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Development and validation of a food frequency questionnaire for assessment of diet among people living with HIV/AIDS in Nepal

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Dietary surveillance in developing and transition countries has often relied on estimates of nutrient intake based on National food availability figures (e.g. FAO food balance sheets) rather than self reported food consumption data. One of the main reasons for this is a lack of appropriate local dietary assessment tools and regional specific food composition databases. To facilitate the measurement of the habitual diet of people living with HIV/AIDS in Nepal a new semi-quantitative food frequency questionnaire has been developed. The present study aimed test the new FFQ in Nepal by comparing report nutrient intakes with intakes calculated using a reference method, in this case, 24 hr dietary recall.

A total of 73 Nepalese people living with HIV (43 male, 30 female) completed this study which was approved by Ethics committees in UK and Nepal. Participants attended local HIV/AIDs community centers where researchers measured their height and weight before completion of the interviewer-administered FFQ. After the FFQ participants were asked to report the previous day's food intake using the 24 hr dietary recall method. Nutrient intake was then calculated for both the FFQ and 24 hr recall after linking with a newly-compiled nutrient database for Nepal. The new database includes food composition data gathered and evaluated from Nepalese[(1)] Indian[(2)] and UK[(3)] tables: UK tables were only used when no local analysis was available and food composition was likely to be similar.

The average age of the study population was 32 (IQR 28–37) y, while the mean BMI of the group was 20.4 (IQR 19.5 = 24.4) $kg/m^{2.}$ 14% of the participants were classified as under-nourished (>18.5 kg/m^2). Estimated nutrient intake by the two methods is shown in the Table below. There was no significant difference between the two methods for the reported intakes of energy, protein, carbohydrate, iron or vitamin C or carotene (all $p>0.2$), but mean fat intake was significantly lower when determined by the FFQ than the 24-h recall ($p<0.001$). Bland-Altmann analysis however showed that the differences between the methods for individuals could be high. Relative agreement measured by Pearson correlation coefficients between the methods ranged from 0.50 to 0.60 for macronutrients, but coefficients were below 0.3 for iron, carotene and vitamin C.

	FFQ		24 h dietary recall		Difference between means	Pearson's correlation
Nutrients	mean	SD	mean	SD	(*p*)	(*r*)
Energy (kcal/day)	2030.00	505.00	2046.00	469.00	0.745	0.596
Fat (g/day)	28.97	13.04	36.20	18.30	0.001	0.47
Fat (% energy)	12.69	4.24	15.60	7.08	0.001	0.31
Protein (g/day)	59.67	15.81	60.67	16.10	0.705	0.547
Protein (% energy)	11.86	1.53	11.84	2.11	0.924	0.282
Carbohydrate (g/day)	385.50	96.53	383.20	86.50	0.827	0.543
Carbohydrate (% energy)	76.12	5.42	75.52	8.02	0.523	0.358
Iron (mg/day)	18.02	5.31	16.60	8.90	0.204	0.12
Carotene (µg/day)	2219.00	661.00	2082.00	1160.00	0.341	0.196
Vitamin C (g/day)	48.19	15.10	49.34	20.14	0.829	0.287

The new FFQ can estimate the group mean intake for energy, protein, carbohydrate, iron, vitamin C and carotene but may underestimate the group mean intake for fat. The correlation between the two measurements was stronger for macronutrients than the selected micronutrients.

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