role entails heavy mental and physical effort which often leads to complete exhaustion of women due to over work. Good health is a requirement throughout life and vital to women in terms of their daily activities, but nutritional anaemia is a major problem for women in India. To overcome these problems daily diet of the women should be nutritious. But health is a crucial area where no due attention has been paid for women. The study was carried out from two agro – climatic zones of Maharashtra. Nanded district was selected from Central Maharashtra Plateau zone and Nagpur district was selected from Central Vidarbha zone. This research consist sample of six hundred farm women 200 each from urban, rural and tribal areas. The respondents were interviewed personally. In the present study, anthropometric measurements, daily food intake and nutrient intake of the respondents were calculated. Results of this investigation indicated that average height of the farmwomen was 149.46 cm, average weight noted was 51.20 kg and average Body Mass Index was 22.88. It was seen that except nuts and oilseeds and meat and meat products all the foods groups were satisfactorily consumed by majority of the selected respondents and the nutrient intake of the selected women was normal or satisfactory.

Index Terms- Daily, farm women, food intake, nutrient intake

I. INTRODUCTION

An overwhelming majority of women in rural India is associated directly or indirectly with agricultural production, processing and distribution. About two third of the manual labour in farming is constituted by rural women. Irrespective of their degree of affluence, they provide 14 to 18 hour of productive physical labour every day in a wide variety of activities directly connected with agriculture, allied and domestic chores. (Manju Suman - 2002).

Women invariably perform the duties of both employees and the housewives. This dual role entails heavy mental and physical effort which often leads to complete exhaustion of women due to over work. Good health is a requirement throughout life and vital to women in terms of their daily activities, but nutritional anaemia is a major problem for women in India. To overcome these problems daily diet of the women should be nutritious. But health is a crucial area where no due attention has been paid for women. Nutritional surveys indicate large gaps in nutritional requirements and consumption among females as compared to males. A majority of rural and tribal

women suffer from anaemia which leads to low birth weight among babies (Jhamtani, 1995).

The food requirement of the people varies greatly depending on various factors. Apart from non-occupational activities like walking, dressing, eating, etc., the energy requirement changes depending upon the various activities that one has to perform in his or her daily occupation such as agricultural activities, stone cutting, loading, etc., for e. g. a stone cutter requires and expends more energy than a worker in a factory doing light work. A considerable percentage of India's population consists of agricultural workers.

Nutritional status of an individual is assessed by anthropometry, which includes height, weight and other body measurements. The information on height throws light on the past nutritional status, that indicates how well nourished they have been from the beginning. Body weight gives an indication of the current nutritional status to identify the individual as over weight, underweight or retarded growth. Bulkiness of an individual or body mass index is assessed by calculating the body weight and height so as to classify them into groups depending on their nutritional status.

Health is fundamental to human progress. Women's health status affects their productivity and thereby their roles in society and their own development. Nutrition is closely interlinked with health. Low nutritional status of woman makes her more prone to several diseases. It has notifying significance in case of women, because they have to bear and rear children. Hence the present study was conducted to know the daily food intake and nutrient intake of the farmwomen with following specific objectives -

1. To assess the anthropometric measurements of the farmwomen.
2. To study the daily food intake of the farmwomen.
3. To investigate daily nutrient intake of the farmwomen.

II. METHODOLOGY

The study was carried out from two agro – climatic zones of Maharashtra. Nanded district was selected from Central Maharashtra Plateau zone and Nagpur district was selected from Central Vidarbha zone. This research consist sample of 600 farm women, 200 each from urban, rural and tribal areas. It was easy to get sample of farm women from rural and tribal areas but difficult from urban area. Hence the localities of the urban area, where farming was done by the women, were selected.

Data were 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. In the present study, anthropometric measurements, daily food intake and nutrient intake of the respondents were calculated. Body height (cm) and weight (kg) were the two anthropometric measurements recorded for all the sample women by using standard procedures (Jelliffe, 1966).

To find out the health status of the respondent, the Body Mass Index (BMI) was calculated from the recorded measurements of body weight and height of a woman. The ratio of weight (kg) and height² (cm) is referred as Body Mass Index (BMI). It provides a reasonable indication of the nutritional status of adults, which has good correlation with fatness. It is also indicator of health risks. BMI is calculated by using the following formula –

$$\text{Body Mass Index} = \frac{\text{Weight in kg}}{(\text{Height in cm})^2}$$

On the basis of Body Mass Index values, these selected women were classified into three groups as under weight (< 18.5 BMI), normal (18.5 – 24.9 BMI) and over weight women (25 – 29.9 BMI) as per James *et al.* (1988).

