

Evaluation of the implementation and practicality of a novel approach to 24-hour dietary recall interviews using the image-assisted Mobile Food Record 24-hour dietary recall

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The 24-hour dietary recall (24HR) is the preferred method of dietary assessment in nutrition surveillance. Using images to supplement 24HR may reduce recall bias, which impacts accurate estimation of energy intake. The image-assisted Mobile Food Record 24-hour recall (mFR24) is a mobile application developed by Purdue University.^(1–3) The aim was to evaluate the implementation and practicality of a novel image-assisted mFR24 method in a controlled feeding study. Participants ($n = 145$) took ‘before’ and ‘after’ images of foods/beverages consumed over one day. Once midnight had lapsed, the images were returned to the participant’s mobile device for labelling through a feature known as the ‘user confirmation step’. Labelling was completed using a drop-down list of 372 foods/beverage names, or the free text entry option. The food list was adapted so that a ‘mini label’ and ‘short description’ were displayed to the participant. These labels link to a food composition database (not visible to the participant) with the food code, detailed description, energy and nutrient composition (AUSNUT 2011–13 nutrient database).⁽⁴⁾ A trained researcher conducted the 24HR interview by video call, following an adapted multiple-pass approach. The recall process was assisted by the labelled images, quick list, and time pass completed by the researcher prior to interview. During the detail cycle portion of the interview, participants described the amount of each item consumed using the standard food model booklet used in the Australian Health Survey.⁽⁵⁾ The average age of participants was 32 y (SD 11 y), and 56% of participants were female. 82% ($n = 119$) of participants labelled their images prior to the interview, and a further 13% ($n = 19$) labelled images after the interview. Each labelled image included a mean of 4.7 labels (SD 1.8). Three per cent (70/2182) of total labels used the free text entry option. Researchers assigned reasons to each occasion free text entry was used. Reasons included wanting an exact description match (33%; 23/70), and alternative ways of naming food (19%; 13/70). The pre-interview image reviews completed by the interviewer to produce the quick lists took an average of 5 minutes (SD 2 minutes). The average duration for the interview and for the interview coding for dietary analysis (Xyris Foodworks) was 18 minutes (SD: 5 minutes) and 13 minutes (SD: 6 minutes), respectively. MFR24 was successfully implemented in this Western Australian population of adults. Typically, a 24HR recall takes 20–60 minutes to complete. With mFR24, the use of images captured by the participant allowed streamlining of 24HR processes, with a reduced need for probing. This evaluation demonstrates the practicality of the novel mFR24 approach in comparison to traditional 24HR protocols which are not image assisted. Future analyses will assess the accuracy and cost effectiveness of this novel method, including an evaluation of energy intake measurement error.

References

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