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Nutritional profile of tribal pre-school children (3-5 years) of Rayagarda district of Odisha

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Abstract
The objectives of the present study were to assess the dietary pattern and nutritional profile of tribal pre-school children (3-5 year) of Rayagada District of Odisha. One hundred children belonged to sabar and kandha communities were selected by random purposive sampling method for the present study. The results of the study revealed that majority of the parents were working as agricultural laborers having low socio-economic condition. Rice was their staple food. Different locally grown pulses, vegetable & seasonal fruits etc. were consumed by the respondents according to availability. Egg consumption was found to be more in comparison to other non-vegetarian foods because of Anganwadi supply. Mean height, weight and mid arm circumference was found to be less than ICMR and Wolanski standard irrespective of sex. 46% children were found to be mildly malnourished. Thus steps should be taken to create awareness among parents regarding child care, nutrition, immunization, hygiene practice etc. to improve health status of the children.

Keywords: food habits, tribal, nutrient intake, anthropometric measurement

1. Introduction
Millions of children in India either die because of not getting proper nourishment or stay in a state of sub optimal nutrition. India has 43% underweight children which is twice higher than the average figure in sub-Saharan Africa (22%). Tribal pre-school children are most vulnerable segments of the society because of poverty of parents, illiteracy, frequent infection, low food intake, food fads and fallacies, cultural aspects etc. Nutrition for preschool children is of paramount importance because foundation for life time is laid during this period. Worldwide it is estimated that every fourth child is affected by protein energy malnutrition. Even though policy attention has been paid to health and nutrition issues in recent years, still than malnutrition rates remain high among children. Therefore the present research was undertaken to study the nutritional profile of the tribal pre-school children of Rayagada District of Odisha. The objectives of the present study were-

- To assess the socio-economic conditions of the family.
- To study the dietary pattern of the respondents.
- To assess the nutritional status of pre-school children by anthropometric measurements.

2. Materials and Methods
The present study was conducted on 100 sabar and kandha pre-school children belonged the age group of 3-5 year from Padampur and Ambdala block of Rayagrda District of Odisha by using simple random sampling method during July- August 2015. In order to elicit information regarding socio-economic background, food habits, dietary pattern of the children a schedule was constructed and revised for its maximum reliability. The data was collected with the help of questionnaire cum observation method by interviewing the parents in local language. 24 hour dietary recall method was used to collect information on to food habits of the children. Weight, height and mid-upper aim circumference of the children were taken with the help of weighing machine and measuring tape respectively. Their nutritional status was assessed with the help of Gomez's classification.

3. Observation and Discussion
Socio-economic condition

Table 1: Distribution of respondents a according to socio-economic condition.

S. No	Socio-economic variables	Characteristics	Percentage (%)	
1	Age of children	3-4years	35	
		4-5years	65	
2	Type of family	Nuclear	78	
		Joint	22	
3	Religion	Hindu	57	
		Muslim	09	
		Christian	34	
4	No of family member	Below-4	10	
		4-6	77	
		6-above	13	
			Father	**Mother**
5	Age of the parents	15-25year	06	22
		25-35year	77	76
		Above-35	17	02
6	Education of parents	Illiterate	20	29
		Below-5class	49	54
		5-10class	28	15
		Above-10class	03	02
7	Occupation of parents	Service	04	-
		Business	26	-
		Agricultural labor	68	67
		Other	02	33
8	Income level (per month) of parents	Below-2000	07	60
		2000-4000	49	40
		4000-6000	28	-
		Above-6000	16	-

Results of the table-1 depicts that majority (65%) of the children belonged to 4-5 years of age group. Nuclear family system was found to be prevalent in that area. It was interesting to note that people from all religion were found in that locality being dominated by Hindu. Most of the parents belonged to the age group of 25-35 years and were having primary education. Only 2.5% parents were having education above 10th class. It was also observed that majority of the parents were working as agricultural laborers having income less then Rs. 4000/- per month.

Table 2: Dietary pattern and food habits of children-N=100

S. No		Description of variables	Percentage (%)
1	Food habits	(a)Vegetarian	3
		(b)Non-vegetarian	97
2	Common dietary pattern	(a) Breakfast + Lunch + Dinner	12
		(b) Lunch + Snack + Dinner	3
		(C) Breakfast + Lunch + Snack + Dinner	85

It was observed that majority (97%) of the children were non-vegetarian and were taking four meals (85%) per day.

