# Dietary Diversity and Micronutrient Status of School Children in Chamwino and Kilosa Districts, Tanzania

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## Abstract

Background: Childhood is a period of rapid growth, during this stage of life micronutrient deficiencies can lead to retarded growth, anaemia and reduced immune function. Poor feeding practices and limited dietary diversity are contributing factors to poor micronutrient status. Deficiencies of vitamin A, zinc and iron co-exist in malnourished children.

Methodology: The Scale-N study aims to improve nutritional and micronutrients status (vitamin A, iron, zinc) in school-children (5–10 years) in 2 villages in Chamwino and 2 villages in Kilosa districts, Tanzania (scale-N.org). During baseline study, 666 children were randomly recruited to obtain information on demographic characteristics, anthropometry, Household Dietary Diversity Score (HDDS), and to collect blood for the determination of haemoglobin (hemocue method) and micronutrient status (serum vitamin A, iron and zinc by enzyme-linked immunosorbent assay and spectrophotometric methods). Data are presented as means (SD) and prevalences and compared using ANOVA, and chi-squared test.

Results: The prevalence range of underweight and stunting were 11–17 % and 25–35 % with no significant differences between villages/districts . Anaemia, iron-, vitamin A deficiency and low serum zinc among children in the study villages showed a prevalence range of 19–69 %, 15–40 %, 8–19 % , and 20–49 % respectively. Children from villages of Kilosa had significantly higher prevalence of anaemia (59 and 68 % vs. 19 and 26 %) and iron deficiency (37 and 40 % vs. 19 and 15 %) than those of Dodoma.

The overall mean HDDS was 4.8 ±1.8. The households of Kilosa villages had higher HDDS than those in Dodoma (5.7 and 6.2 vs. 4.2 and 3.0, $p < 0.001$). The higher HDDS in Kilosa district contributed mainly by reported consumption of foods such as sugar, fats/oil and beverages. The least consumed food groups in both districts were meat/organ, eggs and milk products.

Conclusion: The higher diversity score consisting of food groups such as sugar, oil and beverages was associated with higher prevalence of anaemia and iron deficiencies. Pro vitamin A rich vegetables/fruits and animal based foods are highly recommended in order to improve children's micronutrient status in the study villages.

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