Effect of Vitamin A, Zinc and multivitamin supplementation on the nutritional status and retinol serum values in school-age children

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Abstract

Micronutrient deficiency or “Hidden Hunger” represents the most widespread form of malnutrition in the world. The aim of this study was to evaluate the effect of supplementation with Vitamin A as a single dose, Zinc and Vitamin A + Zinc on nutritional status, and on serum retinol and zinc levels in schoolchildren. A database total of 80 schoolchildren (girls = 47 and boys = 33) were evaluated about the effect of supplementation with vitamin A (VA), Zinc (Zn) and VA + Zn on nutritional anthropometric status, and on serum retinol and zinc values. Serum retinol concentrations were determined by HPLC, according to Bieri method, considering <20 µg/dL Vitamin A deficiency (DVA), 20–30 µg/dL DVA risk (RDVA) and >30 µg/dL normal VA; serum zinc was analyzed by Flame Atomic Absorption Spectrometry, considering ≥0.72 µg/dL normal zinc and <0.72 µg/dL zinc deficiency (DZn). Data were analyzed using SAS program Statgraphics XVI, and a significant $p < 0.05$ was considered. The deficiency of the nutritional consumption of zinc was high in the students, contrary to the consumption of vitamin A which was normal. The observed prevalence of DVA was 6.25%, RDVA 23.75% and DZn 97.50%. The isolated or combined supplementation of vitamin A and Zinc contributes to the maintenance of the anthropometric state; however, they are ineffective in the cases of low consumption of these nutrients to reach optimum circulating values.

Keywords

Nutritional status, Retinol serum, Schoolchildren, Supplementation, Vitamin A deficiency, Zinc