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Regional Variations in Nutritional Status among Tribals of Andhra Pradesh

A. Varadarajan and Sheela Prasad

Centre for Regional Studies, School of Social Sciences, University of Hyderabad, Hyderabad 500 046, Andhra Pradesh, India
E-mail: a_v_rajan@yahoo.co.in

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ABSTRACT This study attempted to assess the nutritional status of tribals in three different regions of Andhra Pradesh state through Body Mass Index method. To calculate calorie intake, twenty-four hour recall method was adopted and compared with Indian Council of Medical Research's recommended dietary allowances. The study found considerable differences in terms of average body weight, height and Body Mass Index among studied regions and tribes.

INTRODUCTION

Nutritional status of any community is influenced by interplay of various factors including beliefs, customs, food stuff availability in the region. This will in turn influence the physical growth and nutritional status of the community. This is all the more relevant in the context of tribals as they have more bondage with their traditional food practices and values. Traditional food practices, poor sanitation, non-utilization of available food resources, poverty illiteracy and poor hygienic condition are have a detrimental effect on their nutritional status.

Food taboos such as consumption of milk and milk products are taboo among most of the tribals of Andhra Pradesh. Milking of cow is a taboo among many tribal groups, hence, their foods are crossly deficient in animal protein, fats, and vital nutrients like calcium iron and vitamin A. Studies on dietary intake on tribal population were initiated by Sen Gupta (1952, 1953, 1955, 1960). Prior to 1970, most of the nutritional studies among the tribal groups were limited to gathering of quantitative information on food intake for consecutive days, taking the household as the unit. Magico-relgious beliefs and food taboos tend to aggravate the nutritional disorders (Prema and Thomas 1992). A deficit of calcium in the diets of pregnant and lactating tribal women was reported by Gopal Das (1987). Many studies (Goplan 1971; Ali 1980; Basu et al. 1990) on nutritional status of tribal show high incidence of malnutrition. Ali (1980) found that ecological imbalances caused by rapid deforestation resulted not only hunger and starvation but also prolonged droughts. Many studies (Elvin 1963; Chaudhari 1985; Sharma et al. 2004) have made assessment of nutrition through dietary habits of tribals. A few studies have so far attempted to analyze the nutritional status of tribals. However, this study has attempted to study the differential nutritional status between tribes and regions.

Objectives: The main objective of the study is to examine the pattern of food habits and nutritional status of tribals of Andhra Pradesh across regions. The study also attempted to measure the Body Mass Index (BMI) of the sampled respondents. An attempt has also been made to compare the Body Mass Index between the tribes covered in this study.

MATERIALS AND METHODS

The selection of study area is purely on the basis of concentration of tribal population. The Government of India, working group on development of scheduled tribes has divided the tribal areas into three major categories, viz a. tribal residing in areas with a traditional concentration, b. primitive tribes concentration, and c. dispersed tribal population (GOI 1985). Accordingly it was decided to select one region from each category, namely Visakhapatnam (Region-I), Adilabad (Region-II) and Medak (Region-III) districts on the above order. From each district a notified tribal primary health centre was identified. Hukumpeta primary health centre from Vishakaptnam district, Kazipet Primary health centre from Adilabad district and Shankaranpet primary health centre

from Medak district have been selected. The selection of villages was based on distance and health facilities. Accordingly it has been decided to take one PHC village, one sub center village and one village where no health center was present. From each village 25 respondents were randomly selected and interviewed. A total of 225 eligible couples in the age group of 15-49 were interviewed in three districts with 75 from each PHC area. The sample covered six tribes in three regions. The data was collected during April to July 2005. The study adopted 24 hours recall method to calculate the calorie intake. By converting the reported food items into equivalent calories, unit calorie consumption was computed. It was compared with ICMR recommended dietary allowances (RDA). Weighing machine, measurement tape and pre-quantified vessels were used to collect the data. Limitation of the study is that the intra-family distribution of food to women and children are hard to bring into light with the adopted method of data collection. Hence, this is not intended to participate in the discourse of the utility of the normative standards but simply explains the calorie intake in terms of nutritional averages. However, consumption unit of individuals were calculated on their respective characteristics such as age, sex, and physiological condition etc.

The study covered six tribes in three regions. As such, Bhagata and Konda Doara from region I, Gonds and Raj Gonds from region II and Sugalis or Lambadas and Yerukulas from region III were covered in the sample. Each tribe has diversified heterogeneous culture and tradition. Therefore, tribe wise analysis is also incorporated to identify the nutritional differences between the tribal groups.