Nutritional and health status of all 600 selected women were also assessed by determining the intake of foods and nutrients. As per the advice of nutritionist 24 hours recall method was used for recording data regarding nutrient intake. For this purpose, the respondent was 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. For measuring quantity of the food stuffs she consumed, the standard measurements for all the food stuffs i. e. chapatti, bhakri, curry, dhal, chutney etc. were already taken by a katori, serving spoon etc. and it was compared with the measurements taken by the respondent to prepare the food item. For example, for one chapatti how much wheat flour she used, it was compared with the standard measurement and calculation was done. The measurements were different for urban, rural and tribal area. For example, for urban area, for one chapatti 30 – 35 gm wheat flour is used, while in rural and tribal area it is 50 gm. It was noted during pilot survey. For each and every food item, the quantity was measured and nutrients were calculated accordingly. As per the advice of the nutritionist, total 10 important nutrients as energy, fat, protein, calcium, iron, thiamine, riboflavin, niacin, free folic acid 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 farmwoman as per the book, Nutritive Value of Indian Foods (C. Gopalan *et al.* - 1989).

Frequencies and percentages were calculated for statistical analysis.

III. RESULTS AND DISCUSSIONS

Anthropometric measurements of the respondents

Table 1 indicates about anthropometric measurements of the selected respondents. It can be observed that average height of the women under this investigation was 149.46 cm while average

weight noted was 51.20 kg. It was also observed that an average body mass index of the women was 22.88, which is in the normal category. The minimum noted height was 122 cm and maximum was 166 cm. The minimum weight observed was 32 kg while maximum weight was 87 kg. Likewise the lowest BMI assessed was 15.19 and the highest was 38.66.

The observation related to average weight is nearer to the finding of Victor *et al.* (2002) and Bhoyar *et al.* (2014). As far as average height of the respondents was concerned, it was noted that the finding is nearer to the finding of Bhoyar *et al.* (2014). The assessment in case of BMI is found in line with the result of Bhoyar *et al.* (2014).

When compared with mean height and weight of Indian women the present values of selected women were lower. This could be due to the type of food consumed by selected population because the food consumption influences to the greater extent on the nutritional status of population.

Daily intake of foods by the respondents

Table 2 reveals about mean percent adequacy of daily intake of foods by the selected respondents. It was found that cent percent women were consuming cereals, pulses and green leafy vegetable followed by 99.83 percent of them were found to be consuming roots and tubers and other vegetables in their daily diet. The results in case of cereals are in line with Bhalerao (2002), Pathak and Goswami (1989) and Jha (1994). The result in case of consumption of pulses is coinciding with Bhalerao (2002).

It can be seen from the table that daily consumption of nuts and oilseeds was found by 40.16 per cent of the selected women but majority of them were consuming fats and oils (90.16 %) daily. It is also clear that less than three fourth (71.66 %) of the selected respondents were found to be consuming milk and milk products daily. Milk they consumed was mainly in the form of tea, curd, butter milk etc. It is worthy to note that the families who had milch animals, not only developed it as income source but also utilized some remaining milk for family consumption, in spite of having one or two goats or at least one cow or buffalo. It was illustrated that less than half (49.00 %) of the women were consuming meat products, fish and eggs. They reported that they were not consuming these items frequently due high cost of the products and their less purchasing power. The same case was found with consumption of fruits. It can be stated from the table that more than three fourth (76.33 %) of the women were consuming fruits but not regularly or frequently. Majority of the respondents reported that due to less purchasing power they were consuming those fruits which were available in their own farms or received from their employer in the season. The fruits consumed by them were mostly mango, banana, zizipus, gauva, jamun etc. These fruits are available at low rate in the season or received from neighbours or from the employer. The results are in agreement with the results of Bhalerao (2002).

Daily nutrient intake by the respondents

Man needs a wide range of nutrients to perform various functions in the body and to lead a healthy life. These nutrients are the chemical substances which are present in the food, we eat daily. Table 3 gives information about daily nutrient intake by the respondents. The respondents selected for this study were in

the category of moderate workers as per the categories given by Gopalan C., Rama Sastri, B.V. and Balsubramanian, S.C. (2004) in their book Nutritive Value of Indian Foods.

