

Nutritional Status of Tribal and Non-Tribal Farm Women: with References to Raigarh District of Chhattisgarh

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Abstract

Raigarh is one of the most important potential district of Chhattisgarh in terms of area, production and productivity of different crops. About 70% of farm work here is performed by women. The study was carried out on 300 tribal and non-tribal farm women to assess their nutritional status with 150 women in each tribal and non-tribal category. In the study self framed, pretested questionnaire was used to collect data on Socio economic status. Anthropometric measurements were performed and 24 hours Dietary Recall survey was used to assess their food intake. Results revealed that the 45.3% tribal and 28% non-tribal marginal farm women were illiterate while 36% tribal and 48% non-tribal marginal farm women had only primary level education. The farm women are at risk of under nutrition due to poverty, illiteracy and food fads. In the study, mean height of tribal & non tribal farm women were 150.80 cm & 150.04 cm respectively. There was no significant difference between heights in both groups. It was found that the weight and BMI of non-tribal farm women is significantly higher 46.33kg, 20.64 respectively than tribal farm women 44.70kg, 19.61 respectively. The average body weight and height as specified by ICMR for women is 55kg and 151cm respectively. Thus it can be inferred that both the groups had comparatively low weight. The average energy consumption per day in tribal and non-tribal farm women was found to be 2032 Kcal and 2045 Kcal respectively which is below the recommended level of 2230 Kcal. The protein intake was also found to be deficient by 8.2%. All nutrients were found to be less than RDA. The energy was mainly derived from carbohydrate rich foods as the consumption of fat and protein was found to be below RDA.

KEYWORDS-Nutritional Status, Farm women, Tribal women, Non tribal women, BMI

Introduction

Agriculture has always been India's most important economic sector. The 60% of Indian population is engaged in agriculture as their main source of income. In India, agriculture requires man power. If the manpower is seen gender wise, amazingly the women contribution is greater than men. Nearly 63 percent of all economically active men are engaged in agriculture as compared to 78 percent of women. It has been reported by E. Krishna Rao (2006) also that about 70 percent of farm work was performed by women.

The status of women in India has been subject to many great changes over the past few millennia. The Women's status has been considered as an important measure of social development in a community. It is an important tool for planning purposes also.

Several research studies on tribal population of India revealed that prevalence of chronic energy deficiency was high among tribal population. Women belong to vulnerable section and hence the impact on their health is much higher. In this connection only this study was conducted on the tribal & non-tribal marginal farm women of Raigarh District of Chhattisgarh to assess their Socio economic status and Nutritional Status.

Materials & Method

A Study of Socio economic and Nutritional Status of the tribal & non tribal farm women of Raigarh District of Chhattisgarh was carried out on 300 subjects. The district comprises of 9 blocks out of which two tribal and two non-tribal blocks were selected for the study. Total of 300 marginal farm women of age group 18-45 years, who were available at home at the time of study and who were willing to participate were selected for the study. The pregnant & lactating farm women and women with chronic infectious diseases were excluded from study. All samples were divided into two groups of 150 tribal and 150 non-tribal farm women either working in farm or involved in agricultural activities. The data was collected with the help of close ended as well as open ended questionnaires. The data was analysed statistically by applying different suitable tests to compare between the two groups and to find out the significant difference between groups. The social and economical aspects of nutrition are essential for successful functioning of food and nutrition policies and associated programs. The anthropometric measurements such as height & weight were measured and body mass index were calculated. According to the WHO classification of BMI, study population was categorized as underweight (<18.50), normal weight (18.50-25) and overweight (>25). The Chi-square test was used to test the significance of results. The dietary survey was conducted on pretested schedule as described by ICMR (2000). The information regarding food intake was collected by 24 hours Recall method. The data collected through diet survey was converted in terms of weight and tabulated. The calories, proteins, fats, carbohydrates, iron and vitamin C intake was calculated using food composition table of the ICMR and compared with RDA.

Results and Discussion

I. DEMOGRAPHIC PROFILE:

Social and economic aspect of nutrition is essential for successful functioning of food and nutrition policies and associated programs. This study was conducted on marginal farm women of tribal and non-tribal origin. The equal numbers of tribal and non-tribal marginal farm women were selected and the age range was in between 18 to 45 years.

