

## **THE HEALTH SCENARIO OF THE TRIBES OF ODISHA – A REVIEW**

**Monali Goswami**

### **ABSTRACT**

This paper reviews the status of undernutrition or chronic energy deficiency (CED) among the tribal groups of Odisha. A descriptive cross-sectional study was carried out among the five particularly vulnerable tribal groups (PVTGs) namely – Bhuyan, Lodha, Kharia, Juang and Mankirdia tribes of Northern Odisha. On the basis of their availability during data collection, the total household covered was 2103 – Bhuyan (448), Juang (515), Kharia (460), Lodha (524), and Mankirdia (156). The adult males and females (≥18 years), who were willing to give their measurements, were considered for the anthropometric data. The anthropometric characteristics reveal that the females of the five PVTGs are under serious nutritional stress. A significant sex difference of mean BMI is also observed among them. The BMI based cut-off points (WHO, 1995) for the evaluation of under nutrition are appropriate for use among the tribal populations of India. According to the WHO classification (1995) of the public health problem of low BMI, the prevalence of CED (Chronic Energy Deficiency) was very high (≈40%) in both the sexes of all the tribal groups, indicating a critical situation. The present study also instigates an open pedestal to compare the current health scenario of the various tribes of Odisha. Other studies also highlight the overall nutritional anguish of the various tribes of Odisha. But pragmatic information on the anthropological health and nutrition, morbidity and mortality, demography, etc. is scanty among these tribal groups. Therefore sincere efforts should be made to bring out valuable information or data on these tribes, as a result of which plausible panacea can be developed to address their problems scientifically.

### **INTRODUCTION**

The term 'Tribe' refers to a type of society and designates a stage of evolution in Human Society. The English term 'Tribe' comes from the Latin 'Tribus', designating a particular kind of social and political organization existing in all these societies. About half of the World's total population of indigenous people, often referred to as Tribals, are living in India (Rao *et al.*, 2006).

The tribal India lives in the forest, hills and naturally isolated regions known by different names meaning either the people of forest and hills or the original

inhabitants. The popular names are Vanyajati (castes of forest), Vanvasi (inhabitants of forest), Pahari (hill dwellers), Adimjati (original communities/primitive people), Adivasi (first settlers), Janjati (Folk people), Anusuchit Janjati (Scheduled Tribe) and so on. Among all these terms, 'Adivasi' is known most extensively and 'Anusuchit Janjati' is the constitutional name covering all of them (Ota and Mohanty, 2010).

The tribal population is found in almost all parts of India and Odisha claims as the second largest tribal dominant state in the country. India has the largest tribal population in the world that constitutes 8.6 percent of the total population of the country. There are 705 Scheduled Tribes (ST) and 75 Particularly Vulnerable Tribal Groups (PVTG) with diverse cultural and socio-economic developmental stages (Census, 2011). Majority of the tribes lives in scattered and small habitats located in remote and distant areas from main stream population near forest and hillocks of the country more or less total isolation in a lifestyle.

Against this backdrop, there are certain tribal groups who are techno-economically backward and are relatively less acculturated. Keeping eye upon their development, Government of India has classified and declared certain tribal groups as Primitive Tribal Groups (PTGs). Low level of literacy, pre-agricultural level of technology and declining or stagnant population are the parameters on the basis of which certain groups have been declared as PTGs. Subsequently they have been re-designated as Particularly Vulnerable Tribal Groups (PVTGs). There are 75 PVTGs in India and Odisha houses 13 PVTGs (Nayak, 2010). So far as development is concerned, these tribal groups are still trailing behind and continue to be techno-economically backward; therefore their health and demographic information are worthy to be included in Government publications. Several studies reported high under nutrition among tribals across India (Adak *et al.*, 2006). Data is scanty on anthropological health, socio-demographic profile and nutritional status among the various tribal populations of India (Arlappa, 2005; Bose and Chakraborty, 2005; Bose *et al.*, 2006; Goswami, 2012, 2013, 2014). Therefore, this study is an endeavour to present the nutritional status of the five Particularly Vulnerable Tribal Groups (PVTGs) of Northern Odisha and further compare them with other tribes of Odisha.

## MATERIALS AND METHODS

This cross-sectional study was conducted during the year 2009-2010. Five Particularly Vulnerable Tribal Groups (PVTGs) namely Bhuyan, Lodha, Kharia, Mankirdia and Juang of the three districts of Northern Odisha (Mayurbhanj, Keonjhar and Anugul) were taken under study. All the selected villages (46 in number) were under 14 blocks of three districts of Odisha. The villages were selected considering their accessibility and dominance.

