Tropentag, September 17-19, 2018, Ghent

"Global food security and food safety:
The role of universities"

Validation of a Food Group Based Nutrition Software to Assess Nutrient Intake in Tanzania

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Abstract

Analysis of food intake by 24 h recalls or food frequency questionnaires are the common methods to quantify nutrient intake in larger surveys. After data acquisition, data analysis is time consuming and individual results are not provided to the participants. These limitations can be overcome by the nutrition software CIMI, which calculates nutrient intake using food groups automatically and directly after data input. Feedback to the respondent enhances willingness to participate in such surveys and provision of reliable answers. In addition, individual feedback can help to improve nutritional quality. The present study verifies the accuracy of the CIMI programme by comparing the results with the established nutrition software NUTRISURVEY. 24 h dietary recalls of 1013 Tanzanian women from Kilosa and Chamwino districts collected in the TransSEC project (347 women, January to May 2015) and the Scale-N study (666 women, July to August 2016) were analysed by both, single food item based nutrition software NUTRISURVEY (NS) and the food group based software CIMI. Macro- and micronutrient intake calculation between NS and CIMI were compared using SPSS 24. Differences in nutrient intake between CIMI and NS were marginal: out of the 14 analysed macro- and micronutrients, mean difference +/- standard deviation was for energy +65kcal +/- 283, protein -1.4g +/-15.5, retinol equivalents -170 μg +/- 715, vitamin B1 +0.15 mg +/- 0.33, iron +1.5 mg +/-10.7, and zinc -1.2 mg +/-2.6. Nutrients with a very high accuracy (difference expressed as % of NS result: +/-0<5 %) were energy, protein, carbohydrates, vitamin B2 and B6. Those with a good accuracy (+/- 5–15 %) were vitamin B1 and C, iron and zinc. Moderate accuracy (+/-15–30 %) showed retinol equivalents, vitamin B12, folic acid and calcium. Fat was the only nutrient which was not calculated adequately by CIMI. CIMI is a valid and timesaving instrument to measure nutrient intake in Tanzania. Adjustment of food groups by the respondent will be implemented in a soon available CIMI-app, and will therefore lead to even more accurate results in the evaluation of nutrient intake.

Keywords: 24h dietary recall, dietary intake, hidden hunger, nutrients

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