The distribution of subjects on the basis of age is shown in Table No.1. The distribution of subjects according to age group shows that 56 out of 300 subjects were in the age group of 18-25 years with 20% tribal and 17.3% non-tribal marginal farm women respectively. Ninety six subjects out of 300 were in the 25-35 years age group with a distribution of 28% tribal and 36% non-tribal marginal farm women. The number of subjects in the 35-45 years age group was 148 with a distribution of 52% tribal and 46.7% non-tribal marginal farm women.

Table No. 1: Distribution of the subjects as per their age

Age Group	Marginal Farm Women		Total
	Tribal (N=150) Number (%)	Non-Tribal (N=150) Number (%)	
18-25 years	30 (20.0)	26(17.3)	56 (18.7)
25-35 years	42(28.0)	54 (36.0)	96 (32.0)
35-45 years	78(52.0)	70(46.7)	148 (49.3)
Total	150 (100.0)	150 (100.0)	300(100.0)

The demographic profile of tribal and non-tribal marginal farm women is presented in Table No.2.

Family details: Out of the 150 tribal marginal farm women studied 84% belonged to nuclear families as compared to 70.7% non-tribal farm women. The number for joint families was 16% in case of tribal and 29.3% in case of non-tribal marginal farm women. When studied statistically they χ^2 (df=1) = 7.60 denotes that nuclear family pattern is of higher magnitude in tribal marginal farm women as compared to non-tribal marginal farm women. As far as family size is concerned 47%, 51% and 2.7% tribal farm women had 1-4, 5-8 and >8 members in their families respectively. In non-tribal marginal farm women 41.3%, 57.3% and 1.4% non-tribal marginal farm women had 1-4, 5-8 and >8 family members respectively.

Education: The educational status of tribal and non-tribal marginal farm women was found to be extremely poor. 45.3% tribal and 28% non-tribal marginal farm women were illiterate while 36% tribal and 48% non-tribal marginal farm women had only primary level education. 16% tribal and 21.3% non-tribal marginal farm women had education up to middle school while only 2.7% tribal as well as non-tribal marginal farm women had education up to high school.

Table No. 2: Socio-economic profile of Farm Women

Socio economic Variables	Tribal Farm Women (N=150) Number (%)	Non-Tribal Farm Women (N=150) Number (%)	
Family			
1. Nuclear	126 (84.0)	106(70.7)	χ^2 (df=1) = 7.60, p<.01
2. Joint	24 (16.0)	44 (29.3)	
Number of Family Members			
1. 1-4	70 (47.0)	62 (41.3)	χ^2 (df=2) = 1.76, p>.05
2. 5-8	76 (51.0)	86 (57.3)	
3. >8	04 (2.7)	02 (1.4)	
Educational Status			
1. Illiterate	68 (45.3)	42 (28.0)	χ^2 (df=3) = 9.86, p<.01
2. Primary	54 (36.0)	72 (48.0)	
3. Middle	24 (16.0)	32 (21.3)	
4. High School	04 (2.7)	04 (2.7)	

Housing Condition			
1. Kachha	138 (92.0)	118 (78.7)	χ^2 (df=1) = 10.65, p<.01
2. Pukka	12 (8.0)	32 (21.3)	
Land hold			
1. 0-1 acre	48 (32.0)	28 (18.7)	χ^2 (df=2) = 7.55, p<.01
2. 1-2 acre	52 (34.7)	68 (45.3)	
3. 2-3 acre	50 (33.3)	54 (36.0)	
Source of Income			
1. Agriculture	108 (72.0)	108 (72.0)	χ^2 (df=2) = 8.84, p<.01
2. Agriculture+ Other	42 (28.7)	42 (28.0)	
Income			
1. More than 5000	40(26.7)	68(45.3)	
2. Less than 5000	110(73.3)	82(54.7)	
Earning Members			
1. 1-2	122 (81.3)	98 (65.3)	χ^2 (df=1) = 9.81, p<.01
2. >2	28 (18.7)	52 (34.7)	

Housing Condition: Majority of the surveyed tribal and non-tribal marginal farm women i.e. 92% and 78.7% respectively were living in Kachha houses while only 8% tribal and 21.3% non-tribal marginal farm women had Pukka houses. The calculated χ^2 (df=1) = 10.65 also reveal that housing arrangements of non-tribal marginal farm women were significantly better as compared to that of tribal marginal farm women.

