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Magnitude of multiple micro-nutrient malnutrition among the rural children in India

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Introduction: In spite of the green revolution and implementation of several national nutrition programs for more than four decades, the prevalence of undernutrition continues to be a major public health problem in India. Almost all the age and physiological groups in general and below five and school-age children, in particular are most vulnerable to malnutrition. India has the highest percent of undernourished and stunted children in world. The burden of hidden hunger i.e., multiple micro-nutrient malnutrition among the children of below five and school-age (7-12 years) children is a major nutritional problem of public health concern in India.

Objective: To assess the magnitude of micro-nutrient deficiencies among the rural pre-school and school-age children in India.

Materials & Methods: A community based cross sectional study was carried out by the National Nutrition Monitoring Bureau (NNMB) during 2011-12 in 10 major states constituting two third geographical area of India by covering 12,004 (5,810 children of 1-6 years and 6,194) rural children. A one day (24 hour) recall diet survey was carried out to assess their dietary consumption and the median nutrient intakes were calculated and compared them with the Recommended Dietary Allowances (RDAs). The deficit intake of each Nutrient (Against their RDAs) and Adequacy (consumption≥70% of RDA) status of various nutrients were assessed.

Results: In general, the rural children were subsisting on inadequate diets and the intakes of all the nutrients except for proteins were below the RDAs. The proportion of children consuming adequate (≥70% of RDA) amounts of nutrients was poor with respect to vitamin A (10-12%) followed by calcium (15-16%), riboflavin (19.4-32.8), iron (27.8-34.8%) and vitamin C (14.6-31.8%). Similarly, the deficit intake of micro-nutrients as against their RDAs was highest for vitamin A (81.5-86.4%) followed by calcium (66-72%), iron (45-53%), riboflavin (50-53%) and vitamin C (49-63%). Likewise, the proportion of the rural children not meeting even 50% of their RDAs was 80-87% for vitamin A, 71-74% for Calcium, 51-59% for Riboflavin and 50-77% for Vitamin C and this proportion is significantly high among the children of marginalized communities, illiterate parents, laborers and those residing in the household where the facility of sanitary latrine is absent ($p<0.001$).

Conclusions: In general, the rural children in India were subsisting on in adequate diets with gross deficit in multiple micronutrients. Hence, appropriate nutrition interventions to be initiated to meet suggested levels of all micronutrients and nutrition education to be imparted to the community.

Biography

N Arlappa has completed his MD in Community Medicine from NTR University of Medical Sciences, India. He has been working as Nutrition Scientist in the Division of Community Studies, National Institute of Nutrition (NIN), Indian Council of Medical Research, Hyderabad, India, since 1997. He has 18 years of research experience in the field of Public Health Nutrition and published more than 50 scientific papers in peer-reviewed national and international journals. He has also published 4 book chapters, completed more than 40 research studies and published more than 250 technical reports. He has attended and presented more than 25 scientific papers in national and international conferences/workshops. He is the Faculty Member for the Courses of MPH (NIE), MSc (Nutrition) and PG Certificate course in Applied Nutrition at NIN and currently working as a Deputy Director.

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