The total households covered in all the selected villages are 2013, which include Bhuyan (448), Juang (515), Kharia (460), Lodha (524) and Mankirdia (156). The households covered were on the basis of their availability during data collection.

The adult males and females ( $\geq 18$  years), who were willing to give their measurements, were considered for the anthropometric data. Prior consent was sought before taking the anthropometric measurements. Prior permission and ethical approval were obtained from local community leaders as well as relevant authorities before commencement of the study. Information on age, gender, weight and height were collected on a pre-tested questionnaire following interview and examination. Height and weight measurements were recorded to the nearest 0.1cm and 0.5 kg respectively following the standard techniques of Lohman *et al.* (1988).

Nutritional status (based on BMI) was evaluated using internationally accepted BMI guidelines (WHO, 1995). BMI was computed using the standard equation:  $BMI = \text{weight (kg)} / \text{height (m}^2\text{)}$ .

The following cutoff points were used:

CED Grade III :  $BMI < 16.0$

CED Grade II:  $BMI = 16.0-16.9$

CED Grade I :  $BMI = 17.0-18.4$

Normal :  $BMI = 18.5-24.9$

Overweight:  $BMI \geq 25.0$

The subjects were further classified on the basis of WHO classification (1995) of the public health problem of low BMI and CED grades. This categorizes prevalence of under-nutrition according to percentage of a population with  $BMI < 18.5 \text{ kg/m}^2$ .

1. Low (5-9%): warning sign, monitoring required.
2. Medium (10-19%): poor situation.
3. High (20-39%): serious situation
4. Very high ( $\geq 40\%$ ): critical situation.

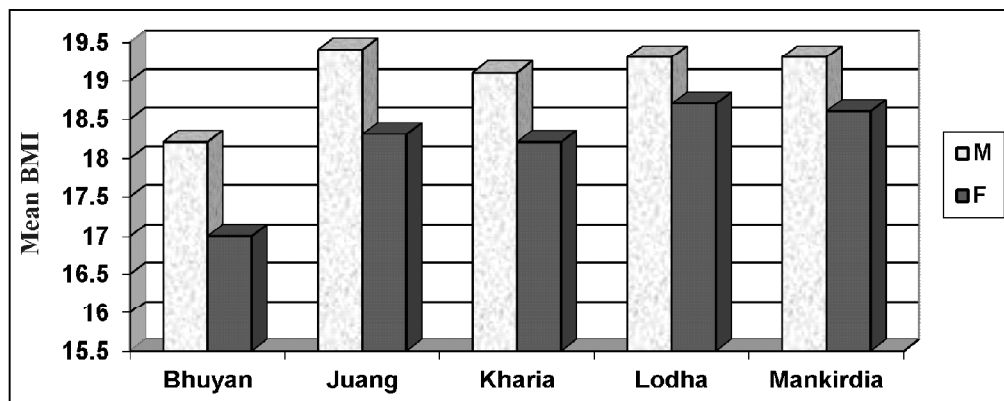


Figure 1: Mean BMI of the five PVTGs of Northern Odisha

## RESULTS AND DISCUSSION

The anthropometric characteristics of the five PVTGs (male and female) of Northern Odisha are presented in table 1.

In all the tribal groups (Bhuyan, Juang, Kharia, Lodha and Mankirdia) the mean BMI of the males is appreciably higher than the females. Thus a significant sex difference of mean BMI is also observed among them. The table reveals that the Bhuyans of Northern Odisha have the lowest mean BMI out of all the studied PVTGs tribal population. The mean BMI of the Bhuyan (17.0 Kg/m<sup>2</sup>), Juang (18.3 Kg/m<sup>2</sup>) and Kharia (18.2 kg/m<sup>2</sup>) females is less than 18.5 kg/m<sup>2</sup> which reflects that these women are under serious nutritional stress.

Figure 1 shows the Mean BMI (Males and females) of the five PVTGs of Northern Odisha. It is clear from the figure that in all the five PVTGs, the females are more undernourished and are under nutritional stress.

Table-2 represents the nutritional status of the PVTGs (both males and females), based on their BMI. The high frequency of CED (BMI<18.5 kg/m<sup>2</sup>) among the five Particularly Vulnerable Tribal Groups (PVTGs) of Northern Odisha indicates that the adult tribal populations (both males and females) of these tribes are suffering from severe under nutrition. According to the WHO classification of the public health problem of low BMI, the prevalence of CED was very high ( $\geq 40\%$ ) in both the sexes of all the tribal groups, indicating a critical situation.

