

Development and implementation of dementia-related integrated knowledge translation strategies in rural home care

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Abstract

Purpose: As the Canadian population ages the provision of high quality dementia care may be increasingly challenging, particularly in under-resourced rural areas. Researchers have also

suggested that rural care providers have unmet dementia-related educational needs and would benefit from formal knowledge exchange supports, such as a knowledge broker (KB). The current research aimed to address this issue by employing a KB to facilitate the development and implementation of integrated knowledge translation (iKT) strategies within two rural home care centres.

Methods: In this longitudinal multiple case study, iKT processes at each site were assessed at baseline, 6 months, and following the termination of KB assistance. Data from 38 semi-structured interviews at the latter time points with registered and licensed practical nurses, health care aides, managers, and other care providers ($n=19$) were analyzed thematically to examine their perceptions of strategy processes and impacts, including the KB role.

Findings: Perceived facilitators of iKT strategy development and implementation included collaborative development by knowledge users, alignment with organizational values and culture, and regular communication. Home care providers (HCPs) identified the importance of leadership and perceived the KB to be integral for facilitating communication, keeping strategies on track, and brokering information. Barriers to strategy implementation also emerged however, including significant time constraints, limited resources, and the variable nature of dementia. HCP reported that the iKT strategies enabled rural/community-specific solutions, enhanced their knowledge and ability to use best practice dementia information, increased their capacity to exchange dementia knowledge, and ultimately enhanced family and client well-being.

Conclusions: HCPs reported professional benefits from their participation in the iKT strategies, and perceived benefits for people living with dementia and their caregivers. Findings suggest the utility of such strategies for addressing ongoing education needs of rural care providers.

Keywords: dementia, integrated knowledge translation, home care, rural

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Dementia is a syndrome with multiple etiologies that affects memory, cognitive function, behaviour, and ability to perform everyday activities (World Health Organization, 2012). As a neurodegenerative disorder with high incidence and prevalence (Hirtz et al., 2007), it is estimated that over 65 million people will be living with dementia worldwide by 2030 (Prince et al., 2013). Given the prevalence and significant impacts of dementia on individuals, their families, and health care systems, dementia has been identified as a priority health area by the World Health Organization. Since the risk of dementia increases rapidly with age (Ferri et al., 2005; Viera et al., 2013) the provision of quality dementia-related health care is particularly important for countries with aging populations such as Canada, where the number of people aged 85 and older grew by 19.4% from 2011 to 2016 (Statistics Canada, 2017).

The provision of quality dementia care in Canada will be increasingly difficult in general as the population ages. Rural areas face specific challenges such as shortages of human health resources such as nurses, physicians, and home support workers, few local support resources for persons living with dementia and their caregivers, limited specialist and professional services, and insufficient access to long term care homes, respite, and day programs (Canadian Home Care Association, 2006; Dal Bello-Haas, Cammer, Morgan, Stewart, & Kosteniuk, 2014; Morgan, Semchuk, Stewart, & D'Arcy, 2002; Teel, 2004). Additionally, poor transportation options and travel requirements can be difficult for both people and families living with dementia. Working over long distances and/or in a setting where local resources are limited poses unique challenges for health care providers. The above challenges, coupled with other factors such as lack of family awareness regarding services, can lead to unmet health needs and crises for people living with

dementia and families (Forbes, Morgan, & Janzen, 2006; Morgan et al., 2002). Furthermore, when care or services are available and accessible, providers may not be equipped to deliver optimal dementia care and support. Researchers have suggested that the educational needs of rural formal care and support providers are often not met, and that continuing education opportunities and access to current dementia-related information and best-practices are required (Dal Bello-Haas et al., 2014; Forbes et al., 2012; Forbes et al., 2011; Morgan, Innes, & Kosteniuk, 2011).

Access to evidence-based and current information is important to maximize the quality of care provided to people living with dementia, but also for communication and the exchange of knowledge with families affected by dementia. Forbes et al. (2012) explored the knowledge needs and degree of knowledge exchange between rural community-based health care providers, people living with dementia, and their care partners. They found that trusting relationships between health care providers and care partners were important to the successful exchange of knowledge and meeting the needs of care partners. However, health care providers reported that these relationships were difficult to establish in a climate of short-staffing and minimal resources; their own ability to access knowledge was limited given these constraints. Working in relative isolation from other health care providers and organizations was also a frequently reported barrier to inter-professional knowledge exchange, which in turn limited the ability of care providers to provide information to people living with dementia and their families. This work suggests that rural dementia health care providers, people living with dementia, and their care partners would benefit from increased and perhaps more formalized knowledge translation supports.

