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Malnutrition among grade schoolers

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Abstract

A study was conducted on *Malnutrition among grade schoolers* of age 9-11 years. Total samples of 135 school children were included. The children belong to Lambani community at Hoovinahadagali taluk, Bellary district, Karnataka. All the children's 9-11 years of age studying in 4th and 5th standards were selected according to cardinal direction oriented five government primary schools. The nutritional status was assessed by using anthropometric measurements (height and weight). The results revealed that there were highly significant differences found in mean height and weight of children with respect to their NCHS norm values in both groups by age and gender. The height of boys and girls were found lower by 5.3 and 5 percent, while weight of boys and girls found less by only 1.77 and 3.6 percent respectively. There was highly significant differences found in mean height and weight (22.72**, 35.44** respectively) of children with respect to their NCHS norms value in both groups by age and (22.33** boys and 24.73** girls) gender. It was highlighted that 48.2 per cent children belonged to normal category followed by stunted (40.74%), wasted and stunted (8.2%) and wasted (2.96%) category. This is important to note that in young age group 22.22 per cent of children from 9 year age group fell in normal category while 37.03 per cent of older children belonged to stunted category indicated that prevalence of malnutrition in older group than younger children.

Keywords: Nutritional status, anthropometrics measurements, wasted and stunted category, cardinal direction/point are the directions north, earth, south and west

Introduction

Nutrition is a fundamental pillar of human life, health and development across the entire life span. According to WHO report (2000) [6] proper food and good nutrition are essential for survival, physical growth, mental development, performance and productivity, health and well-being from the earliest stages of fetal development, at birth, through infancy, childhood, adolescence, and into adulthood and old age.

Malnutrition also increases a child's risk of contracting respiratory infections, diarrhoea, measles and other diseases that often kill children or permanently harm their physical, psychosocial and cognitive development (Srivastava *et al.* 2012) [4].

The National Family Health Survey (NFHS) data show that 53% of children in rural areas are underweight and this varies across states. The percentage of underweight children in the country was 53.4 in 1992; it decreased to 45.8 in 1998 and rose again to 47 in 2006. (NFHS-3,)

The UNICEF report (2005) pointed out that over one billion children, half of the World's population of the children (640 million) has been denied of adequate shelter, 400 million have no access to safe drinking water, 270 million lack health care amenities, 140 million children have never been to school and more than 150 million children are malnourished worldwide. Indian children are equally deprived of their rights to survival, health, nutrition, education and safe drinking water. It is also reported that 63 per cent of them go to bed hungry and 53 per cent suffer from chronic malnutrition, 27 million are severely underweight and 33 million never attended the school. The report highlights that the brain damage due to iodine deficiency was 26 and 6.6 million children in world and India respectively (WHO 2001) [7].

NFHS report (2005) has revealed that over 70 per cent children suffer from iron deficiency, while 1.5 million children suffer from vitamin A deficiency. Thus in India nutritional deficiency due to low food intake, poverty and ignorance contribute to brain damage and low intelligence development among children. This has promoted on increased focus on the diverse needs of the school age children and reduces the heavy burden of malnutrition among them.

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A new study reported by Satyan in national news paper "Times of India" (dated 6 June 2013) revealed that malnutrition was main cause of deaths all tribal children below six years old in 40 villages of Attapadi, Tamil Nadu. The children only weighed half of what has been prescribed by WHO standard. Health workers reported that 5,969 children below six years old in 187 villages had one or the other degree of malnourishment.

The Lambani are one of the largest scheduled tribes, which is called by the different names in different parts of the country. They are known as Banjara, Banjari, Lambada and Lambani. The word banjara is said to be derived from the Sanskrit word "*Vana Chara*", meaning wanderers of the jungle. Generally they live in exclusive settlements called '*tandas*', maintaining their cultural affinities and ethnic identity. Various historical records suggest that they originally hail from northern parts of the country, especially from the *Marwar* region of Rajasthan. These migrated groups of the Lambani (*Banjara*) were exposed to different regional cultures and borrowed many cultural patterns from neighbors, still retained their cultural identity despite living in the midst of other cultural groups. Today, however they are experiencing many changes in their traditional culture due to exposure of younger generation and school children to urban areas and in turn undergoing considerable transformation. A increasing number of school children in tribal and total population brings demographic transitions that are affecting developing countries such as India. Increase in population affects Human Development Index (HDI) which includes life expectancy, education, income and nutrition indices (Rathod, 2007)^[2].

