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## Nutritional status of tribal women of Kandhamal district, Odisha

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### Abstract

The study was conducted among married, non-pregnant and non-lactating tribal women of Kandhamal district, Odisha during the period 2018-19. Total 80 tribal women of Desia Kandha (Desia Khonds) tribe were selected by random sampling method from two different villages of Kandhamal. Forty women were selected from Brenguda village and another 40 were selected from Penala village of Kandhamal district. Different nutritional deficiencies were identified by clinical signs and symptoms observation. Symptoms like fatigue, weakness, backache, dizziness, insomnia were frequently experienced by the women which were one of the causes of low nutrient intake. The average age of the women were  $43.7 \pm 13.43$  years, the average height of the women were  $148.5 \pm 6.2$  cm and the average weight of the women were  $45.8 \pm 7.20$  kg. The study revealed that women were consuming low amount of nutrients (except energy) i.e protein, fat,  $\beta$ -carotene, calcium, iron, riboflavin, folic acid, vitamin B12, vitamin C and zinc intake was deficit by 39.17%, 50.24%, 97.8%, 67.46%, 34.48%, 45%, 76.33%, 85%, 74.83%, 51.5% respectively. Therefore, for sustainable health there is a need of increased food intake and proper dietary practices.

**Keywords:** Non-pregnant, non-lactating, nutritional deficiencies, food intake

### Introduction

The tribal population was recognized as socially and economically vulnerable. In Odisha, there are so many districts where the intensity of nutritional problems is very high; Kandhamal is one of those districts. Kandhamal is one of the poorest districts in Odisha, ranking 29th out of 30 districts by the Human Development Index. More than 50% of the population constitutes ST community. Most inhabitants belong to the Desia Kandha (Desia Khonds) tribe. In Kandhamal, the nutritional status of the tribal women is very poor. Intake of nutrients also very low from the RDA.

Jerath. S *et al.* (2016) conducted a cross-sectional study to assess the dietary intake and nutritional status of women in the Santhal tribal community of Jharkhand. The result showed that, dietary recalls revealed low intake of foods. Women consumed adequate energy and protein but micronutrient intake was inadequate (less than 66% of recommended) in the majority (more than 50%) for Ca, Fe, vitamin B2, folate and vitamin B12.

### Materials and methods

A study design was prepared and Kandhamal district was selected by purposive sampling method. Total 80 tribal women of Desia Kandha (Desia Khonds) tribe were selected by random sampling method from two different villages of Kandhamal. Forty women were selected from Brenguda village and another 40 were selected from Penala village. Structured questionnaire was prepared and pre-tested for the collection of data.

General information of respondents was collected by structured questionnaire through personal interview method. The food intake was assessed by 24 hour recall method using a set of pre standardized vessels. Frequency and percentage were computed to interpret the demographic profile of the individuals. Mean and standard deviation were calculated for dietary intake of the individuals.

### Result

#### General information of respondents

A total 80 women were selected by random sampling method for the study. From two villages each 40 women were taken. In the study information were collected from background characteristics of respondents and data has been showed in table 1.

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Age distribution of respondents revealed that 53.75% and 46.25% of women were belonged to 23-44 years and 44-73 years respectively. There were 57.5% illiterate, 10% were in between class 1 to 5<sup>th</sup> and 27.5% were in between 6<sup>th</sup> to 10<sup>th</sup> and 5.10% were in between 11<sup>th</sup> –graduation. Most of them (92.5%) were in below poverty line and only 7.5% were in above poverty line category. It is customary to classify the families into two categories viz., nuclear and joint. The results indicated that 62.5% were lived in nuclear type family and 37.5% were lived in joint type family. As far as the family size is considered 52.5% families belonged to small family (i.e 1 to 4 members in the family) and 47.5% families belonged to large family (i.e 5 to 9 members in the family). Eighty percent women were agricultural worker whereas 20% were non-agricultural worker.

**Table 1:** General information of respondents

Particulars	Category	Frequency	Percentage
Age (Years)	23-44	43	53.75
	44-73	37	46.25
	Total	80	100
	Average (Mean $\pm$ SD)	43.7 $\pm$ 13.43	
Education	Illiterate	46	57.5
	1 <sup>st</sup> - 5 <sup>th</sup>	8	10
	6 <sup>th</sup> -10 <sup>th</sup>	22	27.5
	11 <sup>th</sup> -graduate	4	5
	Total	80	100
Economic status	BPL (AAY, Ration, Job)	74	92.5
	APL	6	7.5
	Total	80	100
Type of family	Nuclear	50	62.5
	Joint	30	37.5
	Total	80	100
Family size	1-5	42	52.5
	5-9	38	47.5
	Total	80	100
Occupation	Agricultural worker	64	80.0
	Non-agricultural worker	16	20.0
	Total	80	100

### Nutritional Anthropometry

Anthropometric measurements of women were taken by using stadiometer for height, bathroom scale for weight and unstretchable measuring tape for waist and hip to find out BMI level and WHR ratio of females. The average height of females was 148.5  $\pm$  6.2 cm, the average weight was 45.8  $\pm$  7.20 kgs, the average waist size was 73.5  $\pm$  9.1 cm, the average hip size was 89.5  $\pm$  6.2. The average BMI level is 20.8  $\pm$  3.03 and the average WHR ratio was 0.82  $\pm$  0.1.

