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Special Article

Improving Food and Fluid Intake for Older Adults Living in Long-Term Care: A Research Agenda



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A B S T R A C T

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Poor food and fluid intake and malnutrition are endemic among older adults in long-term care (LTC), yet feasible and sustainable interventions that target key determinants and improve person-centered outcomes remain elusive. Without a comprehensive study addressing a range of determinants to identify those that are of greatest importance for targeting with interventions, expert consensus can be used to develop a research agenda. International experts and stakeholders convened for a 2-day meeting to participate in a nominal group process to identify and prioritize determinants of food and fluid intake for persons living in LTC. Top determinants to address with intervention research included social interactions of residents at mealtime; self-feeding ability; the dining environment; the attitudes, knowledge, and skills of staff; adequate time to eat/availability of staff to provide assistance; sensory properties of the food; hospitality and mealtime logistics; choice and variety in the dining experience; and nutrient density of food. Multimodal interventions that could target these prioritized determinants were also suggested. This consensus process has resulted in a prioritized research agenda for the development and testing of interventions to improve food and fluid intake of older adults living in LTC.

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Poor food and fluid intake is common among older persons living in long-term care (LTC)^{1,2} and the primary mechanism^{3,4} for the approximately 50% who experience malnutrition.^{1,3,5} Due to the consequent deleterious health and quality of life effects of poor intake and malnutrition,^{3,6–8} research that informs practice is needed.⁹ Recent reviews suggest multiple risk factors for weight loss and poor food and fluid intake, of which some might be amenable to nutritional or mealtime intervention, including behaviors related to

dementia, such as agitation at mealtimes; staffing levels and skill for assisting with eating; interaction among staff and residents at mealtime; eating dependency and capacity; chewing and swallowing problems; unmet cultural food and dining preferences; and poor appetite.^{6,9}

The Making the Most of Mealtimes (M3) evidence-based framework conceptualizes diverse determinants of food and fluid intake and malnutrition as *meal quality*, *meal access*, and *mealtime experience* factors.¹⁰ This framework demonstrates the complexity of dietary intake and suggests that potential causes of varied consumption occur at multiple levels of influence (ie, resident, staff, dining room, home, region). To date, there is no single study that has identified the most influential predictors of food and fluid intake among a comprehensive set of diverse determinants. However, a few studies considering multilevel determinants have been conducted, demonstrating the relevance of factors at different levels, such as food expenditure and size of facility (ie, number of residents cared for).^{11,12} Due to the complexity of food and fluid intake in LTC, multimodal interventions may be warranted. In other words, several different activities that target different determinants, potentially across more

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than one level of influence, are required. To date, several interventions to improve dietary intake in LTC have been tested, many of which were multimodal.¹³ Lack of effect with some of these interventions may be due to targeting less influential determinants of consumption or those factors not amenable to nutritional interventions. It is anticipated that the M3 conceptual framework can be used to identify targets for and guide the development of effective multimodal interventions to promote food and fluid intake for older adults living in LTC.

Recent consensus groups have acknowledged that nutrition is a top area of concern for LTC research and practice.^{14–17} However, potential areas of research lack formal vetting and prioritization, necessary for a research agenda. The purpose of this article was to present the findings of a consensus-building process by an international group of nutrition experts, composed of both practicing clinicians and researchers, who used the M3 concept to consider a comprehensive list of potential determinants, prioritizing those considered most influential to promoting food and fluid intake among older adults living in LTC. The ultimate goal of this work is to provide the basis for development of novel, multimodal interventions that promote consumption and are feasible for broad implementation among diverse LTC settings.