Material and Methods

The study entitled "Malnutrition among Grade Schoolers" was conducted at Tandas belongs to Lambani community at Hoovinahadagali taluk, Bellary district during 2017-18 in tribal areas of Hoovinahadagali taluk of Bellary district of Karnataka state.

The Hoovinahadagali taluk comprised of more number of tandas hence the research study was conducted in these

tandas. There are totally 33 tandas (tribes) around Hoovinahadagali taluk, out of which 5 tandas were selected, representing four geographical location, according to cardinal direction oriented five government primary schools of tandas selected were Sovenhalli tanda, Kalvi tanda, Mudlapur Hale tanda, Mudlapur Hosa tanda and Mudlapur sanna tanda which were away (20-25 km) from Huvinahadagali. The list of tribal Government primary schools of surrounding areas of Huvinahadagali taluk was obtained from the BEO office. The children belonging to 9-12 years of age and studying in group of 4th and 5th standard all available children were selected for the study. The selection of the children has been depicted in Figure 1 and 2. Out of 5 tandas 135 children were selected for assessment of nutritional status.

The four building blocks or measures used to undertake anthropometric assessment are age, sex, length or height and weight. Height was taken in centimeter (cm) and weight in kilograms (kg). The height and weight of children were compared to National Council for Health Statistics (NCHS) 50th Percentile value as standard with their respective age group. Then the nutritional status of the children was assessed by Waterlow classification. Height-for-age and weight-for-height were used in Waterlow classification.

Height-for-age: Low Height-for-age index identifies chronic and acute under nutrition. It cannot measure short term changes in malnutrition. For children below two years of age, the term length -for-age is used and for above two years of age, the index is referred as Height-for-age.

Weight-for-Height: Low Height-for-age indicates the current and long duration malnutrition. It is useful when exact ages are difficult to determine. Weight-for-age is appropriate for examining short-term effects such as seasonal changes in food supply.

The height and weight for 135 were noted and their nutritional status was calculated by using percentile formulate for individuals. Depending upon the percentile and children were classified as follows.

Waterlow Classification/Components of Nutritional Status

Category	Parameter	Range
Normal	Weight for height Height for age	≥80% standard ≥90% standard
Wasted (short duration malnutrition)	Weight for height Height for age	≤80% standard ≥90% standard
Stunted (long duration malnutrition)	Weight for height Height for age	≥80% standard <90% standard
Wasted and stunted (current and long duration malnutrition)	Weight for height Height for age	<80% standard <90% standard

Normal: Normal children are those whose weight for height > 80% of NCHS norm and height for age > 90% of NCHS norm.

Wasted (Short Duration Malnutrition): Wasting is the result of a weight falling significantly below the expected weight of a child of same height. Wasting indicates current or acute malnutrition resulting from failure to gain weight or actual weight loss. Children having < 80% standard for weight for height and > 90% height for age belong to wasted nutritional status.

Stunted (Long Duration Malnutrition): Low Height-for-age, stunting is stemming from a slowing in the growth of the

child and resulting in a failure to achieve expected height as compared to a healthy, well nourished child of same age. Stunting is an indicator of growth failure during past period. Children having > 80% standard for weight for height and for < 90% height for age belong to stunted nutritional status.

Wasted and Stunted (Current and Long Duration Malnutrition): is a composite measure of stunting and wasting and is recommended as the indicator to assess changes in the magnitude of malnutrition over time. Children having < 80% standard for weight for height, and for height for age < 90% standard belong to wasted and stunted category.