One such support is the development of a knowledge brokering (KB) role, which has recently been gaining traction within the health care sector (Bornbaum, Kornas, Peirson, & Rosella, 2015). Knowledge brokers perform a variety of tasks which can be categorized into the domains of

knowledge management (facilitating the creation, exchange, and application of knowledge), linkage and exchange (developing or enhancing knowledge exchange and relationships between different knowledge users and creators), and capacity building (strengthening knowledge users' capacities and skills, evidence-informed decision making, and capacity to access and apply knowledge) (Bornbaum et al., 2015; Ward, House, & Hamer, 2009). While KB is often unplanned and happening on an informal basis as part of professional practice (Canadian Health Services Research Foundation, 2003; Currie & White, 2012; Elueze, 2015), formal KB positions and initiatives have been identified within the health sector as a priority in efforts to increase evidence-based decision making (Ellen et al., 2014). Initial research on the effectiveness of the KB role in a variety of health-based contexts has suggested its utility for the successful exchange of knowledge between individuals and groups, translating research evidence into policy and practice, connecting people to useful knowledge, facilitating optimal patient care and acquisition of knowledge, and enhancing teamwork, relationships, and links between health care players and sectors (Elueze, 2015).

Given the need for increased knowledge translation supports within rural dementia care (Forbes et al., 2012), the current project aimed to support the development of integrated knowledge translation (iKT) strategies to facilitate the exchange and use of best available dementia care knowledge by rural home care providers (RHCP), people living with dementia, and their caregivers. IKT strategies refer to those that are developed collaboratively with knowledge users, to ensure that their priority questions or needs are addressed (CIHR 2011; Bowen & Graham, 2013). This research was developed using the Promoting Action on Research Implementation in Health Services (PARIHS) framework (Rycroft-Malone, 2004; Kitson et al., 2008). The PARIHS framework posits that for knowledge to be successfully translated and implemented into practice,

clarity is needed about the type/credibility of *evidence* or knowledge being shared, a conducive *context* (i.e. environment or setting), and effective *facilitation* to support knowledge exchange and changes to practice (Rycroft-Malone, 2004; Kitson et al., 2008). In its most recent iteration, published after the development of the current research, the i-PARIHS framework has been re-conceptualized to more comprehensively address the types of knowledge that are shared/created for implementation into practice, highlight the roles of actors involved in the implementation of knowledge, and explicitly consider the impacts of the wider, external context (e.g. the broader health system and its embeddedness in social, cultural, and economic systems) (Harvey & Kitson, 2016). Facilitation remains central within this modified framework; Harvey and Kitson (2016) conceptualize the facilitator role and associated activities as the activators of implementation, and therefore critical to its success.

This project aims to explore the processes of knowledge exchange as iKT strategies related to dementia care. This was accomplished by examining how iKT strategies were developed and implemented in two rural Canadian home care centers with the help of a KB who was hired for this purpose. Specifically, the following research questions were posed: a) what are the process and contextual factors which facilitate or hinder the development and implementation of dementia care iKT strategies? b) how is the facilitation role of a KB perceived by knowledge users during these processes? And c) what are the perceived impacts of the developed iKT strategies? RHCP participated in the development of the iKT strategies and represent key knowledge users, who rely on up-to-date knowledge in dementia care in their work and are also important sources of knowledge for family caregivers. The purpose of this article is therefore to explore RHCP perceptions of the development, implementation, and impacts of the iKT strategies, with a focus on the KB role.

Methods

The current research was designed as a longitudinal multiple case study, in which the design and implementation of iKT strategies at two sites were assessed at multiple time points.

Participants

Two home care centres in rural northern prairie communities were selected as the study sites (Site A and Site B). Sites were selected based on the recommendation of a principal knowledge user working in the North Zone of Alberta Health Services. Both communities have approximately 5000 people, are within 30 km of each other, and a couple of hours drive from a major centre. Workshops were initially held in both sites to explore RHCP concerns/challenges in providing best available dementia care, and all RHCP were invited to participate in this process and the larger study. Across sites A and B, 36 participants who were involved with providing or receiving home care services agreed to participate. Participants included people living with dementia ($n = 3$), their family caregivers ($n = 14$), and home care professionals ($n = 19$). The sample for the data presented consists of the 19 RHCP (18 female, one male), who occupied diverse occupational roles within the home care setting (see Table 1). On average participants had worked within the community for over ten years, within the profession for over twenty years, and most were currently employed part-time. A significant proportion of participants' current caseloads were comprised of persons with memory problems, indicating the relevance of dementia-focused iKT strategies to this sample.

Table 1

Participant Demographic Information

Rural Home Care Providers	Site A (n=10)	Site B (n=9)
Mean age	52.8	50.9
Highest level of education		
<i>Health Care Aide Certificate</i>	1	4
<i>College Diploma</i>	7	1
<i>Undergraduate Degree</i>	2	4
Current work role		
<i>RN</i>	3	3
<i>LPN</i>	1	1
<i>Health Care Aide</i>	1	4
<i>Case Manager</i>	2	-
<i>Director/Manager</i>	2	-
<i>Other</i>	1	3
Mean number of work hours/week	31.4	29.3
Employment Status		
<i>Full time</i>	4	2
<i>Part time</i>	6	7
Mean years in profession	22.7	20.2
Mean years in current community	10	12.4
Mean number of clients on case load	28.7	29.8
Percentage of current clients with memory problems	58.4%	41%

IKT Strategy Development and Implementation

A registered nurse, who had home care managerial experience and was familiar with both home care settings and the communities, was hired and trained by the principal investigator (PI) in knowledge brokering. The PI connected with the KB on a regular basis to discuss approaches, challenges and successes in supporting the home care staff in developing iKT strategies. Beginning with facilitated working group sessions to discuss gaps and potential solutions in dementia care, each site planned and implemented their own iKT strategies. Site A developed two iKT strategies, although the second strategy (a meeting with senior area managers to discuss issues and needs related to dementia and care provision) was implemented after data collection. Their main strategy

involved the development and implementation of an information/resource booklet for persons living with dementia and their caregivers. This booklet included information about dementia, dementia management and communication strategies, a list of local resources with descriptions (including associated costs) and contact information, and links to other helpful dementia-related resources. After obtaining feedback from families of people living with dementia, the booklet content was finalized, and copies were printed for distribution.

