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Nutrition Care for Residents with Dementia in Long-Term Care Homes: Umbrella Review of Care Aide and Registered Dietitian Services

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ABSTRACT

Recent attention has highlighted the distinct food and nutrition needs of residents with dementia living in long-term care (nursing homes). Nutrition care involves assessment of nutritional need, along with providing safe and appropriate food that fulfills nutritional requirements. Within long-term care, much of the direct care responsibilities lies with care aides who provide the day-to-day assistance including at mealtimes; however, it is the registered dietitian (RD) who provides specialized nutrition care. We sought to examine how roles and responsibilities of care aides and dietitians were described in long-term care settings. As many systematic reviews addressing nutrition care in dementia have appeared in the past two decades, we examined these using an Umbrella Review protocol. Ten papers were retrieved which examined nutrition services for dementia residents. These were diverse in nature. While all addressed some aspect of nutrition and the need for appropriate staffing, only three noted and discussed care aides and only three either noted or made recommendations for involvement of dietitians. Thus, the lack of attention to RDs and care aides represents a true gap that must be addressed in order for recommendations to enhance nutrition care for residents with dementia to be effective.

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Keywords: long-term care, dementia, nutrition care, umbrella review.

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Introduction

Dementia refers to a group of chronic, progressive, incurable neurological diseases united in cognitive and functional decline. Approximately half of residents of long-term care (LTC) homes in Canada have diagnosed dementia (1). These facilities are also referred to as nursing homes, geriatric care institutions, or aged care facilities. Nutrition care for these residents is of utmost importance and it is well established that dementia is associated with increased risk of eating problems, weight loss, and malnutrition (2,3). In recent years, there has been increased recognition of nutrition care as a crucial element of not only resident physical health but also quality of life (4). Of particular interest is the evidence base to support nutrition care practices within the LTC setting, and interventions aimed at improving nutrition related health outcomes for residents with dementia within the LTC setting. LTC residents with dementia may experience impairment in eating ability (2,5), yet eating and drinking remain a source of pleasure even for those with severe dementia (6) that also increases general well-being and quality of life (7).

Within LTC, much of the responsibility for direct care lies with care aides, also known as personal support workers, continuing care assistants, and nursing aides/assistants. However, it is the

registered dietitian (RD) who provides specialized nutrition care within LTC (8). Nutrition care includes proper assessment of nutritional need, provision of safe, appetizing food that is culturally appropriate and fulfills nutritional requirements, therapeutically sound food, adequate assistance that promotes independence and function, and an environment that enables fulfillment of intake and enjoyment of food (8). The body of evidence examining potential improvements in resident outcomes related to nutrition care has increased substantially in past decades and with this, there has been an increased number of narrative, scoping, and systematic reviews addressing various aspects of nutrition care. We sought to conduct an umbrella review to ascertain the current evidence base in nutrition care for residents with dementia in LTC settings and determine how the role of the care aide and that of the dietitian were addressed.

Methods

An umbrella review process was undertaken following standard procedures (9). The databases searched were MedLine (Ovid MEDLINE), PubMed, and CINAHL (EBSCO Host). A combination of MeSH terms and keyword search terms addressed four categories: dementia, long-term care, nutrition, and reviews (Table 1).

Table 1. Search terms

Terms related to dementia	Terms related to nutrition	Terms related to facility
Dementia Alzheimer	Diet Food Nutrition Feeding methods Enteral nutrition Eat* Meal* Feed* Dine Dining	Long-Term Care Longterm care Nursing Homes Home for the aged Old age home Residential home Special care home Personal care home Group home

*Indicates truncation was applied

Inclusion criteria were: peer-reviewed 2000 to January 2018, and including all search publications written in English, published from terms. Exclusion criteria were: non-English

publications published prior to 2000, non-systematic review method (e.g., narrative review), main setting not specific to LTC, study not focused on residents who have dementia, or study not focused on dementia as a condition (e.g., enteral treatment of undernutrition due to short term illness within persons with dementia).