Methods and Results

Identification of Experts and Local Stakeholders and Meeting Preparation

Members of the Agri-food for Healthy Aging (A-HA) research group, the M3 research group, and the Schlegel-University of Waterloo Research Institute for Aging (RIA) identified potential attendees based on their expertise and disciplinary perspective within the research and practice sectors, to ensure that the group was sufficiently large but not unmanageable (eg, <20) for the consensus-building process. Specifically, the priority setting exercise was focused on risk factors for food intake amenable to change for a large portion of the LTC population, thus experts in social, behavioral, and environmental influences on food intake were invited. Selection also considered local and international researchers from Europe and the United States. Invited researchers (n = 13 of attendees) also had to recently have published food- or mealtime-related research for LTC. Stakeholders (n = 6 of attendees) were also invited and included local practice leaders (eg, practicing dietitians, managers, LTC providers).^{14,18,19} Disciplines represented included dietetics (n = 9); nursing (n = 3); speech-language pathology (n = 2); and psychology, food science, nutritional science, gerontology, and kinesiology (each n = 1) (see Appendix for I-DINE consortium members). The purpose statement, biographies, and key documents or peer-reviewed publications selected by the attendees were circulated before the meeting. Three research assistants, the project manager for A-HA, and the consensus group moderator were additional members. Researchers and stakeholders met for 2 days in May 2014 in Ontario, Canada. A visit to a local research-intensive LTC home with several levels of care (retirement through to LTC and dementia care) was conducted on day 1 to provide an example of types of LTC in Canada for international researchers.

Meeting Parameters

At the beginning of the meeting, limits and boundaries for building consensus on key determinants of food and fluid intake and identifying potential interventions were discussed and agreed on. Specifically, it was decided that the goal was to *improve* mealtimes among older LTC residents and not just increase energy and nutrient intake, especially considering the quality of life aspects of dining.

Attendees were to consider the following when prioritizing determinants of food and fluid intake: (1) amenable to change; (2) evidence of and/or strong potential to improve intake; (3) magnitude of the determinant in LTC, either in terms of prevalence or importance of the issue for a smaller number of residents; (4) novel, relatively under-researched; (5) relevant to stakeholders; (6) acceptable to modify/change from the perspective of key consumer groups (eg, staff/residents/family); and (7) measurable. As well, the characteristics of an innovation (such as a new intervention) that influence its uptake were also considered, specifically its relative advantage, compatibility, simplicity, trialability, and observability.²⁰

Building Consensus on Key Determinants for Improving Food and Fluid Intake in LTC

A nominal group process was used to develop consensus,^{18,19,21,22} as it is a highly democratic and structured process, ensuring the achievement of the desired outcomes in a short period of time.²¹ Nominal groups are commonly conducted by content experts to ensure a quality process.¹⁹ The moderator (HK) is a dietitian in the area of LTC nutrition and a lead researcher with the M3, A-HA, and RIA research groups. She is experienced in qualitative methods and consensus-building techniques.^{23–25} A 2-step process was completed to first identify and then prioritize a range of potential determinants. The M3 concept had been precirculated to attendees and was used as the framework for identifying determinants.¹⁰

At the beginning of the meeting, the fishbone²² cause-and-effect diagram was used to identify factors along the “bones” of meal quality, mealtime experience, and meal access that could affect food and fluid intake. Experts first identified individually their ideas for determinants of consumption among older adults in LTC in these 3 areas, by writing them down on their own fishbone diagram (see example Figure 1). For example, under the bone of “meal quality” a participant identified nutrient density as a factor affecting meal quality, and raw food cost as a root cause of nutrient density. Next, using a round-robin process, each attendee offered an idea and a display version of the fishbone diagram was used to note down new ideas for the entire group to see as they were generated. When no new ideas were identified, the displayed fishbone diagram was reviewed to consolidate and explain or further specify potential determinants. Each participant was then provided sufficient time to review the displayed version of the fishbone, and consider and anonymously rank order these determinants. As more than 30 determinants were identified across the 3 categories, attendees were asked to rank order their top 9 choices,²⁶ where the most important was given a score of 9. The most relevant determinants were then tallied by the research assistant recorders and identified by their total score.

Table 1 identifies the top 20 ranked determinants for improving food and fluid intake in LTC. All 3 domains of M3 were covered in this prioritized list of determinants.

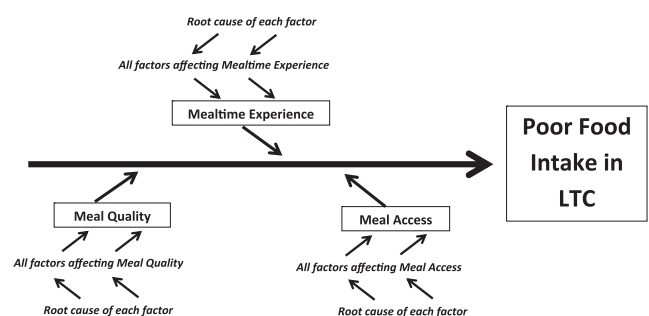


Fig. 1. The M3 fishbone diagram.

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