**Appendix**

***Literature review on the validity of food-frequency questionnaires (FFQ) among adults.***

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| --- | --- | --- | --- | --- | --- | --- |
| Author/Year | Country | Reference method | Sample | FFQ characteristics | Validity Study | Reproducibility Study |
| Type of FFQ | Number of food items | Reference time period | Range of Correlation (energy-adjusted) | Level of Agreement (unadjusted) | Range of Correlation |
| Zack *et al.* (2018) (35) | Tanzania | Two 24hR | 317 adults | semi-quantitative | 179 | 1 month | -0.02 – 0.26 | -0.04 – 0.26  | N.A. \* |
| Mouratidou *et al.* (2011) (27) | United Kingdom | Four 24hR | 101 postpartum women | semi-quantitative | N.I.† | 1 month | 0.01 (vit. B12) – 0.57 (iron) ‡ | Energy-adjusted: 54% (starch, vit. B12) – 84% (manganese) ¶ | -0.21 (total fat) – 0.67 (zinc) ‡ |
| Athanasiadou *et al.* (2016) (37) | Greece | Two 24hR | 179 pregnant women | semi-quantitative | 221 | 1 month | Crude: 0.35 (cholesterol) – 0.77 (SFA)‡ | 0.15 (vit. B6) – 0.42 (magnesium) § | N.A. \* |
| Papazian *et al.* (2016) (32) | Lebanon | One 24hR | 128 (validity) 38 (reproducibility) pregnant women | semi-quantitative | 157 | N.I.† | 0.312 (cholesterol) – 0.563 (carbohydrates) ‡ | 62% (folic acid) - 88% (carbohydrates)¶ | 0.935 (calcium) – 0.984 (vit. D)\*\* |
| Gunes *et al.* (2015) (31) | Turkey | Four 24hR | 120 adults | semi-quantitative | 229 | 1 year | 0.017 (vit. C and A) – 0.539 (zinc) ‡ | 21.7% (vit. C) – 49.2% (fat) ¶ | N.A. \* |
| Silva-Jaramillo *et al.* (2015) (26) | Ecuador | Three 24hR | 345 adults | semi-quantitative | 111 | 1 year | 0.20 (total fat) – 0.61 (calcium)‡ | Energy-adjusted: 27.4% (total fat) – 52.7% (calcium) ¶ | 0.77 (vit. A) – 0.88 (calcium)\*\* |
| Dehghan *et al.* (2012) (28) | Argentina | Three/Four 24hR | 256 adults (urban/rural) | semi-quantitative | 96 | 1 year | Crude:Urban: 0.20 (retinol) –0.47 (carbohydrate); Rural: 0.11 (PUFA) – 0.47 (Folate) ‡ | Urban: 46.1 (energy) – 24.7 (fibre)Rural: 16.4 (phosphorus and PUFA) 49.3 (fibre) ¶ | Urban setting: 0.30–0.56Rural setting: 0.32–0.60 ‡ |
| Jackson *et al.* (2012) (22) | Botswana | Four 24hR | 79 adults | quantitative | 122 | 1 year | 0.23 (iron)- 0.49 (protein) ‡ | 27% (retinol) to 72% (alcohol) ¶ | 0.39 (retinol) – 0.66 (vit. E) ‡ |
| Cheng *et al.* (2008) (30) | China | Six 24hR | 12 pregnant women | semi-quantitative | 68 | 3 months | 0.22 (protein) – 0.60 (calcium, retinol) ‡ | 28% (phosphorus) – 40% (calcium) ¶ | 0.08 (zinc) to 0.50 (manganese) ‡ |
| N.A.: Not applicable; †N. I.: No Information; ‡Spearman/Pearson correlations coefficients; § Cohen’s kappa; || Bland-Altman mean and 95% CI; ¶Agreement in the same (or same and adjacent) percentile; \*\*Intra-class correlations coefficients.  |
| Author/Year | Country | Reference method | Sample | FFQ characteristics | Validity Study | Reproducibility Study |
| Type of FFQ | Number of food items | Reference time period | Range of Correlation (energy-adjusted) | Level of Agreement (unadjusted) | Range of Correlation |
| Segovia-Siapco *et al.* (2007) (34) | Southern California | Six 24hR | 87 adults | semi-quantitative | 171 | 6 months | De-attenuated: 0.33 (95% CI -0.36-0.67) (protein) – 0.96 (95% CI 0.40-1.00) (vit. C) ‡ | N.I.† | N.A. \* |
| Mouratidou *et al.* (2005) (29) | United Kingdom | Two 24hR | 123 pregnant women | semi-quantitative | 17 | 1 month | Crude: -0.15 (potassium) to 0.47 (Englyst ﬁbre) ‡ | 48.0% (alcohol) – 70.7% (Englyst ﬁbre) ¶ | N.A. \* |
