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Validation of Web-based self-reported socio-demographic and anthropometric data collected in the Food4Me Study

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With the growing numbers of e-health intervention studies, concerns have arisen regarding the validity and reliability of Web-based self-reported data. Therefore, the aim of this study was to assess the validity of Web-based self-reported (SR) anthropometric and socio-demographic data compared with standardized measurements performed face-to-face in a validation study (VS).

A total of 140 participants from seven European countries, participating in the Food4Me Proof of Principle Study which is investigating the utility of personalised nutrition, were invited to take part in the VS. Participants visited a research centre in each country within two weeks of self-reporting their data via a Web-based questionnaire. For SR data, participants were provided with detailed instructions, including photographs and online video, on how to make each measurement. Differences between SR and VS were investigated using paired t-test, Intraclass Correlation Coefficient (ICC) and Bland-Altman limits of agreement for continuous variables (height, weight and BMI); socio-demographic characteristics (age and gender) were presented as percentage of concordance between SR and VS.

The results demonstrate a strong ICC between SR and VS for self-reported anthropometric data (height 0.992 [95% CI 0.988 to 0.993], $p < 0.0001$; weight 0.996 [0.995 to 0.997], $p < 0.0001$ and for the derived estimates of BMI 0.993 [0.990 to 0.995], $p < 0.0001$). However, the Web-based SR for height (Δ 0.003 m [95% limits of agreement -0.027 to 0.032], $p = 0.046$) was slightly higher than the VS measurements but lower for weight (Δ -0.65 kg [-3.6 to 2.2], $p < 0.0001$) and, therefore, for estimated BMI (Δ -0.30 kg m⁻² [-1.56 to 0.96] $p < 0.0001$). In addition, the Bland-Altman analyses show that just 4.2%, 7.1% and 5.0% of the total participants fall outside 95% limits of agreements for height, weight and BMI respectively. A perfect concordance was found for age and sex between SR and VS data.

Our findings confirm the reliability of Web-based self-reported anthropometric and socio-demographic data collected in the Food4Me study. This reliability of SR data may have been aided by the provision of standardised instructions, including photographs and videos, to facilitate self-measurement by the participants.

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