DEGREE OF MALNUTRITION AMONG PRESCHOOLERS BELONGING TO THE LOW SOCIO-ECONOMIC GROUP

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ABSTRACT

Malnutrition refers to imbalances in a person's intake of energy and/or nutrients (Type 1 and 2). This study was undertaken to evaluate the degree of malnutrition among preschoolers belonging to a low socio-economic group.

Diet recalls from 86 mothers' of preschoolers was taken with anthropometry assessment for 80 preschoolers. The preschoolers were grouped into 2 age categories, 1-3 years and 4-6 years for dietary assessment as per RDA. (mean age= 3.8±0.81 years).

Among both the age categories, preschoolers fell below the 50th percentile height-for-age (HFA) (66%) and weight-for-age (WFA) (80%). Only 3.5% of preschoolers met their RDA for energy (mean intake = 856.5±217.5 kcals). Preschoolers among both age categories reported values did not meet the RDA for calcium (94.2% unmet RDA) (mean intake = 322.8±207.3 mg), retinol (100% unmet RDA), beta-carotene (100% unmet RDA) and zinc (80.2% unmet RDA) (mean intake =5.1±1.4 mg). Iron intake was lower than RDA for 46.8 % of preschoolers from 1-3 years age group (mean intake = 9.0±2.0 mg) and 85.2 % from 4-6 years (mean intake = 9.7±2.8 mg). Adequate intake of magnesium (mean intake = 215.5±57.4 mg) and fair intake of phosphorus (mean intake = 645.2±224.9 mg) was observed.

Nutrition education and counseling for mothers focusing on recipes rich in type 1 and type 2 nutrients would be sustainable for improving the degree of malnutrition observed among the preschoolers.

Keywords: Preschool children, malnutrition, type 1 & 2 nutrients, growth, and low socio-economic group.

INTRODUCTION

Under 5 children are at risk of malnutrition due to rapid urbanization, migration of people and colonization in urban areas with compromised living conditions. (1) Malnutrition refers to imbalances in a person's intake of energy and/or nutrients. (2)

According to the National Family Health Survey-4 conducted during 2016-2017, among children under 5 years of age belonging to the urban Maharashtra, 29.3%, 24.9 % and 30.7% are stunted, wasted and underweight, respectively, whereas 9.5% are severely wasted (3) These statistics have improved since NFHS-3 (4). Incorrect infant feeding practices, lack of knowledge about weaning, using packaged foods rich in sugar and salt as snacks to feed hungry toddler are some of the causes that can lead to chronic under-nutrition in urban slum children. Malnutrition can cause morbidity and limited cognitive and physical growth. (5) The full genetic potential of the child for physical growth and mental development may be compromised due to subclinical deficiencies of micronutrients which are commonly referred to as "hidden hunger". Micronutrients are required for the integrity and optimal functioning of immune system. Children with subclinical deficiency of micronutrients are more vulnerable to develop frequent and more severe common day-to-day infections thus triggering a vicious cycle of under-nutrition and recurrent infections. (6)

Type 1 nutrients are required for specific metabolic functions and are stored in the body. Type 2 nutrients are required for growth, the chronic deficiency of which could result in growth failure. (7) According to a study conducted by M. Singh, over 50% of apparently healthy looking children have subclinical or biochemical deficiencies of vitamin A, vitamins B2, B6, folate and vitamin C. Over two-third of children have clinical evidences of iron deficiency while deficiency of trace minerals like iodine and zinc is quite common in certain populations. (6)

Objective - To evaluate the prevalence of malnutrition with an emphasis on dietary intake type 1 and type 2 nutrients among preschoolers belonging to the low socio-economic group

METHODOLOGY

86 mothers volunteered to provide a dietary recall of the preschoolers. Type 1 and 2 nutrients were analyzed using the Indian Food Composition Tables. (8) The nutrients were later evaluated as per the recommended dietary allowances (RDA) (9).

Anthropometry assessment for 80 preschoolers was undertaken by measuring height and weight. Percentiles for weight for height, height-for-age and weight-for-age were evaluated using WHO growth charts. (10)

RESULTS AND DISCUSSION

As per WHO, global acute malnutrition (GAM) is measured by the prevalence of wasting (low weight-for-height) in a population. (11) As per the GAM thresholds, the children belonging to the study population are critically malnourished (weight for height is below 3rd percentile for more than 15% of the study population) (Fig. 1) More than 60% of the children belonging to 4-6 years age group were underweight and stunting (less than 3rd percentile for weight-for-age and height-for-age) (Fig. 2 & 3).

