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# Clinical Assessment of Health and Nutritional Status of School Going Children of Tirupati

Home Science

KEYWORDS : School going Children. Nutritional Status. Undernutrition. Tirupati.

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## ABSTRACT

*Health and nutritional status of Tirupati urban school children of Chittoor district was studied with the help of clinical examination, and height and weight measurements. A total of 776 children (342 boys and 434 girls) formed the study group. With clinical symptoms of height and weight, the prevalence of undernutrition was also determined. A close proximation was observed in the appearance of deficiency symptoms and undernutrition between boys and girls, depicting their poor state of health and nutrition.*

## INTRODUCTION

India is a home to the largest number of 414 million children in the world and school children constitute about 20 per cent of total population of India i.e about 82 million. A dynamic period of growth and development including physical, mental, emotional and social changes. It is nutritionally significant prime time to build up body stores of nutrients in preparation for rapid growth of adolescence (Kumari and Jain, 2005). 6-10 years is a period of growth and at this stage, the foundation for adulthood is laid down. The nutritional deprivation during this period may influence the adult size and capabilities of the individual at later stages of life (Rajagopalan, 2003). Physical signs and symptoms of malnutrition can be valuble aids in detecting nutritional deficiencies. Presences of clinical symptoms that are proved to be associated with specific deficiency state reveal the most severe form of malnutrition as clinical deficiencies precede the subclinical deficiency.

The school children, in their existing nutritional conditions are in great need of health promotion, health appraisal and health restoration. For assessing health and nutritional status of a community, clinical examination has always been and remains an important practical method. The method is based on the examination for changes believed to be related to inadequate nutrition that can be seen or felt in superficial epithelial tissues, especially skin, eyes, hair and buccal mucosa. In the present study, an attempt has been made to evaluate the clinical health and nutritional status of Tirupati urban school children.

## MATERIALS AND METHODS

The present study was carried out on 776 children (342 males and 434 females) between the age group of 8 to 10 years from Tirupati urban, Municipal upper primary schools. Which are the beneficiaries of Mid Day Meal Programe. All the subjects were from low income families. All the subjects were examined clinically for the presence of signs of nutritional deficiency. The observations were taken according to Jelliffe (1966). For the assessment of anaemia, blood samples were also collected. A written informed consent was obtained from each child's parents prior to participation. The estimation of hemoglobin level was done by cyanomethaemoglobin method (Dacie and Lewis, 1991). The grading of anaemia was done as per the WHO guidelines (WHO, 1989). Height and weight measurements were also taken following the general procedure as given by Bamji (2006). The grading of nutritional status by the Waterlow's classification (Bamji, 2006).

## RESULTS AND DISCUSSION

In the present study attention is given to the clinical symptoms of vit-A, C, deficiency and ID/IDA. For each of the deficiency primary focus was on the group-I category of signs (Jelliffe, 1966).

The percent prevalence of signs and symptoms of different nutritional deficiency states of children is presented in table.1. The presence of Bitot's spot and Conjunctival Xerosis indicates the presence of vitamin A deficiency. Out of the total sample studied, 23.0% of children were noticed to suffer from vitamin A deficiency. Sampathkumar and Abel (1993) reported that in Asia alone, over 250,000 children are found to go blind every year on account of vitamin A deficiency. Khandait et al. (2000) studied the low socio-economic group children and observed the frequency of vitamin A deficiency in 35.70% children. Chary (2000) indicated that Indian preschool children continue to consume less than 50% of the recommended dietary intake of vitamin A despite considerable socio-economic development.

The magenta-coloured tongue, swollen tongue and a trophic papillae were the various clinical features, indicating the presence of vitamin B deficiency. 31.3% Scheduled Caste children were deficient in vitamin B. The comparison of boys and girls did not reveal much difference in their percentage values. The incidence of vitamin B is less in the studied population compared to other vitamin-deficiency symptoms. This may be because of the fact that the utilization of polished rice or cereal products and less consumption of leafy vegetables, prevalent among the present community. Environmental factors (such as excess heat or sun, wind or cold air), lack of general personal hygiene, and cultural factors can cause or contribute to the physical signs which are also associated with malnutrition.

Scurvy, a disease of vitamin C deficiency, is characterized by sporogy and bleeding gums. In the present sample, 57.7% children were found deficient in vitamin C (Table 1). The frequency of this symptom was more in girls (58.3%) than in boys (56.7%). About fifty percent ascorbic acid may be lost on cooking or storage of foods rich in vit-C (Bamji, 2006).

Jellifee (1966) reported the incidence of dental caries to be known to closely associated with highly milled carbohydrates and use of sugar. 48.9% of children showed the development of cavities. More girls (50.7%) were suffering from cavities in comparison to the boyss (46.8%). . Frequent consumption of sweets (chocolates, candy etc.) and lack of oral hygiene most often are the predisposing factors to dental caries among children. Among the LSE families in particular, the standards of personal hygiene are low. Further, guidance of hygiene are limited in these families. These reasons may also be contributing to the skin leisons observed among these groups of children.

