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Relative validation of a food frequency questionnaire against diet records to estimate n-3 fatty acid intake in adults.

By J McKenzie, L Muirhead, E Shillinglaw and I Paciarotti. *Queen Margaret University, Edinburgh, Scotland, EH21 6UU*

Long chain omega-3 polyunsaturated fatty acids (LC n-3 PUFA) are important for health and well-being. Recent studies suggest *in vivo* synthesis of LC n-3 PUFA from their dietary precursor, alpha-linolenic acid (ALA), may be limited. Preformed LC n-3 PUFA are found in a limited number of foods that are not commonly eaten in the UK diet. The potential for insufficient conversion of ALA, which is found in plentiful supply in the diet, has therefore raised questions as to whether intakes of LC n-3 PUFA are sufficient. Very little information is currently available on intakes of LC n-3 PUFA and, consequently, there is a need to develop an efficient method to estimate intakes. As intakes of LC n-3 PUFA in the diet are somewhat sporadic, accurate assessment of intake would traditionally involve recording dietary intake over a long period of time. This approach is not efficient for use in many population groups. A food frequency questionnaire (FFQ) has previously been developed to assess children's total n-3 PUFA intake^{1,2}, including intakes of docosahexanoic acid (DHA) and eicosapentanoic acid (EPA), and estimated intakes appear to be comparable to intakes reported in the National Diet and Nutrition Survey³.

The aim of this study was to investigate the relative validity of the FFQ in comparison to a 14-day diet record in estimating n-3 PUFA intakes in adults aged 19 to 64 years.

Forty-four participants (24 females) completed a 14-day diet record, followed by the FFQ. Dietary intakes were estimated manually using nutrient composition tables and modification of the FFQ spreadsheet to account for adult portion sizes. Comparison of methods by Bland-Altman analysis indicated that the FFQ over estimated total n-3 PUFA intakes by an average of 0.6g/d, yet underestimated intakes of LC n-3 PUFA by an average of 30mg/d. Agreement between the methods was very good for both total n-3 PUFA intake and total LC n-3 PUFA intake. Only two subjects consistently showed discrepancies outside of the 95% limits of agreement, due to exceptionally high intakes being reported. Results were compared with the SACN recommendations⁴ indicating that, when assessed by either method, 82% of subjects had intakes below the 450mg/d recommendation.

The results of the study showed the FFQ to be a good tool to establish LC n-3 PUFA intakes in groups of adults, however its use in assessing the adequacy of individual intakes may be limited. Further validation, potentially against a biomarker of fatty acid intake, is warranted.

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