

Nutritional Status of Primary Schoolgoing Santhal Children of Paschim Medinipur District, West Bengal, India

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ABSTRACT Rural tribal children of India are facing difficult growing conditions. It is very important to track the nutritional status of tribal children to understand their current situation. The present study was conducted to understand the nutritional status of Santhal children of Paschim Medinipur in West Bengal, India. The present study is cross-sectional, ex-post-facto research. The study depicts that nearly one-third of the study children are undernourished (26.38% stunted, 37.78% underweight, 25.73% thin). A higher percentage of underweight (41.6%), stunting (29.8%) and thinness (28%) can be observed among boys compared to the girls (33.6%, 22.6%, 23.3% respectively) in this area. The differences in the nutritional status of boys and girls are not statistically significant. The study concludes that Santhal children of this area are facing difficult situations concerning nutritional status, which indirectly indicates compromised health and wellbeing.

INTRODUCTION

“Children are the world’s most valuable resource and its best hope for the future”, John F. Kennedy (the 35th President of the United States of America). If children do not get the opportunity to grow to their full potential, then the future of a country is compromised. Primary school age is an immensely important period of physical growth and mental development for the children (Shashank and Chethan 2016). Primary school age is also significant because this is the prime time to build up body stores of nutrition in preparation for the rapid growth in the next stage (Handa et al. 2008). It is the responsibility of every society and country to ensure good health and well being for each and every child. Unfortunately, India could not ensure proper nutrition for all its children and one of the greatest problems for India is undernutrition among children (Sireesha and Rajani 2015).

One of the major public health problems in developing countries is malnutrition (Agarwal et al. 2018). The biggest contributor to child mortality

is malnutrition, causing half of all cases globally (Amruth et al. 2015). Undetected and untreated undernutrition lowers the chance of survival, growth and development of children (Asghar et al. 2017). Malnutrition causes physical and emotional suffering to children and it is a violation of a child’s human rights (Ashok et al. 2014).

The indigenous population of India, known as ‘adivasi’ or scheduled tribes (ST), is among the poorest and most marginalised groups of the nation. It has over and over been shown that maturation is very high in India. But the situation among the tribal children is miserable. Young children from scheduled tribes and scheduled castes are more likely to be stunted and underweight than children from other groups (Singh et al. 2016).

Nutrition refers to the availability of energy and nutrients in the body as per its requirements. Nutrition has immense effects on health. Under nutrition can cause serious problems to the health and wellbeing of children (Mondal et al. 2015). Under nutrition may lead to growth retardation, reduced work capacity and poor mental and social development (Manna et al. 2011).

Best et al. (2010) observed that not enough and good quality data on child health and nutritional status is available in developing countries and countries in transition. They suggest the necessity of tracking the growth and nutritional status of children as well as nutritional intervention programs.

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Realising the importance of the nutritional status of children, many other studies were conducted in different areas of the world (Abiba et al. 2012; Syed and Rao 2015; Kumawat et al. 2016; Chong et al. 2017; Das et al. 2017; Al-Ameri and Abdalhamid 2018; Limbu and Arya 2018; Mandlik et al. 2019; Rahaman et al. 2019). The above literature precisely tells the importance of studying nutritional status, especially in India.

Objectives

The objective of the present study is to evaluate the nutritional status of the Santhal primary school-aged children (aged 5-10 years) of Paschim Medinipur district. This study also tries to compare the findings with other studies on the nutritional status of primary school-aged children.

METHODOLOGY

The present study was conducted on Santhal primary school-aged children of Paschim Medinipur district in West Bengal, India. The Santals represent more than half of all tribal population of West Bengal, and mainly reside in Purba Medinipur, Paschim Medinipur, Jhargram, Bankura and Purulia Districts (Chowdhury et al. 2007). The present study is cross-sectional, ex-post-facto research. Interviews and structured schedule methods were used to collect all the data. The fieldwork was done in the first half of 2019. Anthropometric measurements were collected using the standard procedure (Weiner and Lourie 1981). A total of 307 Santhal children (aged 5-10 years) were selected for this study. Purposive sampling method was used to select the participants of the study. The objectives and procedures of the study were explained to the parents. Verbally informed consent from the parents was taken before taking measurements. Participation in this study was voluntary. Ethical approval was obtained from the Institutional Ethical Committee (IEC) of West Bengal State University before conducting the study. Data analysis and statistical testing were done using SPSS version 16, with a statistical testing p-value of less than 0.05 was considered as statistically significant. One of the most reliable and inexpensive ways to measure growth and nutritional status is anthropometry. Anthropometry is widely used to measure the growth and nutritional status of children all over the world.

In the present study, Height-for-age Z score (HAZ), Weight-for-age Z score (WAZ), and BMI-for-age Z score were used to examine the nutritional status of the studied children. World Health Organisation (2006) growth standards were used as the reference value to examine the nutritional status of the children. Nutritional status of the study children was calculated using WHO growth and nutritional standard charts. Age grouping was done according to the last birthday of the children. If a children has completed his/her 5th birthday but did not complete his/her 6th birthday, then he/she was grouped in the 5-year age group and so on.