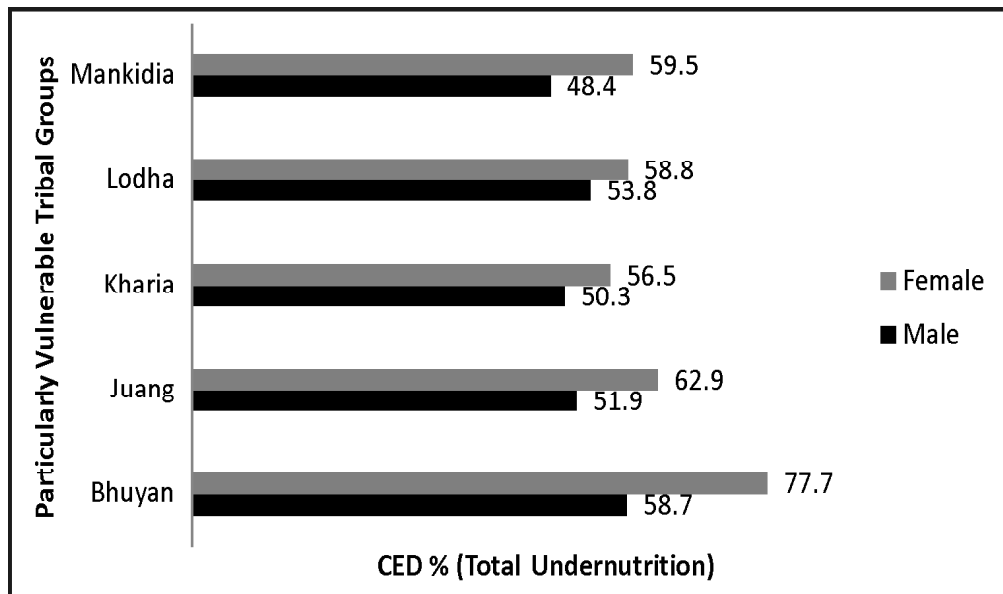


Figure 2: Percentage (%) of undernutrition (CED) among the studied tribal population of Odisha, India

Figure 2 shows that out of the five PVTGs of Northern Odisha the CED of females and males were highest among the Bhuyans (M-58.7%, F-77.7%). It is also clear from the figure that the females of all the five tribes have higher prevalence of undernutrition. However, the sex specific prevalence of CED demonstrated that both tribal females as well as males are passing through the critical situation while the nutritional status of the females being worse off.

Tribals are particularly vulnerable to malnutrition because of their geographical isolation, uncertainty of food supply, lack of adequate health care facilities and due to certain traditional belief systems and cultural practices. Studies carried out earlier by National Institute of Nutrition among primitive tribal groups in different areas of the country revealed that socio-economic conditions and nutritional status of these tribes were influenced by the eco-system they live in (Hanumantha Rao, *et al.*, 1993, 1994).

Studies worldwide (Strickland and Ulijaszek, 1994) and from India (Das and Bose, 2015) have utilized BMI to study nutritional status of tribal populations. Moreover, the BMI based cutoff points (WHO, 1995) for the evaluation of under nutrition are expropriate for use among the tribal populations of India. Several recent studies (Table-3) have highlighted the nutritional status of the various tribes of Odisha. But pragmatic information on the anthropological literature and nutritional status are scanty as regards to these groups. There is immense discrepancy in nutritional assessment or prevalence of CED among tribes in India. This is due to different reasons, such as isolation, cultural barriers, ignored and underprivileged tribes, unavailability of samples during data collection, small sample size, etc. Such infringement between the general populations and the tribal groups should be taken seriously to bridge the gap between different populations. Therefore, efforts should be taken to publish socio-economic and health data about these tribes separately, as a result of which plausible panacea can be developed to address their problems scientifically.

## CONCLUSIONS

Though there is a gradual and steady increase in health expenditure from the Government of India, still there are populations who remain detached from this service, thus facing critical situation of under nutrition. Earlier studies indicated that the nutritional status of tribal people is very poor compared to their rural counterparts. The tribal populations are "at risk" of under nutrition because of their dependence on primitive agricultural practices, and uncertainty of food supply. Despite of all the developmental actions taken by the authority there is still paucity of data and information on the health aspect of these tribal populations. Hence, consented efforts and need based policies are required to improve the health status of these tribes. To enhance the nutritional profile of these tribes, the planners and policy job makers must concentrate on opportunity and food security or the availability of food and purchasing power.

