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The validation of a web-based dietary assessment tool for an Irish adult population: Foodbook24

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Web based dietary assessment methods may offer solutions to the limitations of traditional dietary assessment methodologies (cost, participation rates and accuracy of data collected) especially in large epidemiological studies[(1)]. Foodbook24[(2)] is a web-based 24 hour dietary recall tool which has been developed for use in the Irish adult population. The aim of this project was to investigate the validity of Foodbook24 compared to intakes derived from a 4 day semi weighed food diary and biomarkers of nutrient intake.

This study received ethical approval from the UCD Human Research Ethics Committee (LS1527). Forty participants aged 18–64 years (50 % female) were recruited to the study which consisted of three visits to UCD. Participants were required to complete 3 non-consecutive (2 week day and 1 weekend day) 24 hour recalls using Foodbook24 and subsequently provided a fasted blood sample and 24 hour urine collection. A two week wash out period was included to allow sufficient time to elapse between reporting methods, then participants completed a 4 day semi weighed food diary (3 week days and 1 weekend day) and provided a fasted blood sample and 24 hour urine collection on completion of the food diary. Biological samples were obtained for analysis of select nutritional biomarkers. Data obtained from FoodBook24 was automatically analysed by the tool itself generating a nutrient output. In addition all food diaries were entered into nutrition analysis software, WISP (Tinuviel Software, Anglesey, UK). Statistical analyses were performed in SPSS (Version 20·0). Mean nutrient intake levels and % energy contributions (and standard deviations) recorded using each method were calculated. Spearman correlations and Wilcoxon Signed Rank tests (data was not normally distributed) were used to investigate the agreement and differences in the nutrient output from the two methods.

Nutrient	Foodbook24 Mean (SD)	Food diary Mean (SD)	Correlation coefficient (*r*)	Significant difference (*p*)
Energy (kcal)	1970·78 (626·68)	2100·83 (679·06)	·536**	·168
% Energy Carbohydrate	45·8 (8·0)	45·4 (8·0)	·364*	·806
% Energy Protein	16·6 (3·8)	17·8 (5·0)	·478**	·093
% Energy Total Fat	36·1 (7·7)	36·6 (6·0)	·328*	·669
% Energy Saturated Fat	14·3 (3·8)	12·2 (3·1)	·335*	·004*

** Significant at the 0·01 level. * Significant at the 0·05 level. Data presented are raw means + SD. Statistical tests were carried out log transformed data.

One participant from the study was omitted from the analysis as they did not record their dietary intake correctly using Foodbook24. Initial analysis indicates moderate, significant relationships between energy % contribution of energy from macronutrients derived from Foodbook24 and a 4 day semi weighed food diary. Apart from a significant difference in the % energy from saturated fat, there were no other significant differences in the reporting of the remainder of % energy contributions by the two methods. Further analysis into the validity of Foodbook24, including the use of biological markers of of nutrient intake is ongoing. Despite the variation of diet over the 2 different time points, preliminary results indicate Foodbook24 could potentially be comparable with a semi weighed food diary for the estimation of the % energy from macronutrients.

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