The total energy intake is low, mean intake = 856.5±217.5 kcals which doesn't meet the RDA requirements for total caloric intake (9). The intake of macronutrients was moderate in their ratio (Fig. 5) More than 85% of the children met their RDA requirement for protein in both the age groups. However, type 1 nutrients such as Vitamin A and its precursor, calcium and iron requirements were inadequate in the diet. Between the age groups, the older children (4-6 years of age) were found to have a poor intake of type 2 nutrients such as magnesium and zinc compared to the children of 1-3 years of age. (Fig. 6 & 7) However, mean intake of magnesium (215.5±57.4 mg) and phosphorus (645.2±224.9 mg) was observed to be good.

CONCLUSION

Growth failure is the result of a diet deficient in energy, protein, zinc, magnesium, phosphorus, and potassium. Other factors associated with growth failure include exposure to toxins, infection, worms, or persistent diarrhea prevalent among those with poor immunity. (7,12)

Type 1 & 2 nutrients are important for increasing growth and maintaining our cellular metabolism. Early intervention focusing on dietary intake of type 1 and type 2 nutrients would be sustainable for improving the degree of malnutrition observed among the preschoolers. These interventions include nutrition education and counseling for mothers to increase awareness about importance of healthy and hygienic food for themselves and their children.

Cooking demonstrations is another intervention where recipes focusing on type 1 and 2 nutrients can be presented to mothers to be replicated at home for their children.

FIGURES AND TABLES

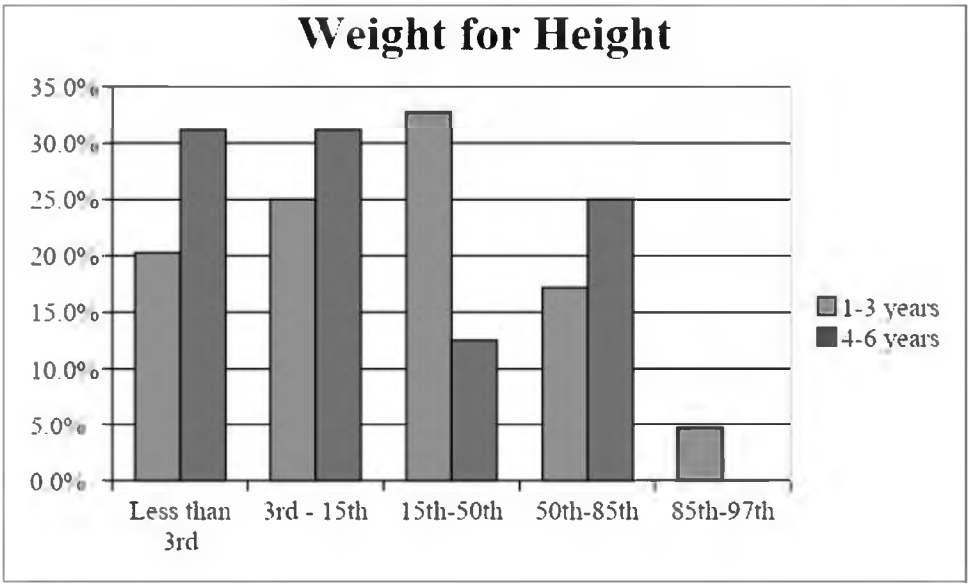


Fig. 1 Percent distribution of the children as per their weight for height percentiles.

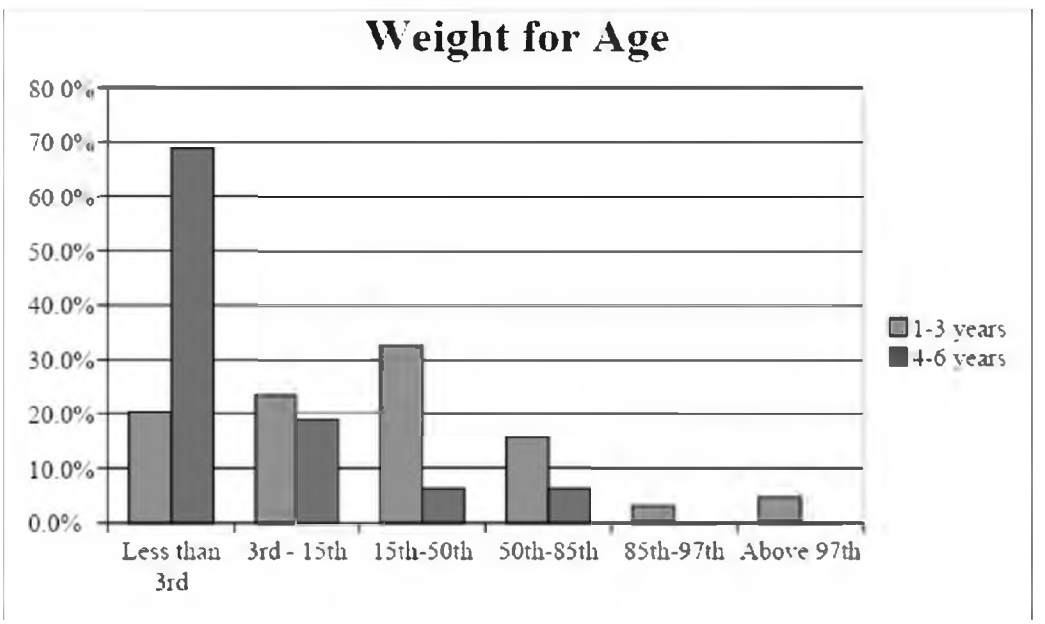


Fig. 2 Percent distribution of the children as per their weight for age percentiles.

