

# Association between nutritional status and gender among Tribal Primary School Children

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■ **ABSTRACT** : Children are the wealth of a nation as they constitute one of the most important segments of the population. About 375 million children live in India, which constitutes 41 per cent of the total population. Tribal communities are one of the deprived sections of the population in all indicators of development. Tribes are found to be socially and economically deprived and their diet appears to be nutritionally deficient. Jharkhand is having 8.29 % of the total tribal population and 32% of the children are undernourished in this state which reveals that one in every four children are severely underweight in this state. Hence, an attempt was made to study the association between nutritional status and gender among East Singhbhum district of Jharkhand state. The samples were comprised of 60 boys and 60 girls between the age groups of 7-11 years. Nutritional status was assessed through anthropometric measurements (height, weight) and dietary survey. These nutritional status parameters were then compared with 50<sup>th</sup> per centile of National Centre for Health Statistics (NCHS) reference and ICMR (RDA) standards. It was found that there is a significant relationship between nutritional status and gender (both boys and girls) in all the nutritional parameters which reveals that prevalence of malnutrition was higher in girls when compared with boys.

■ **KEY WORDS**: Nutritional status, Anthropometric, Recommended dietary allowances, National Centre for Health Statistics, Indian Council of Medical Research (ICMR)

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Children are the wealth of any nation as they comprise one of the most important segments of the population and they are builders of any nation. School age is the active growing phase of childhood and primary school age is a dynamic period of physical as well as mental development of the child. It is recorded that in India one fifth of the population comprises of children between 5-14 years, which includes the primary and secondary school age (Suvarna and Itagi, 2009).

World health organization (WHO) states that health is one of the fundamental rights of every human being without distinction of race, region, political, economic and social condition. A proper diet is essential for growth and development of children. Thatcher (2002) suggested that the health of children is dependent upon food intake that provides sufficient energy and nutrients to promote optimal physical, social, cognitive growth and development. According to UNICEF report, under

nutrition is defined as the result of insufficient food intake and repeated infectious diseases in children. In India, about 40 % of children are undernourished, is largely due to dietary inadequacy in relation to children's needs (National Institute of Nutrition, 2003). Research reports indicate that the health problems due to poor nutritional status in primary school-age children are the most important reasons for low school enrolment, high absenteeism, early dropout and unsatisfactory academic performance. According to 2011 census, the scheduled tribe (ST) population of India, is 10.43 crore, constituting 8.6% of the total population. These tribes are found to be socially and economically deprived and their diet appears to be nutritionally deficient. They remain in poor living condition due to various factors such as geographical isolation, poor healthcare delivery systems, beliefs and customs etc.

Jharkhandis having 8.29 % of the total tribal population and 32% of the children are undernourished in this state. The tribal groups namely Birhor tribe and Sabar tribe are known as primitive tribes. Due to poor economical, educational, nutritional and health status, children of these families may not have adequate nutrition. Hence an attempt is made to assess the nutritional status of tribal primary school children of 7-10 years of age.

### Objectives :

- To study the socio-demographic profile of tribal primary school children.
- To compare height and weight of tribal boys and girls.
- To find the association between nutritional status and gender.

### RESEARCH METHODS

Research was conducted at East Singhbhum district of Jharkhand state. Two villages viz., Bonta and Patipani were purposively selected for this study. Bonta village has been selected to study about Sabar tribes and Patipani village was to study the Birhor tribes. In this study samples comprising of 15 boys and 15 girls in the age group of 7-8 years and 9-10 years from each tribe/village, total of 120 children, 60 from each tribe / village ( Bonta and Patipani) were randomly selected. The interview schedule was designed to collect the socio demographic profile and nutritional status of the children. Nutritional

status was assessed through anthropometric parameters such as height, weight, and dietary intake in terms of energy, protein, fat, iron, calcium, vit. A, vit. C and zinc. The height and weight were compared to NCHS reference standard and malnutrition was classified according to Indian Academy of Pediatrics (IAP, 1972) classification based on weight for age values. The calculated nutrient intake in terms of energy, protein, fat, calcium, iron, Vitamin A, Vitamin C and Zinc were then compared against Recommended Dietary Allowances (RDA) by ICMR (Indian Council of Medical Research) Frequencies, percentage and t- test and chi- square test were used to analyze the collected data.

### RESEARCH FINDINGS AND DISCUSSION

The study showed that majority of the children (75%) were belonging to nuclear family and only few (25%) were belonging to joint family. Majority of the subjects (54.17%) were found to have medium family size and 34.16 % were belonging to small family and only 11.67% were having large family. About 66.67% of the subjects were labourers and 29.16% were artisans and only 4.17% were agriculturists. Majority of them (62.5%) were having shed thatched house followed by 35.83% mud walled and thatched house and the remaining 1.67% had mud walled and tiled house. As they were living in forest dwelling areas, they were having no access to resources and hence they built their houses with the locally available resources. Few of them had tiled houses through Government schemes under Indira Gandhi Awas Yojana (IGAY). Majority of the respondents (70%) were illiterate and only 30% had studied upto primary education. Majority of the respondents (89.17%) were belonging to low income level and 10.83% were belonging to middle income group. This also reveals that most of the families do not engage in good remunerative jobs as they do not move out of their village for better job.