Energy - is the main content of our food. Energy is essential for rest, activity and growth. Certain amount of energy is also expended by the body for respiration, blood circulation, digestion, absorption and excretion, maintenance of body temperature etc. It is depicted from this table that energy consumption of the selected respondents ranged between 469.09 – 3374.95 kcal, whereas average energy consumption of these respondents was 1372.33 kcal which is less than recommended intake. The calorie gap observed in present study might be mainly due to low calorie density of their diets which are largely in the form of cereals, inferior grains and also due to the use of inadequate amount of fats and oils in their diets. Because majority of the respondents were farm labours and from low income category. Recommended energy intake for moderate woman worker is 2225 kcal. The result is supporting to the result of Sunita Kumari (2000) who noticed in her study that the respondents were more chronic energy.

Proteins - are vital to any living organism. These are one of the most important nutrients required by the body and should be supplied in the adequate amounts in the diet. It is illustrated from the same table that protein intake of the respondents ranged between 15.89 – 91.81 gm while average protein intake was found to be 42.04 gm which is slightly less than the recommended protein intake. Recommended protein intake is 50 gm for a moderate worker woman. The finding of the present study is in accordance with finding reported by Roy *et al.* (2003) who noticed that protein intake of the respondents was just adequate.

Fat - is an important component of diet and serves a number of functions in the body. It is a concentrated source of energy. It also imparts palatability to a diet and retards stomach emptying time. It can be seen from the table that the fat intake of the respondents ranged between 6.17 – 240.63 gm while average fat intake of the women was 22.23 gm which is nearer to the recommended intake (20 gm). As stated earlier, fat provides palatability to the diet hence it is used widely for food preparation especially in the urban areas. In rural and tribal areas its use is limited due to high cost and less paying capacity of the poor people.

Calcium - is required for the formation and maintenance of skeleton and teeth. It is also needed for normal contraction of muscle to make limbs move contraction of heart for its normal function, nervous activity and blood clotting. It is clear from the table that the calcium intake of the women ranged in between 131.29 – 1762.59 mg whereas its average intake was 394.17 mg which was quite normal. Recommended intake of calcium is 400 mg.

Iron - is an essential element for the formation hemoglobin of red cells of blood and plays an important role in the transport of oxygen. Since there is limited capacity to absorb dietary iron, diet should contain 10-25 fold iron required daily. Diets differ very widely in the bioavailability of their iron. A variety of factors contribute to iron deficiency but diet intake is one of the most responsible factors. The iron intake of the selected respondents was found to be ranged between 2.98 – 60.90 mg. Average intakes was very poor as 14.74 mg which was half of

the RDA (Recommended Dietary Allowances) iron intake (30 mg). It was found that in rural and tribal areas the composite diet system is not followed. Considering iron requirements, availability of iron from the composite diet is more important than from the individual foods because of profound interaction between foods in influencing iron absorption. The low intakes of nutrient are related to iron deficiency signs. The result is in accordance with the observations of Murthy *et al.* (1989) and also with Mane *et al.* (1999). The finding also supports with Sunita Kumari (2000) whose observation is that almost all the respondents in the study were found to be anaemic.

Thiamine - is an important B-group vitamin. It is concerned in the proper utilization of carbohydrates in the body and for full utilization of sugars and starches for meeting the energy needs. It is clear from the table that thiamine intake of the selected women ranged between 0.34 – 11.68 mg and average intake was noted as 1.31 mg which is slightly more than RDA i.e. 1.1 mg. It may be due the fact that the cent percent selected women consumed cereals and pulses and a fair percentage of them (40.16) consumed nuts which contain high level of thiamine.

Riboflavin - as a part of a coenzyme is essential for several oxidation processes inside the cell and is concerned with energy and protein metabolism. It can be stated that the intake of riboflavin by the selected women ranged between 0.19 – 1.63 mg. Table indicates that average intake was 0.62 mg which was less than half of the RDA (1.3 mg). Milk & milk products and eggs, liver are the good sources of riboflavin while wheat, millets and pulses are fair sources. It was stated earlier that the intake of milk and milk products of the selected respondents found to be less i.e. 71.66 per cent of the selected women were consuming milk and milk products daily. Milk intake of these respondents was mainly through tea. Quantity of milk is less in tea. Hence the intake of riboflavin might be less. Another reason is that riboflavin is the most limiting of all B-vitamins in cereal based diets of the poor. It is rather difficult to ensure adequate supply of this vitamin in a predominantly vegetarian diet. The finding coincides with Thimayamma (1987), Busi (1999) and Bhalerao (2002).

