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Applying knowledge translation concepts and strategies in dementia care education for health professionals: recommendations from a narrative literature review

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Abstract

Introduction: Dementia education programs are being developed for health professionals, but with limited guidance about "what works" in design and content to promote best practice in dementia care. Knowledge translation (KT) is a conceptual framework for putting evidence to work in health care. This narrative literature review examined the question: What does the field KT offer, conceptually and practically, for education of health professionals in dementia care? It seeks to identify the types of strategies currently used within education to facilitate effective KT for the wide range of health professionals who may be involved in the care of people with dementia, plus explore enablers and barriers to KT in this context. **Methods:** From 76 articles identified in academic databases and manual bibliographic searching, 22 met review criteria. **Results:** The literature synthesis indicated four hallmarks of successful KT-oriented dementia education for health professionals: (1) multimodal delivery, (2) tailored approaches, (3) relationship building, and (4) organizational support for change in the work setting. Participatory action frameworks were also favored, based on interactive knowledge exchange (eg, blended learning) rather than passive unidirectional approaches alone (eg, lectures). **Discussion:** The following six principles are proposed for educating health professionals in dementia care: (1) Match the education strategy to the KT goal and learner preferences; (2) Use integrated multimodal learning strategies and provide opportunities for multiple learning exposures plus feedback; (3) Build relationships to bridge the research-practice gap; (4) Use a simple compelling message with formats and technologies relevant to the audience; (5) Provide incentives to achieve KT goals; and (6) Plan to change the workplace, not just the individual health professional.

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Applying knowledge translation concepts and strategies in dementia care education for health

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Abstract

Introduction: Dementia education programs are being developed for health professionals, but with limited guidance about 'what works' in design and content to promote best practice in dementia care. Knowledge Translation (KT) is a conceptual framework for putting evidence to work in health care. This narrative literature review examined the question: What does the field KT offer, conceptually and practically, for education of health professionals in dementia care? It seeks to identify the types of strategies currently used within education to facilitate effective KT for the wide range of health professionals who may be involved in the care of people with dementia, plus explore enablers and barriers to KT in this context.

Methods: From 76 articles identified in academic databases and manual bibliographic searching, 22 met review criteria.

Results: The literature synthesis indicated four hallmarks of successful KT-oriented dementia education for health professionals: (a) multimodal delivery, (b) tailored approaches, (c) relationship building, and (d) organizational support for change in the work setting. Participatory action frameworks were also favored, based on interactive knowledge exchange (e.g. blended learning) rather than passive unidirectional approaches alone (e.g. lectures).

Conclusion: Six principles are proposed for educating health professionals in dementia care: (1) Match the education strategy to the KT goal and learner preferences; (2) Use integrated multimodal learning strategies and provide opportunities for multiple learning exposures plus feedback; (3) Build relationships to bridge the research-practice gap; (4) Use a simple compelling message and formats/technologies relevant to the audience; (5) Provide incentives to achieve KT goals; and (6) Plan to change the workplace, not just the individual health professional.

Introduction

Global projections for dementia diagnoses continue to rise.[1] The challenges of meeting the needs of people with dementia have made continuing education of health professionals on this topic an international priority. The concept of 'evidence-based practice' has become the gold standard for health care; it is envisioned that new ideas, treatments, technology and methods will be continually incorporated into the routine practices of health professionals leading to improved outcomes for people with dementia.

However, a research-to-practice gap exists, reducing the ease, speed and effectiveness with which health care professionals adopt new findings.[3,4,5] Education is widely recognized as an important mechanism for closing this gap.[2] The challenge of educating health professionals in dementia care is broader than the provision of information updates (e.g. latest drug therapies) – it extends to strategies that will support the implementation and ongoing use of that information.