The initial search yielded 478 publications and an additional 4 were found through hand searching. After duplicates were omitted, the titles and abstracts were assessed according to the inclusion and exclusion criteria. If it was not clear whether to include the paper based on the title and abstract, the full-text paper was retrieved and reviewed against the inclusion and

exclusion criteria. A total of 25 full-text publications were reviewed and independently assessed for eligibility by two researchers (AC, SJW). Discussion of these articles in relation to the inclusion and exclusion criteria was undertaken to achieve consensus and the final list of 10 publications was determined (Figure 1). The 10 publications were reviewed by the two researchers. Quality of reviews was assessed according to Guyatt's guidelines to evaluate systematic reviews (10) and Khan's critical appraisal of systematic reviews (11). The articles were evaluated according to their focus, interventions and outcomes examined, main findings, strengths, and limitations.

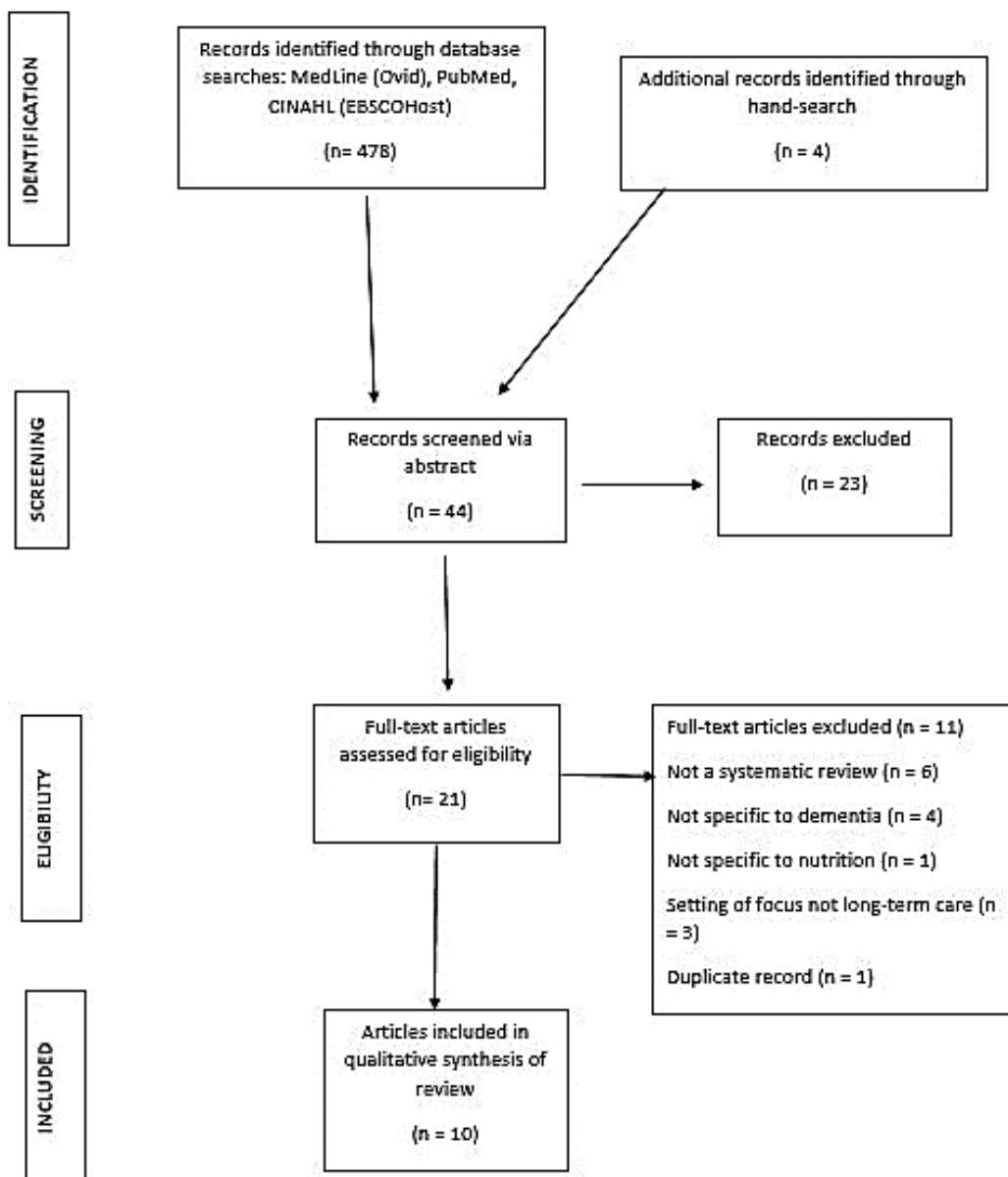


Figure 1. PRISMA Flow Diagram

Results

Overall the quality of evidence in the 10 selected reviews (12-21) was low (Table 2). Surprisingly, there was little overlap in included studies between reviews, possibly owing to the variety of focuses of these ten systematic reviews. Nutrition care is a broad concept and these reviews addressed specific facets such as environment, foodservice/mealtime enhancement, feeding assistance, enhanced nutritional screening, use of nutrition supplements, and education/training for staff.