RESULTS

Table 1 represents the age-sex group-wise nutritional status of the Santhal children according to HAZ. In this table, it is observed that a large percentage of children are stunted in all age-sex groups. In most of the age groups, boys show higher percentages of stunting compared to girls. The highest percentage of stunting among boys (42.4%) can be observed in the 5-year age group, and in the 8-year age group in girls (36.7%). The overall nutritional status according to HAZ is better among girls (22.6% stunted) compared to boys (29.8% stunted). In Table 2, the nutritional status of children according to WAZ is shown. Being underweight is a very good indicator of low nutritional intake. The percentage of underweight children in the study

Table 1: Age-sex group wise nutritional status of the Santhal children according to HAZ

Age group (years)		Sex					
		Boys			Girls		
		Stunted	Normal	Total	Stunted	Normal	Total
5	No.	14	19	33	6	19	25
	%	42.4	57.6	100.0	24.0	76.0	100.0
6	No.	10	14	24	6	17	23
	%	41.7	58.3	100.0	26.1	73.9	100.0
7	No.	6	23	29	11	19	30
	%	20.7	79.3	100.0	36.7	63.3	100.0
8	No.	9	19	28	4	23	27
	%	32.1	67.9	100.0	14.8	85.2	100.0
9	No.	6	28	34	4	27	31
	%	17.6	82.4	100.0	12.9	87.1	100.0
10	No.	3	10	13	2	8	10
	%	23.1	76.9	100.0	20.0	80.0	100.0
Total	No.	48	113	161	33	113	146
	%	29.8	70.2	100.0	22.6	77.4	100.0

Table 2: Age-sex group wise nutritional status of the Santhal children according to WAZ

Age group (years)	Sex						
	Boys			Girls			
	Under- weight	Normal	Total	Under- weight	Normal	Total	
5	No. 18	15	33	7	18	25	
	% 54.5	45.5	100.0	28.0	72.0	100.0	
6	No. 8	16	24	11	12	23	
	% 33.3	66.7	100.0	47.8	52.2	100.0	
7	No. 12	17	29	12	18	30	
	% 41.4	58.6	100.0	40.0	60.0	100.0	
8	No. 10	18	28	6	21	27	
	% 35.7	64.3	100.0	22.2	77.8	100.0	
9	No. 14	20	34	9	22	31	
	% 41.2	58.8	100.0	29.0	71.0	100.0	
10	No. 5	8	13	4	6	10	
	% 38.5	61.5	100.0	40.0	60.0	100.0	
Total	No. 67	94	161	49	97	146	
	% 41.6	58.4	100.0	33.6	66.4	100.0	

population is very high in most age-sex groups. The highest percentage of underweight boys can be observed in the 5-year age group (42.4%) followed by the 6-year age group (41.7%). Among girls, the 7-year age group shows the highest percentage of underweight children.

Table 3 represents BMI-for-age of study children. Like the previous tables, this table also shows a very high level of undernourishment (thinness). As like HAZ and WAZ results, the girls display a better nutritional status than the boys according to BMI-for-age Z score. Like stunting and underweight, thinness is also high among the study children.

Table 3: Age-sex group wise nutritional status of the Santhal children according to BMI-for-age

Age group (years)	Sex						
	Boys			Girls			
	Thin	Normal	Total	Thin	Normal	Total	
5	No. 9	24	33	6	19	25	
	% 27.3	72.7	100.0	24.0	76.0	100.0	
6	No. 2	22	24	5	18	23	
	% 8.3	91.7	100.0	21.7	78.3	100.0	
7	No. 8	21	29	8	22	30	
	% 27.6	72.4	100.0	26.7	73.3	100.0	
8	No. 9	19	28	5	22	27	
	% 32.1	67.9	100.0	18.5	81.5	100.0	
9	No. 11	23	34	7	24	31	
	% 32.4	67.6	100.0	22.6	77.4	100.0	
10	No. 6	7	13	3	7	10	
	% 46.2	53.8	100.0	30.0	70.0	100.0	
Total	No. 45	116	161	34	112	146	
	% 28.0	72.0	100.0	23.3	76.7	100.0	

Both, girls and boys of the 10 years age group (30.0% and 46.2% respectively) show the highest percentage of thinness. Overall thinness (age combined) is higher among boys (28.0%) compared to girls (23.3%).