Site B focused on one iKT strategy that entailed dementia education and skill training. Health care aides and a registered nurse (RN) worked through online modules within the U-First program, which was developed as part of the Ontario Ministry of Health and Long-Term Care's Alzheimer's Strategy prior to 2004 (Ryan, 2009). U-First is designed specifically for individuals working within community, acute, and long-term care and aims to improve the quality of interaction between the care provider and the person living with dementia. After completing the program modules, RHCP used U-First wheels (a tool summarizing U-First information and tips for quick reference) to apply skills with clients when providing respite and daily care.

Procedure and Data Collection

RHCP who consented to participate completed three interviews about the development, implementation, and impacts of the iKT strategies (at baseline, 6 months into the process, and a few months following the termination of the KB role). The interview schedules were developed in accordance with the PARIHS framework (see Rycroft-Malone, 2004; Kitson et al., 2008), and included questions about evidence (e.g., *Based on what you were trying to achieve by participating in the demonstration project, what type of information was most useful?*), context (e.g., *In your workplace, was it difficult or easy to use the information you accessed through the demonstration project?*), and facilitation (e.g., *What strategies used by the knowledge broker facilitated and*

hindered the success of the projects?). At the final interview, participants were also asked questions focused on perceived impacts of the iKT strategies. All interviews were conducted in a private room in the home care office. Ethics approval was obtained from the University of Alberta, Health Research Ethics Board (ID Pro000048613; amendment Pro00048613_REN1).

Data Analyses

Interviews were transcribed verbatim and subsequently coded using thematic analysis (Braun & Clarke, 2006). Data were organized by question, with key meanings identified and coded, including those that did not match emerging patterns. Codes which cohered around a central concept were then organized into themes, which were considered in relation to each other and the overall dataset. Themes, along with illustrative quotations from participants, are presented below.

Findings

In line with the foci of this research, themes were organized into three categories: (a) facilitators and barriers of iKT, (b) role of the KB, and (c) perceived impact of the iKT strategies. While RHCPs identified several facilitators of effective knowledge translation strategies (i.e., collaborative development by knowledge users, alignment with organizational values and culture, and regular communication), barriers also emerged (e.g., lack of time, limited resources, and the variable nature of dementia). Participants felt that leadership was important to the success of the iKT strategies and viewed the KB very positively, specifically regarding facilitating communication, keeping strategies on track, and brokering information. The KB role was perceived as a valuable human resource helpful for continuing knowledge translation. Finally, RHCP described how the iKT strategies allowed community-specific solutions, enhanced

professional knowledge and ability to use best practice dementia information, increased capacity to act as KB with families, and ultimately enhanced family and client well-being.

Effective Knowledge Translation Strategies: Facilitators

Collaborative development by knowledge users. A facilitator of effective knowledge translation strategies in the current research was having knowledge users themselves (RHCP) develop the strategies by means of a collaborative process. Through the facilitated working group sessions participants worked collectively to identify dementia-related issues that were pertinent to their rural community and worksite, and developed strategies to address them:

I think the best strategy was the way we came about establishing what the problems were for people. I think the backwards methodology of how we got to what our— what did we think was gonna be the best, how we could help people in the most cost effective, quickest manner, I think that was really cool. -Area Manager, Site A

In Site A the main issue being addressed was limited and inadequate support for families of people living with dementia and poor awareness/uptake of existing services. In Site B the issue was limited RHCP knowledge and opportunities for continuing education on dementia care best practices. Being part of the process to determine solutions to problems was rewarding to RHCP and enhanced commitment to the tasks required for successful strategy implementation:

Everyone was pretty excited about it even though it was a little extra work, but it's different from the day-to-day routine too. Something that's needed, not really new but yet exciting to be a part of developing something that might actually go somewhere -RN, Site A

Participants found it meaningful to participate in knowledge exchange (KE) efforts they felt would benefit professionals and families dealing with dementia in their communities. One RN from Site A stated that even the support for an initiative in their rural community was helpful: “Just basically

the interest and especially in rural because we don't have anything at rural, and what works and what doesn't, it'll be a benefit I thought."

