Development, validation and implementation of a quantitative food frequency questionnaire to assess habitual vitamin D intake - DTU Orbit (08/11/2017)

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Background A well-designed, validated quantitative food frequency questionnaire (FFQ) could offer an efficient and cost-effective method for assessing habitual vitamin D intake. The present study aimed to describe the development, validation and implementation of a vitamin D FFQ. Methods National food consumption survey data obtained from Irish adults (18–64 years) were used to identify foods that contribute 95% of vitamin D intake. A winter-based validation study was carried out for the resulting FFQ in 120 females, including 98 women [mean (SD) 65.0 (7.3) years] and 22 girls [12.2 (0.8) years], using a 14-day diet history (DH) as a comparator. Serum 25(OH)D concentrations were analysed. Validity coefficients were calculated using the method of triads. Cross-classification and Bland–Altman analysis were also performed. Results Median (interquartile range) vitamin D intakes (including the contribution from nutritional supplements) were 5.4 (3.7) and 3.7 (5.9) μg day−1 from the FFQ and DH, respectively and intakes of vitamin D from food sources were 3.6 (3.1) and 2.4 (2.2) μg day−1. The FFQ and DH classified 86% and 87% of individuals into the same and adjacent thirds of wintertime serum 25(OH)D status, respectively. There was a strong association ($r = 0.71$, $P < 0.0001$) and no significant systematic or proportional bias observed for the difference between estimates from the FFQ and DH. The validity coefficient for the FFQ was 0.92 (95% confidence interval = 0.80–0.97). Repeatability analysis (n = 56) performed 6–12 months later showed no significant difference in estimates of vitamin D between administrations. Conclusions The data obtained in the present study indicate high validity and good reproducibility of a short, interviewer-administered FFQ for vitamin D.

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