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From Data to Action: Reducing Food Waste and Improving Well-being in Elderly Care

Niina Sundin, Runa Halvarsson and Mattias Eriksson

Swedish University of Agricultural Sciences, Sweden

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Abstract

Food waste in meal services is increasingly recognised as a sustainability challenge, yet research has largely focused on schools, hospitals and restaurants (Eriksson et al., 2025). In contrast, municipal care settings, such as elderly care homes, remain underexplored, despite facing a dual challenge: substantial food waste alongside a high prevalence of undernutrition (Borgström Bolmsjö et al., 2015; Swedish Food Agency, 2025). This creates a critical inefficiency, where nutritionally adequate meals are prepared but under-consumed, undermining both environmental sustainability and health outcomes. This study presents a research project conducted in collaboration with Uppsala Municipality, Sweden, aiming to reduce edible food waste while improving food intake and well-being in municipal care. The project builds on established methods for food waste quantification and intervention design developed in school, hospital and household contexts (Malefors et al., 2024; Sjölund et al., 2025; Sundin et al., 2024), now adapted to care environments. A mixed-methods approach is employed, combining continuous quantitative measurement of food waste using smart bins that capture each waste event, including serving waste and plate waste, with timestamps, weights, and images, with qualitative methods such as interviews and observations with care staff and residents. Waste composition is assessed based on recorded data, enabling environmental, economic and nutritional analyses. These insights are used in co-design processes with care staff to develop and implement interventions, including sensory and environmental modifications and adjustments to mealtime practices aimed at increasing food intake and thereby reducing food waste. Interventions are implemented using a quasi-experimental design with intervention and comparison units, and their effectiveness is evaluated in both short- and longer-term perspectives. Preliminary results will be presented, including baseline levels of edible food waste, identification of key waste streams, and initial insights into drivers of both serving and plate waste, as well as low food intake. Intake is estimated indirectly by linking food waste data with menu and food production data, enabling assessment of overall consumption patterns and associated nutrient losses. The project further develops a co-created intervention toolbox targeting identified drivers. Planned analyses will assess outcomes across environmental, nutritional, and economic dimensions, enabling a more integrated understanding of food waste prevention in care contexts. By explicitly linking food waste to food intake, this study challenges the conventional separation between sustainability and health perspectives in public meals. It positions uneaten food not only as an environmental and economic loss, but also as a missed nutritional opportunity in vulnerable populations. The findings are expected to contribute empirical data and methodological advances, supporting municipalities in developing meal services that are not only efficient but also effective in delivering intended nutritional value.

Keywords: food waste prevention, public meals, smart bins, nutritional losses, intervention design

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