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Food-basket intervention to reduce micronutrient deficiencies among Maasai-pregnant women in Tanzania: a quasi-experimental study

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Abstract

Background

Micronutrients comprised of vitamin and mineral nutrients that are needed during pregnancy for foetal growth, development and maturation, as well as for reducing/preventing maternal complications. However, micronutrient-rich foods (vegetables and fruits) are lacking in the Ngorongoro Conservation Area as a result of restrictions on cultivation in conservation areas and the unavailability of vegetables and fruits in local markets. The present study introduced a food basket intervention and assessed the effectiveness of the food baskets with respect to addressing anaemia, vitamin A and iron deficiencies among pregnant Maasai women within the Ngorongoro Conservation Area.

Methods

The quasi-experimental study included Misigiyo ward as a control group (provided education only) and Olbalbal ward as an intervention group (provided food baskets and education). The study assessed haemoglobin, serum ferritin and retinol at baseline and during follow-up. Haemoglobin, serum ferritin and retinol were quantitatively (duplicate) measured with HemoCue™ (HemoCue AB, Ängelholm, Sweden), Maglumi 800 (Snibe Diagnostic, Shenzhen, China) and vitamin A enzyme-linked immunosorbent assay, respectively. Dependent and independent t-tests were used to compare the micronutrient blood levels between and within the groups.

Results

The present study found a statistically significant increase in serum retinol ($P < 0.001$) in the intervention group compared to the control group; moreover, baseline serum retinol was positively associated with the follow-up serum retinol, whereas baseline haemoglobin and serum ferritin were negatively associated.

Conclusions

The food basket intervention holds promise with respect to reducing micronutrient deficiency, especially in communities where micronutrient-rich foods are scarce.