

Impact of dietary iron intake on anaemia in Tanzanian schoolchildren

[Simon Tatala](#) , MD, [Godwin Ndossi](#) , PhD, [Ulf Svanberg](#) , PhD & [Deborah Ash](#) , PhD

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Abstract

Objective. To investigate the nutritional relationship between dietary intake and prevalence of anaemia among Tanzanian schoolchildren.

Methods. Dietary intakes of 101 schoolchildren aged 7 - 12 years were assessed using a pre-tested food frequency questionnaire. Haemoglobin (Hb), haematocrit, erythrocyte protoporphyrin (EP) and serum ferritin (SF) were used to determine their anaemia and iron status. Other socio-economic variables were collected using a profile questionnaire.

Results. Significantly lower intake of iron was seen in 48% of schoolchildren with Hb < 11.5 g/dl (anaemic) compared with those who were normal. Total iron intake was 22 ± 7 and 27 ± 13 mg/day respectively ($p < 0.05$). There was a general poor intake of iron from animal sources in all children. A higher iron intake was found in schoolchildren with normal iron status (by EP and SF levels) than in those who were not normal (26 ± 11 mg/day v. 22 ± 9 mg/day, $p < 0.05$). Iron deficiency was found in 45% of schoolchildren ($N = 80$) and 31% were categorised as having iron deficiency anaemia. The mean energy intake in boys was higher than in girls ($2\ 150 \pm 770$ v. $1\ 830 \pm 895$ kcal/day respectively). Boys also had a higher intake of ascorbic acid (50 ± 32 v. 31 ± 23 mg/day, $p > 0.05$). In stepwise multiple regression analysis, daily iron intake remained the most significant nutrient predicting for Hb status. There was a significant correlation between iron intake and serum ferritin ($r = 0.233$, $p < 0.05$).

Conclusion. Iron intake in this Tanzanian community is inadequate for maintaining normal iron nutrition. The factors contributing to the inadequacy include consumption of foods with low iron bioavailability. Food-based intervention should be one of the important strategies for reducing the magnitude of the problem of anaemia in this community.