A wide variety of interventions were considered in these reviews. Generally, interventions included use of oral supplementation/food fortification (12,15,16,18), eating assistance (12,13,16-19), environmental modification (13,14,16,18,19,21); staff education or training (16-19); and food service/food delivery modification (14,16,20). Outcomes considered varied considerably including a range of psychological/psychosocial/behavioural measures, anthropometric measures such as weight and BMI, intake measures, functional measures such as eating ability/performance, satisfaction/perspective, and quality of life measures (Table 2).

Few specific recommendations were made except for calls for further research. The broad, general nature of the recommendations was likely due to the relatively low quality of evidence, heterogeneity of findings, and the wide range of interventions and outcomes considered. Although few studies differentiated between types of staff, recommendations regarding staff in LTC settings included the need for increased training and education (12,14,16-19), and increased staff time/involvement (12,15). Two reviews made recommendations specific to care aides, calling for appropriate training/education (18,19) and one review recommended that care aides provide one-on-one assistance to residents with dementia (19). One review made recommendations specific to RDs in terms of generally increasing RD involvement in nutrition care and increasing RD involvement in evaluation of nutritional intake (16). For recommendations related to care aides and RDs by Chang et al. (13), a follow-up paper by the same group (22) was consulted. In that paper the use of volunteers at mealtimes was recommended to spare the time of care aides.

Table 2: Examination of review studies included in umbrella review of long-term care nutrition practices

Paper	Focus of Review	Study details: Number(n) Date ranges Setting Location Sample N	Methods	Main Findings	Limitations
Abdelhamid et al., 2016 (12)	Evaluation of direct and indirect interventions to improve eating and drinking in people with dementia	(i) N=43 (ii) 1992-2012 (iii) LTC, group home, day centre, community (iv) Europe, North America, Brazil, Taiwan (v) 5-515	-Searched 13 databases (no language restrictions) for intervention studies -Outcomes: intake, nutrition/hydration status, swallowing, QoL, cognitive/functional ability, cost effectiveness, mortality -Interventions: Oral nutrition supplements, swallowing problem management, eating assistance, social support -Multiple reviewers assessed validity by Cochrane risk of bias tool -Meta-analysis and subgroup analysis -Included a lay-careperson directed investigation	-Findings were generally mixed or weak without sufficient evidence to suggest specific effective interventions -Some evidence to suggest use of oral nutritional supplements, food modification, and increased social/QoL aspects of eating assistance -Noted that strong social support around food and drink are key to QoL - Identified promising practices: oral nutrition supplements; pureed and reformed foods; thickened fluids; individual mealtime or between meal	-Most studies had small sample sizes (5 with >100) - Inclusion of studies not specific to residential LTC home population Studies often lacked details of diagnosis or stage -Broad range of interventions and outcomes assessed making it difficult to characterize the relationships and make specific recommendations