Results and Discussion

Table 1: Demographic profile of Lambani children N=135

Categories	Particulars	Age (years)					
		9 -10 (n=37)		10-12 (n=98)		Total	
Gender	Boys	20	(14.81)	49	(36.29)	69	(51.20)
	Girls	17	(12.59)	49	(36.29)	66	(48.80)
Class	4 th	30	(22.2)	42	(31.2)	72	(53.30)
	5 th	7	(5.1)	56	(41.5)	63	(46.70)

Figures in parenthesis indicate the percentages

Table 1. It depicts different variables viz., gender, and standard. According to the total population consisted of 135 school children out of which 27.40 per cent belonged to 9-10 year old age group while 72.6 per cent to 10-11 years age group. Totally 51.2 per cent boys and 48.8 per cent of girls included in the study, 28.9 per cent boys were belonged to younger age group while 36.29 per cent belonged to older age group. Among girls 12.59 per cent belonged to younger age

group while 36.29 per cent to older age group. In case of standard wise categorization 53.3 per cent children belonged to 4th standard and 46.7 per cent to 5th standard. In case of 4th standard 22.2 per cent were belonged to 9 year age group, while 31.2 per cent to 10 year age group. Among 5th standard children 5.1 per cent belonged to 9 year group while 41.5 per cent to 10 year age group.

Table 2: Height and weight of Lambani children by age and gender, N=135

		Height (cm)	NCHS value	Difference	t-value	Weight (kg)	NCHS value	Difference	t-value
Age	9 (n=37)	121.75±3.7	130	6.87	13.82**	20.21±2.10	28.10	8.08	22.72**
	10 (n=98)	121.08±5.7	138	11.78	27.96**	21.64±2.39	31.40	9.76	35.44**
Gender	Boys	136±4.5	141.3	5.3	18.32**	31.23±2.5	33	1.77	22.33**
	Girls	136±4.4	141.0	5.0	18.32**	31.1±2.4	34.7	3.66	24.73**

**Significance difference found at one percent level

The means of height and weight of Lambani children were calculated and given in Table 2. And compared with NCHS norm (50th percentile). The per cent decrease was calculated as compared to the NCHS norm. The mean height was almost similar in both age groups (121.75±3.7 and 121.8±5.7 cm). The mean height of children was found lower than the NCHS norm by 6.87 per cent in 9-10 year age group and 11.78 per cent in 10-11 year age group. Similarly the mean weights of both groups were found lower than NCHS norm. The weight of children was found less by 28.08 per cent in younger age

group and 31.09 per cent in older age group. When compared to NCHS norm, the mean weight and height of boys and girls found less than NCHS norms. The height of boys and girls were found lower by 5.3 and 5 percent, while weight of boys and girls found less by only 1.77 and 3.6 percent respectively. There was highly significant differences found in mean height and weight (22.72**, 35.44** respectively) of children with respect to their NCHS norms value in both groups by age and (22.33** boys and 24.73** girls) gender.

Table 3: Nutritional status of school children by age N=135

Nutritional status	Age (year)				Total	
	9 -10 (n=37)		10 -11 (n=98)			
Normal	30	(22.22)	35	(25.92)	65	(48.20)
Wasted (Short duration malnutrition)	2	(1.48)	2	(1.48)	4	(2.96)
Stunted (Long duration malnutrition)	5	(3.70)	50	(37.03)	55	(40.74)
Wasted and stunted (Chronic and long duration malnutrition)	-		11	(8.14)	11	(8.20)

Figures in parenthesis indicate percentages

It was highlighted that 48.2 per cent Lambani School children belonged to normal category followed by stunted (40.74%), wasted and stunted (8.2%) and wasted (2.96%) category (Table 3). It indicated that long term malnutrition among tribal children than wasted and stunted and stunted (short and chronic and long type of malnutrition). Among the younger age group 22.22 per cent fell in normal category followed by stunted (3.70%), wasted (1.48 %) and none of them fell in wasted and stunted category. In older age group 37.03 percent

of children fell in stunted category followed by normal category (25.92 %), wasted and stunted (8.14%) and only 1.48 per cent in wasted category. This is important to note that in young age group 22.22 per cent of children from 9 year age group fell in normal category while 37.03 per cent of older children belonged to stunted category indicated that prevalence of malnutrition in older group than younger children.