Finally, being able to work in a collaborative manner was identified as helpful by participants, as they did not always have opportunities to communicate about issues and work together:

Well, I really believe that using the [U-First] model and having the home support aides part of the collaborative meeting was just, it's the only way to go really to get this information out. And to try and focus on specific clients that things may work, you know, the principles are there... the principles are there but you have to change it for each client. And being able to do that, you can't do that in a vacuum. You have to do that with other people around you and make the decisions that way, I think. -RN, Site B

Participants identified colleagues as important sources of knowledge and found it helpful to apply an inter-disciplinary approach to the development and implementation of iKT strategies.

Alignment with organizational values and culture. Participants felt that the iKT strategies were well-aligned with the priorities and values within their organization, such as helping people living with dementia stay at home longer, supporting clients and caregivers, and educating families: *"It's talking about excellence, right? And that's what it is for me is enriching the caregiver's resource space, so that they're better equipped to meet client needs". -RN Manager, Site B.* Moreover, the strategies were implemented using resources and processes participants reported were already part of the organizational culture, such as regular communication and meetings between staff members.

Implementation of iKT strategies was also facilitated by the supportive attitudes of managers, and an organizational culture that was receptive to formal KE efforts. In discussing this culture, one participant remarked:

I think we're like a great group of people that are willing to learn new things, and try new things, and well, provide the best patient care. And we have a really good team lead who likes us to participate in different things because it's a learning experience. So, we all learn something. -RN, Site A

Participants reported that their superiors did not dictate how the strategies should be developed, but rather interacted collaboratively and supported autonomous efforts.

Regular communication. RHCP spoke at length about the degree to which ongoing communication and meetings with colleagues facilitated KE. In addition to the collaborative brainstorming meeting, ongoing communication helped keep the iKT strategies on track:

I think the idea of getting together originally, which was good, because then you are picking from different areas. You're not just working as one, like not just community care... I think the best thing that really worked well is getting together with just the meetings afterwards, so we could streamline it together, too.

-Licensed Practical Nurse (LPN), Site A

Meetings enhanced the collaborative processes which participants valued, and helped ensure strategy implementation progressed.

Ongoing communication and meetings also enhanced RHCP ability to learn from their peers' professional experiences and share new information learned: *"I like to have meetings. I like to do a little bit of research on my own and then come, bring it back to the table and discuss it."* –

RN, Site A. Participants in Site B reported that ongoing communication and meetings with peers encouraged them to use the new information and skills learned:

The regular meetings gave me new insight of what we needed to do or what we were trying to accomplish because I found that at first, I was saying we don't have time for this. We only have a couple of minutes... So, it was hard at the beginning to get into it because this was not our practice. But then, it was kinda like it let you put your guard down and say that I can take this extra five minutes. I can do this with this client. –Home Care Aide (HCA), Site B

Site B participants also reported that discussing their experiences working with people living with dementia using the U-First wheel with colleagues helped successfully integrate new strategies into their practice. Although regular communication and meetings was a facilitator to implementation of iKT strategies, a minority of participants reported *online* communication and information to be a barrier:

Like even like the KB says, 'Oh, I sent this email off to everybody.' How many people looked? I didn't. I didn't go check my emails because I don't do that very often. So, if there's stuff happening there, I'm going to miss it. And I think a lot of people would... And then, of course, when I'm looking at it in front of me, it seems to be clearer in my mind... I'm a hardcopy people. Not a computer people. –HCA, Site B

While computers were accessible at both sites, some participants (home care aides in particular) were uncomfortable learning and communicating online or did not perceive online activity to be part of their job.

Effective Knowledge Translation Strategies: Barriers

Time constraints. Time constraints emerged as a significant barrier to the successful development and implementation of iKT strategies. Although regular communication and meetings were already part of the organizational culture of both sites, the strategies involved an additional time commitment that people found difficult to meet:

It's just, you know, it's so hard to pull off a project because it's not that others didn't cover for you when you attended. It's not that best effort forward wasn't made, and it wasn't that everyone didn't try to be there. It's just that it becomes low on the totem pole. You know, you just got to fit it in. -LPN, Site A

Irrespective of their specific employment role, RHCP were stretched thin and working with high caseloads. Participants overwhelmingly indicated that they found it difficult to add additional strategy development and implementation tasks (e.g. searching for information, attending meetings, providing feedback, completing the online modules) to their workload.

Time was also a barrier to communicating with clients living with dementia and their families and successfully exchanging information. A LPN from Site A explained:

Time, in the sense of taking the time when you make the visit to elaborate or go through or presenting a package is one thing but taking the time to kind of slide through it with the family that's going through something like that, I think would be more beneficial than just passing it to them.

