

ORIGINAL RESEARCH

Modification of Local Diets to Improve Vitamin A, Iron and Protein Contents for Children

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Abstract

The banana-based farming system of the Kagera region in Tanzania exhibits substantial edible food diversity. Despite this, household diets remain monotonous, predominantly energy-dense, and inadequate in essential micronutrients. To address this paradox, this study formulated and developed eight dishes with improved vitamin A, iron, and protein content for children aged 6 to 23 months. A community-based participatory approach was employed, randomly selecting 50 mothers from Izimbya ward. Together, they modified five traditional banana-based 'katogo'/'matoke' recipes and three types of porridges using locally available, affordable ingredients. These included bananas, beans, amaranths, red palm oil, pumpkin (fruit and leaves), groundnuts, maize, and orange-fleshed sweet potato (OFSP). The modification process focused on enhancing nutrient bioavailability and suitability for young children. Techniques included soaking beans to reduce phytates, fermenting maize flour to improve digestibility and nutrient absorption, and puréeing cooked dishes to achieve an appropriate consistency for infant feeding, thereby increasing overall food and nutrient intake. Nutritional composition was calculated using Tanzanian Food Composition Tables, applying a 12:1 conversion factor for beta-carotene. The results demonstrated that a 500g consumption portion of the modified recipes provided over 100% of the Recommended Dietary Allowance (RDA) for vitamin A (108-2768 RAE) and protein (28-56 g), and between 61% to 99% of the RDA for iron (6-17 mg). Red palm oil, OFSP, and pumpkin were key sources of vitamin A, while red kidney beans and groundnuts significantly contributed to iron and protein levels. The study concludes that dietary modification using locally available ingredients is a feasible, cost-effective, and culturally acceptable strategy to significantly improve the nutrient intake of young children. The formulated recipes have high potential to meet the RDAs for vitamin A, iron, and protein within the Kagera region and other similar banana-based farming systems in Africa. To ensure sustainability, promoting home gardens is recommended to guarantee a consistent supply of these affordable, nutrient-rich vegetables.

Keywords: Vitamin A, Dietary Modification, Local Diets, Children, Iron, Protein