| NO ASSESSMENT OF ABSOLUTE INTAKES/ OTHER REFERENCE METHOD |
| Landais *et al.* (2014) (40) | Morocco | Three 24hR | 100 women | quantitative | Fruit and vegetable intakes: 8 | 1 week | 0.48 (vegetables) – 0.67 (fruits) ‡ | N.I.† | 0.48 (vegetables) – 0.54 (fruits) ‡ |
| Morita *et al.* (2015) (41) | Papua New Guinea | Biomarkers and three-day Weighed Food Records | 135 adults | semi-quantitative | Protein intake: 32 | 1 month | Median protein intake did not differ signiﬁcantly in total protein intake (P=0.56) or animal protein intake (P=0.33) | FFQ vs. biomarkers:27.2% (total protein) – 34.8% (animal protein) ¶ | N.A. \* |
| Jayawardena *et al.* (2016) (42) | Sri Lanka | 7-day weighed-intake dietary records | 77 adults | semi-quantitative | 85 | 1 month | 0.09 (vit. E) – 0.47 (carbohydrates) ‡ | Mean: -96.20 (mean-2SD: -897.05 mean+2SD: 704.64) (energy) – Mean: -40.92 (mean-2SD: -180.09, mean+2SD: 98.25) (carbohydrates) || | N.A. \* |
| Macedo-ojeda *et al.* (2013) (43) | Mexico | Three weighed dietary records | 97 adults | semi-quantitative | 162 | 1 year | 0.09 (vit. E) – 0.62 (calcium) ‡0.16 (riboflavin) – 0.77 (cholesterol) \*\* | 56.7% (vit. B12) – 76.3% (thiamine) ¶ | 0.20 (vit. E) – 0.82 (energy) ‡0.34 (vit. E) – 0.82 (ethanol) \*\* |
| Barret *et al.* (2010) (44) | Australia | Four 7-day food diaries | 100 adults | semi-quantitative | 297 | 1 year | Crude: 0.239 (starch) – 0.810 (alcohol) ‡ | Energy-adjusted: 43% (riboflavin) – 67% (alcohol)¶ | 0.928 (galactans) – 0.352 (mannitol) \*\* |
| N.A.: Not applicable; †N. I.: No Information; ‡Spearman/Pearson correlations coefficients; § Cohen’s kappa; || Bland-Altman mean and 95% CI; ¶Agreement in the same (or same and adjacent) percentile; \*\*Intra-class correlations coefficients.  |
| Author/Year | Country | Reference method | Sample | FFQ characteristics | Validity Study | Reproducibility Study |
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| NO ASSESSMENT OF ABSOLUTE INTAKES/ OTHER REFERENCE METHOD |
| Bountziouka *et al.* (2012) (45) | Greece | Three dietary register | 500 adults | semi-quantitative | 76 | 1 month | Crude: -0.02 (carbohydrates) – -0.15 (protein) ‡ | -1.1 (mean-2SD: -64, mean+2SD: 62) (protein) – 27 (mean-2SD: -56, mean+2SD: 119) (fat) || | Crude: -0.08 (protein – -0.01 (fat, carbohydrates) ‡ |
| Pinto *et al.* (2010) (46) | Portugal | Three food diaries | 71 (reproducibility study) | semi-quantitative | 86 | 1 month | 0.20 (for protein) to 0.58 (for riboﬂavin) ‡ | 22.8% (vit. C) – 36.6% (folate) ¶ | 0.19 (vit. E and thiamine) –0.62 (riboﬂavin) ‡ |
| Moreira *et al.* (2003) (47) | Portugal | Four-day dietary records | 246 adults | semi-quantitative | 89 | 1 month | 0.20 (selenium) – 0.75 (iodine) ‡ | Lowest two percentiles: 52% – 84%; Highest two percentiles: 51% – 88% | N.A. \* |
| MacIntyre*et al.* (2001) (39) | South Africa | 7-day weighted records and biomarkers | 144 adults | quantitative | 145 | N.I.† | Crude: 0.14 (fibre) and 0.59 (vit. C) ‡ | 31% (protein) – 79% (alcohol) ¶ | Crude: 0.14 (calcium) – 0.75 (alcohol) ‡ |
| Decarli *et al.* (1996) (48) | Italy | Two 7-day dietary record | 395 cancer patients (adults) | semi-quantitative | 77 | 1 year | 0.19 (vegetable fat) – 0.64 (sugar) ‡ | Lowest two percentiles: 59% (vegetable fat, vit. E) – 96% (alcohol); Highest two percentiles: 44% (vegetable fat) – 94% (alcohol) | N.A. \* |

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