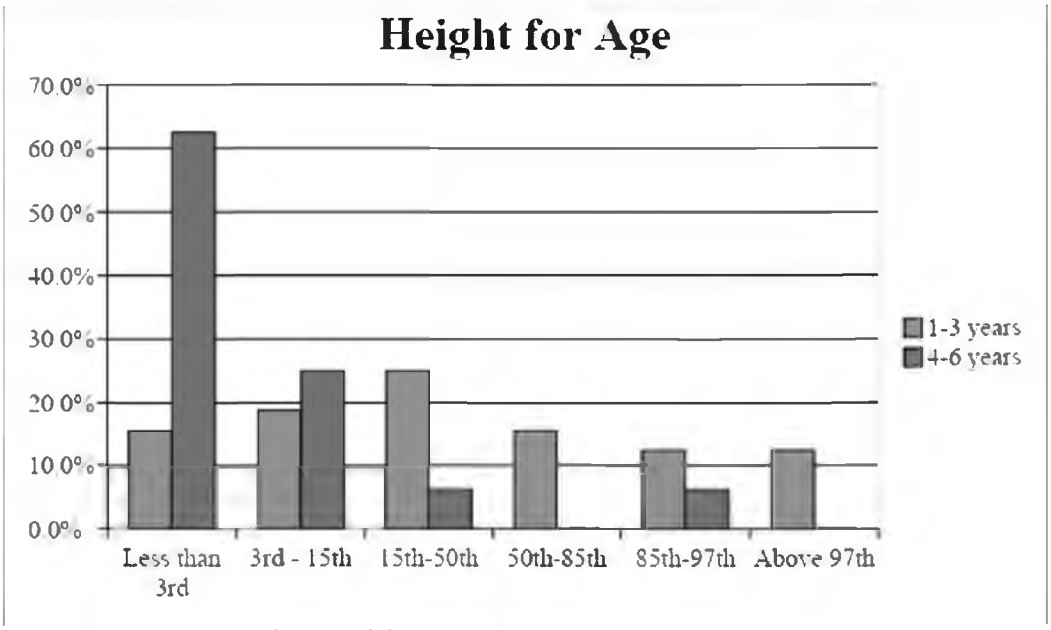


Fig. 3 Percent distribution of the children as per their height for age percentiles.