Although RHCP ultimately felt better equipped to communicate with people living with dementia and their families following the iKT projects, time remained a barrier to successfully doing it. Similarly, some participants reported that time constraints made it difficult to use the information or skills they had learned:

And then the other thing that frustrated me with this was, okay, let's do this but you know, in our jobs, we don't have time for this... You know, like you don't have the time with our clients to step back, take the time, here you go, let me help you... Like I said our job is personal care. So, you're going in. You have five minutes with the dementia client, you know? -HCA, Site B

Limited resources. Although most participants reported time was the only significant barrier to iKT, others described how working with limited resources (i.e., human, technological, financial, and programming) made it more difficult to implement strategies. Participants felt that more human resources would improve ability do their job as well as access new dementia care information. As noted above, some RHCP found the use of online information difficult as they did not have convenient computer access:

The online modules, I did most of them. I did not complete them. I found them repetitious, long for the time that I had because I don't live in town. I run to town. I have to come, I don't have a computer at home. - HCA, Site B

In Site A, several participants felt that they could have done more with more financial resources to be allocated towards staffing, patient care, and knowledge translation. One participant stated:

*I think we would have been further at producing if we had a little bit of a budget to go with it. So, I would say definitely the financial- that was one of the struggles. How were we going to make a positive impact and a meaningful impact but not have a budget to do it?
Recreational Therapist, Site A*

Finally, some RHC described a general lack of resources in their community, which could not be ameliorated by knowledge translation and made it difficult to effectively help clients:

It's just disappointing because it's like, I know what I'm doing is not enough... we could do this better. Yeah, working with the group and even some of the families that I've given that booklet to and stuff, a lot of it was, well you know it would have been great if we had this earlier. Or, you know it'd be wonderful if we could actually have more in-home help which we don't have right now, so just things that are lacking or such a thing as simple as, you know these families want to go to these support groups, which has started but there's no resource for them to access to go and somebody's looking after the person with dementia... The follow through is still missing. The hands-on resources I guess, the physical resources. -RN, Site A

Limited access to services was therefore a barrier to meeting goals (helping families access resources, keeping people living with dementia at home longer) of the iKT strategies in Site A. Participants described how more resources, especially respite care, were needed to effectively help people living with dementia and families in their community. Ultimately, participants felt that more funding for dementia would enhance their ability to hire more staff, increase programming, and engage in more effective knowledge management.

The changeable nature of dementia. One of the unique barriers to iKT reported by participants was the variable nature of dementia. RHCP felt while up-to-date information on dementia and best practices was useful, a challenge was that each person living with dementia expressed different needs and behaviour:

I honestly kinda run on my shirt tails anyway when I get with people and just try and go live in their world as best as I can and kind of direct them that way. And if we get information passed to us and that sort of thing, I definitely take that in, but I find with people everybody is so different... I mean the information you get is kind of a guideline.

HCA, Site A

RHCP reported that discussing clients with their peers was a helpful source of information, to understand each client as an individual. The nature of dementia could still pose difficulties however as RHCP tried to apply information and strategies, since the behaviour of many clients was variable day-to-day:

I think for some, it made a difference for a while but then you must tweak it again because their condition changes or they get... One day, it works. The next day, it doesn't. You know, when they get a bladder infection or their physical abilities change, that kind of thing, it changes. It's always a changing- it's a moving target. That's what it is. -RN, Site B

RHCP felt that it was crucial to adapt knowledge and resources to clients' current needs; this reality made it more challenging to apply dementia care information learned through the iKT strategies.

The Role of the Knowledge Broker

KB as leader. RHCP perceived leadership as important for the success of the iKT strategies, particularly to their development. Participants valued the initial working group session and reported that facilitators led them through brainstorming and decision making in a way that fostered ownership and enthusiasm about the project. Participants also viewed the KB as a leader, who guided them through iKT strategy implementation:

She kept us on track which I feel without her, things will just not— she was the head of that, she was the one who kept all the notes and planned the meetings and stuff and without someone taking the lead role, things may not follow through how they're supposed to. -RN, Site A

The KB was perceived as a constant presence who pulled aspects of the iKT strategies together and was available for questions and advice. Although RHCP valued their own collective roles in

developing and implementing the strategies, they reported KB leadership was necessary for success given their busy workloads.

KB as communication liaison. One of the most fundamental tasks performed by the KB was facilitating communication. The KB coordinated project-related meetings, emailed meeting minutes, made herself available to RHCP for questions or issues, and checked in by phone or email with individual staff. Participants valued the time the KB spent communicating with them and felt that she coordinated communication between RHCP in a way that facilitated knowledge translation:

I'd say she did really well with the project. Very organized and she was there to kind of, like even in our meetings, she was there asking questions and kind of summing things up for us... -HCA, Site B

Given the importance of ongoing communication to the successful implementation of the iKT strategies, participants perceived the KB's communication efforts as crucial.

KB as monitor. In line with her role as communicator and leader, one of the KB's perceived functions was to make sure that RHCP were continuing to work on the iKT strategies (e.g. finding resources for the booklet, completing the online modules). As an RN from Site B commented:

Well, having a knowledge broker helps to facilitate that you focus on the problem at hand because you can get yourself overwhelmed by going all over the place or... they were very good at making sure we stayed within our boundaries and didn't go off track too much.

Participants found it valuable that the KB was overseeing the progress of the projects and able to “keep everybody on track”; this was perceived as necessary to keep them focused on KT and the strategies amidst their other workplace demands.