Table 3: Food consumption pattern of the children.

S. no	Food stuff	Commonly use food stuff	Daily percentage (%)	Weekly percentage (%)	Once in fortnight percentage (%)	Occasionally percentage (%)
1	Cereals	Rice, wheat, ragi, puffed rice, rice flake, semolina	100	-	-	-
2	Pulses	Green gram dal, red gram dal, Bengal gram dal, soybean	13	46	5	36
3	Root &tuber	Potato, carrot, yam, radish, sweet potato	21	45	1	33
4	Green leafy vegetable	Drumstick leafs, forest leafs (vada saga, chalikania saga)	-	44	15	41
5	Other vegetable	Brinjals, tomato, cabbage, broad bean, flat bean, ladies finger	29	37	-	34
6	Vitamin A rich fruits	Mango, papaya, carrot	04	13	24	59
7	Other fruits	Mango, jackfruits, guava, tendu, charakoli, dates, palm	-	2	24	74
8	Milk & milk product	Milk, amulspray,tin milk	6	-	4	90
9	Egg	Broiler egg & country egg	-	63	1	36
10	Fish	Rohi, small fish &dry fish	-	1	17	82
11	Meat	Country chicken, broiler chicken, mutton,	-	2	15	83
12	Other foods	Biscuits, chocolate, mixture, chips, kurrkure, cold drinks	28	36	-	36

Table no 3 highlights about the food consumption pattern of the respondents. Parboiled rice was found to be staple food of the respondents in the hot rice/pakhal (flooded rice) and wheat, ragi, semolina, puffed rice, rice flake were also profoundly consumed by them according to availability.

The popular pulses consumed in that locality were green gram dal, red gram dal, bengal gram dal, horse gram dal, soybean etc. Only 13% children were found to take pulses daily whereas 46% children were taking pulses weekly.

Daily consumption of root & tubers was found among 21% children. Commonly used roots & tubers in the surveyed area were potato, radish, yam, carrot, & sweet potato etc.

The green leafy vegetables like drumstick leaves and different types of wild leaves (vadasaga, chalikania saga) use on weekly basis or occasionally because of dislike of the children for green leafy vegetables.

The other vegetables consumed by them were brinjal, tomato, cabbage, broad beans, flat beans, papaya, and ladies finger etc. Only 29% children were found to take vegetables daily and 45% children were taking vegetables weekly or according to availability.

Vitamin A rich fruit like papaya, mango, carrots etc. were found to consume by then seasonally.

Different types of fruits such as mango, guava, kendu, charakoli, dates, palm, and different type of berries etc. were consumed by them according to availability.

Milk & milk product consumption was found to be very rare among children.

Egg consumption was found to be highest among children. 63% of children consumed egg on weekly basis at Anganwadi center and rest children consumed egg occasionally at their home according to availability as they were staying in remote areas.

Fleshy foods like broiler, country chicken, mutton, and other forest meat such as big rat, rabbit, mongoose and forest bird were found to be consumed by them according to availability.

Only 1% children out of total survey had consumed fish like rohi, small fish and dry fish on weekly basis. 82% children consumed fish occasionally.

Ready to eat snacks such as noodles, biscuits, kurkure, bread, chips, mixture, chocolate, cold drinks (mazza) and ice-cream etc. were consumed by them as per availability.

Similar findings were also observed by Shatge (2012) and Ahmed Nazrin (2012).

Anthropometric measurement

(1) Weight

Table 4: Mean weight (kg) of the children according to age.

S. No.	Age in year	Boys			Girls			Total N=100
		Actual mean weight (kg) & SD	ICMR standard(kg)	Percentage of deficiency/Excess	Actual mean weight (kg) & SD	ICMR standard (kg)	Percentage of deficiency & Excess	
1	3-4 year	12.02±1.83	14.78	18.67(-)	11.25±1.86	13.79	18.60(-)	46
2	4-5 year	18.46±4.96	19.33	4.43(-)	14.02±2.07	18.67	24.93(-)	54

Table 4 reveals that all children were deficient in weight in comparison to ICMR standard. The percentage of deficiency was more in the age group of 4-5 years in comparison to 3-4 years among girl's and vice versa in case of boys.

