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The relative validity of 24-hour dietary recalls conducted via telephone against a 4-day food record to estimate energy, macronutrient, dietary fibre and salt intakes in a convenience sample of adults in Ireland

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The previous National Adult Nutrition Survey (NANS) (2008-10) in Ireland collected dietary data using a 4-day weighed food record[(1)], however, the more recent NANS II (2020-21) used 2x24-hour dietary recalls as per EU guidance[(2)] (collected by telephone due to the Covid-19 pandemic social distancing guidelines). The aim of this study was to investigate the relative validity of two telephone 24-hour dietary recalls against a 4-day weighed food record to estimate energy, macronutrients, dietary fibre and salt intakes in a convenience sample of adults to ascertain comparability between the two methods.

A total of 40 participants (19-64 years; 55% female) visited Munster Technological University on four occasions as part of this study. Participants were equally randomised (to complete the food record first followed by the dietary recalls or to complete one dietary recall first, then the food record followed by the 2nd dietary recall (corresponding to the last food record day)). Participants were trained in completing the food record (with researcher visits on day 2/3 and upon completion to review the record/check for completeness). The researcher-led 24-hour dietary recalls were conducted via telephone (at least 7 days apart) (photographic food atlas provided to participants in advance). For both methods, a high level of researcher interaction was employed with detailed dietary data collected at brand level for updating of food composition tables. UK and Irish food composition tables were used to estimate energy and nutrient intakes (food sources only) and mean daily intakes of energy, macronutrients, total sugars, saturated fat, dietary fibre and salt (g, % total energy (%TE), g/10MJ) were estimated from both methods. Differences between methods were assessed using; mean percent difference (calculated as ((mean food record-mean 24-hour recall)/mean food record)*100), paired sample *t*-tests (to examine differences between mean intakes), Pearson coefficient analyses (to investigate the strength and direction of associations) and cross-classification tertile analysis (nutrient-specific; to quantify the level of agreement between the categorisation of estimates)[(3)].

The mean percent difference between methods was acceptable (1-10% difference) for all nutrients except total sugars in both grams (13% difference) and %TE (11% difference). Paired-samples *t*-tests showed no significant difference between methods. Correlations ranged from 0.53–0.86 (good) for energy and nutrients, except dietary fibre (0.48: acceptable) ($p<0.001$). Fifty to eighty percent of participants were classified in the 'exact agreement' category of intake by cross-classification with 90-100% of participants classified in the 'exact agreement/adjacent category'.

These findings suggest that two 24-hour telephone dietary recalls may be comparable with a 4-day weighed food record for the estimation of energy, macronutrients, dietary fibre and salt intakes in adults. The methodologies used for both methods (high researcher involvement, brand level data, matching food composition databases) are important for accuracy and their similarities may have improved comparability.

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