KB as knowledge resource. Finally, RHCP described the KB's ability to effectively research, identify, and collate up-to-date dementia knowledge, to facilitate KE and the use of best practice information. In Site B, the KB engaged in online research and identified the U-First program as a current and useful tool for home care aides:

The knowledge broker being able to come in and do some of the education about it or the identification of it... She had to find it for us, right? And so, it was something she learned about and then went and researched it and then sort of came back and said, "This is what I've found." -RN Manager, Site B

As part of her leadership role, the KB was also a source for answers to RHCP questions. In Site A, individual RHCP aided the KB with research on dementia and local resources, and the KB collated this information into a coherent and user-friendly package:

She's taken all our information because we've given her, and she's organized it and put it into a package and brought it back to us. And we had say on what we liked and what we didn't like, and she changed it... we would literally just give her little bits of information and she put it together. -RN, Site A

Participants in both sites emphasized that with their professional demands there was very little time to seek additional research, knowledge, and educational materials; the KB role was therefore important to finding quality information and translating it into an accessible format.

KB role as an ongoing human resource. The role of the KB was valued by participants, who felt that the iKT strategies would have been less successful without the KB's leadership, communication, monitoring, and knowledge brokering. Participants spoke about time as an enormous barrier to KE after termination of the KB position:

Time to find it [information]. And there's no, after the knowledge broker is removed, the onus will be back on us to be trying to find the time to research and find research because there is no current avenue to be able to support frontline workers with easy accessible information. -RN Manager, Site B

Participants spoke of difficulties sustaining the current iKT strategies (e.g., updating the resource booklet developed in Site A, ensuring that RHCP are kept up to date with best practice information and implementing it with clients), expanding them, or engaging in further coordinated KE efforts. Again, time was a major barrier and participants felt they had little access to ongoing education, as noted by an RN from Site B: *“We don't see an education person ever, you know, in our office. It's sad.”*

Many participants identified the desire for a sustained KB role. In speaking about potential changes she would like to see, as a result of the iKT projects, an RN from Site A replied: *“Once again hopefully the staffing, like that one person that maybe is responsible for this, and does it, and gathers all the information and keeps it up to date, not so it's all old.”* Participants were aware of the fiscal challenges in sustaining such a role and described how a KB could be part time, apply skills to conditions beyond dementia, or be shared among multiple locations. RHCP reported that this human resource would allow them to better keep up to date with current dementia information, update client resources, seek case-related resources and information, encourage best care practices, and ensure that dementia information is relevant for specific rural areas.

Perceived Impact of iKT Strategies

Community-specific solutions. Participants described how the iKT strategies allowed them to address community-specific gaps and solutions. Several participants described rural resource gaps or commented that strategies for urban areas cannot necessarily be applied to rural.

Since RHCP were involved in strategy development, they could ensure that knowledge was applicable and usable for their community and professional role. This was particularly salient for the booklet developed in Site A:

We're looking at community, different points for people who are caregivers, it could be family members that have somebody with dementia... looking at the resources within the community, identifying what is dementia, what are resources. So, we've got like the adult day program, respite within our facility, home care resources, Meals on Wheels, some common contacts for that, how to communicate with people, looking at personal directives, goals of care, how people are placed. So basically, it's a good workable document and it's specific, a good workable booklet and it's specific to the resources in our community.

Recreational Therapist, Site A

RHCP in Site B described a high proportion of older adults and people living with dementia within their community and reported that their iKT project helped ensure staff were knowledgeable and using best practice information with clients.

Enhanced professional knowledge and skills. Participants overwhelmingly indicated that the iKT strategies enhanced professional knowledge about dementia, best practices/skills, and resources within their community:

It gave me more information, I feel more, what shall I say? Confident, it gave me a lot of confidence and with the information I have it's solid, it's legit, it isn't just me googling whatever. So, with the information that I have, it's very evidence-based and I appreciated it. -LPN, Site B

As illustrated above, many RHCP described feeling more confident working with people living with dementia and their families. RHCP in Site B reported having more dementia-related

knowledge and practical skills to apply and found these skills helpful in their everyday work role.

The RN Manager in Site B explained:

The aides reported that it was really, really good for them... You could see their excitement as they had been able to study something, go and try it for a month and see what they can do and then come back and report to us, "Oh, this changed." ... They felt better equipped to handle difficult behaviours. They reported that they were able to change their own personal approach to the client recognizing that the client's behaviour was coming from something. So, it reframed the way they were thinking and approaching the client.

RHCP in Site A also reported greater dementia-related knowledge including resources within their community, which they felt was crucial to supporting people living with dementia and families. A minority of RHCP (primarily in Site A) did not feel they learned a lot of new information; however, these participants valued the increased knowledge of peers or families as well as the validation of their own practices:

So, I think it also reaffirmed that, you know, the way I was doing my nursing was still okay and still effective and still considered a good practice. So, when I try and coach other staff members or healthcare aides how to approach people, I feel that I am giving them pertinent information and up to date ideas. -RN, Site A

All participants therefore perceived the iKT strategies to be a professional asset.