				assistance; family style meals, meals shared with staff/carers; meals with facilitated social element; reminiscence cooking; finger foods	
Chang et al., 2008 (13)	Review of literature to develop an understanding of feeding difficulty and delineate their antecedents and consequences	(i) N=71 (ii) 1981-2006 (iii) Not specified (iv) Not specified (v) Not specified	-Searched 4 databases (language filters not specified) -Used concept analysis -Considered persons with dementia or articles related to infants if they contributed conceptually to feeding difficulties in adults	-Feeding difficulty, manifestations of feeding difficulty, and consequences or outcomes of feeding difficulty -Feeding difficulties arise from both caregiver efforts and personal abilities.	-Review process unclear -Lack of detail of review -Lacks a description of quality assessment of included studies -Use of reviewed studies in conceptual development unclear -Excluded 5 earlier studies because they had similar designs and results as more recent studies
Chaudhury et al., 2013 (14)	Examination of the role of the physical environment of nursing home dining rooms to support positive outcomes for residents with dementia	(i) N=22 (ii) 1996 – 2012 (iii) LTC, adult day program (iv) Not specified (v) ≥ 6 (not stated except when small as a limitation, which occurred for 14 of the studies included)	-Searched 5 databases (all English) -12 were intervention studies; remainder were qualitative, mixed method, or other non-intervention -Many different outcomes considered including physiological and psychosocial aspects -Interventions: A number of intervention types were considered -Multiple reviewers assessed selection and validity -Data synthesis was based on the validity assessment, critical review of main focus, research methods, findings, and limitations	Identified 7 therapeutic goals related to physical environment: -support functional ability -maximize orientation -provide sense of safety/security -create familiarity and home likeness -provide optimal sensory stimulation -provide opportunities for social interaction -support privacy and personal control	-Inclusion of studies not specific to residential nursing home population (e.g., adult day program) -Several observational studies with non-specific outcomes, small sample sizes -Limited explanation of process used in development of therapeutic goals -Noted inability to assess nutritional outcomes when timelines are too limited -Noted difficulty in measuring outcome specific to interventions of environmental change due to potential to affect staff behaviour.
Hines et al., 2010 (15)	Examination of the use of oral liquid nutrition supplements (OLNS) for residents with dementia	(i) N=15 (ii) 1998 – 2007 (iii) LTC (iv) Not specified (v) Unknown	-Searched 14 databases (all English) and grey literature -All types of study designs were considered as were quantitative and qualitative studies -Interventions: Where OLNS were administered to improve protein and energy intake. -Outcomes: There were many including those related to effectiveness (e.g. mortality, functional status, etc.) as well as to prescription and administration (e.g. staff views and management, etc.) -Considered persons with dementia -Rated quality of evidence by 2 reviewers using an appraisal checklist (JBI)	-Prescription of OLNS: most often made by physicians and sometimes by dietitians to treat poor intake and/or weight loss; little work to investigate root cause of impaired intake/weight loss done prior to prescribing -Administration of OLNS: Not always provided to resident according to the prescription; staff assistance is an important factor; medication rounds may lessen wastage; significant amount is not consumed by residents with dementia -Effectiveness of OLNS: No evidence for impacting morbidity or mortality; no evidence for an effect on functional status; weak evidence on slowing cognitive decline or improving energy intake; some evidence for improving nutritional status and body weight.	-Multiple factors make it difficult to decisively conclude whether OLNS are beneficial for residents with dementia (for example, if prescription practice or administration was improved would effectiveness be impacted?)

Jackson et al., 2011 (16)	Assessment of interventions to encourage eating or minimize undernutrition for persons with dementia living in care facilities	(i) N=11 (ii) 2000 – 2008 (iii) LTC (iv) USA, Canada, Sweden, Finland, Spain, New Zealand (v) (v) 9-62	-Searched for published and unpublished studies in a 3 step approach (English) -Designs: RCTs, CCTs, pre-post designs -Outcomes: A range were considered including dietary intake, nutritional status, anthropometry, functional -Interventions: A range including anything that was intended to promote dietary intake: education of staff, environment/foodservice modification. -Quality of evidence was assessed by two reviewers using JBI	-While evidence was not robust, there was some moderate evidence to show improvements in dietary intake or dietary status with staff education, simple environmental manipulations, introduction of background, feeding assistance, enhanced menus, decentralized food service, nutritional screening, increased dietetic time	-Limited time period considered -Broad spectrum of interventions and outcomes considered -Inability to compare effectiveness of different interventions due to heterogeneity
Leah, 2016 (17)	Identification of best practices to support eating in persons with dementia	(i) N=22 (ii) 2004 – 2015 (iii) Long-term care, 1 rehab centre, 1 community-dwelling (iv) USA, Canada, Europe, Taiwan (v) (v) Unknown (only some information provided)	-Searched 5 databases (English) -Intervention studies -Outcomes: Considered multiple outcomes related to nutritional health -Interventions: Considered several and grouped as educational, environmental, assistance with eating, and mixed -Multiple reviewers assessed selection and validity and used the Quality Assessment Tool for Quantitative Studies followed by GRADE -Studies included staff and person with dementia -Considered persons with dementia	-Noted the importance of tailoring intervention to particular needs of individual Categorized findings into 4 types of interventions: -Education: training programs for staff positively impacted outcomes particularly when education is paired with supervision -Environmental or routine changes: mixed results found in part due to wide variation in interventions -Assistance with eating: positive outcomes observed when time spent by staff in assisting increased -Mixed interventions: 2 studies used multiple interventions, some benefit demonstrated by increased involvement of staff/volunteers during meals	-Inclusion of study with community dwelling or outpatient population -Wide range of interventions, variation in study methods and outcomes evaluated prevents assertion of specific recommendations -Noted difficulty in translating results of studies when interventions performed by researchers rather than LTC staff -Noted confounding nature of increased attention regardless of specific intervention
Liu et al., 2014 (18)	Examine evidence in interventions to reduce mealtime difficulties for older adults with dementia	(i) N=22 (ii) 2004 – 2011 (iii) LTC (iv) USA, Canada, Europe, Taiwan (v) (v) 12-226	-Searched 5 databases (English) -Intervention studies -Outcomes: Extremely broad range of outcomes considered from mealtime difficulties to weight and nutrition status -Interventions: Broad range of interventions considered grouped by supplementation, training/education, environment/routine modification, feeding assistance, mixed -Quality of evidence: Quality and strength of evidence rated by multiple reviewers using the quality assessment tool for quantitative studies followed by graded of evidence for: body weight, BMI, food intake, eating time, feeding difficulty, and agitation -Studies included staff and person with dementia -Considered persons with dementia and caregivers	Findings categorized according to 5 types of intervention: -Nutritional supplementation: moderate evidence that high-calorie supplements can increase nutrient intake and weight but no changes observed in behavior or cognitive function, low evidence for use of appetite stimulants or modified food -Training: Mixed results; some decreases in feeding difficulty and increases in eating time shown with increased staff training, limited effect on intake or nutritional risk -Environment modification: Mixed results and insufficient evidence to make recommendations -Feeding assistance: Moderate evidence to suggest increases in intake and in time to assist -Mixed training and environment interventions have	-Wide range of interventions and outcomes examined -Inclusion of studies with non-nursing home populations or mixed geriatric inpatient and day program outpatient populations

