

### LETTER TO THE EDITOR

## Serving size estimates using digital food photographs among Japanese adults: a critical analysis

(Received 23 December 2022 – Accepted 29 December 2022)

*Journal of Nutritional Science* (2023), vol. 12, e21, page 1 of 2

doi:10.1017/jns.2023.14

We read with pleasure the article by Shinozaki *et al.*<sup>(1)</sup>, titled ‘Accuracy of estimates of serving size using digitally displayed food photographs among Japanese adults’ and would like to offer commentary on the addition of food consumption in the study, different methods of estimating portion size and the accuracy of the web-based questionnaire. We hope these perspectives may provide insight into areas that may require further research and improvement.

Shinozaki *et al.* summarised that among Japanese adults, there are significant differences between the estimated and true serving sizes for most food items, with wide limits of agreement. However, on average, the relative difference was small, with more than half of the estimates being within 25 % of the true serving size. These findings suggest that the digital food photograph atlas can be used for portion size estimation, but further development and refinement are needed to improve its usefulness. Previous studies have also found variations in the accuracy of portion size estimation, with factors such as the type, shape, texture and size of the food, as well as the conditions of the study and the characteristics of the participants, potentially impacting the accuracy of estimates<sup>(1)</sup>.

First, in order to accurately assess serving sizes in food items, it is important to consider food consumption rather than just the portion sizes that are served. This can be done through methods such as 24-h dietary recalls, where individuals report all of the foods and beverages consumed over a period of 24 h. This allows the researchers to capture more accurate estimates of serving size, as it takes into account factors such as leftovers and variations in individual consumption<sup>(2)</sup>. Overall, the inclusion of food consumption data can greatly improve the accuracy of serving size estimates in future studies.

Second, it is important to consider the method of estimating portion size when conducting a study or collecting dietary data, as different methods can affect the accuracy and reliability of the results. Using visual aids, such as photographs, may be prone to error due to individual differences in interpretation, while using standardised measurement tools, such as cups or spoons, may be more precise but may not accurately reflect real-life consumption patterns. Using multiple methods, such as both visual aids and standardised measurement tools, can help increase the accuracy of the estimates<sup>(3)</sup>.




Additionally, line diagrams and textual descriptions can be useful and flexible tools for estimating portion sizes in serving size studies, particularly for foods that are more difficult to estimate visually, such as amorphous foods or liquids. A study evaluating portion size estimation aids for the Korea National Health and Nutrition Examination Survey, found that people estimated non-amorphous foods and foods with defined shapes better using line diagrams versus photographs<sup>(4)</sup>. These methods may provide more accurate estimates by allowing participants to estimate in grams or millilitres, using standard portion sizes or household measures. Another study conducted by Lucassen *et al.* showed that text-based estimation shows an increased accuracy compared to image-based assessment<sup>(3)</sup>. Further research is needed to determine the most effective methods for estimating portion sizes in different situations.

Finally, to further improve the accuracy of the web-based questionnaire in this study, it is recommended to make it anonymous by assigning unique identifiers to each subject, rather than using their names. This may help reduce the Hawthorne or observer effect, referring to the behavioural changes among participants in an epidemiological or control



study<sup>(5)</sup>. Additionally, it is suggested to include questions related to eating disorders, notably anorexia and bulimia, and hunger levels in future iterations of the survey. This is because individuals with certain eating disorders may have distorted perceptions of serving size portions, and their responses to the questionnaire may be influenced by their current level of hunger<sup>(6)</sup>.

In the end, we applaud the authors for conducting a well-designed study with a good balance of controlled trials while mimicking real-world settings. We look forward to reading about future studies that provide insight into these factors.

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## Acknowledgements

No funding was received for this study/paper.

The authors declare that they have no competing interests.

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