Land hold: 32% tribal and 18.7% non-tribal women possesses-1 acre of land, 34.7% and 45.3% tribal and non-tribal women possess 1-2 acres land while 33.3% and 36.0% had 2-3 acres of land. The calculated χ^2 (df=1) = 7.55 which indicates that land holdings of non-tribal women were higher as compared to tribal women.

Source of Income: According to survey agriculture was the main source of income as reported by 72% tribal and similar percentage of non-tribal marginal farm women. 28% tribal and non-tribal marginal farm women reported their source of income from agriculture as well as other sources.

Income: Table No.2 reveals that 73.3% tribal and 54.7% non-tribal marginal farm women had earnings below INR 5000. It was also found that 26.7% tribal and 45.3% non-tribal marginal farm women had earnings of more than INR 5000 per month.

Earning Members: Surveyed results shown in Table No.2 indicate that 81.3% tribal and 65.3% non-tribal farm women had 1-2 earning members in their families while 18.7% and 34.7% had more than two earning members.

II. ANTHROPOMETRIC MEASUREMENTS

The nutritional status of women was assessed using anthropometric measurements of the tribal and non-tribal marginal farm women. The same has been presented in Table No. 3 and Table No. 4. The comparison of height, weight and BMI values of tribal and non-tribal marginal farm women are presented in Table No. 3

Table No 3: Comparison of Mean Anthropometric Measurements of Farm Women

Anthropometric Parameters	Farm Women				't' value
	Tribal (N=150)		Non Tribal (N=150)		
	Mean	S.D.	Mean	S.D.	
Height (cm)	150.80	5.08	150.04	4.09	1.42 (NS)
Weight (kg)	44.70	6.18	46.33	6.19	2.27*
BMI (kg/m ²)	19.61	2.37	20.64	2.44	3.67**

* Significant at .05 level; ** Significant at .01 level; NS - Not Significant

Perusal of entries reported in Table No.3 indicates statistically no significant difference in height measurements of tribal (M=150.80) and non-tribal marginal farm women (M=150.04). The calculated t=1.42 was not found to be statistically significant.

Weight of non tribal marginal farm women (M=46.33) was found to be significantly heavier (M=46.33) as compared to tribal farm women (M=44.70) at .05 level of statistical significance. (t=2.27, p<.05)

Body mass index of non-tribal marginal farm women showed significantly higher values (M=20.64) as compared to tribal marginal farm women (M=19.61). (t=3.67, p<.01)

Frequency distribution of tribal and non-tribal marginal farm women according to body mass index is shown in Table No. 4.

Table No. 4: Comparison of Body Mass Index (BMI) Values

BMI Categories	Tribal Farm Women		Non-Tribal Farm Women		Total	
	No.	Percent	No.	Percent	No.	Percent
Underweight <18.5	50	33.3	32	21.3	82	27.3
Normal 18.5-25	96	64.0	110	73.4	206	68.7
Overweight 25-30	04	2.7	08	5.3	12	4.0
Total	150	100	150	100	300	100

χ^2 (df=2) = 6.44, p<.05

Perusal of entries reported in Table No. 4 gives the following inferences:

- 33% tribal marginal farm women were underweight while 21.3% non-tribal marginal farm women were placed in underweight category. Percentage of non-tribal marginal farm women with normal BMI was higher (73.4%) as compared to tribal marginal farm women. 2.7% tribal marginal farm women were overweight while 8% non-tribal marginal farm women were placed in

overweight category. Results indicate that non-tribal marginal farm women showed significantly better nutritional status as assessed by body mass index as compared to tribal marginal farm women. The calculated χ^2 (df=2) = 6.44, $p < .05$ also shows that nutritional status of farm women were significantly influenced by their tribal and non-tribal origin

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III. DIET SURVEY

In Table No. 5 dietary intake in terms of calories, proteins, fats, carbohydrates, Iron and vitamin C were compared between groups of tribal and non-tribal marginal farm women.