				evidence of increases to body weight and intake	
Liu et al., 2015 (19)	Examine interventions aimed at optimizing eating performance for long-term care residents with dementia	(i) N=11 (ii) 1995 – 2011 (iii) LTC (iv) USA, Canada, Taiwan (v) Range unknown but included 530 adults with dementia and 86 nursing caregivers in total	-Searched 5 databases (English) -Intervention studies -Outcomes: Multiple but focused on eating performance and self-feeding -Interventions: Classified into four types (training programs, mealtime assistance, environment modification, multicomponent) -Quality of evidence assessed by two reviewers using the Quality Assessment Tool for Quantitative Studies and level of evidence grading -Considered persons with dementia and caregivers	-Training programs for residents or nursing assistants suggested -Montessori methods improved eating performance -Mealtime assistance from nursing caregivers helped improve eating performance -Environmental modification to address environmental factors was effective	-Wide date range of included studies -Limited overall description of the studies which were included -Specifically, limited measurement of outcome and intervention considered in studies (e.g., eating performance)
Watson and Green, 2006 (20)	Examination of interventions for feeding difficulty for older persons with dementia	(i) N=13 (ii) 1994 – 2002 (iii) LTC (iv) Sweden, UK, Belgium, USA (v) 2-24	-Searched 4 databases (English) -Multiple types of quantitative designs -Outcomes: Many types of outcomes were considered including weight/BMI, behaviours related to dementia, intake, time spent at meals -Interventions included staff assignment, nutritional assessment, behaviour, foodservice environment -Quality of evidence assessed by two reviewers -Considered persons with dementia	-Some suggestion that use of music and use of prompting or reinforcing behaviours could be beneficial to enhancing feeding assistance, but results varied among studies -Major finding addressed the difficulty of research in the area of feeding due to the presence of multiple confounding factors within long term care context -Demonstrated a clear need for increased rigour in future studies.	-Most studies had very small sample sizes, non-experimental designs -Wide variety of interventions and outcomes examined so limited specificity of recommendations -inclusion of non-LTC populations in some studies -Out of the 13 papers included, only 2 published after 2000
Whear et al., 2014 (21)	Examination of direct or indirect mealtime interventions for improving behaviour of residents	(i) N=11 (ii) 1994 – 2011 (iii) Residential care (iv) Canada, USA, Belgium, Sweden, Taiwan (v) 5-41	-Searched 15 databases (no language restrictions) -Comparative study designs were considered -Outcomes: Behavioural and psychological symptoms -Interventions: Those aimed to improve routine, experience, or environment which were then categorized as music, food service, or environmental -Multiple reviewers assessed selection, validity, and quality -Considered only elderly people	-Noted limitations due to study quality in LTC research -Most of the studies showed positive effects with the strongest evidence coming from the investigation of music on various outcomes	-Inconsistency in study interventions -Many studies did not have a formal dementia diagnosis noted -Potential publication bias due to studies missing from larger centers (e.g. UK)