Increased capacity for knowledge translation. Another perceived impact of the iKT strategies was increased RHCP capacity to communicate and exchange knowledge with people living with dementia and their families. Site A's resource booklet was a concrete manifestation of KE, but RHCP also felt that it encouraged further conversations: *I think because we have a conversation with them, not that we never used to, but we've got something concrete to give them*

and to explain to them. (RN team lead, Site A). The booklet opened a line of communication between RHCP and families to talk about dementia and resources. In addition to more effective communication with people living with dementia through the U-First strategies, several Site B RHCP felt better able to share dementia-related information with their families:

I don't tell them exactly what I've learned in the thing but a lot of clients would ask about dementia or the families will have a hard time and I find it sometimes easier now that I can explain things to them. Like don't be afraid, or it's normal, or before you were kind of, what should I say? Should I say anything at all or just stand there and be quiet, you know? Where now I find that I can give them a little bit more information or saying that there is help for that or if you need more information, there is more information. -HCA, Site B

This was important to RHCP as most of them identified sharing information and educating families to be part of their professional role.

Participants also perceived an enhanced capacity for KE with peers. Both iKT strategies brought together individuals with different professional roles, and participants reported that it was a benefit to learn from different perspectives and experiences:

Probably just the conversation because I learned a lot from peers and colleagues that we don't often talk to. We were involved with the recreation department and listening to their concerns and what they see, you know, it's sometimes good to be outside of our little box. RN, Site A

It was also noted that increased KE between peers strengthened inter-professional communication about specific clients and made it easier to provide performance feedback.

Enhanced well-being for people living with dementia and their families. Finally, RHCP perceived benefits to people living with dementia and their families, largely because of

enhanced knowledge/skills and communication. Participants in Site A received very positive feedback from families regarding their booklet and perceived families to be more aware of local community resources, which was a goal of this iKT strategy. A registered nurse commented: “*They [families] all thought it was a great thing, that it was very useful information.*” Several RHCP explained that the information met families’ needs and helped them interact more positively with the person living with dementia, as exemplified by an RN:

You kind of know when a client’s family comes back, and they say they have read some of those articles and found them very helpful, and that they were going to change some strategies and how they were talking and dealing with their dementia person in their family. So, I thought that was good to know that we had reached our goal.

Participants also felt that there were better channels of communication and support in place between RHCP and people living with dementia or their families. In Site A, the resource booklet helped RHCP offer support and created a space where families felt comfortable approaching them with needs and questions:

I mean giving out these packages, one client in particular who sticks in my mind, gentleman looking after his wife, and he phoned me on a regular basis after he got this package to say, “Well this is happening, what do I do now?” Which was lovely, we had a connection then that he felt he could phone and ask and get more information. -RN, Site A

In Site B, most of the enhanced communication and support centered on more positive interactions with people living with dementia, as illustrated by a RHCA:

And then I started paying more attention to this gentleman, started listening to him, taking an extra five minutes to pay attention to what he had to say... At the beginning, I found it a little bit difficult because he [has] dementia, right? But the more I used the wheel and

tried to figure him out, the easier it became; the less I ran in in a hurry and calmed down. And my approach, my attitude, my everything made a difference on how he approached me and how he felt. And then he started to open up and tell me a lot of stuff about his life and about himself and everything else. And then he became more confident and confident in me and trusted me more.

Overall, participants in both sites perceived positive impacts of the iKT strategies such as enhanced communication, stronger care relationships, and increased access to knowledge and community resources for people living with dementia and their families.

Discussion

Findings illustrate how dementia-related iKT strategies were successfully developed and implemented within a rural home care context. With the help of a KB and support from the researchers, home care providers collaborated to identify gaps/issues related to dementia care, developed iKT strategies to address them, and implemented strategies to increase the use of best practice information in dementia care. This process reflected the key steps identified as necessary in translating knowledge to action (see Graham et al., 2006). In addition to the above activities, knowledge was identified and adapted to the local context, barriers to the process were assessed, knowledge use was monitored, evaluation of outcomes was undertaken, and discussions around sustainability and expansion occurred. Moreover, RHCP perceived strategies to be of benefit for KT within their professional practice, reporting increased collaboration, and sharing of information with colleagues as well as people living with dementia and their families. While some of the information shared was new information from the iKT initiatives, the increased collaboration meant that RHCP also engaged in internal/informal knowledge brokering, where they shared practice-based knowledge (Currie & White, 2012). As noted by Ward, Smith, House, and Hamer

(2012), informal KT is important and integral to change; our findings suggest that it was enhanced through the collaborative aspects of iKT strategy processes and highly valued by RHCP.

An important aspect of iKT is the degree to which the knowledge in question is being applied or influencing practice or decision making (see, e.g., CIHR, 2011; Campbell, McIntrye, & Lord, 2013; Straus, Tetroe, & Graham, 2011). In addition to increased professional knowledge (for most participants), RHCP described how they were using the new knowledge to better inform families about dementia (Site A) and interact with people living with dementia in more successful ways (Site B). These were important benefits described by RHCP, and it was noted by several participants that the new information and its successful use increased RHCP confidence and positive outlook on iKT activities.