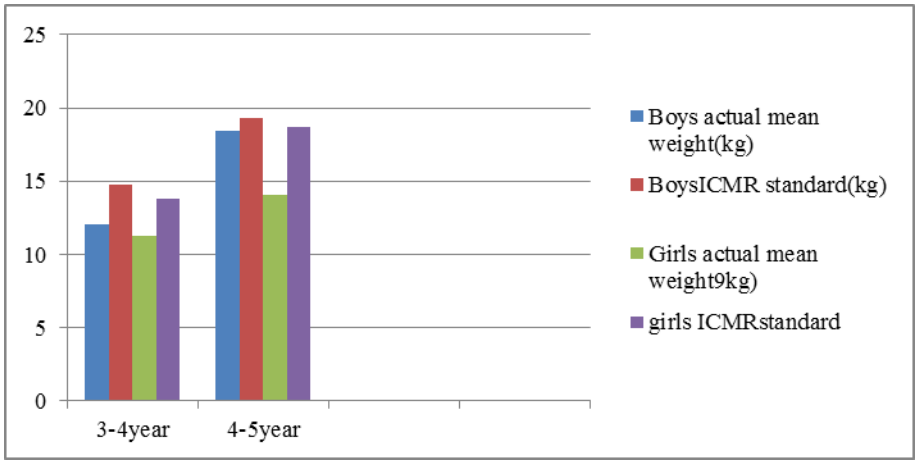

Fig 1

(2) Height

Table 5: Mean height (cm) of the children according to Age

S. No.	Age in year	Boys			Girls			Total N = 100
		Actual Mean Height (cm) &SD	ICMR standard (cm)	Percentage of deficiency/ Excess	Actual mean height(cm) &SD	ICMR standard (cm)	Percentage of deficiency/ Excess	
1	3-4 year	90.87±6.09	98.36	7.6(-)	87.44±6.60	96.21	9.11(-)	46
2	4-5 year	101.14±8.15	113.51	10.87(-)	100.41±7.37	112.24	10.53(-)	54

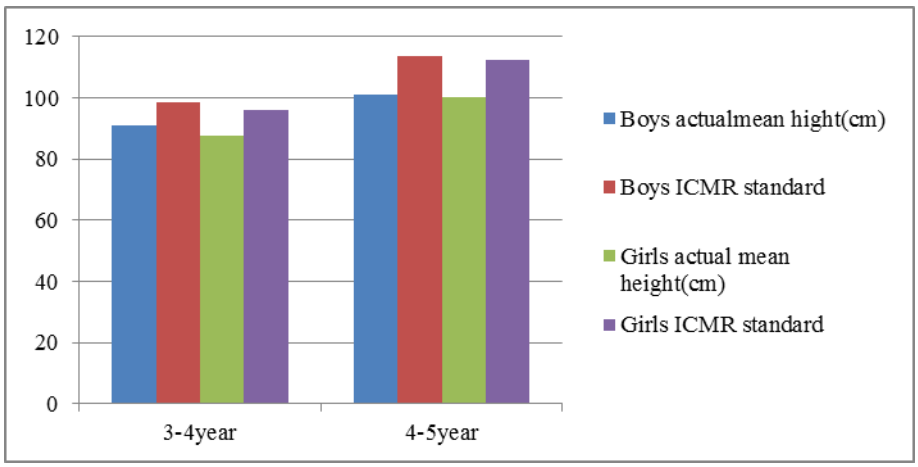

Fig 2

Table 5 reveals that all the children were deficient in height in comparison to ICMR standard but the girls were found to be more deficient in height than boys in the age group 3-4 year and in the age group of 4-5 year boys were found to be more deficient in height than girls but the difference was found to be negligible. Similar trend was also observed by Dahiya Kapor (1992).

(3) Mid upper arm circumference (MUAC)

Table 6: Mean MUAC (cm) of children according to Age

S. No	Age	Boys			Girls			Total N=100
		Actual mean MUAC in (cm)&SD	Wolanski standard in (cm)	Percentage of deficiency/ Excess	Actual mean MUAC in (cm)&SD	Wolanski standard (cm)	Percentage of deficiency/ Excess	
1	3-4 (year)	14.49±0.85	16.40	11.64(-)	13.94±1.34	16.21	13.95(-)	46
2	4-5 (year)	14.94±0.87	16.60	10(-)	14.56±0.60	16.40	11.21(-)	54