Table 3. Recommendations related to LTC Staff in general, Care Aides, and Registered Dietitians (RDs)

Study	Recommendations for LTC staff (in general)	Recommendations specific to LTC care aides	Recommendations specific to RDs
Abdelhamid et al., 2016 (12)	-Recommended increasing social support around food and drink -Recommended increased staff assistance, increased staff training, and staff involvement at mealtimes	nil	nil
Chang et al., 2008 (13)	-Noted that feeding is within the purview of nursing care, and the importance of skills and knowledge of staff in assisting with nutrition care -Noted that "the antecedents to feeding difficulty often are not appreciated [by	-Follow-up paper (23) described that care aides provide nearly all feeding assistance -Follow-up paper (23) recommended consistent assignment of care aides and residents, use of volunteers to	-Follow-up paper (23) did not include RDs in list of multidisciplinary care team; noted that RDs typically calculates calorie counts and assesses malnutrition;

	staff] as conceptually different from feeding difficulty and may be confused during assessment and interventions” -Follow-up paper by same authors (23) recommended a multidisciplinary approach to address feeding difficulties and listed nurses, care aides, occupational therapists, physical therapists, speech therapists, family members, and volunteers	assist at mealtimes in order to free care aide time to attend to more complex resident cases; recommended further research specific to the effect of education and training on care aide knowledge, attitude, and behavior when assisting in meal provision	recommended involvement of RDs in monitoring malnutrition
Chaudhury et al., 2013 (14)	-Noted the importance of staff education in person-centered care related to physical environment (e.g., foodservice should limit excess noise, nursing staff should ensure clear dining rooms free of staff carts/tools) -Noted that person-centered care principles are key to supporting abilities and promoting connectedness	nil	nil
Hines et al., 2010 (15)	-Recommended treating oral nutrition supplements as a medication rather than a food in order to reduce staff using them in place of meals -Noted that inadequate staffing in LTC can lead to use of oral nutrition supplements as a meal replacement - Recommended sufficient staffing to enable mealtime assistance, to pour oral nutrition supplements from difficult packaging to more appropriate serving cups, and to ensure that supplements are given in small amounts at regular intervals	nil	No recommendations specific to RDs; noted that RDs as well as physicians prescribe oral nutrition supplements
Jackson et al., 2011 (16)	-Recommended increasing education and training of staff; regular repeating or updating of training of staff	nil	Recommendations to increase involvement of RDs in nutrition care in general, increase RDs in evaluation of intake
Leah, 2016 (17)	-Recommended staff training supplemented by supervision	nil	nil
Liu et al., 2014 (18)	-Recommended education and training for nursing, care aides and family caregivers	-Recommended appropriate training for care aides	nil
Liu et al., 2015 (19)	-Recommended one-on-one nursing assistance during mealtimes -Recommended staff training on mealtime assistance	-Recommended education and training for care aides, one-on-one care between care aide and resident during mealtime	nil
Watson and Green, 2006 (21)	-Noted importance of multidisciplinary team and listed geriatricians/psychogeriatricians, physiotherapists, speech language therapists and occupational therapists	nil	nil
Whear et al., 2014 (22)	-No recommendations made related to LTC staff	nil	nil

Discussion

In 2013, Rolland and de Souto Barreto noted that therapeutic strategies in LTC are, for the most part, not evidence-based, owing in part to the dearth of research conducted in LTC at less than 2.5% of published research in older populations (23). Similarly, this umbrella review found that while there is heightened interest in the topic of effective nutritional care for LTC residents with dementia, research conducted within LTC is of generally low quality with

inconsistency in outcomes investigated or considered important (24).

Improvements to anthropometric, functional, and quality of life outcomes were observed in the wide variety of interventions examined and no negative outcomes were reported. Of particular importance are the improvements made to quality of life given that dementia results in progressive decline in cognitive and functional abilities. Though not specific to residents with dementia, in a study examining the relationship

between 11 domains of quality of life among LTC residents, food enjoyment was found to be a significant positive predictor of satisfaction with LTC (25).

