Nutritional Status and Food Consumption Pattern of Tribal Farm Women of Sabarkantha

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A B S T R A C T

Tribal women play multiple roles in a family, primarily as mothers and housekeepers and also equally important roles as wage earners and agricultural producers. Tribal people are amongst the poorest population and experiencing extreme levels of health deprivation. Tribal follows very distinct dietary pattern and mainly rely upon locally available crops. Tribal women in India are at a great disadvantage due to illiteracy and ignorance. The present study was conducted in Khedbrahma and Poshina taluka of Sabarkantha district of Gujarat. To check the nutritional status of tribal farm women, BMI was measured and dietary assessment was done using food frequency method. It was observed that tribal farm women were coming from poor socio-economic background, most of them were illiterate, their income was less and nutritional status was poor. Their average height, weight and BMI was lower than reference Indian women. Their food consumption pattern was not appropriate and frequency of consuming nutritious foods.

Introduction

India is a home to tribal population (Agrawal, 2013). Tribal women play multiple roles in a family, primarily as mothers and housekeepers and also equally important roles as wage earners, agricultural producers, nutrition providers etc. They are instrumental in the acquisition of food, its preparation, storage and distribution. However, very often they are subjected to malnutrition and form a group highly vulnerable to morbidity and mortality. Rao *et al.,* (1994 and 1996) noted that scheduled Tribe people constitute about 8% of the total population in India, with varying proportions in different States. They live in unique physical, socio-economic and cultural environment, isolated from general population. In view of their habitat and food habits, they form a distinct group compared to other populations. Their food intake is influenced by vagaries of nature, with large seasonal variations, depending upon availability of agricultural and forest produce. Several studies have documented a close relationship between the tribal ecosystem and their nutritional status. Sabrkantha district of Gujarat has tribal population. In the year 2006,

the Ministry of Panchayati Raj considered Sabarkantha as one of the country's 250 most backward districts (out of a total of 640). Six districts of Gujarat are receiving funds from the Backward Regions Grant Fund Programme (BRGF) and Sabarkantha is one of them (Anonymous, 2009).

Tribal follows very distinct dietary pattern and mainly rely upon locally available crops. Tribal people are amongst the poorest population and experiencing extreme levels of health deprivation. Researchers have found that tribal women in India are at a great disadvantage due to illiteracy and ignorance. Tribal women are malnourished and their dietary energy intake is not adequate to compensate their heavy physical workload (Maiti *et al.,* 2005). The present study was carried out to assess the nutritional status and food consumption pattern of tribal farm women of Sabarkantha district.

Materials and Methods

The present study was conducted in Sabarkantha district of Gujarat. Two tribal taluka of Sabarkantha district *viz;* Khedbrahma and Poshina were selected purposively for the study. Five villages from these two selected tribal taluka and thus total ten villages were selected randomly for the study. Total hundred tribal farm women were selected for present study. The data were collected by personal interview method. Dietary assessment was done using food frequency method. Anthropometric measurements were taken by using weighing scale, anthropometric rod and fibre glass tape. The cut off levels of the Body Mass Index as per Anonymous (2003) were used to classify subjects as malnourished, normal and obese. Body mass index (BMI) was calculated using anthropometric measurement (weight and height) and calculated by the formula given below:

$$BMI = \frac{Weight\ (kg)}{Height\ (m)^2}$$

Results and Discussion

Information regarding socio-economic background of tribal farm women were gathered and presented as below.

The data presented in Table 1 shows that majority of tribal farm women belonged to young and middle age group.

It can be seen from Table 2 that majority of tribal farm women were illiterate and overall education level was poor. Kupputhai and Mallika (1993) also noted that tribal women in India are at a great disadvantage due to illiteracy and ignorance.

Annual income of majority of tribal farm women was recorded very low. Dave *et al.,* (2016) reported lower socio-economic condition of tribal families of Sabrkantha district (Table 3).

Table 4 depicts the data of anthropometric measurements. Height, weight and BMI are important indicators of nutritional status of the individual. It depicts that majority (66 %) of the tribal farm women had height in range of 150-165cm. But it also noticeable that little more than one fourth (31 %) tribal farm women were recorded having height less than 150cm. Only half (53 %) of the tribal farm women were showed BMI in acceptable range. Large numbers of tribal farm women (42 %) were found to be underweight. Agrawal (2013) carried out a study on tribal women of Orissa and reported that they were deprived in important aspects of health and nutrition. They studied that tribal women as compared with non tribal women were 2.3 times more illiterate, 1.3 times more likely to be underweight and anemic and were 4 times more likely to never/occasionally consume

milk /curd or pulse/beans, 1.6 times more underweight.

Indian reference woman is between 18-29 years of age, non-pregnant non- lactating (NPNL) and weighs 55 kg with a height of 1.61m and a BMI of 21.2, is free from disease and physically fit for active work; on each working day she is engaged in 8 hours of occupation which usually involves moderate activity, while when not at work she spends 8 hours in bed, 4-6 hours in sitting and moving about, 2 hours in walking and in active recreation or household duties (Anonymous, 2009). From the Table 5 it can be said that average height, weight and BMI was found lower than reference Indian women. Dave *et al*., (2016), conducted a study amongst tribal children of Sabarkantha and reported varying degree of malnutrition amongst children.

