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Comparison of online 24hr dietary recalls using INTAKE24 with interviewer-led 24hr recalls in 11–24 year olds

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Online dietary surveys offer a low-cost alternative to traditional interviewer-led assessments, and can be administered with relative ease to large population groups. INTAKE24 is an online 24hr dietary recall tool developed by Newcastle University for use with people aged 11 years and older. The tool was initially developed to survey dietary intake of 11–24 year olds in Scotland. A comparison of INTAKE24 with interviewer-led 24hr recalls was conducted with 11–24 year olds to compare the tool against an established, validated and widely used method.

One hundred and sixty-seven 11–24 year olds completed INTAKE24 and an interviewer-led 24hr recall on the same day on four occasions. A weighted randomisation was used with 75 % of participants completing INTAKE24 first and 25 % completing the interviewer-led recall first. All recalls for participants aged 11–16 years took place at secondary schools. For 17–24 year olds, the initial interview was conducted face-to-face with the participant, and the remaining three recalls were conducted over the telephone. The four days included at least one weekend day. The interviewer-led 24hr recalls followed the interview protocol used in the LIDNS⁽¹⁾. Portion size was assessed using the Young Person’s Food Atlas⁽²⁾.

The accuracy of estimation of nutrient intakes using INTAKE24 was calculated as a ratio by dividing each participant’s estimated nutrient intake from INTAKE24 by the estimated intake from the interviewer-led recall. A ratio of less than 1 indicates an under-estimation of intake using INTAKE24 compared with the interviewer-led recall and above 1 represents an over-estimation. The closer the ratio to 1, the more accurate the estimate. The table below indicates the relative accuracy of the online tool. Limits of agreement were applied so that 95 % of the differences would lie between the limits.

| | Mean Ratio (n = 167) INTAKE24:interviewer | Limits of agreement | |
|-------------------|--|---------------------|-------|
| | | Lower | Upper |
| Energy (kJ) | 0.99 | 0.51 | 1.92 |
| Carbohydrate (g) | 1.00 | 0.51 | 1.95 |
| NMEs (g) | 0.89 | 0.21 | 3.80 |
| Protein (g) | 1.01 | 0.43 | 2.37 |
| Fat (g) | 0.97 | 0.43 | 2.20 |
| Saturated fat (g) | 0.97 | 0.38 | 2.48 |

INTAKE24 was found to under-estimate energy intake by just 1 % on average with the limits of agreement ranging from an under-estimate of 49 % to an over-estimate of 92 % compared with the interviewer-led recall. The accuracy of INTAKE24 compared favourably with other methods of dietary assessment, such as YANA-C⁽³⁾ and myfood24⁽⁴⁾, in both adults and children although the precision of the system was slightly lower as seen by the relatively wide limits of agreement.

The development of INTAKE24 is ongoing and several new features have been incorporated since the comparison study to improve the accuracy of the data captured including a video tutorial, context specific help, and the ability to input recipe items and missing foods. The system is currently being adapted for use in four countries.

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1. Nelson M, Erens B, Bates B *et al.* (2007) *Low Income Diet and Nutrition Survey. Volume 1: Background, Methods and Sample characteristics.* London: The Stationary Office.
2. Foster E, Matthews JN, Lloyd J *et al.* (2008) *Br J Nutr* **99**, 175–84.
3. Vereecken CA, Covents M, Sichert-Hellert W *et al.* (2008) *Int J Obes (Lond)* **32**, S26–34.
4. Albar SA, Alwan NA, Evans CE, *et al.* (2016) *Br J Nutr* **15**, 1–9. [Epub ahead of print].