Knowledge Translation (KT) was developed as a conceptual framework for putting evidence to work in health care.[3] KT principles and strategies can and have been used in the context of continuing education interventions to facilitate application of new knowledge into practice. In the Australian setting, the higher education sector has explored KT activities within a national research quality framework, seeking ways to embed KT into research and teaching.[6] There is a need for evidence-based strategies to drive more KT-oriented education for health professionals and undergraduate students who are being prepared for work with people with dementia. However, to our knowledge, there has been no synthesis of the literature aimed at identifying these strategies.

This narrative review seeks to integrate existing educational research and provide recommendations for best practice 'educational KT' initiatives which target health professionals who have a role in caring for people with dementia. More specifically, the review aims to (a) identify the types of strategies currently used within education to facilitate effective KT for health professionals who may be involved in the care of people with dementia, and (b) explore enablers and barriers to KT in this context. The objective was to summarize the educational literature *explicitly guided* by KT concepts and address the overarching question: What does the

field of KT offer, conceptually and practically, for effective continuing education of health professionals engaged in dementia care?

Method

Review rationale: Dementia care pathways involve many disciplines and health sectors (e.g. primary health, aged and community care). The literature is correspondingly scattered for understanding best approaches to delivering KT-oriented dementia-specific education. Integrating available literature also faces the challenge of confusion around the concept of KT. It is commonly used interchangeably with other terms like knowledge transfer, knowledge exchange and implementation science.[2,4,5,7,8] While a full conceptual review is out of scope (see authors[9,10]) of this paper, KT is understood as "the exchange, synthesis and ethically sound application of knowledge – within a complex system of interactions among researchers and users – to accelerate the capture of benefits of research".[3(p33)] KT is viewed as a broad holistic construct which subsumes knowledge transfer.[3,4] KT is active not passive; information flow between knowledge producers and users can be multidirectional and interactive; and there is no prescription for who or what is responsible for ensuring knowledge is used (i.e. impact) and for how long (i.e. sustained). To bring together a sparse and scattered literature, a narrative review strategy was used. This approach allowed a broader literature scan beyond the traditional systematic review method which tends to focus on outcomes. The narrative review allowed inclusion of (reports of education delivery (where outcomes may not be available), plus other scholarly effort to bring conceptual precision to the KT field as relevant for dementia care.

Review methodology. Following guidelines for narrative synthesis,[8] the search strategy used academic databases (Medline, CINAHL, Psyinfo) and manual bibliographic scanning (e.g. Google Scholar) to identify peer reviewed literature written in English (January 2000- January 2015 inclusive). This timeframe ensured review of historical and contemporary literature to track changes in the educational landscape (e.g., increasing use of online teaching modalities). Key search terms were: Dementia AND (knowledge transfer OR knowledge

translation) AND (education OR intervention OR training OR strategy OR evidence based practice).This keyword combination limited article retrieval to those targeting health professionals (or trainees) who may be involved in the care of people with dementia and who were being (or had been) educated through a university or tertiary education system. Articles were included if: they were an education-based initiative with Knowledge translation (or knowledge transfer) goals; targeting health care professionals who may be involved in the care of people with dementia; described and/or evaluated components or enablers/barriers to the intervention. Articles were excluded if they focused on non-tertiary-educated care staff (e.g. personal care attendants); did not describe the intervention and/or barriers/enablers of KT; or described a KT initiative which was not education-based (e.g., was policy or technology focused). The reference list for each included article was scanned for other relevant works.

Results

The search strategy yielded a shortlist of 76 papers (62 from academic databases, and 14 from manual search), of which 22 met review criteria (listed in Table 1). The following types were represented (some had multiple components, e.g. review plus case-study): program evaluation (8 articles), review (3), RCT or interrupted time series (3), intervention description (4), case study (2), and survey (2). All articles included participants from OECD countries: USA/Canada (11 articles), UK/Western Europe (6), and Australia (4). One included an Egyptian sample but none represented Asia, Eastern Europe or Africa. Target populations typically comprised multiple professions and roles: Nurses (7 articles), General Practice/Physicians (8), generic health professionals (10), researchers (4), educators (3), and policy-makers (3), students (2), and allied health (1).

