

## Original Research Article

# Nutritional status among children aged one to six years in tribal area

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**Received:** 29 May 2020

**Accepted:** 21 June 2020

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## ABSTRACT

**Background:** Nutrition in children is considered as a major concern for good health and also for normal growth and development. The present study aimed to estimate the prevalence of malnutrition in 1 to 6 years children.

**Methods:** This was a community based cross sectional carried out in a south Indian tribal area for a period of 5 years among 1020 children. The anthropometric measurements categorization among children was done using world health organization (WHO) guidelines. Data was analyzed using microsoft excel 2010.

**Results:** Out of 1020 children, nutritional status based on underweight, stunting and wasting was 30.80%, 26.8% and 15.68% respectively. Severe degree of underweight, stunting and wasting was observed in 76.4%, 64.7% and 5.49% respectively.

**Conclusions:** Under nutrition was significantly high in infants and it decreased with increasing in age and significantly higher number of female children were stunted and underweight compared to male children.

**Keywords:** Nutrition, Underweight, Stunting, Obesity

## INTRODUCTION

Nutrition is considered as a major concern for good health and also for normal growth and development.<sup>1,2</sup> Even in the global campaign for health for all, promotion of proper nutrition was one of the eight elements of primary health care.<sup>3,4</sup> Globally each year, malnutrition is implicated in about 40% of the 11 million deaths of 1-6 years children in developing countries and lack of exclusive breast feeding in infancy causes an additional 1.5 deaths.<sup>5</sup> Overall India hosts 57 million or more than a third of the world's 146 million undernourished children. More than 2 billion people worldwide suffer from vitamin /minerals deficiencies of 30% live in India.<sup>5</sup>

India is home to almost half of the tribal population of the world. As per census 2011, 104 million constitutes 8.6% of total population. They live in different places in hills,

forests and other geographical areas with limited access to public facilities.<sup>6,7</sup>

Malnutrition is a silent emergency and frequently it is part of poverty and disease.<sup>8</sup> Socioeconomic status also become a specific nutrition and health interventions. The major outcomes of malnutrition during childhood was classified in terms of morbidity, mortality, psychological and intellectual development, reproductive performances and risk of chronic diseases.

The three main definitions used to define nutrition are underweight, stunting and wasting. Stunting is primarily associated with adverse economic conditions, low nutrition intake, poor sanitation and repeated infections. Underweight is related to recurrent illness, and /or starvation and wasting is associated with recent illness and failure to gain weight.<sup>9</sup>

The present study was done with the to estimate the prevalence of malnutrition in 1 to 6 years of children belongs to Eturunagaram tribal area of South India.

## METHODS

After getting approval from institutional ethics committee, a community based cross sectional study was carried out in Eturunagaram tribal area of South India, which is a tribal field practice area of Kakatiya Medical College, situated 97km away from Warangal. The study was done on 1-6 years age group children from August 2010 to July 2015. A total of 1020 children that constitute 13% of total population with prevalence rate undernourishment being 46.37% and allowable error 10% using statistical formula  $n=4pq/i^2$  was considered. Where  $p$ =probability of occurrence,  $q$ =probability of non-occurrence and 'I' is allowable error (% of  $p$ ).

Anthropometric measurements were carried out following standard methods. The data included weight, height and recumbent length. Weight was measured using analog weighing machine. Height was measured using non-stretchable tape fixed to a vertical wall, with participant standing on a level surface and measured to nearby 0.5 cm. Recumbent length was measured using measuring tape. All the readings were taken twice and average was taken for analysis.

Based on age, height and weight indices such as weight for age, height for age and weight for height have been analyzed and classified into three categories, as underweight (low weight for age), wasting (low weight for height) and stunting (low height for age).

The data was analysed using microsoft excel 2010 and the values are presented in number and percentages.

## RESULTS

The intake of protein was broadly in not line with the recommended dietary allowances (RDA) in all age groups among children. However, the average intake of energy and other nutrients was lower in all age groups as compared to RDA. Calorie deficiency was 38% whereas protein deficiency was about 19%. The results were analyzed as follows. Table presents the distribution of children according to demography. Male children outnumbered female child. Majority of them belongs to 13-24 months followed by 0-12 months.

Classification of children according to WHO was presented in (Table 2). About 30.80%, 26.8% and 15.68% were underweight, stunting and wasting was respectively. Severe degree of underweight, stunting and wasting was observed in 76.4%, 64.7% and 5.49% respectively.

**Table1: Distribution of children according to age and sex.**

Age in months	Males		Female		Total	
	N	%	N	%	N	%
0-12	118	48.76	124	51.24	242	23.7
13-24	134	54.92	110	45.08	244	23.9
25-36	112	52.83	100	47.17	212	20.8
37-48	112	61.43	70	38.57	182	17.8
49-60	60	42.86	80	57.14	140	13.8
Total	536	52.55	484	47.45	1020	100

**Table 2: Distribution of children according to WHO classification of malnutrition.**

Indices	Normal		Under nourished		Severely under nourished	
	N	%	N	%	N	%
Weight for age (underweight)	628	61.56	157	30.80	54	7.64
Height for age (stunting)	680	66.67	137	26.86	46	6.47
Weight for height (wasting)	804	78.83	80	15.68	36	5.49

## DISCUSSION

The present study confirms that inspite of several nutrition programmes, the extent of malnutrition was observed in Eturunagaram tribal area of south India. The prevalence of malnutrition among 1020 children surveyed was underweight, stunting and wasting was 30.80%, 26.86% and 15.68% respectively. Severe degree of underweight, stunting and wasting was observed in 7.64%, 6.47% and 5.49% respectively. These findings are

lower when compared with national and state averages. No children were observed overweight or obesity in the present study.

Under nutrition was significantly more in children of illiterate parents, children who belonged to nuclear families and low socio-economic status families. Higher birth order and less birth interval were also significant risk factors for mal nutrition.<sup>10,11</sup>

In order to reduce the problem nutritional education should be incorporated in the curriculum of schools. Micro nutrient supplementation is another way to prevent specific deficiency disease in individual children to promote health. Parent's education is the key to reduce mal nutrition in India. More attention to the (ICDS) Integrated Child Development Services for improving the quality of service delivery in distributing food rather than changing family based feeding and caring behavior.<sup>12</sup> This has resulted in limited impact.

Community based programs under many circumstances play a major role in improving nutritional status in children and reducing the burden of malnutrition, dealing with women and children's health addresses a substantial part of global nutritional problems. Finally, education promotes positive nutritional health to the society. Skill based education at schools addresses health, nutrition that promotes positive behavior in children.<sup>13</sup>

The extent of under nutrition was high among female children. Girls in the tribal areas could be at greater risk of nutritional stress because of early marriage and early conception before completion of their physical growth, so education and healthy complete diet is the only way to combat this situation.<sup>14</sup> There is an urgent need to develop a database on the diet and nutritional status of the children from different tribal communities of India to enable the agencies to formulate policies and initiate strategies for the well-being of tribal children.<sup>15</sup>

## CONCLUSION

The present study confirms that the extent of undernutrition is still prevalent in tribal areas due to low socioeconomic status, more numbers in the family, poor sanitation, frequent illness, poor access to public facilities. Hence, more awareness to be conducted in such areas to improve sanitation, maternal and child health. Government schemes to be implemented more in such areas to improve their socio-economic conditions there by indirectly improving the nutrition status of their children.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Reddy PL, Chand AA. Nutritional status among children aged one to six years in tribal area. *Int J Community Med Public Health* 2020;7:2715-7.