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Table 1: Anthropometric characteristics of the five PVTGs of Odisha

Tribe	Sex	Number	Anthropometric characteristics		
			Height (cm)	Weight (kg)	BMI (kg/m <sup>2</sup> )
			Mean (SD)	Mean (SD)	Mean (SD)
Bhuyan	M	303	159.5(6.97)	46.5(7.65)	18.2(2.71) *
	F	324	154.02(7.01)	40.2(6.31)	17.0(2.98) *
Juang	M	414	160.9(7.3)	50.2(7.2)	19.4(2.7) *
	F	423	153.9(7.6)	43.4(6.9)	18.3(2.9) *
Kharia	M	157	158.8(6.2)	48.3(7.3)	19.11(2.6) *
	F	191	148.4(6.4)	39.8(7.1)	18.2(2.8) *
Lodha	M	264	163.6(6.1)	52.4(6.4)	19.3(2.1)
	F	306	150.6(6.3)	42.6(6.8)	18.7(2.3)
Mankirdia	M	124	158.4(7.3)	48.5(5.9)	19.3(2.0)
	F	136	148.1(6.9)	40.8(6.3)	18.6(2.1)

\*Significant sex difference of mean BMI (p<0.001)

Table 2: Prevalence of under-nutrition based on BMI among the five PVTGs of Northern Odisha

Nutritional Status	BMI kg/m <sup>2</sup>	Bhuyan		Juang		Kharia		Lodha		Mankirdia	
		M	F	M	F	M	F	M	F	M	F
		(n-303)	(n-324)	(n-414)	(n-423)	(n-157)	(n-191)	(n-264)	(n-306)	(n-124)	(n-136)
CED G-III	<16.0	54 (17.8)*	97 (29.9)	36 (8.7)	56 (13.2)	10 (6.4)	29 (15.2)	25 (9.5)	32 (10.5)	8 (6.5)	14 (10.3)
	16.0-16.9	65 (21.4)	91 (28.1)	82 (19.8)	94 (22.2)	32 (20.4)	31 (16.2)	49 (18.6)	61 (19.9)	20 (16.1)	32 (23.5)
CED G-I	17.0-18.4	59 (19.5)	64 (19.7)	97 (23.4)	116 (27.4)	37 (23.6)	48 (25.1)	68 (25.8)	87 (28.4)	32 (25.8)	35 (25.7)
	18.5-24.9	120 (39.6)	70 (21.6)	189 (45.6)	153 (36.2)	75 (47.8)	76 (39.8)	116 (43.9)	118 (38.6)	61 (49.2)	53 (38.9)
Overweight	≥ 25.0	5 (1.7)	2 (0.6)	10 (2.4)	4 (0.9)	3 (1.9)	7 (3.7)	6 (2.3)	8 (2.6)	3 (2.4)	2 (1.5)
Total under nutrition	<18.5	178 (58.7)	252 (77.7)	215 (51.9)	266 (62.9)	79 (50.3)	108 (56.5)	142 (53.8)	180 (58.8)	60 (48.4)	81 (59.5)

\*Figures in parentheses are percentages.

**Table 3: Mean Body Mass Index (BMI) and percentage of under nutrition (CED) among various tribes of Odisha**

Tribe	Mean BMI (kg/m <sup>2</sup> )		Under nutrition (BMI<18.5) CED (%)		Reference
	Male	Female	Male	Female	
Bathudi	18.4	17.9	52.7	64.5	Bose & Chakraborty, 2005
Oraon	18.8	19.7	47.0	30.7	Mittal & Shrivastava, 2006
Santal	19.6	NA	26.2	NA	Bose et al., 2006
Paroja	17.3	NA	80.0	NA	Chakraborty et al., 2008
Bhuiya	19.4	NA	30.0	NA	Chakraborty et al., 2008
Gond	18.1	NA	64.6	NA	Chakraborty et al., 2008
Khond	19.2	NA	35.0	NA	Chakraborty et al., 2008
Munda	19.1	NA	34.0	NA	Chakraborty et al., 2008
Oraon (Migrants)	18.8	18.2	NA	NA	Beck & Mishra, 2010
Oraon (Natives)	18.8	19.3	NA	NA	Beck & Mishra, 2010
Santal	18.3	NA	63.2	NA	Chakraborty et al., 2008
Savara	18.5	NA	53.0	NA	Chakraborty et al., 2008
Savar	18.9	19.3	38.0	49.0	Bisai & Bose, 2012
Desia Khond	17.6	NA	92.0	NA	Kapoor et al., 2012
Bhumij	18.9	18.5	48.4	58.3	Goswami et al., 2010
Bhuyan*	18.2	17.0	58.7	77.7	Goswami, 2012
Juang*	19.4	18.3	51.9	62.9	Goswami, 2013
Kharia*	19.1	NA	50.3	NA	Goswami, 2014
Lodha*	19.6	NA	48.5	NA	Goswami, 2014
Mankirdia*	19.3	18.6	52.4	63.2	Goswami, 2015

\* PVTG- Particularly Vulnerable Tribal Group

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