[Insert Table 1 about here]

Aim 1: Strategies used to promote KT within educational interventions

Multimodal interventions

The dominant strategy identified for successful KT was a multi-faceted/multi-modal approach[11-15] involving two or more educational strategies. Multimodal KT interventions were associated with improved confidence, knowledge and skills[12, 14, 15, 16, 17]. These interventions could include a combination of traditional lectures, workshops, web-based resources, DVDs/CD-ROMs, and a mentorship system. These multiple strategies were used to enhance learning, target a variety of barriers to KT and ease uptake of new behaviors and practices into the work setting.

There was evidence that a sound theoretical base offered useful guidance to support integration and cohesion of multiple components. Two examples of the use of theory to anchor educational strategies are learning theory[18] and the PARiHS (Promoting Action on Research Implementation in Health Services) Framework[19]. Cooke, et al. (2013)[18] developed an 8-month educational intervention using Knowles' (1980) learning theory to implement a capability model of person centered dementia care - the range of teaching methods included face-to-face sessions by nurse facilitators, clinical scenarios, mentor discussions, personal reflection, interactive audio visual activities, and using 'tip sheets'. Participating staff perceived the program as well-designed, relevant, and with positive impact on their work. Parke, et al. (2012) used the "Promoting Action on Research Implementation in Health Services" (PARiHS) framework to develop and implement a dementia pocket card tool to aid family physicians with dementia assessment, diagnosis, service provision and case-finding. Rather than focusing just on the clinical tool production, the theoretical framework supported exploration of range of implementation enablers, such as the role of the family as part of the care team, and organizational change factors (e.g. time).

The rationales in the literature for developing multi-faceted interactive models of education appeared to reflect appreciation for the potentially limited efficacy of interventions that could be deemed to be expert-driven, one-way, and passive – such as traditional one-off 'lecture' delivery styles[14]. Single format educational interventions (e.g., a lecture/slide show format or viewing a DVD/video with limited facilitator/learner

interaction) were still useful parts of some interventions[13] – and justified as cost effective and avoiding barriers to KT such as the lack of time for professional development[13]. Overall, however, these more passive, *expert as driver* educational strategies were recognized as modest-to-poor KT predictors[14,20]. Although an important caveat, proposed in a cluster randomized trial comparing blended and 'classical' learning for physician-targeted dementia education,[15] was that multi-faceted interventions are only beneficial if participants are motivated to engage with the different components, and otherwise added little to classical approaches.

Effective KT typically occurred when interventions combined multiple sources of information (e.g., toolkits, guidelines) alongside *active* learning elements[14,21,29] (i.e. those which engage the learner via participation, reflection, role playing, etc.). It was unclear which components or combinations within a multimodal approach were most effective. Results were equivocal for independent study options (e.g. written materials) with some age differences evident. For example, younger physicians were more likely to prefer internet/audiovisual based learning[22].

An educational approach providing multiple learning exposures also appeared to maximize successful KT outcomes[11,12]. Yet a tradeoff was evident – traditional didactic learning interventions were relatively inexpensive with quicker delivery than multimodal formats, and addressed a commonly cited resource barrier to KT oriented education: limited time for busy health professionals.[13] Therefore, rather than simply offering variety for learners, a KT-oriented multimodal approach to learning ensures a place for each component in a coordinated whole. Taken together, available evidence suggests that multi-modal interventions were successful in increasing self-reported knowledge and confidence of learners, particularly when also incorporating elements of 'relationship building'[23, 24, 25] - a feature of tailored interventions (see below). An example of an effective relationship building strategy is the use of interprofessional training in a multicomponent education delivery – such as providing different learning opportunities (e.g. workshops, observation, mentoring) to increase the capacity of health professionals (e.g., family physicians) to detect and manage patients with dementia through primary care memory clinics.[16]

