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Testing an audit tool to measure food served and wasted in early childhood education settings

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Children attending Early Childhood Education and Care settings (ECEC) receive half of their daily nutritional needs from these services^(1,2). Issues such as poor menu quality and high food waste in ECEC have been documented⁽³⁾, which has implications for human and planetary health. Thus, monitoring food served and wasted in ECEC is crucial. Weighed measures are most rigorous, but reliable weighing protocols are needed to support accuracy⁽⁴⁾. A self-administered audit tool for ECEC cooks was developed to measure the weight of food served (for nutritional analysis) and food wasted at pre-consumer (serving waste) and post-consumer (plate waste) levels. This tool was used in previous ECEC research⁽³⁾ and offers a low cost, scalable option for monitoring diet quality and food waste. The aim of the present study was to assess the equivalence of the audit tool across administrators. Data was collected in June 2024 at a university food laboratory by a trained researcher (TR) and six research assistants (RAs) using the same protocol, and under conditions similar to those in ECEC settings. Menu and waste data from previous ECEC research⁽³⁾ were used to simulate provision and waste of one meal and two snacks for 25 children over two days. Raw ingredients, simulated serving waste and plate waste were weighed and photographed first by the TR, followed by RAs. Weighing was conducted individually, and data entry sheets coded to ensure blinding of data among researchers. Coded data were entered into an Excel spreadsheet, with accuracy checks. The mean % difference and standard deviation of difference between TR and RAs for weights of raw ingredients, total food served, serving waste and plate waste were calculated. Equivalence testing was used to verify if the mean % (and 90% CI) were within established margins ($\pm 10\%$). Results showed high reliability of the tool between users, with statistical equivalence for weight comparisons of total prepared food served, total serving waste and total plate waste (all p 's < 0.001). For raw ingredients most items (45 of 54) were statistically equivalent (all p 's < 0.05). Results were inconclusive for prepackaged items, grated apple and sweet chilli sauce ($n = 5$) and not equivalent for some small items (oil and garlic, $n = 4$). The audit tool could therefore be considered reliable for measuring total food served, serving waste, and plate waste, and provided accurate measurements for most individual raw ingredients. The tool provides a scalable, low-cost option to audit food provision and waste in ECEC settings. Its self-measurement enables research in geographically diverse ECEC settings. It also has the potential of becoming a support strategy for ECEC to monitor and improve their own food provision and waste levels. Future research could focus on digitalisation of the tool.

References

1. Australian Government Department of Education (2024).
2. Benjamin-Neelon SE (2018) *J Acad Nutr Diet* **118**(7), 1291–1300.
3. Elford A, Spence AC, Wakem A *et al.* (2023) *Public Health Nutr* **11**, 2200–2210.
4. Elford A, Gwee C, Veal M *et al.* (2022) *Int J Environ Res Public Health* **19**, 4096.