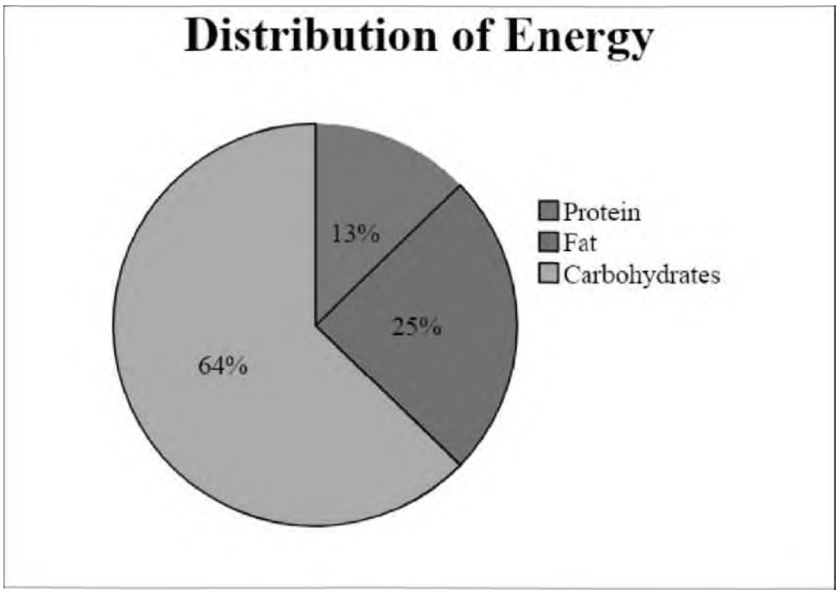


Fig. 5 Percent distribution of macronutrients as per the recorded dietary intake

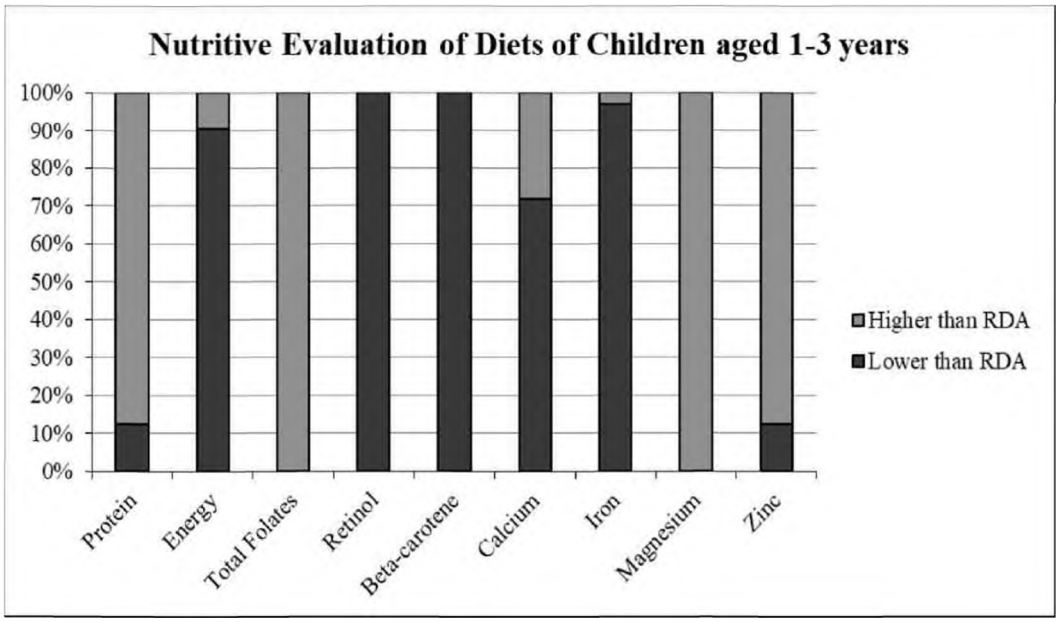


Fig. 6 Percent distribution of nutrients as per RDA for children within age group of 1-3 years

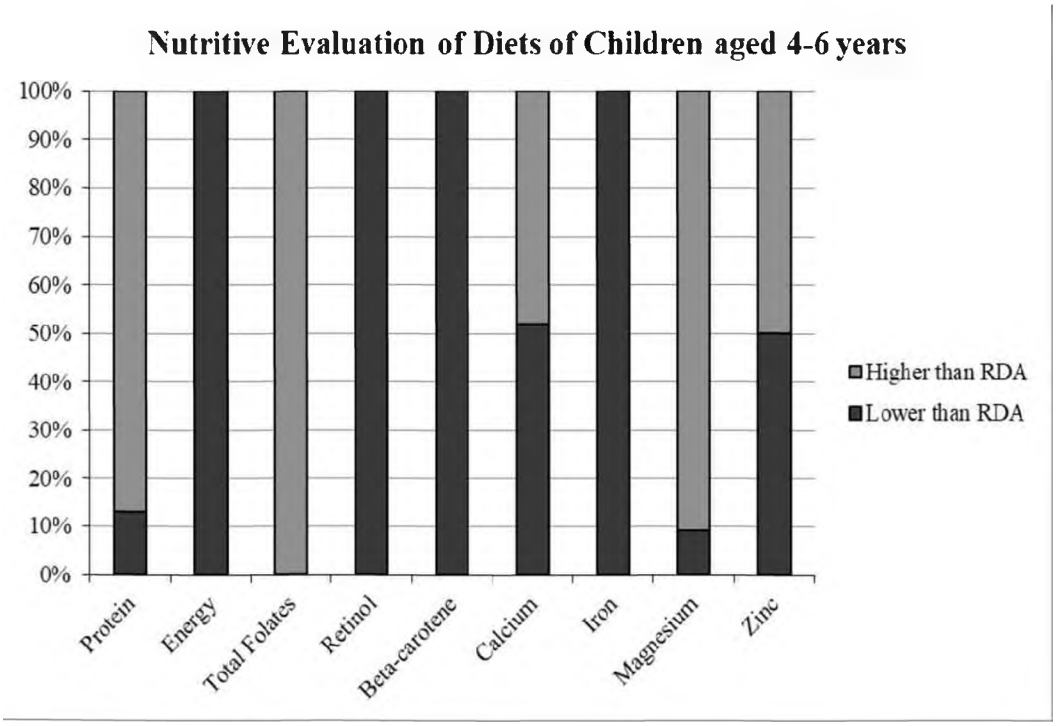


Fig. 7 Percent distribution of nutrients as per RDA for children within age group of 4-6 years

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