The presence of pallor of eyes and pale complexion indicates that the child is suffering from the deficiency of iron. About 64 percent children (n=499) had pale conjunctiva; which was 62.3 percent for boys and 68.2 percent for girls when segregated. Among boys and girls 20.0 and 19.8 percent respectively showed conditions of kolonychia. The presence of pale conjunctiva and koilonychia indicates that the children are suffering from anemia.

**Table: 1 Number and percentage prevalence of different nutritional deficiency symptoms in school children**

| Clinical parameters | Boys N=342 | | Girls N=434 | | Total N=776 | |
|---|---|---|---|---|---|---|
| | Number | Percent | Number | Percent | Number | Percent |
| Vit-A deficiency | 78 | 22.3 | 100 | 23.0 | 178 | 23.0 |
| Vit-B deficiency | 106 | 33.0 | 134 | 31.3 | 240 | 31.3 |
| Vit-C deficiency | 194 | 56.7 | 254 | 58.3 | 448 | 57.7 |
| Incidence of dental caries | 160 | 46.8 | 220 | 50.7 | 380 | 48.9 |
| Iron deficiency | 213 | 62.3 | 296 | 68.2 | 499 | 64.3 |

**Table: 2 Prevalence of undernutrition among school going children as assessed from Waterlow's classification**

| Nutritional Grades | Boys %(n) | Girls %(n) | Total %(n) |
|---|---|---|---|
| Normal | 29.5 (101) | 24.0 (104) | 26.4 (205) |
| Wasted | 0.3 (1) | - | 0.04 (1) |
| Stunted | 33.1 (113) | 41.0 (178) | 37.5 (291) |
| Stunted&Wasted | 37.1 (127) | 35.0 (152) | 36.0 (279) |

**Table: 3 Percent prevalence of anemia among school going children**

| Status (Hb µg/dl) | Boys %(n) | Girls %(n) | Total %(n) |
|---|---|---|---|
| Non anemic (> 11.5) | 40.6 (139) | 38.7 (168) | 39.6 (307) |
| Mild anemia (10 to <11.5) | 31.9 (109) | 9.9 (43) | 19.6 (152) |
| Moderate anemia (7.5 to <10) | 27.5 (94) | 50.9 (221) | 40.6 (315) |
| Severe anemia (<7.5) | - | 0.5 (2) | 0.2 (2) |

The aggregate data combined for boys and girls on Hb status reveal that 60.4 percent children have Hb levels below the normal values (<11.5 g/dl) indicating anemia (WHO, 2001); out of which 40.6 percent were moderately anemic and 19.6 percent were mildly anemic and 0.2 percent were severely anemic. The age wise distribution of the data revealed that in the 8 y age group 35.6 percent were found to be normal, 12.9 percent were mildly anemic and 50.6 percent were moderately anemic and only 0.9 percent were severely anemic. In the 9 yrs age group the categories of anemia in the same order were 39.3, 22.1 and 38.6 percent and none of them were severely anemic. In the 10 yr age group the categories of anemia occurred as 43.2, 22.5, 34.3 percent and none of them were severely anemic. A high percent of moderate anemia was prevalent in all the three age groups. The data thus reveal that a high percent of children in every age group were suffering from moderate degree of anemia followed by mildly anemic state. There is a wide range in the prevalence of anemia reported among children. An in-depth survey of 2,998 children ages 8-9 and 12-13 yrs in Ghana and Tanzania revealed that 77 percent of children in Tanzania and 41 percent of children in Ghana were suffering from IDA (Partnership for child development, 1998). In a study of 1,210 primary school children aged 7-14, in Riyadh, Saudia Arabia, an anemia level of 55.4 percent was found. The highest level (71.4 percent) was found among 14 yr-old girls (Alothainmeen et al., 1999). The clinical symptoms observed indicate that the children, a significant percentage suffer from severe deficiency states in addition to a majority showing sub clinical deficiency status.

Weight-for-age and weight-for-height is a good indicator of nutritional status of children. The weight and height of the children was evaluated against the National Centre for Health Statistics (NCHS, 1977) standard of weight-for-age and weight-for-height and graded according to Waterlow's classification. Table.2. shows that out of the total of 776 children screened only 26.4 percent were found to be normal and the remaining 74 percent belonged to stunted (31.5 percent) and stunted & wasted (36.1 percent) types of malnutrition. The percent of normal children was comparatively higher in boys than girls. The stunted category percent was higher in girls than boys. The percent of SW children increased in boys.

**CONCLUSION**

The health and nutritional status of school children of Tirupati was, on the whole very poor. The gournment should take effective steps to improve the nutritional status of school children by monitoring and improving the existing supplementary feeding programmes.

The fact that several children still suffer from the worst form of malnutrition calls for immediate attention to be given to this group of children. With such gross deficits the catch up growth as observed in some populations may not be attained or even if some growth occurs it may not reach satisfactory level. Both these situations ultimately result in small adult statures. A small individuals physical activity, physical work capacities and endurance levels have been shown to be limited. Correction of the existing situation of grossly inadequate and poor quality diets is thus, imperative for the overall development of children.

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