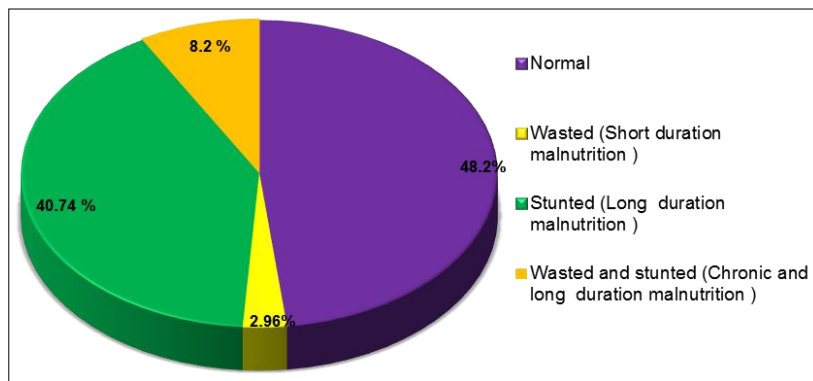


Fig 1: Nutritional status of school children by age

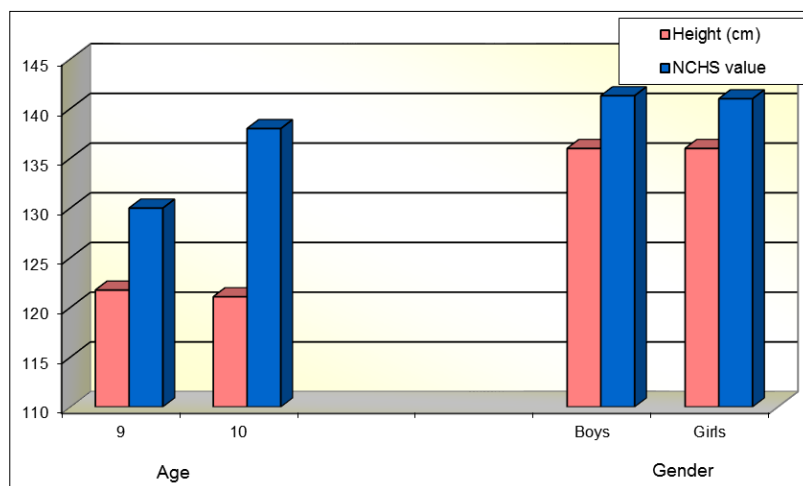


Fig 2: Height of lambani children by age and gender

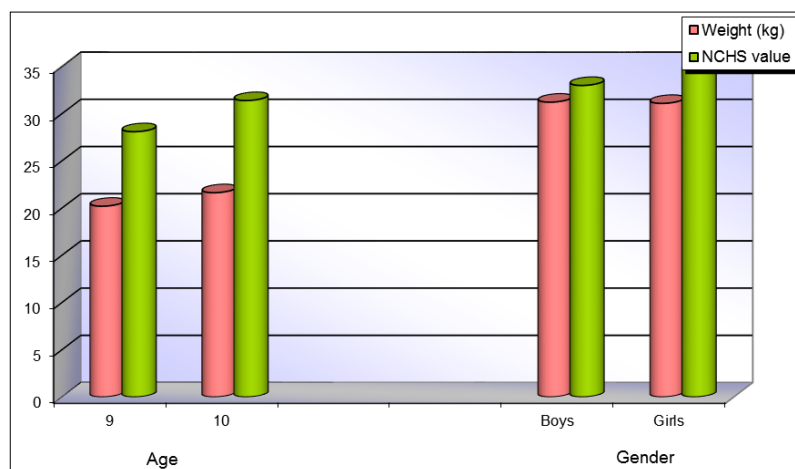


Fig 5: Weight of lambani children by age and gender

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