The mean height of boys and girls are lower than the NCHS standards. Mean height of both boys (116.63 cm and 119.73 cm) and girls (115.9 and 121.42 cm) of both age groups were found to be statistically significant at 0.01% level than the reference standard. However there is no significant difference were found between boys and girls height.

The mean weight of boys and girls are lower than the NCHS standards. Mean weight of both boys (16.25

kg and 18.9 kg) and girls (15.9 kg and 18.25 kg) of both age groups were found to be statistically significant at 0.01% level than the reference standard. However there is no significant difference were found between boys and girls weight.

It is seen from the table that overall half of the respondent *i.e.* 50 per cent falls under Grade II

malnutrition followed by Grade III (25 %), Grade I (23.33 %) and Normal (1.67 %). In case of boys almost half of them (51.67 %) belongs to Grade II malnutrition category, followed by Grade I malnutrition (31.67 %), Grade III (13.33 %) and few of them *i.e.* 3.33 per cent have normal nutritional status. Whereas in case of girls nearly half of the them falls under *i.e.* 48.33 per cent

**Table 1 : Socio-economic background of the selected children of the two villages (n=120)**

Sr. No.	Variables	Category	Bonta village (60)		Patipani village (60)		Overall
			Sabar tribes		Birhor tribes		
1.	Types of family	Joint	17 (28.33)	13 (21.67)	30 (25)		
		Nuclear	43 (71.67)	47 (78.33)	90 (75)		
2.	Size of family	Large (above 6)	10 (16.67)	4 (6.67)	14 (11.67)		
		Medium (6)	35 (58.33)	30 (50)	65 (54.17)		
		Small (upto4)	15 (25)	26 (43.33)	41 (34.16)		
3.	Occupation Type	Labour	41 (68.33)	39 (65)	80 (66.67)		
		Artisan	17 (28.33)	18 (30)	35 (29.16)		
		Agriculture	2 (3.34)	3 (5)	5 (4.17)		
4.	Housing Type	Shed thatched house	41 (68.33)	34 (56.67)	75 (62.5)		
		Mud walled and thatched house	17 (28.33)	26 (43.33)	43 (35.83)		
		Mud walled and tiled house	2 (3.34)	-	2 (1.67)		
5.	Education status of the head	Illiterate	40 (66.67)	44 (73.33)	84 (70)		
		Primary education	20 (33.33)	16 (26.67)	36 (30)		
6.	Monthly income of family	≤ 1802	52 (86.67)	55 (91.67)	107(89.17)		
		1803-5386	8 (13.33)	5 (8.33)	13 (10.83)		

Figures in parentheses represent percentage to total

**Table 2 : Comparison of height between boys and girls**

Sr. No.	Age (years)	Boys				Result	Girls				Comparison between boys and girls
		50 <sup>th</sup> percentile NCHS std.	No. of children	Observed mean (cm)	Result		50 <sup>th</sup> percentile NCHS std.	No. of children	Observed mean (cm)	Result	
1.	7-8	124.4	30	116.63±1.58	S**	123.5	30	115.9±1.45	S**	NS	
2.	9-10	134.9	30	119.73±3.08	S**	131.8	30	121.42±1.78	S**		

S\*\* represents significant at 0.01% level, NS = Non significant

**Table 3 : Comparison of weight between boys and girls**

Sr. No.	Age (years)	Boys				Result	Girls				Comparison between boys and girls
		50 <sup>th</sup> percentile NCHS std.	No. of children	Observed mean (kg)	Result		50 <sup>th</sup> percentile NCHS std.	No. of children	Observed mean (kg)	Result	
1.	7-8	24	30	16.25±1.06	S**	23.3	30	15.93±0.83	S**	NS	
2.	9-10	29.8	30	18.9±2.00	S**	30.5	30	18.25±1.47	S**		

S\*\* represents significant at 0.01% level, NS = Non significant

**Table 4 : Distribution of children according to nutritional status by gender**

Gender	Nutritional status					Total	χ <sup>2</sup>
	Normal	Grade I	Grade II	Grade III	Grade IV		
	>80%	70-80%	60-70%	50-60%	<50%		
Boys	2 (3.33)	19 (31.67)	31 (51.67)	8 (13.33)	-	60	12.17**
Girls	-	9 (15)	29 (48.33)	22 (36.67)	-	60	
Overall	2 (1.67)	28 (23.33)	60 (50)	30 (25)	-	120	

\*\* indicates significance of value at P=0.01 level

Grade II malnutrition, followed by Grade III malnutrition (36.67 %) and remaining 15 per cent falls under Grade I malnutrition category. None of the girls have normal nutritional status. It was also observed that there is a significant positive relationship between nutritional status and gender (both boys and girls) (Gangadharan *et al.*, 2014 and Mini and Indira, 2000).

### Conclusion :

Malnutrition is prominent in both boys and girls of this area. There is a significant positive relationship between nutritional status and gender (both boys and girls). Government developmental programmes meant for tribal improvement should be implemented effectively to accomplish the objectives of the programmes and also may be focused to improve their socio-economic status and nutritional status. Training programmes may be focused towards developing skill of the tribal people for enhancing the family income.

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