Acta Scientific Nutritional Health

Volume 1 Issue 1 May 2017

Research Article

A Study on Energy Balance of Farm Women

Deepa Mishra and Rashmi Singh*

Department of FSN, College of Home science, CSAUA&T, Kanpur, 208002, India

***Corresponding Author:** Rashmi Singh, Department of FSN, College of Home science, CSAUA&T, Kanpur, 208002, India.

Published: May 08, 2017

Abstract

A cross-sectional study of 100 farm women of district Kanpur was undertaken to assess the energy intake and energy balance of the farm women. Nutrient intake of the subject was assessed using 24 hour recall method. Anthropometric measurements were made by measuring height and weight. BMI classification was used to assess nutritional status of the farm women. In the present study it was found that intake of all nutrients was less than RDA [1]. Mean BMI was 21.17 kg/m2. Negative energy balance was found in all the farm women studied. All these observations signify that there is need to improve nutrition of farm women to combat the problem of under nutrition.

Keywords: Nutritional status; Energy expenditure; Anthropometry; Nutrient intake; Basal metabolic rate

Abbreviations

RDA: Recommended Dietary Allowance; BMI: Body Mass Index; BMR: Basal Metabolic Rate; ICMR: Indian Council Medi-cal of Research

Introduction

Agriculture is the largest industry in India and women participate in almost all-agricultural operations such as transplanting, weed-ing, threshing, winnowing, harvesting etc. Employment of women in agriculture sector therefore, is not a new phenomenon and they have been recognized as the backbone of Indian agriculture since long.

Women constitute 50% of the agricultural work force in India giving India the highest degree of female participation in agriculture. Women agricultural activities are changing as mounting demographic pressure on land and environmental degradation results in in-creased rural poverty and male migration off the form in search of wage employment.

According to Rawat [2] women face higher risk of morbidity and mortality because of strenuous physical work. Women with poor health and nutrition are also less likely to give birth to unhealthy babies and with poor health they are also likely to provide food inad-equate care to their children.

Ishaq [3] women also do domestic chores of work, they perform 90% of food processing work, 80% of food storage, 60% in post har-vest packaging, transportation and marketing other than taking care of children, elderly and disabled family members, fetching water and fuel, cleaning and maintaining the house as helped men to mix and prepare pesticide solution. Ronzio [4] women are usually vulnerable to malnutrition for both social and biological reasons, throughout their life cycle. It has been reported that calorie inadequacy in the different states varied from 23% of households in Andhra Pradesh in the south to more than 65% in Uttar Pradesh in the north. Keeping the facts in mind the present study was conducted with the objectives- To assess the dietary pattern and nutrient intake of the farm women, to measure the anthropometry of farm women and to assess the energy balance of the farm women.

Material and Methods

Study Area: The present study was carried out in 8 farms of block Kalayanpur of district Kanpur city.

Study Participants: The study was conducted among farm women of age group 25- 55 years. Total 100 women were selected of the study.

Duration of Study: The data was collected during January 2015 to May 2015.

Sampling Design: The study was cross-sectional in nature and the subjects were selected through random sampling technique.

Anthropometric Assessment: Height, Weight and BMI were recorded as per standard methods and procedures. BMR was calculated using equation of ICMR 1989 and energy requirement was calculated using BMR unit.

Statistical Analysis: for statistical analysis of data, percentage, mean and standard deviation have been computed.

Ethical Consideration: All measurements were non invasive. Permission for the study was obtained from the concerned authority.

Results and Discussion

A total of 100 women aged 25 to 55 year were taken for the study. Demographic profile of subject revealed that maximum farm women (57%) belonged to 35 to 45 year age group. More than half women were illiterate and (52%) and the occupation of husband was agriculture. It was found that 53% of family was having less than 5 members and 56% of the farm women were land less. Information pertained to religion revealed that maximum subjects i.e. (34%) were observed as Hindu and 57% subjects belonged to nuclear family (Table-1).

Age group (year)	Frequency	Percent
25-35	24	24.00
35-45	57	57.00
Above to 45	19	19.00
Literacy status		
Illiterate	57	57.00
Primary Middle	20	20.00
Highschool	23	23.00
Occupation of husband		
Labour	9	9.00
Agriculture	52	52.00
Service	8	8.00
Unemployment	18	18.00
Buisness	13	13.00
Marital status		
Married	69	69.00
Unmarried	8	8.00
Widow	23	23.00
Religion		
Hindu	83	83.00
Muslim	17	17.00
Type of family		
Nuclear	57	57.00
Joint	43	43.00
Size of family		
Small (below 5 member)	53	53.00
Medium (5 to 8 members)	29	29.00
Large (above 8 members)	18	18.00
Monthly income (Rs.)		
5000-10,000	26	26.00
10,000-15,000	57	57.00
15,000-20,000	17	17.00
Land holding		
Land less	56	56.00
Below 1 ha.(marginal farmer)	37	37.00
1-2 ha (small farmer)	7	7.00

Table1: Socio- demographic profile of study population.

Nutrient intake

Intake of all the nutrients was found to be less than the RDA value. Energy intake of farm women was found to be less than RDA val-ues. The energy intake was 1840 ± 124, 1753 ± 32 and 1811 ± 150K cal/day in 25 to 35, 35 to 45 and 45 to 55 year respectively. Protein intake was about 70% of the RDA and intake of fat, iron, calcium, were more than 50% of the RDA. Intake of vitamin-A was only about 45% of the RDA (Table 2). Mittal, [5] also reported that overall quality of food and nutrient intake was poor as the intake of all the food groups was found to be much lower than there RDA. The mean energy and protein intake was found to be 983.60 ± 309k cal and 27.33 ± 8.2g respectively which met only 50% of the nutrient requirements.