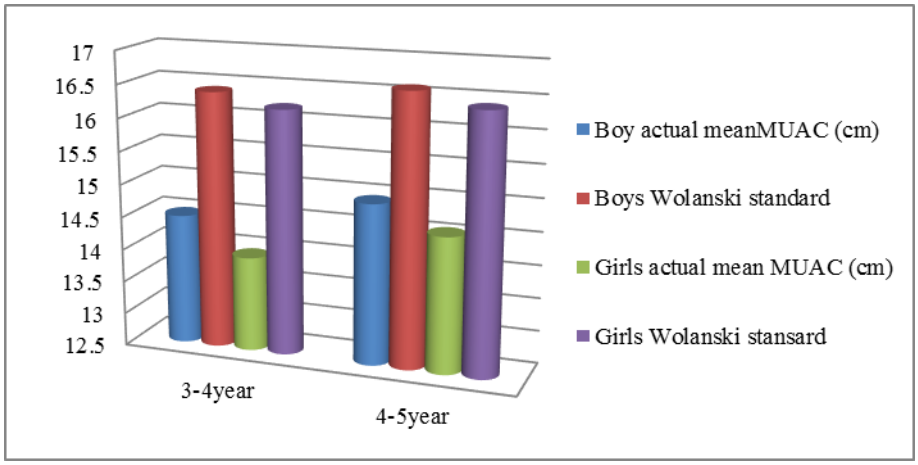

Fig 3

Table 6 reveals that MUAC of all children was deficient in comparison to wolanski standard. Percentage of deficiency was more in case of girls in comparison to boys which varies from 10% to 13.95%. Similar findings was also observed by Dahiya and kapoor (1992) and lenka(2013).

(4) Nutritional status According to Gomez's classification

Table 7: Distribution of children according to Nutritional status-

S. No.	Nutritional status	Frequency		Percentage (%)		Total
		Boys	Girls	Boys	Girls	
1	Normal	09	10	9	10	19
2	Mildly malnourished	25	21	25	21	46
3	Moderately malnourished	15	13	15	13	28
4	Severely malnourished	04	03	04	03	07

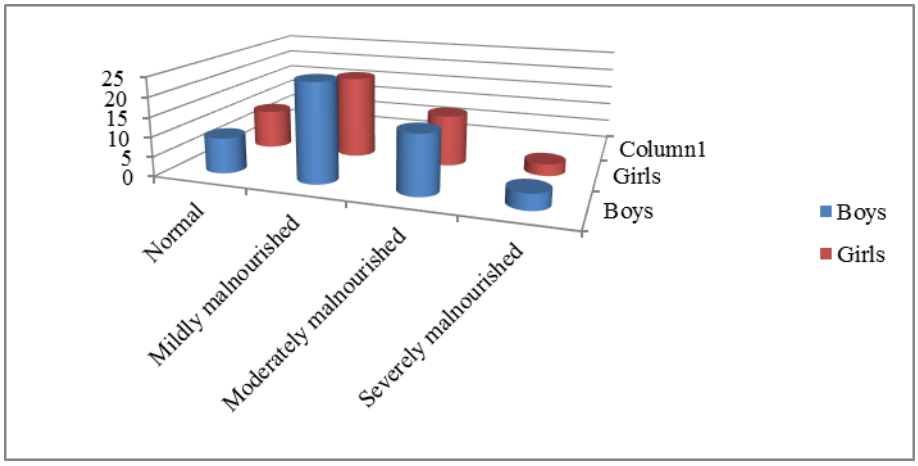

Fig 3

Table no 7 depicts that majority (46%) of the respondents were mildly malnourished where as 28% of the respondents were moderately malnourished. Only 7% of the respondents were found to be severely malnourished. It was also interesting to note that boys were more malnourished in comparison to girls which may be due to frequent infection,acute illness orpoverty of the parents. Similar trend was also observed by Verma *et al.* (2009) [17] and Viand *et al.* (2011) [18].

Health status

It was observed that 100% children were immunized which was a commendable effort of medical workers. None of the children were suffering from chronic illness. Only 3% children were suffering from measles, 10% from cold and 14% children were suffering from fever during the period of survey.

4. Conclusion

Despite remarkable progress in the field of health and education still majority of the studied respondents were suffering from mildly malnutrition (46%) to moderate degrees (28%) of malnutrition. Therefore emphasis should be given on parental education, upliftment of economic condition of the families and nutrition and health access at door step to combact malnutrition and future complications. The community need to be educated about environmental sanitation, personal hygienic practices and also proper child rearing and breast-feeding practices as well as importance of nutrition in every stage of life.

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