Tailored interventions

Strategies where the components were adjusted (tailored) to address specific barriers for a particular participant group or their context were frequently utilized to enhance KT outcomes[12,13]. Tailoring typically occurred in response to a preliminary needs analysis. For example, one study reported improved outcomes from tailoring generic information regarding the management of dementia behavioral problems to highlight those faced specifically in a residential aged care setting.[4] Tailoring was especially integral in active learning modalities, featuring interpersonal contact between learner and educator. For example, learners were trained to tailor action plans to their workplace and to conduct a needs analysis based on new knowledge obtained from a KT intervention[13]. In this way, tailoring can be built in to all educational components such as, lectures, resources, networking events and panel discussions, allowing for each strategy to be precisely targeted to promote KT and (as relevant) removing or adjusting previous practice.

Interventions which foster relationship-building

The domain of 'relationship building' refers to strategies utilized to connect learners with others who can assist them with the process of putting knowledge into practice. Many educational interventions reporting effective KT employed relationship building strategies. Examples included: linking researchers and users,[23] preceptors,[26] observership (field trips), mentoring,[16, 17, 18] a community of practice,[27] and the creation of interprofessional networks.[19,24,25] One systematic review identified linkage and social interaction between researchers and users as fundamental for KT-oriented education.[23]

Whole-of-organization interventions

Depending on their position and status, health professionals may lack the channels of influence to implement new practices. Educational KT efforts therefore, may be best coupled with strategic education to also support wider organizational change. For example a dementia care management intervention which

promoted system change to unite separate service provider groups[28] was superior to a low intensity

educational seminars not offering system change support.

One study also suggested that factors which can be defined as "organizational culture" are important

for ensuring KT outcomes in dementia education for health professionals in their workplace.[27]– Key features

are a work setting that embodies trust and leadership (e.g. in management to support a practice change or a

new care innovation), and encourages staff to engage in problem solving activities in dementia care. KT

strategies incorporating organisational culture factors can help sustain motivation to engage with education

and put new learnings into practice, and proactively address change barriers that are viewed to be 'the

system'. Whole of organization educational approaches may need to address communication issues (e.g.

between management and reporting staff) and provide incentives at a policy level.[4] (e.g. protected time for

health professional learning, or a needs assessment to understand practical dementia education gaps)

Aim 2: Identifying KT Barriers and Enablers

Studies addressing the needs of health professionals in relation to KT identified specific barriers. These

included insufficient time to implement strategies; a lack of financial, leadership or staff support; inadequate

levels of knowledge or training; participant personal factors (e.g., changing their mind, forgetting);

inappropriate staffing or resources; barriers relating to position in the institution (e.g., not enough power to

instigate change); and previous unsuccessful attempts at implementing new practices/knowledge.[4,13,18] Other

barriers related to the knowledge base itself, such as the high volume of dementia research; and the

accessibility and/or quality of the evidence[4].

KT facilitators were also identified. These included adequate resources and support; having sufficient

knowledge/experience; access to feedback; a learning experience which combined group and individual

teaching; and formulating an easy rather than a difficult action plan[13,18]. Practical skill-based knowledge and

experience, and the use of interactive workshops, placements and personal delivery of information enabled KT

success[4]. With respect to content, the use of simple compelling messages - integrated, clear, concise user-friendly information with minimal technical jargon - was highlighted as a KT enabler[4]. Also important was the work environment (the KT target), to promote and support "realistic" goals[13], and include group learning, innovation and communication, plus policy-level incentives[4].

Discussion

This narrative review aimed, firstly, to identify the types of strategies currently used within education to facilitate effective KT for health professionals who may be involved in the care of people with dementia. From a review of 22 articles, multifaceted and/or multimodal interventions were the most frequently employed 'educational' KT approach. These approaches comprised two or more delivery modes and could include a combination of traditional lectures, workshops, online resources, DVDs/CD-ROMs, and a mentorship or field-trip systems Overall the complementary effect of the components was associated with enhanced confidence, and improvement and retention of knowledge and skills[12,14,15,16,17].