**Table 2:** Average nutritional Status of women

Anthropometric measurements	Mean $\pm$ SD
Height(cm)	148.5 $\pm$ 6.2
Weight(kg)	45.8 $\pm$ 7.20
BMI	20.8 $\pm$ 3.03
Waist(cm)	73.5 $\pm$ 9.1
Hip(cm)	89.5 $\pm$ 6.2
WHR	0.82 $\pm$ 0.1

### Health problems experienced by women

Information on frequency of experiencing health problems related to nutrient deficiencies in last three months were collected based on major five symptoms such as fatigue, weakness, backache, dizziness and insomnia considering deficiency of nutrients like iron, folic acid, vitamin B12 and calcium. The respondents were expected to answer in terms of frequently or rarely.

The result indicated that 81.25% of respondents experienced fatigue frequently and 18.75% experienced it rarely. Weakness was experienced by 73.75% and 26.25% of respondents frequently and rarely respectively whereas 63.75% of respondents experienced backache frequently and 36.25% experienced rarely. There were 67.5% respondents experienced dizziness frequently and 32.5% experienced rarely. Insomnia was experienced by 66.25% and 33.75% of respondents frequently and rarely respectively.

**Table 3:** Health Problems experienced by women

Symptoms	Category	Frequency	Percentage
Fatigue	Frequently	65	81.25
	Rarely	15	18.75
	Total	80	100
Weakness	Frequently	59	73.75
	Rarely	21	26.25
	Total	80	100
Backache	Frequently	51	63.75
	Rarely	29	36.25
	Total	80	100
Dizziness	Frequently	54	67.5
	Rarely	26	32.5
	Total	80	100
Insomnia	Frequently	53	66.25
	Rarely	27	33.75
	Total	80	100

### Nutrient consumption of respondents per day

Dietary assessment was done through 24hr recall method and nutritive value of the respective diet was calculated and compared with Recommended Daily Allowances (RDA) 2010. In Table 3 the mean nutrient (Energy, protein, fat, vitamin A ( $\beta$ -carotene), calcium, iron, thiamin, riboflavin, niacin, folic acid, vitamin B12, vitamin C, Zinc etc.) intake of respondents are presented.

The average intake of energy of women was 2225.18  $\pm$  261.85 kcal/day, which was comparable with RDA. The mean protein intake was 33.46  $\pm$  11.17gm/day which was low from RDA. Average fat intake was low i.e 12.44  $\pm$  2.09gm/day of. The mean  $\beta$ -carotene intake (1075.66  $\pm$  228.30 $\mu$ g/day) was low. Mean calcium intake also low (195.29  $\pm$  56.73mg/day). Mean iron intake was low i.e 13.76  $\pm$  4.99mg/day. Average thiamine intake was 0.94  $\pm$  0.3mg/day which was comparable to RDA. Mean intake of riboflavin was low (0.66  $\pm$  0.53mg/day). Average niacin intake (10.74  $\pm$  6.62mg/day) was comparable to RDA (14mg/day). Mean intake of folic acid (47.35  $\pm$  15.08 $\mu$ g/day), vitamin B12 (0.15  $\pm$  0.42 $\mu$ g/day), vitamin C (10.07  $\pm$  15.56mg/day) and zinc (4.85  $\pm$  1.34) were low.

**Table 4:** Average consumption of nutrients of respondents

Nutrient	RDA (2010) (Moderate female)	Mean intake	Nutrient gap (%)
Energy (kcal/d)	2230	2225.18 ± 261.85	Comparable intake
Protein (g/d)	55	33.46 ± 11.17	Low intake (39.17 deficit)
Fat (g/d)	25	12.44 ± 2.09	Low intake(50.24 deficit)
β – carotene (µg/d)	4800	1075.66 ± 228.30	Low intake (97.8 deficit)
Calcium (mg/d)	600	195.29 ± 56.73	Low intake (67.46 deficit)
Iron (mg/d)	21	13.76 ± 4.99	Low intake (34.48 deficit)
Thiamine (mg/d)	1.1	0.94 ± 0.3	Comparable intake
Riboflavin (mg/d)	1.2	0.66 ± 0.53	Low intake (45 deficit)
Niacin (mg/d)	14	10.74 ± 6.62	Comparable intake
Folic acid (free) (µg/d)	200	47.35 ± 15.08	Low intake (76.33 deficit)
Vitamin B12 (µg/d)	1.0	0.15 ± 0.42	Low intake (85 deficit)
Vitamin C (mg/d)	40	10.07 ± 15.56	Low intake (74.83 deficit)
Zinc (mg/d)	10	4.85 ± 1.34	Low intake (51.5 deficit)

## Conclusion

It was observed that intake of nutrients were low in correspondence with RDA. The energy, thiamine and niacin intake was comparable with RDA but rest of the nutrient intake such as protein, fat, β-carotene, calcium, iron, riboflavin, folic acid, vit. B12, vit. C and zinc was low, which indicates poor nutritional status of tribal women. Therefore, for sustainable health there is a need of increased food intake and proper dietary practices.

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