Table No.5 Average intake of nutrients (per day) among farm women

Nutrients	Tribal (N=150)		Non Tribal (N=150)		RDA (2010)	t value
	Mean	S.D.	Mean	S.D.		
Energy (Kcal)	2032.54	304.87	2045.90	262.23	2330	0.40(NS)
Protein (gm)	43.91	8.96	44.32	9.34	55	0.39(NS)
Fat (gm)	12.42	4.68	13.54	5.75	30% of NPC= 67	1.82(NS)
Carbohydrate (gm)	431.86	105.08	437.26	74.45	70% of NPC=351	0.51(NS)
Iron (mg)	19.31	7.20	16.91	4.47	21	3.46**
Vitamin C (mg)	39.66	16.13	37.58	13.24	40	2.08 (NS)

** Significant at .01 level; NS - Not Significant

Energy – The average energy consumption per day in tribal and non-tribal farm women was 2032 Kcal. and 2045 Kcal respectively which is 8.8 and 8.2 percent less than the RDA (2230 Kcal). The energy intake of 73.3% tribal farm women and 70.7% non-tribal marginal farm women was below the RDA whereas energy intake of 26.7% tribal and 29.3% non-tribal marginal farm women was within normal range.. Mishra & Singh (2015) also reported that the energy requirement of farm women of the District Kanpur was higher than their daily average energy intake and negative energy balance is about 500 Kcal/ day.

Protein- The average protein consumption by tribal & non-tribal farm women was less than the recommended level. No significant difference was found in both groups. According to NNMB report 2002 intake of protein, energy, vitamin A, and riboflavin was less in RDA in almost all states. Protein plays an important role in many bio-chemical and biophysical processes in the body. The RDA for protein intake is 55gm. According to data protein intake of 86.7% tribal farm women and 90.7% non-tribal marginal farm women was below the RDA whereas protein intake of 13.3% tribal and 9.3% non-tribal marginal farm women was within normal range. Comparison of protein intake of tribal and non-tribal marginal farm women yielded similar results. The mean protein intake of tribal (M=43.91) and non-tribal marginal farm women (M=44.32) and $t=0.39$, $p>.05$ also support this finding statistically.

Fat - Fat is an important component of diet and performs number of functions in the body. It is a concentrated source of energy. The fat intake in all the selected tribal and non-tribal marginal farm women was found to be deficient. In rural and tribal areas fat use is limited due to high cost and less paying capacity of the family. The mean fat intake of tribal (M=12.42) and non-tribal (M=13.54) marginal farm women was not found to differ significantly with each other. [$t=1.82$, $p>.05$]

Iron - Iron is an essential element for the formation of haemoglobin and plays an important role in the transport of oxygen. Table No. 5 shows that average iron consumption by tribal and non-tribal farm women was 19.31mg and 16.91mg respectively which is quite close to the recommended intake of 21mg. In India nearly 70% of women are estimated to be iron deficient. Iron deficiency anaemia is a very late manifestation of iron deficiency because iron deficiency is very well tolerated. Anaemia does not develop till stored iron is exhausted (Shah, 2004).

Vitamin C- Also called as ascorbic, acid is necessary for the proper functioning of the human body and 40 mg / day /capita is needed. It not only helps against contagious diseases but also aids in case of injuries. It can be seen from the table that the average intake of vitamin C of the respondents was 39.66 mg in tribals and 37.58 mg. in non tribal's. This is very close to RDA (40mg). Similarly **Bhanot & Chauhan (2003)** stated that the intake of various nutrients like energy, protein, calcium, iron thiamine, riboflavin, niacin, ascorbic acid and beta carotene was much less than RDA (2010).

Summary

The findings of the present study gives the impression that non-tribal farm women had comparatively better weight than tribal farm women but less than the recommendations of ICMR which is 55 kg for Indian Reference women. The non-tribal women are comparatively better in nutritional status than the tribal women. 84% of tribal marginal farm women belonged to nuclear families as compared to 70.7% non-tribal farm women. The educational status of both groups' women was found to be extremely poor. The average energy consumption per day in tribal and non-tribal farm women was 2032 Kcal. and 2045 Kcal, respectively which is 8.8 and 8.2 percent less than recommended amount of 2230 Kcal .Consumption of almost all nutrients is less than RDA. Energy requirement is fulfilled mainly from carbohydrate rich foods. Use of fat is very little. Ultimately the results suggest that all women

require to increase their intake of pulses, vegetables and fruits which meant that the protective food were inadequate in their diets.

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