The KT 'success' of the multimodal approach seemed to rely on both the participant's opportunity and willingness to engage with each component in a preferred learning format[15], and the perceived relevance of both the content and/or delivery modality. Understanding and incorporating learner preferences and input into design of learning activities (especially active approaches) is an example of KT-oriented 'tailoring'. The importance of tailoring has also been highlighted in the broader KT literature which recommends that early assessment of barriers and facilitators for KT should inform and become part of program design and delivery.[31] In short, more is not necessarily better. Each part needs to be perceived as relevant to the KT goals - by learner and teacher.

Two other sets of factors emerged as potential enhancers for KT success. One set addressed relationship building[16,17,23,24,26] - between learner and educators, and between learners themselves, and between organizations involved in KT. The other set of factors concerned a whole of organization perspective to change, with a focus on supporting KT education objectives for individuals in their work setting.[19,27,28]

Considered together, the health professional learner requires more than new knowledge to improve dementia care practice. Key elements are a supportive work setting, opportunity, peer support, and feedback (or mentoring).

The second aim of this review was to explore barriers and enablers for KT in dementia care. Barriers tended to relate to restrictions experienced by the participants, especially time, resources and power to implement KT related change within their workplace[13,18]. There were also limitations with identification of relevant, methodologically rigorous research to translate.[4] Enablers supported the implementation and maintenance of practice change, and centered on providing relationship and organizational support for KT via professional networks, resource allocation, and systemic change.[4,13,18]

What do models of knowledge translation offer?

As *part* of the larger KT agenda, educational interventions which incorporate multimodal learning strategies, tailoring and relationship building emerged as the cornerstones approaches for promoting KT outcomes within health professionals who play a role in the care and support of people with dementia. Multiple rather than single learning exposures appear to support KT,[11,20] alongside using relevant tools (e.g. checklists, toolkits),[29] expert support,[18] and providing opportunities to be observed in action with feedback[16,17]. From the broader KT literature, it has been argued that multicomponent educational approaches need to be carefully planned with specific attention to integrating the program parts.[31] A sound KT-oriented theoretical approach, such as Participatory Action Research or the "Promoting Action on Research Implementation in Health Services" (PARiHS) framework, can provide a useful planning guide. A systematic theoretical approach may also help build the capacity of a health professional to translate knowledge into practice by giving an additional learning opportunity in the role of a dementia care study participant or leader.[32] These frameworks also promote optimal KT-oriented communication styles by tailoring education, plus supporting relationship building and sustaining learning networks beyond the intervention. Knowledge transfer is facilitated by simple

compelling and integrated messages.[4] Technical ("research") jargon is minimized by tailoring language to the target professional group,[12] and education delivered by an appropriate *change agent* (e.g. peers, opinion leader).[8] These issues highlight *knowledge relationship*s as potentially vital KT supports for organizational change. To be effective, KT-oriented education may also risk being either intensive or expensive. Tailoring to health professional needs and work setting may require numerous resources to meet different learning styles and content needs. The return on investment should be weighed against practical desirable KT goals, e.g. improved patient outcomes. In dementia care, a carefully tailored multimodal approach, catering for learner diversity, should ensure that limited resources are allocated optimally.

Knowledge translation is a broad field. In summing up the implications for using education to achieve KT, there is pragmatic value in borrowing the terminology of behavioral stages from guidelines implementation in health.[33] KT education starts with the aim of promoting *awareness* of new evidence, moves participants through a process of *agreement* with that evidence, then *adoption* and eventual *adherence* phases for integrating knowledge into a sustained practice change. This review suggests it is possible to build awareness of new research via a single learning encounter (i.e. transfer new knowledge via one workshop or lecture), but repeated multifaceted learning interactions tailored to the professionals working environment are required to support attitudinal change, skill building and confidence. Sustainable outcomes will benefit from educational strategies which promote ongoing learner feedback and relational support, informed by evidence about best practice. KT education therefore is a long term and incremental learning investment.