Niacin - also called as nicotinic acid, is a vitamin intimately connected with several metabolic reactions. Hence its requirement has also been related to energy requirement. This vitamin can be formed in the body from the amino acid tryptophan. The table implies that the average intake of niacin of the selected women was 12.26 mg whereas the recommended intake is 14 mg. The daily requirement of this vitamin varies from 8-26 mg niacin equivalents for various physiological activity groups. Hence it can be said that the niacin intake of the respondents was quite normal. It may be due the reason that whole cereals, pulses are good sources of niacin which were consumed by cent per cent of the selected women. Nuts and meat are also good sources. The nuts were regularly consumed by 40.16 per cent of the respondents, among the nuts ground nuts were consumed more by these respondents which are particularly rich in niacin. More than half of the respondents were non vegetarian; hence due to meat consumption niacin intake was normal.

Folic acid - is required for multiplication and maturation of red cells. The table indicates that the average intake of this vitamin by the selected women was 40.08 µg while

recommended intake is 100 µg. The actual requirement of free folic acid ranges between 50-100 µg depending on the age. The average intake found to be less than recommended intake. It may be due to the fact that majority (48.50 %) of the selected women were middle aged (31-45 years) whose requirement is less due to their age.

Vitamin C - also called as ascorbic acid, is an essential nutrient for human as he lacks the capacity to synthesis it like many other animal species. It is a strong reducing agent. It is involved in collagen synthesis, bone and teeth calcification and many other reactions in the body as a reducing agent. It can be seen from the table that the average intake of vitamin C of the respondents was 36.47 mg which is quite nearer to recommended intake i.e. 40 mg. Vitamin C is mainly present in fresh fruits and vegetables especially in green varieties. As stated earlier, cent percent of the respondents consumed vegetables. Fruits were not consumed regularly by the respondents especially by the rural and tribal women due the high prices but more than three fourth of them (76.33 %) were found to be consuming fruits. Fresh meat also contains small quantity of vitamin C, which was consumed near about half of the respondents. Hence intake of vitamin C was found to be normal.

Overall it can be stated that the nutrient intake of the selected women was normal or satisfactory. It may be due the fact that near about cent per cent of the women daily consume of cereals, pulses and legumes, vegetables i.e. green leafy vegetables, roots and tubers and other vegetables and also fats and oils while near about three fourth of the women consume fruits and milk and milk products daily.

The finding of this study lend support to the finding of the result of Kale *et al.* (1999) who reported that most of the respondents had fair nutritional status.

IV. CONCLUSIONS

In present investigation it was noticed that average height of the farmwomen was 149.46 cm, average weight noted was 51.20 kg and average Body Mass Index was 22.88. It can be said that except nuts and oilseeds and meat and meat products all the foods groups were satisfactorily consumed by majority of the selected respondents. The nutrient intake of the selected women was normal or satisfactory. It may be due the fact that near about cent per cent of the women daily consume of cereals, pulses and legumes, vegetables i.e. green leafy vegetables, roots and tubers and other vegetables and also fats and oils while near about three fourth of the women consume fruits and milk and milk products daily.

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Table No. 1 Anthropometric measurements of the respondents
n = 600

Sr. No.	Particulars	Average
1	Height (cm)	149.46
2	Weight (kg)	51.20
3	Body Mass Index	22.88

Table No. 2 Daily intake of foods by the respondents
n = 600

Sr. No.	Particulars	Frequency	Percentage (%)
1	Cereals	600	100.00
2	Pulses and legumes	600	100.00
3	Vegetables - a) Green leafy b) Roots and tubers c) Other vegetables	600 599 599	100.00 99.83 99.83
4	Nuts and oil seeds	241	40.16
5	Fats and oils	541	90.16
6	Milk and milk products	430	71.66
7	Meat, fish, eggs (not frequently)	294	49.00
8	Fruits (not frequently)	458	76.33

Table No. 3 Daily nutrient intake by the respondents
n = 600

Sr. No.	Nutrient	Recommended Nutrient Intake (for moderate woman worker)	Range	Mean ± SD
1	Energy (kcal)	2225	469.09 – 3374.95	1372.33 ± 352.34
2	Protein (gm)	50	15.89 – 91.81	42.04 ± 12.66
3	Fat (gm)	20	6.17 – 240.63	22.23 ± 14.89
4	Calcium (mg)	400	131.29 – 1762.59	394.17 ± 201.81
5	Iron (mg)	30	2.98 – 60.90	14.74 ± 8.21
6	Thiamine (mg)	1.1	0.34 – 11.68	1.31 ± 1.02
7	Riboflavin (mg)	1.3	0.19 – 1.63	0.62 ± 0.21
8	Niacin (mg)	14	3.44 – 33.54	12.26 ± 3.87
9	Folic acid (µg)	100	13.2 – 118.56	40.08 ± 14.05
10	Vitamin C (mg)	40	1.75 – 240.13	36.47 ± 32.32