Impact of vitamin A or iron alone or in combination on anaemia and anthropometric indices of anaemic school children in Tanzania

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Iron Deficiency Anaemia, which affects 1.2 billion people, is the most prevalent nutritional deficiency world wide with majority of affected people living in the third world (1). Growth retardation is also an important public health problem among children living in poverty in developing countries (2). The extent to which catch up growth in later childhood reduces deficits incurred in early childhood is not well documented. However, the biological potential for catch up growth has well been illustrated in studies that evaluated the responses to clinical intervention with supplementary feedings, treatment of illness or hormonal therapy (3).

To examine the effects of dietary supplements on anaemia and growth, a randomised double blind controlled trial was conducted on 136 anaemic school children from rural Tanzania. The supplements were vitamin A alone, iron and vitamin A, iron alone or placebo, given for three months. All supplements were provided with local maize meals. Haemoglobin concentration, body weight and height were measured at baseline and at follow-up after supplementation.

The table presents the changes in mean haemoglobin concentrations between different supplement groups over time.

Comparison Groups	difference in mean change in haemoglobin[1]	95% CI[2]	P[2]
Vitamin A *vs* Placebo	9.9 ± 1.4	6.19, 13.57	<0.0001
Iron *vs* Placebo	13.9 ± 1.4	10.14, 17.59	<0.0001
Vitamin A+ Iron *vs* Placebo	18.5 ± 1.4	14.81, 22.23	<0.0001
Iron *vs* Vitamin A	4.0 ± 1.4	0.19, 7.77	0.0337
Vitamin A+ Iron *vs* Vitamin A	8.6 ± 1.4	5.00, 12.38	<0.0001
Vitamin A+ Iron *vs* Iron	4.7 ± 1.4	0.94, 8.37	0.006

[1]Differences in mean changes ± standard error: values are adjusted for baseline haemoglobin, weight and height, each centred at their respective mean.
[2]95% confidence intervals and two-tailed P values are corrected for multiple comparisons using the Bonferroni method.

Vitamin A increased mean body weight by 0.6 kg compared to 0.2 kg (P<0.0001) and mean height by 0.4 cm compared to 0.1 cm for placebo (P=0.0009). However, the group which received combined vitamin A and iron showed greatest improvements in all indicators compared with placebo. These results suggest that vitamin A supplementation may have a crucial role in controlling iron deficiency anaemia and growth retardation.

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