Jethi and Chandra [6] reported less consumption of pulses, green leafy vegetable, other vegetable, and fruits than recognize level among hill from women.

Mean height and weight of the subject was observed as 150.74 cm and 52.67 ± 5.2 kg (Table 3). Mann., et al. carried nutritional study on rural women aged 25-35 year of Ludhiana district and reported that mean weight and height were below the reference standard. The body mass index indicator is based on body height and weight. BMI classification [7] showed that only 64% of farm women were having normal nutritional status and 27 percent had BMI of 17.0 to 18.5 Kg/m2. Dibley [8] reported that 21% of the study participant had a BMI < 18.5 Kg/m^2.

Age (year)	N	Energy (kacl)	Protien (g)	Fat (g)	Iron (g)	Calcium (g)	Vitamin-A (µg/d)	Vitamin-C (g)	Folic acid (µg/d)
25-35	24	1814 ± 24	35 ± 3.1	18.5 ± 1.1	20.5 ± 2.2	368.4 ± 31.6	265.5 ± 19.1	28.2 ± 1.7	60.9 ± 2.0
35-45	57	1753 ± 132	36 ± 3.9	18.7 ± 1.4	19.6 ± 2.5	356.6 ± 28.5	255.8 ± 17.2	28.7 ± 2.1	60.7 ± 1.8
45-55	19	1811 ± 150	35 ± 3.5	18.4 ± 0.9	19.8 ± 2.9	346.02 ± 1.2	261.01 ± 5.6	27.8 ± 1.6	60.1 ± 1.4
RDA		2225	50	20	30	400	600	40	100

Table 2: Nutritive intake of farm women (N = 100).

S. No	Height(cm)	Weight (kg)	BMI (g/m^2)
M ± SD	150.74± 6.3	52.67 ± 8.1	21.17 ± 1.49
50th percentile	151.5	52	21.3

Table 3: Anthropometric measurements of farm women.

BMR of farm women was found to be 1216 and 1226 K cal in less than 30 year old women and 30-55 year aged women respectively (Table 4).

S. No	Age group (years)	Frequency	BMR (Kcal)
1	25 -30	8	1216.021
2	Above to 30	92	1225.89

Table 4: BMR of the farm women.

It was found that energy requirement of farm women was higher than their daily average energy intake. The difference between energy intake and energy requirement was found to be -534 and -532 K cal in 25-30 years old and 30-55 year old farm women respec-tively. All the subjects were found in negative energy balance of about 500 K cal per day [9,10].

Age (year)	BMR	Energy Intake	Energy requirement	Energy Balance
25- 30 year	1216	1776	2310	-534
30-55 year	1226	1797	2329	-532

Table 5: Energy balance of farm women (N = 100).

Conclusion

The study concludes that the farm women undertaken in the present study were consuming fewer nutrients than recommended levels. Only 64% of farm women were having normal nutritional status as revealed by BMI classification. BMR calculation showed that energy requirement of farm women are more than their daily energy intake [11].

It is therefore, high time that some plan or projects are under taken by the government to improve upon the nutritional status of the farm worker by extending financial help, providing health education and diet counseling highlighting the importance of a balanced diet for good living and supplementing nutrient where extremely needed. Hence, there is an urgent need for improving the overall situation of the farm worker women in country.

Bibliography

1. RDA. "A report of the expert group of the Indian Council of Medical Research". National Institute of Nutrition, Hyderabad (2010).
2. Rawat YS and Singh SP. "Constraints to Agricultural Production in Africa: A survey of female farmers in Ruhegeri preference of Rwanda". *Studies in Comparative international development* (1995): 78-98.
3. Ishaq A and Sadaf S. "Preference of rural women for agriculture information sources". *Journal of agriculture & social science* (1998): 145-149.
4. Ronzio R. "The Encyclopaedia of Nutrition and Good Health". New Delhi: Viva Books Private Ltd (2004).
5. Mittal Megha. "To Assess the Nutritional Status and Morbidity Patterns among Non -Pregnant Non -Lactation (18 -40 Years)". *International Journal of Scientific and Research Publications* 3.9 (2013): 1-47.
6. Jethi R and Chandra N. "Nutritional status of Farm women in hills of Uttarakhand". *Indian Research Journal of Extension Education* 13.3 (2013): 92-97.
7. James WPT., *et al.* "Definition of chronic energy deficiency in adult's report of working party of the intervention dietary energy consultation group". *We* 42 (1988): 969-981.
8. Do TT., *et al.* "Receiver operating characteristic analysis of body mass index to detect increased risk of function morbidity in Viet-namese rural adults". *European Journal of Clinical Nutrition* 58.12 (2004): 1594-1603.
9. ICMR. "Nutrient requirements and Recommended Dietary Al-

lowances for Indians". *National Institute of Nutrition Hyderabad* (1989).

10. Gibson RS. "Principle of Nutritional Assessment". *New York. Oxford University Press* (1990): 153-195.
11. Bains Kiran and Kaur Balwinder. "Measurement of energy cost of selected household and farm activities rural women". *Food and Nutrition Bulletin* 2002. 23.3 (2002): 274-279.

Volume 1 Issue 1 May 2017