Food consumption pattern

Table 6 shows food consumption pattern of the tribal women. It was observed that tribal farm women consume maize followed by wheat and rice as the major cereals. Pulses and dals were taken twice a week while vegetables on daily bases. While taking personal interview of the tribal farm women it was found that though tribal farm women were utilizing locally available vegetables and pulse but their cooking method was not appropriate.

Vegetables were cut into large amount of water and then water was drained off which might result into leaching and loss of valuable vitamins and antioxidants. Open pan cooking of vegetables, pulses and dals was a regular practice instead of using presser cooker. These may lead to prolonged cooking time and considerable loss of heat liable and water soluble vitamins. Pulses and dals should be soaked before cooking and then pressure cooked to inactivate antinutrients and anti proteins of pulses, but this ideal practice was not followed. Use of nutritious and cheap minor millets was found to be very limited. Rao *et al.,* (2006) studied tribal of nine different states of India and reported the similar findings.

Table.1 Distribution of the tribal farm women according to their age

(n=100)

Sr. No	Categories	Frequency	Per cent
1	Young (Up to 35 years)	44	44.00
2	Middle (35 to 50 years)	45	45.00
3	Old (above 50 years)	11	11.00
	Total	100	100.00

Table.2 Distribution of the tribal farm women according to their level of education

(n=100)

Sr. No.	Education	Frequency	Per cent
1	Illiterate	74	74.00
2	Primary education (1-7 Std.)	12	12.00
3	Secondary education (8-10 Std.)	06	6.00
4	Higher secondary education (11-12 Std.)	08	8.00
	Total	100	100.00

Table.3 Distribution of the tribal farm women according to their annual income

(n=100)

Sr. No	Annual income	Frequency	Per cent
1	Up to Rs. 25000	59	59
2	Rs. 25001 to Rs. 50000	27	27
3	Rs. 50001 to Rs. 75000	07	07
4	Rs. 75001 to Rs. 100000	05	05
5	Above Rs. 100000	02	02
	Total	100	100.00

Table.4 Distribution of the tribal farm women according to their Anthropometric Measurements

(n=100)

Sr. No.	Anthropometric Measurements	Frequency	Per cent
1	Height (cm)		
	< 150	31	31.00
	150-165	66	66.00
	>165	03	03.00
2	Weight (Kg)		
	< 40	16	16.00
	40-50	58	58.00
	51-55	14	14.00
	>55	12	12.00
3	**BMI**		
	Underweight (<18.50)	42	42.00
	Acceptable (18.50-24.99)	53	53.00
	Overweight (25.00-29.99)	4	04.00
	Obese (30-40)	1	01.00

Table.5 Comparison of anthropometric parameters of tribal farm women

(n=120)

Sr. No.	Anthropometric measurements	
1	Height (cm)	
	Mean height of the tribal farm women	152.75$\pm$5.89
	Reference height	1.61 meter (161 cm)
2	Weight (kg)	
	Mean height of the tribal farm women	46.41$\pm$7.34
	Reference weight	55
3	BMI	
	Mean BMI of the tribal farm women	19.87$\pm$2.84
	Reference BMI	21.2

Table.6 Distribution of the tribal farm women according to their frequency of food consumption

(n=100)

Sr. No.	Food products	Daily	Twice a week	Once a week	Monthly	Occasionally or seasonal	Never
		%	%	%	%	%	%
Cereals :							
1	Rice	14	14	24	35	4	9
2	Wheat	12	24	37	15	0	12
3	Bajra	8	8	10	16	10	48
4	Maize	67	30	2	0	0	1
5	Jowar and other millets	0	0	0	0	0	100
Pulses and legumes :							
1	Pigeon pea	11	7	17	30	10	25
2	Bangle gram	0	4	4	11	3	78
3	Urad / Black gram	6	12	22	30	5	25
4	Peas	1	10	25	28	9	27
5	Green gram	1	23	25	28	2	21
6	Soybean	0	2	3	1	7	87
7	Pigeon pea (dal)	11	27	33	23	4	2
8	Bangle Gram (dal)	3	7	20	12	15	43
9	Black gram (dal)	5	26	32	29	5	3
10	Green gram (dal)	13	25	27	25	7	3
11	Any other (Pl specify)	-	-	-	-	-	-
Green leafy vegetables :							
1	Amaranth	0	0	2	11	12	75
2	Spinach	0	17	19	32	17	15
3	Fenugreek leaves	1	23	27	29	13	7
4	Drumstick leaves	0	7	13	7	4	69
5	Cabbage	0	12	33	25	20	10
6	Cauliflower (Green)	7	16	29	17	17	14
7	Coriander leaves	28	46	11	4	5	6
8	Radish leaves	0	25	20	15	26	14
9	Curry leaves	15	20	54	8	0	3
10	Any other (Pl specify)	-	-	-	-	-	-
Other vegetables :							
1	Bottle gourd	1	8	23	28	15	25
2	Brinjal	4	16	21	25	9	25
3	Cauliflower	2	17	29	26	16	10
4	Cucumber	2	4	17	11	24	42
5	Ladies finger	2	6	24	27	20	21
6	Tomato	13	23	32	15	15	2
7	Cluster bean	0	15	50	10	5	20
8	Bitter gourd	1	6	32	25	27	9
9	Double bean	0	15	43	14	26	2
10	Ridge gourd	0	25	56	2	7	10
11	Kankoda	7	18	19	6	49	1
12	Any other (Pl specify)	-	-	-	-	-	-
Roots and Tubers :							
1	Beet root	0	2	2	0	31	65
2	Carrot	4	13	17	16	45	5
3	Ginger	32	16	6	9	18	19
4	Onion	9	45	29	12	5	0
5	Potato	6	27	38	14	8	7
6	Radish	2	7	16	5	50	20
7	Sweet potato	0	1	12	22	42	23
8	**Any other (Pl specify)**	-	-	-	-	-	-