Six principles for integrating KT into continuing education

This review indicates promising principles for educators seeking to integrate KT approaches into their continuing education interventions for health professionals who may have a role in dementia care:

1. *Match the education strategy to the KT goal and learner preferences*

Single (one off) strategies may support short term goals (e.g. 'awareness' of new knowledge). However, measurable and sustained evidence based practice will likely need a longer term and multipronged educational strategy tailored to the learner's needs and work context.

2. *Use integrated multimodal learning strategies, with opportunities for multiple learning exposures and feedback*

    Learning thrives on variety, but *more* does not mean *better*. Multimodal strategies optimally support adopting evidence into practice if learners see the relevance of all parts, and are motivated to participate. Learners also benefit from multiple exposures to difference ideas and repeated opportunities to try out new learnings with feedback.

3. *Build relationships to bridge the research-practice gap*

    Learners value follow-up support to 'try out' new knowledge. Mentoring and peer partnerships need to be considered to sustain practice change in the longer term.

4. *Use simple compelling messages delivered with formats and technologies relevant to the audience*

    KT will be promoted by clear jargon-free message delivery via a messenger and media that fits the audience. Sometimes the format may change but the message needs to stay consistent.

5. *Provide incentives to achieve KT goals*

    Motivation for learners and teachers to engage in KT activities may be enhanced via organizational incentives (e.g., protected time)

6. *Plan to change the workplace, not just the individual health professional.*

    Change affects all system elements: individual and organizational. KT-oriented education is a call for workplace change, and information about change processes will also support modifying prior practices.

Limitations and future considerations

Evaluations of KT concepts and strategies in this review have been limited by a reliance on learner self-reports, e.g. confidence or knowledge, and not independent assessment of practice change or patient

outcomes. Few studies employed recognized tools to assess practice change, quality of care, or impact on people with dementia. Even fewer use randomized control designs – tending to be short-term with a dearth of longitudinal or patient outcomes. It is therefore not clear whether KT-oriented education for health professionals who deliver care results in either direct or indirect benefits people with dementia.

This review and other research[4,30] highlight a lack of evidence-based research to evaluate effective KT strategies for the care of people with dementia. Therefore results gleaned from this narrative review should be viewed as formative rather than definitive. Furthermore, the range of interpretations of the phrase KT hampered meaningful comparison of data, and in some cases, KT interventions were not adequately described. This review focused on tertiary educated health care professionals, and results may not generalize to all staff - including segments of the informal or volunteer workforce involved in dementia care. Relating to generalizability is the education era for the literature. A decade ago, technology based (e.g. teleconference) formats were least preferred by physicians and nurses relative in-person education (e.g. workshop). This review could be updated within five years for potential technology-based advances relevant to dementia care, and with an extended focus to include the involvement of other stakeholders (e.g. consumers) in KT strategies.

The search strategy focused on two search terms relating to KT – while other conceptualizations are possible (up to 90)[5] the clarity these other terms offer for models of education is not clear. In future exploration of these recommendations, one question worth exploring is the potential tradeoff between tailoring and fidelity.[30] In dementia care, little is known about the boundary between fitting an education product to health professional learner needs and how this impacts the effectiveness of the intervention. There is unlikely to be a single 'right way', but rather the dynamic and iterative 'knowledge-to-action cycle'[5] which is at the forefront of successful ongoing KT. In the words of Pfeffer and Sutton: "Learning is best done by trying lots of things, learning from what works and what does not, thinking about what was learned, and trying again." [34(p7)]

Lessons for Practice

- Six recommendations are made for designing KT education programs for health professional involved in the care of people with dementia:

    o Match the education strategy to the KT goal and learner preferences

    o Use KT goals and theory to integrate a multimodal educational strategy

    o To bridge a research-practice gap, build relationships

    o Use a simple and compelling message and formats/technologies relevant to the audience

    o Provide incentives to achieve KT goals

    o Plan to change the workplace, not just the individual health professional

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Table 1: Key features of the 22 articles included in the narrative literature review of KT-based education for health professionals in dementia care

