A Food Frequency Questionnaire for Hemodialysis Patients in Bangladesh (BDHD-FFQ): Development and Validation

ABSTRACT

Diet is a recognized risk factor and cornerstone for chronic kidney disease (CKD) management; however, a tool to assess dietary intake among Bangladeshi dialysis patients is scarce. This study aims to validate a prototype Bangladeshi Hemodialysis Food Frequency Questionnaire (BDHD-FFQ) against 3-day dietary recall (3DDR) and corresponding serum biomarkers. Nutrients of interest were energy, macronutrients, potassium, phosphate, iron, sodium and calcium. The BDHD-FFQ, comprising 132 food items, was developed from 606 24-h recalls and had undergone face and content validation. Comprehensive facets of relative validity were ascertained using six statistical tests (correlation coefficient, percent difference, paired t-test, cross-quartiles classification, weighted kappa, and Bland-Altman analysis). Overall, the BDHD-FFQ showed acceptable to good correlations ($p < 0.05$) with 3DDR for the concerned nutrients in unadjusted and energy-adjusted models, but this correlation was diminished when adjusted for other covariates (age, gender, and BMI). Phosphate and potassium intake, estimated by the BDHD-FFQ, also correlated well with the corresponding serum biomarkers ($p < 0.01$) when compared to 3DDR ($p > 0.05$). Cross-quartile classification indicated that <10% of patients were incorrectly classified. Weighted kappa statistics showed agreement with all but iron. Bland-Altman analysis showed positive mean differences were observed for all nutrients when compared to 3DDR, whilst energy, carbohydrates, fat, iron, sodium, and potassium had percentage data points within the limit of agreement (mean ± 1.96 SD), above 95%. In summary, the BDHD-FFQ demonstrated an acceptable relative validity for most of the nutrients as four out of the six statistical tests fulfilled the cut-off standard in assessing dietary intake of CKD patients in Bangladesh.