Table.7 Distribution of the tribal farm women according to their food habit

(n=100)

Sr. No.	Food habit	Frequency	Per cent
1	Vegetarian	44	44.00
2	Non- vegetarian	56	56.00
	Total	100	100.00

Table.8 Daily diet pattern of the tribal farm women

Sr. No.	Time	Meal pattern
1	Break fast	Tea (with or without milk) + wheat / maize roti (occasionally)
2	Lunch	Maize/ wheat roti + vegetable (green leafy and potato) / dal/pulses
3	Evening time	Tea (with or without milk)
4	Dinner	Maize/ wheat roti + khichari + green leafy vegetable or dal-bati
5	**Bed time**	None

They reported that the mean intake of all the foodstuffs, especially the income elastic foods such as pulses, milk and milk products, oils and fats and sugar & jaggery were lower than the recommended levels of ICMR. About 42% of adolescent girls were undernourished (<5th BMI age percentiles of NHANES).

Both vegetarian and non vegetarian food habits were prevailing among the tribal farm women (Table 7).

Table 8 shows daily diet pattern of the tribal farm women. It was observed that breakfast was not regularly consumed and skipped frequently. If milking animals are there than only tea with milk was consumed otherwise tea without milk was consumed. Both vegetables and dal/pulses were not consumed together in a single meal but they were consumed optional. Evening time snakes were not consumes. Looking to this it was found that balanced meal based on five food groups and proper meal spacing was not followed by the tribal farm women. Maiti *et al.,* (2005) did a situational analysis of tribal women in Jharkhand and reported the similar findings that tribal women are malnourished and their dietary energy intake is not adequate to compensate their heavy physical workload.

In conclusion, tribal farm women were coming from poor socio-economic background, most of them were illiterate, their income was less and nutritional status was poor. Only half of the tribal farm women were having BMI in acceptable range. Large numbers of tribal farm women were found to be underweight. Their average height, weight and BMI was found lower than reference Indian women. Their food consumption pattern was not appropriate and frequency of consuming nutritious foods i.e. dal, pulses, millets and fruits was less and irregular. Tribal women were malnourished and their diet was not balanced to compensate their heavy physical workload.

References

Agrawal S. (2013). Disadvantageous situation of tribal women and children of Orissa, India: A special reference to their health and nutritional status. *J. Commu. Nutr. Health*, 2(1), 3-14.

Anonymous (2009). Nutrient requirements and recommended dietary allowances for Indians. A report of the expert group of the Indian council of medical research, Published by National Institute of Nutrition, 24.

Anonymous, http://apps.who.int/bmi/index.jsp?introPage=intro_3.html

Dave P. H., Mistry J. J., Chaudhary M. K., (2016). Assessment of nutritional status of tribal school going children of Sabarkantha district, Gujarat. *Int. J. Agri. Sci.*, 8(51), 2308-2311.

Kupputhai U., Mallika N. (1993). Nutritional status of adult women belonging to Khond, Gadaba and Porja tribes of Andhra Pradesh. *Indi. J. Nutr. Diet.*, 30:173-179.

Maiti S., Unisa S, Agrawal P.K., (2005). Health care and health among tribal women in Jharkhand: A situational analysis. *Study Tribe Tribal*, 3:37-46.

Rao H. D., Brahmam G. N. V., Rao M. K, Reddy C. H., Rao P. N. (1996). Nutritional profile of certain Indian Tribes. Proceedings of a national seminar on tribal development options. PK Samal, edt GB Pant. Institute of Himalayan Environment & Development, Almora, India.

Rao H. D., Rao M. K. (1994). Levels of malnutrition and socio-economic conditions among Maria Gonds. *J. Hum. Ecol.,* 5: 185-190.

Rao K.M., Balakrishna N., Laxmaiah A., Venkaiah K., Brahmam G.N.V., (2006). Diet and nutritional status of adolescent tribal population in nine states of India. *Asia Pac. J. Clin. Nutr.* 15(1): 64-71.