Source, Year	Country	Study types	Target group	Sample size	KT Terminology	Intervention	Evaluation	Outcomes
Becheikh et al. (2010)[23]	Egypt/ Canada	Systematic literature review	Linkage agents (Researchers and Practitioners)	50 Articles	Knowledge transfer	Relationship building within a multimodal intervention		Linkage agents central to KT process; review identified models emphasizing interaction between researchers and learner/users as a fundamental for KT .
Bruton et al. (2012)[26]	Wales	Descriptive article (components of graduate foundation program)	Nursing graduates and Managers from Organisations caring for older people with dementia	Not stated	Education	Relationship building within a multimodal intervention	Anecdotal feedback	Staff and graduates valued training program. Evaluation will occur through assessment of patient dignity.
Chesney et al. (2011)[11]	Canada	Program evaluation.	Primary Care Professionals	38 Primary Care Professionals	Knowledge transfer	Multimodal	Self-reported knowledge and confidence	Improved ratings of confidence/knowledge, stable at 3-month follow-up. Greater improvements for those who completed more assessments (performance opportunities), and/or had less initial training.

Chodosh et al. (2006)[28]	US	Cluster randomised controlled trial	Care providers (internists, physicians, nurse practitioners)	166 providers	Provider education	Multimodal organisational intervention	Ratings of knowledge, attitudes and quality of care	Intervention group showed better knowledge on assessment of decision-making capacity than usual-care providers.
Chrzescijanski et al. (2007)[20]	Australia	Simple interrupted time series design with evaluation.	Nursing and care staff; dementia patients with aggressive behavior	43 residents and 85 staff	Education intervention	Uni-faceted delivered at single timepoint.	Aggression scores (measured by a pre-existing tool).	Aggression episodes reduced frequency but not intensity - not maintained at 2 weeks, i.e. short term gain.
Cooke et al. (2013)[18]	Australia	Program Evaluation (exploratory design).	Dementia care staff (personal care workers, Enrolled Nurses, Registered Nurses, diversional therapists.)	48 staff in 3 long term aged care facilities.	Educational intervention	Multimodal	Participant ratings of confidence and satisfaction, and perceptions of workshop facilitators.	Program successful - staff tended to agree workshops were well-designed, content easily understood/relevant, and had a positive impact on their work.
Draper et al. (2009)[4]	Australia	Literature review	Educators; Researchers; Service Providers; Policy Makers; General Public	Not applicable	Knowledge translation	Tailored multimodal intervention		Effective KT had the following features: simple compelling message; use of interpersonal contact/roles; practical framework emphasizing "know-how"; provision of resources/support.

Kontos et al. (2010)[21]	Canada	Program evaluation.	Registered nurses; Allied health professionals; Personal support workers	24 practitioners across 2 nursing homes	Knowledge translation	Multimodal (including critical reflection, role play, dramatized vignettes)	Focus groups and semi-structured interviews with participants	Increased understanding of non-verbal self-expression for people with dementia was reported. Participants reported changes in behavior in response to the intervention. Dramatized vignettes thought to facilitate KT.
Kümpers et al. (2006)[27]	England, Netherlands	Case study design.	Specialist and Generic Dementia Care Services - professionals, managers and carers of people with dementia	4 local case studies (approx. 25 interviews per case).	Knowledge transfer	Relationship building model within a multimodal intervention	Success/failure of intervention based on participant perceptions (uncovered via interview).	Case study data refined a conceptual KT framework, emphasizing professional and organizational culture, domain perceptions, perceived dependency, and resource availability. Personal/organizational continuity identified as fundamental