RESULTS AND DISCUSSION

Nutritional Status

Tribals in the study area usually take their meals twice in a day with few exceptions i.e. in morning and evening. The food requirements of these tribes are met through agricultural subsistence and forest produce. Daily diet of the tribal group is usually quite monotonous. Their normal daily diet includes cereals, pulses, leafy vegetables and essential ingredients, with a little oil. Mostly food items consist of maize, jowar, bajra and rice. They also eat leaves and dry barks of vegetables such as cucumber, pumpkin and other vegetables.

Respondents were categorized on the basis of adequacy in calorie consumption. They are: 1. Those getting adequate amount of calorie (Normal, i.e. 2800 and more calories) 2. Those getting nearly adequate (Mild Malnutrition, i.e. 2000-2800 calories) 3. Those getting inadequate (Moderate Malnutrition, i.e. 1500-2000 calories) and 4. Grossly inadequate amount of calories (Severe Malnutrition, i.e. 1500 and less calories).

Taking into account of an adult individual doing moderate work, distribution of respondents as per calculated unit calorie consumption is tabulated in Table 1.

It is evident from the table 1 that only 39.1 percent of the respondents were in the normal state of nutrition level. Remaining 60.9 percent of the respondents were suffering from mild to severe from of malnutrition in the study area. Among the regions, it is observed that 8.0 percent of the respondents suffer severe malnutrition deficiency from Region I. However, not much difference in nutritional status was found between Regions II and III. It must be mentioned here that calorie intake does not truly indicate better nutrition or a balanced diet, but in the absence of other data, it suggests an indicative nutritional status.

Weight and Height

Body weight and height is largely determined by the nutrient requirements of an individual. The nutritional requirements of an individual vary

Table 1: Distribution of respondents by nutritional status

S. No.	*Indicator*	*Region-I*	*Region-II*	*Region-III*	*Total*
1	Normal	27(36.0)	30(36.0)	30(40.0)	88(39.1)
2	Mild Malnutrition	33(44.0)	33(44.0)	31(41.3)	97(43.1)
3	Moderate Malnutrition	9(12.0)	12(16.0)	13(17.3)	34(15.1)
4	Severe Malnutrition	6(8.0)	-	-	6(2.6)
	Total	75(100.0)	75(100.0)	75(100.0)	225(100.0)

Figures in parenthesis are denote percentages

depending upon age, body weight and more importantly the physiological and metabolic status of the individual. Taking into consideration of all aspects, the Indian Council of Medical Research (ICMR) has recommended that the average body height of Indian men and women is 163 and 151 cm respectively. Similarly the reference weight for man and women should be 60 kg and 50 kg respectively (ICMR, 1990). Although these two indicators are not full proof, many researchers have used it. (Kumar and Sharma, 1988).

In the light of the above recommendation this study compares the average height and weight of the sampled tribals in the three regions (Table 2).

It is evident from the table 2 that the mean height of the male respondent is 5.3 feet (153 cm) while the female height is 5.2 feet (152 cm). The female height is little higher than the reference height of 151 cm as prescribed by the ICMR. However, the male height is little lower than the reference height. Similarly in weight too, female mean weight of 52.3 kg is little higher than the reference weight of 50 kg. While for males it is little lower at 56.8 kg than the reference weight of 60 kg. In all the regions the women have a physical standard comparatively better than that of the males. It was noted that among the three regions there was not much difference in height observed among males, but as far as weight is concerned the lowest weight was reported from region one while near the reference weight is reported from region two. The table shows a good standard among females in all three regions where it is more than the ICMR reference weight of 50 kg. Better (Body Mass Index) BMI standard among females is mainly due to their hard physical work and good personal habits like less consumption of alcohol and avoiding smoking during pregnancy and lactation period etc.

To understand the differences within the tribal groups; a tribe wise analysis is made and presented in table 3.

The mean weight among tribe shows that only Gonds have more than the reference weight of 60.0 Kg, and followed by Sugalis. Yerukulas had lowest weight of 53.0 kg among males. All tribal women groups have a higher weight (54.0 kg). It is only the Konda Doara tribal women who measured 49.8 kg, a little less than the reference weight. The measured height among tribes didn't show much difference between tribes. However, out of six tribes, three had the mean height of 5.4 feet. The lowest height was observed among Yerukulas for both male and females.