In accordance with the PARIHS framework (Rycraft-Malone, 2004; Kitson et al., 2008), contextual factors functioned as barriers and facilitators to the success of iKT strategies. Alignment of strategy processes with the values and culture of the home care organization and managerial support were considered facilitators, while limited time and resources (financial, human, and community) emerged as barriers. These facilitators and barriers are like those described by previous researchers in different health-related contexts, where barriers to KT and KT interventions included limited resources such as money, staff, and time, and facilitators included investment from decision makers and managers (e.g., Ellen et al., 2014; Straus et al., 2011; Yost et al., 2015). Also, consistent with theory and empirical work on KT is the importance of knowledge user collaboration and ownership in KT strategy development and implementation (Bowen & Graham, 2013; Graham et al., 2006; Kothari & Wathen, 2013). In the current research, this was particularly salient given the rural settings of both home care organizations. Minimal local resources posed challenges for dementia care and participants emphasized the importance of

rural and community specific solutions to address the gaps within their respective communities. The mixed feedback regarding online communication and information is noteworthy; this emerged as a barrier for some RHCP and is therefore a potential consideration for other iKT or evidence-based practice initiatives.

Participant descriptions of dementia-specific challenges are also noteworthy, as they highlight the potential for difficulties with knowledge utilization with this population. Fluctuations in cognition, attention, arousal, behavioral and psychological symptoms, verbal ability, memory, and ability to perform activities of daily living are common in people living with dementia. Fluctuations may differ in kind and frequency of occurrence depending on the individual and their environment, stage of disease, and subtype of dementia (Bradshaw, Saling, Hopwood, Anderson, & Brodtmann, 2004; Lee, Taylor, & Thomas, 2012; Rockwood, Fay, Hamilton, Ross, & Moorhouse, 2014; Quinn, Clare, Jelley, Bruce, & Woods, 2014). Inter- and intra-individual variation in abilities and behaviours posed challenges for RHCP applications of information with clients. Successful knowledge implementation in this setting was therefore highly dependent on RHCP ability to constantly reassess the situation and choose useful strategies. RHCP reported the most success when able to apply relational skills, such as listening more to the person living with dementia and trying to understand the underlying causes of problematic behaviours. Part of knowledge exchange and utilization for RHCP was therefore recognizing that the usefulness of specific dementia information and strategies was highly situational. Similarly, the progressive nature of dementia meant that stage needed to be considered for providing useful information to family caregivers; several RHCP indicated that families needed to receive information on dementia and accessible resources as early as possible during the disease. This is consistent with research suggesting that caregiver information needs vary over the course of dementia and that information

on resources is particularly important early in the disease trajectory (Forbes et al., 2012; Zwaanswijk, Peeters, van Beek, Meerveld, & Francke, 2013).

Finally, RHCP perceived the KB to be integral to the development and implementation of the iKT strategies. The PARIHS and i-PARIHS frameworks stress the importance of facilitation to the successful implementation of knowledge into practice (Harvey & Kitson, 2016; Kitson et al., 2008). The RHCP saw the KB as an important facilitative resource who was able to manage knowledge and coordinate collaborative processes. In a recent systematic review of knowledge brokering, Bornbaum and colleagues (2015) suggested that the activities and tasks carried out by KBs confirm their characterization as knowledge managers, linkage agents, and capacity builders. Our RHCP participant descriptions of the KB's involvement (as leader, monitor, communication liaison, and knowledge manager) aligned with these primary characterizations and were congruent with other descriptions of how KBs facilitate KE processes (Bornbaum et al., 2015; Conklin, Lusk, Harris, & Stollée, 2013; Elueze, 2015; Glegg & Hoens, 2016; Traynor, Decorby, & Dobbins, 2014). Importantly, RHCP also suggested that the KB role was needed to ameliorate barriers (time, accessibility of knowledge) to accessing and implementing best-practice information. In discussions of sustainability, RHCP perceived the termination of the KB role as a threat to continued updating and expansion of the iKT strategies. Traynor et al. (2014) noted that once relationships have been built and in-person KB support has been provided, virtual support may be useful; sustainability and the extent of internal capacity building are important considerations for KB initiatives. In the current research study participants' requests for an ongoing KB role may reflect the limited resources in both of these rural settings, as well as an indication that the iKT strategies needed more of a focus on capacity-building. Finding ways to adequately support ongoing KT within a rural context is an important goal for future work in the area.

Conclusions

This research adds to the literature on iKT and processes of KE; such process-based information is important for the establishment of future iKT initiatives within different contexts. Specific to a rural context, findings illustrate the utility of iKT strategies for addressing some unmet, ongoing education needs of rural care providers (Dal Bello-Haas et al., 2014; Forbes et al., 2012; Forbes et al., 2011; Morgan et al., 2011). RHCP reported professional benefits from participation in strategies, as well as improved support and care for people living with dementia and families. Including a KB as a facilitator may be crucial for rural and remote communities who often face a shortage of human health resources (Canadian Home Care Association, 2006; Dal Bello-Haas et al., 2014), making it difficult to add KT activities to care provider roles. As noted by Morgan et al. (2011), rural areas have less capacity than urban settings to develop specialized services for people with dementia; it is therefore important to ensure that rural care providers are capable and comfortable delivering high quality care and support to people living with dementia and their families. While the findings of this research are applicable to iKT more broadly, they provide an illustration of how iKT strategies and the KB role can be successfully applied within a rural setting.

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