It is not surprising that the main recommendations made in these reviews involved LTC staff as it is generally accepted that in order to change a care outcome, staff care practices must be targeted. In a review of LTC staff practices, Low et al. (26) found that there is a strong evidence base regarding the relationship between staff care practices and resident outcomes, that staff behaviours are easier to target than resident outcomes, and that interventions that were not successful in improving staff practices also did not improve resident outcomes (26). However, organizational factors must be in place to support staff practices in order for them to be successfully implemented and maintained (27). An examination of dementia care workers concluded that while education is an essential component of providing quality care, particularly person-centered care, education can contribute to staff distress when they are unable to perform according to the training due to organizational constraints (28).

Notable was a lack of discussion addressing severity of dementia and the impact on nutritional care strategies. In addition to calling for increased rigour in future studies, Watson and Green (20) criticized the state of the science for failing to consider dementia severity when evaluating interventions. That is, severity or stage of dementia is an important factor that may confound the impact of any intervention with some being more successful at earlier or later stages of the dementia trajectory (20). The type of dementia may also be an important consideration that was not addressed by any of the reviews; heterogeneity of results may be, in part, owing to the heterogeneity of diseases resulting in dementia.

The majority of reviews overlapped in recommending increased education or training for LTC staff as an effective strategy to enhance

nutrition care for residents with dementia. A quasi-experimental feeding skills training intervention trial was found to increase care aide knowledge and translate into enhanced care for LTC residents with dementia through significantly lengthened resident time at meals, more supportive eating, and increased intake (29). Amella (30) posits that attention must be paid to not only what residents eat but how they eat and are supported to eat, but cautions that education or training must be paired with adequate staff time and an appreciation that residents with dementia often present challenges to mealtimes and nutrition care. Keller (5) agrees that more robust research on interventions that address the many components that comprise nutrition care for individuals with dementia is needed.

Related to the need to address complexity when considering staff training is the need for training to be long-term and supported by supervision that reinforces the teachings (29). A training intervention aimed at increasing LTC care aide knowledge and behaviours around nutrition care for LTC residents randomized among LTC homes found that pairing education with supportive supervision and reinforcement of concepts was effective to maintain resident nutritional status in comparison to residents in LTC homes where staff did not receive the education and supervision component (31).

The most telling finding from this umbrella review is the lack of specificity regarding type of staff when making recommendations related to nutrition care for residents with dementia. Only 3 of 10 reviews mentioned care aides; similarly, three of 10 acknowledged RDs as nutrition experts. Perhaps studies regard staff as a unified concept under the auspices of person-centered care, in recognition of the need for all staff working within the LTC setting to perform in concert. However, the specificities of staff job duties, knowledge, and abilities are of pertinent concern when formulating recommendations. Given that RDs possess specialized training in nutrition care, the lack of mention in the majority

of the reviews is of concern. Keller et al. (32) found that enhanced RD time in LTC was effective in preventing or halting weight loss among residents with dementia. In a qualitative examination of LTC staff's perception of factors that could influence malnutrition treatment, education from RDs and interdisciplinary cooperation were listed as key (32).

The lack of specificity distinguishing the role of care aides from other direct care providers such as registered nurses or licensed practical nurses is a gap in that each of these groups possesses very different levels of training and responsibility regarding care of LTC residents, including nutrition care. Not only is more research required related to specificity of care aide education and training, but also on the interaction between care aide and residents with dementia, and the influence this has on nutritional outcomes (24). Together, the lack of attention to RDs and care aides represents a true gap that must be addressed in order for recommendations to enhance nutrition care for residents with dementia to be effective, since both roles are central to improving nutrition care in LTC settings.

A limitation of this umbrella review is the inclusion of only English-language articles from high income countries published up to the beginning of 2018. Another limitation is the lack of generalizable recommendations, due in part to the broad scope, but also due to the overall low quality of studies and the inherent lack of consensus on nutrition-related outcomes within the disease states that comprise dementia. The broad scope of the inquiry is a strength of this study, in consolidating and summarizing the current state of the evidence regarding nutrition care for persons with dementia in LTC. This inquiry exposed a gap in the knowledge related to care staff and nutrition care provision in LTC in general.

The authors have no conflict of interests to declare.

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