Body Mass Index

Body Mass Index (BMI) basically is equal to weight in kilogram divided by height in meters squared (BMI = kg/m2). BMI is widely used by the health care providers and researchers to compare correlates between weight and height. It also predicts the development of health problems related to low or excess weight. However, since it does not show the difference between fat and muscle it is more closely

Table 2: Distribution of mean height and weight of tribal

S. No.	*Indicator*	*Region-I*	*Region-II*	*Region-III*	*Total*
I.	*Height (in cm)*				
	a. Male	154	153	152	153
	b. Female	152	152	152	152
II.	*Weight (in kg)*				
	a. Male	55	59.2	56.1	56.8
	b. Female	50.5	51.8	54.8	52.3

Table 3: Mean height and weight of the respondents by tribes

S. No.	*Name of the tribe*	*Mean weight in kg (Male)*	*Mean weight in kg (Female)*	*Mean height of in cm (Male)*	*Mean height of in cm (Female)*
1	Bhagata	56.5	51.33	154	152
2	Konda Dorara	53.3	49.8	153	152
3	Gonds	62.0	51.7	154	152
4	Raj Gonds	57.0	52.0	152	152
5	Sugali	59.1	55.2	154	152
6	Yerrukula	53.0	54.0	151	151

associated with measure of body fat composition than weight and height relations. But the calculation of BMI gives an idea about the condition of the human body in relation to the specified BMI ranges. As such BMI of 25 and above indicates a person is overweight, while those who fall within the range of 20 – 24 are normal and below 20 indicates weak and starving. The respondents classified according to Body Mass Index in the three regions given in table 4.

The above table clearly indicates that about 10 percent of the respondents were absolutely weak and starving with a BMI below 18.5. While 18.2 percent of respondents were weak with a BMI between 18.6 to 20.0, and only 72 percent were matching according to their weight and height. Among the weak and starved respondents majority are from region one and low BMI is also reported from region two and three. Region three appears to have a better profile in BMI as compared to the other two regions. To understand the difference in the BMI between tribes in the three studied regions, it was necessary to compute the BMI tribe wise (Table 5).

The above table shows more clarity on tribes that more vulnerable in their BMI. It is concluded that Konda Dora and Yerukula tribes are more vulnerable and their body mass index is very low, between 17.1and 18.5. It was observed that these two tribal communities are short in stature too. Besides, it shows their poor intake of nutritious food and thereby low weight and stunned growth. Sugalis or Lambada tribe is comparatively better among all other tribal groups as 92.0 percent of them fall under normal range of BMI. Sadly, three respondents from Konda Dora tribe appear to be living under absolute starvation, as their BMI is 17.0.

CONCLUSION

The study found significance differences in the prevalence of malnutrition across the regions and tribes. Nutritional status of the tribals in the study area is varying from one region to another. The study found that within the region, it also varies among tribes. Prevalence of malnutrition is comparatively higher in region one than other two regions. Shifting occupational patterns from traditional agrarian methods, exposures to urban areas in searching of menial work and thereby money circulation are the contributing factors for their better consumption. Within region I, Konda Doara tribe had severe malnutrition due to their monotonous food habits, traditional cultivation method and isolated inaccessible habitat. Lambada tribe from Region III had comparatively better nutritional status among all other tribal groups. This is mainly due to their better awareness and contact with non-tribal population. The combination of food scarcity, imbalanced diet, poor purchasing power, monotonous food habits and ignorance about locally available food values are major reason for this widespread malnutrition. Due to the monotonous food habits of tribals, poor absorption of nutrients is another reason for this malnutrition. Awareness about food values

Table 4: Distribution of respondents by level of Body Mass Index

S. No.	*Body Mass Index level*	*Region-I*	*Region-II*	*Region-III*	*Total*
1	16.1-17.0	3(4.0)	-	-	3(1.3)
2	17.1-18.5	9(12.0)	6(8.0)	3(4.0)	18(8.0)
3	18.6-20.0	18(24.0)	15(20.0)	8(10.6)	41(18.2)
4	21.0-25.0	45(60.0)	54(72.0)	64(85.3)	163((72.4)
	Total	75(100.0)	75(100.0)	75(100.0)	225(100.0)

Figures in parenthesis denote percentages

Table 5: Distribution of respondents by tribe and Body Mass Index level

S.No.	*Tribe*	*16.1-17.0*	*17.1-18.5*	*18.6-20*	*21-25*	*Total*
1	Bhagata	-	3(10.0)	3(10.0)	24(80.0)	30(100.0)
2	Konda Dora	3(6.6)	9(20.0)	12(26.6)	21(46.6)	45(100.0)
3	Konds	-	3(5.0)	18(30.0)	39(65.0)	60(100.0)
4	Raj Konds	-	-	-	15(100.0)	15(100.0)
5	Lambada	-	1(1.5)	4(6.1)	60(92.3)	65(100.0)
6	Yerukula	-	2(20.0)	3(30.0)	5(50.0)	10(100.0)
	Total	3(1.3)	18(8.0)	40(17.7)	164(72.9)	225(100.0)

Figures in parenthesis denote percentages

through anganwadi workers and health educators can help to prevent severity of malnutrition. The study suggests that an effective regional need based effective intervention programmes should be implemented rather than one for tribal areas as a whole.

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