Lee et al. (2013, 2014)[16,17]	Canada	Program evaluation (involving development of Memory Clinics).	Primary care physicians	22 Family Health Teams (FHTs), with 124 health professionals	Continuing Professional Development	Intervention: Relationship building model within a multimodal intervention	Evaluation was based on participant perceptions of knowledge, confidence and comfort.	At follow-up, increased reports of knowledge of and ability to assess and manage cognitive impairment, increased comfort level when speaking to patients about memory problems, and greater confidence in FHT ability to manage cognitive impairment independently. Almost all participants successfully formed a memory clinic.
Malinowsky et al. (2014)[29]	Sweden	Program evaluation	Health care professionals	11 participants	Knowledge translation	Multimodal (presentation, clinical tools and interviews during and after a period of practice)	Participant feedback (qualitative)	This educational model was found to be successful in achieving KT. Participants reported greater understanding and improved clinical practice. Active involvement of learners was a crucial facilitator of KT.

McCleary et al. (2009)[36]	Canada	Program evaluation (a Knowledge Exchange Institute for Geriatric Nursing Education).	Educators and Students; Nursing faculty members, nursing doctoral students; baccalaureate nursing students	30 participants from 22 universities/c olleges	Knowledge transfer	Multimodal	Participant feedback, reports of value of the Institute	Knowledge-to-action process model used to guide and deliver training. Participant personal goals and those of the Knowledge Exchange were met.
McDonald et al. (2008)[24]	Canada	Descriptive article (National Initiative for the Care of the Elderly; NICE).	Researchers, practitioners, students	Not applicable	Knowledge transfer	Relationship building model within a multimodal intervention	(Not applicable)	NICE emphasizes an interdisciplinary approach to elder care, using multidisciplinary themed teams
Meuser et al. (2004)[22]	USA	Cross-sectional survey methods	Primary care and specialist physicians, advanced practice nurses	834 clinicians	Continuing education	Multimodal intervention	Continuing education preferences	Preference for in-person educational programming over technology-driven modes of learning (DVD, satellite, internet)
Nayton et al. (2014)[12]	Australia	Program evaluation	Hospital – based staff	49 acute care nursing and allied health staff	Knowledge Translation	Tailored, multimodal microteaching and workshop	Self-report	Increased confidence (to apply new knowledge) and program satisfaction

Parke et al (2012)[19]	Canada	Descriptive (National Initiative for the Care of the Elderly, NICE.)	Dementia multiple care providers; family members; policy makers	Not described	Knowledge exchange	Multimodal intervention,	(Not applicable)	Developed user-friendly tools, including a dementia pocket-card for family physicians. Knowledge exchange facilitator addressed organizational change.
Rodriguez et al. (2010)[13]	USA	Program evaluation (use of Action Plans).	Health professionals (56% clinicians)	366 participants at follow-up	Continuing education	Tailored multimodal intervention	Self-reported change and use of action plans.	At follow-up, "action plan" stimulated practice change - majority (73%) indicated some degree of implementation success.
Stark et al. (2013)[25]	Scotland	Multi-method (literature review, interview, case study, survey)	Researchers; Policy Makers and Dementia Carers	Survey- 10 community mental health service teams. Interview - 7 patients, 13 family carers; Case study- one of rural area.	Knowledge transfer	Intervention: Relationship building model within a multimodal intervention	Not specified - implied interviews throughout the process.	Knowledge transfer partnership between local service and University over a two year period.

Thomas et al. (2006)[14]	USA	Systematic literature review and interviews	Educators and Physicians	13 articles in review; 28 leaders of active-mode CME programs.	Knowledge translation	Multimodal intervention	Interview	Most effective methods of changing geriatric care involved multiple educational modes, e.g. toolkits plus group training and instructor feedback. Communication between instructors and learners important.
Vollmar, et al. (2007, 2010)[15,35]	Germany	Cluster randomised trial	General Practitioners	166 participants	Knowledge transfer	Multimodal intervention	Participant self-report and change in knowledge scores.	Increased dementia management knowledge for both groups ('blended learning' versus 'classical' approach). No significant group difference, but GPs who engaged with online modules displayed increased knowledge gain, and endorsed e-learning add-on as useful.