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Serum Vitamin A status and its association with haemoglobin level and growth in preschool children in a Sri Lankan community

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Vitamin A deficiency and iron deficiency anaemia affect 30% of the global population and the most vulnerable groups are infants, children and women of reproductive age. Several studies have suggested that there may be a synergistic relationship between vitamin A and iron. Improving the vitamin A status increases haemoglobin concentrations, reduces anaemia and improves growth. The aim of this study was to assess the relationship between serum vitamin A level with hemoglobin level and anthropometric indices of children aged 2 - 5 years in a Sri Lankan community. In a cross sectional study a total of 191 children (91 girls and 100 boys) aged 2 - 5 years were selected by cluster sampling from the Ragama MOH area. The serum vitamin A level, haemoglobin level and the anthropometric characteristics of the children were measured. 38.22% of the children had serum vitamin A deficiency (≤ 20 µg/dl) and 12.90% of the children were anaemic (Hb ≤ 11.5 g/dl). Linear regression analysis showed a significant positive association between serum vitamin A level and haemoglobin level ($r = 0.026$, $p < 0.05$). The mean Z scores of weight for age (WAZ), height for age (HAZ) and weight for height (WHZ) of children with normal serum vitamin A levels were higher than those of serum vitamin A deficient children although not statistically significant (mean WAZ; -0.68 vs -0.95, HAZ; +0.13 vs -0.39, WHZ; -1.09 vs -1.11, $p > 0.05$ in all). Vitamin A maintains iron homeostasis by modulation of liver hepcidin expression and hepcidin alter dietary iron absorption. Accordingly, our data demonstrate that vitamin A deficiency is associated with lower haemoglobin concentrations (Hb) and poor growth in children. The need for appropriate interventions to optimize serum vitamin A levels is emphasized.

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