Table 4 represents a comparative account of the nutritional status of Santhal boys and girls. A lower percentage of undernourishment can be found among the Santhal girls compared to boys. Stunting is higher among boys (29.8%) than girls (22.6%), but the difference between boys and girls was not statistically significant. Similarly, underweight is also higher among boys (41.6%), compared to girls (33.6%). A very similar result can be found in thinness, that is, boys (28%) show a higher percentage of thinness compared to girls (23.3%). As like HAZ, no statistically significant difference can be found between boys and girls concerning WAZ and BMI-for-age. So the results suggest that the Santhal girls are enjoying slightly better nutritional conditions than the boys. But the difference in the nutritional status of Santhal boys and girls is not statistically significant.

Table 4: Comparative account of nutritional status of Santhal boys and girls

According to HAZ							
Sex	Stunted		Normal		Total		χ^2
	No.	%	No.	%	No.	%	
Boys	48	29.8	113	70.2	161	100.0	2.050
Girls	33	22.6	113	77.4	146	100.0	
Total	81	26.4	226	73.6	307	100.0	
According to WAZ							
Sex	Underweight		Normal		Total		χ^2
	No.	%	No.	%	No.	%	
Boys	67	41.6	94	58.4	161	100	2.112
Girls	49	33.6	97	66.4	146	100	
Total	116	37.8	191	62.2	307	100	
According to BMI-for-age Z score							
Sex	Thin		Normal		Total		χ^2
	No.	%	No.	%	No.	%	
Boys	45	28.0	116	72.0	161	100	0.871
Girls	34	23.3	112	76.7	146	100	
Total	79	25.7	228	74.3	307	100	

DISCUSSION

The future of any country depends on children, as they are the future citizens. India covers nearly forty percent of all the undernourished children in the world (Bharthi et al. 2017). Malnutrition is a very big problem throughout the history of India.

National-level data shows a very high level of malnutrition in Indian children (Patni et al. 2013). In India children living in backward and drought-prone rural areas, urban slums and those belonging to the socially backward groups like scheduled castes and scheduled tribe communities are most vulnerable to undernutrition (Mitra et al. 2006). Rural children are facing much worse conditions than their urban counterparts (Bose et al. 2006). As the situation of the nutritional status of children in India is grim, it is a must to have data on the community level to understand the current situation. Unfortunately, not enough studies and data are available on the community level. Physical growth of children is widely used to evaluate the nutritional status of children (Bisai et al. 2008).

The present study was focused to examine the nutritional status of Santhal children. A high percentage of study children were stunted (26.4%), underweight (37.8%) and thin (25.7%). It is clear from the result that the overall nutritional status of the study children is not good but concerning. Recent studies in different parts of India also highlighted a very high percentage of malnourishment among school-aged children. Yankanchi et al. (2018), found a very high level of nutritional deficiency in their study in Vijayapura (57% of children had lower height and/or weight). Arya and Mehta (2020) in their study among primary schoolgoing children in Varanasi found higher malnourishment than the present study (55% wasted and 27% stunted). In another study in West Bengal, very high percentage (compared to NCHS) of underweight, stunting and thinness was found (Pramanik 2020). Raval et al. (2020) found comparatively lower malnourishment in their study in Deodar Taluka, Gujarat. Undernutrition is very common in rural Indian children and many other studies also reported a high percentage of malnourishment in different areas of India (Osei et al. 2010; Dave et al. 2016; Inkhiya et al. 2016; Debbarma et al. 2018; Khanra et al. 2019). Other studies in our subcontinent (Banstola and Acharya 2015; Rahman et al. 2018; Marwat et al. 2019; Ahsan et al. 2020; Nasih et al. 2021; Sathiadas et al. 2021) also found moderate to very high level of malnourishment.

Both the sexes show a high prevalence of undernourishment according to all three parameters used in this study. Stunting, underweight and thinness are higher among boys than girls. Though the difference is not statistically significant, girls show slightly better results compared to boys. Though

the cause is not clear and other studies need to be done. But it was observed in the field that the boys associate themselves in a lot of laborious work at this early age, which could be one of the important causes of higher prevalence of undernourishment in boys. Both boys and girls are facing difficulties and showing poor nutritional status, which indirectly indicates that the overall health condition of the study children is not up to the mark.

CONCLUSION

The nutritional status of Santhal children is not very satisfactory (as a high percentage of underweight, stunting and thinness can be observed). Nearly one-third of all the study children were undernourished. Immediate attention should be given to the nutritional situation of the children in this area. The government has taken many positive initiatives, but the situation is not very good and needs more attention. Moreover, the government alone cannot improve the situation but the parents of the children also need to be aware of the graveness of the condition of their children. Unless the overall livelihoods of the people are improved, it may be very difficult to provide good nutrition for everyone.

RECOMENDATIONS

Awareness programs about the importance of better nutrition and the consequences of malnutrition can help the parents to understand the situation. Better food as part of mid-day meals can provide some additional nutrition to the children. NGOs can take initiatives to improve the situation of the children in their area. It is very important to conduct studies to track the nutritional status of the children.

LIMITATIONS

The present study was conducted with a small sample of the total population. Only the nutritional status of children was examined in this study, but the causes of such results were not studied.

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