

Reproducibility and Validity of a Food Frequency Questionnaire to Measure the Consumption of β -Carotene, β -Cryptoxanthin, Folate, Vitamin D, EPA, and DHA

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Objectives: The authors assessed the reproducibility and validity of a 166-item semi-quantitative food frequency questionnaire (SFFQ) for a Japanese population, focusing on carotenoids, vitamin D, folate, and fatty acids. Foods for the questionnaire were chosen with a focus on nutrients associated with lifestyle-related diseases.

Methods: Nutrient intakes were energy-adjusted using the residual method. De-attenuated correlation coefficients between the energy-adjusted nutrients from the SFFQs and DRs were calculated to account for the within-person variation in replicate DRs or plasma biomarkers. Using the method of triads to calculate validity coefficients (VC) and 95% CIs were calculated with both DR's and plasma biomarkers as comparison methods.

Results: The median of the deattenuated correlations between the second SFFQ and DRs was 0.56 (range, 0.34, 0.74) for 43 energy-adjusted nutrients. The correlations and 95% confidence intervals (CI) for beta-carotene, beta-cryptoxanthin, folate, vitamin D, EPA, and DHA were 0.43 (0.23, 0.60), 0.68 (0.45, 0.82), 0.69 (0.34, 0.87), 0.55 (0.37, 0.68), 0.62 (0.37, 0.79), and 0.62 (0.37, 0.79), respectively. The median of intraclass correlation coefficients between the first six and second six days of DR was 0.59, and that between the first and the second SFFQ was 0.49. The VCs and 95% CIs were 0.47 (0.30, 0.73) for β -carotene, 0.59 (0.42, 0.81) for β -cryptoxanthin, 0.85 (0.51, 1.43) for folate, 0.55 (0.36, 0.87) for vitamin D, 0.61 (0.46, 0.82) for EPA, and 0.61 (0.44, 0.86) for DHA.

Conclusions: These findings suggest that a carefully designed food frequency questionnaire can reasonably estimate the intake of important nutrients in a Japanese population.

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