

# Context Matters: Using A Case Study Approach to Understand Implementing A Patient Centred Rehabilitation Model for Persons With Cognitive Impairment

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## Research article

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## Abstract

**Background:** There is a growing number of older adults with cognitive impairment (CI) that require inpatient rehabilitation. Patient centred rehabilitation models exist, yet there is a lack of specific strategies for implementing these models into other contexts. Researchers collaborated with administrators and staff in one rural site to adapt a patient centred rehabilitation model of care in the Canadian province of Ontario. This paper reports on the contextual factors that influenced the implementation of the model of care.

**Methods:** The study takes a case study approach. One rural facility was purposefully selected for its interest in offering rehabilitation to persons with CI. Four focus group discussions were conducted to explore healthcare professionals' perceptions on the contextual factors that could affect the implementation of the rehabilitation model of care in this facility. Twenty-seven professionals with various backgrounds were purposively sampled using a maximum diversity sampling strategy. A hybrid inductive-deductive approach was used to analyze the data using the Context and Implementation of Complex Interventions (CICI) Framework.

**Results:** Across the domains of the CICI framework, three domains (political, epidemiological, and geographical) and seven corresponding sub-domains were found to have a major influence on the implementation process. Key elements within the political domain included effective teamwork, facilitation, adequate resources, effective communication strategies, and a vision for change. Within the epidemiological domain, a key element was knowing how to tailor rehabilitation approaches for persons with CI. Infrastructure was a key aspect of the geographical domain, which was focused on the facility's physical layout.

**Conclusions:** The study identified key factors within the context that supported and hindered the implementation of the model of care in a new environment. This work suggests that when implementing a new program of care, strong consideration should be paid to the political, epidemiological, and geographical domains of the context and how these aspects interact and influence one another. The CICI Framework was a useful guide to understand which elements existed and which were still required for successful implementation of the model of care.

## Background

Rehabilitation of persons with cognitive impairment (CI) such as dementia, delirium, or both, is an international priority (1). With a higher proportion of older adults requiring rehabilitation and the increasing numbers of persons with CI (2), there is a growing concern regarding access to rehabilitation. Providing rehabilitative care is critical to the quality of life for older adults post hip fracture as it improves recovery, including those with CI (2). However, there are very few rehabilitation facilities that provide care for older adults with CI as there remains an assumption that this population cannot be rehabilitated (3, 4) despite evidence that contradicts this myth (5–7). Of the patient centred rehabilitation models that exist, there is a lack of specific strategies for implementing these models into other contexts especially when often the majority of the clinicians do not necessarily believe this population can be rehabilitated (3, 8). Little is known about the factors influencing adaptations of best practice models into a new context.

Researchers from the fields of implementation science and cultural adaptations warn against the dangers of implementing evidence-based models without attending to the fit of the intervention to the context (9). Context is often referred to as the population being serviced, the different providers who deliver these interventions, and the diversity of the settings (9). What is known is that the effectiveness of complex interventions is critically influenced by their implementation into a given context (10) and context needs to be considered when analyzing the transferability of strategies (11). Without considering context in this matter, implementation may have varying effects and be dependent on factors that differ between two systems (11).

However, across the literature, context is often insufficiently defined or omitted all together as reported in a systematic review (12). Booth et al. describe the Context and Implementation of Complex Interventions Framework (CICI) as a valuable tool for understanding context as it is based on a concept analysis and therefore offers a broad coverage of contextual issues (12). Pfadenhauer suggested that most frameworks are concerned with evaluating implementation, with a smaller number incorporating an assessment of context (10). The CICI framework was thus developed to facilitate a structured and comprehensive conceptualization and assessment of context and implementation of complex health interventions. The CICI framework describes seven contextual domains: geographical, epidemiological, socio-cultural, socio-economic, ethical, political, and legal (10).

As the framework is relatively new, only a few researchers have used it to understand implementation challenges. Bardwell et al. used the geographical and legal domains of the CICI framework to understand the outcomes and challenges with implementing supervised consumption service sites in different areas (13), while Evans et al. used the geographical and sociocultural domains as examples of how interventions can be translated across different contexts (11). Understanding how different contexts influenced implementation is necessary so that empirically tested models can be adapted to fit into new contexts.

For the past 14 years, the lead Principal Investigator (PI) of this current study has focused on addressing issues in rehabilitation of persons with CI and with clinicians developed a patient centred model of care which achieved positive outcomes for persons with CI (5, 14). In addition, health care professionals (HCPs) working with this new population have also embraced their role and have reported satisfaction in their work (15). The model focuses on four distinct elements: 1) Education and support for clinicians; 2) Patient/Family engagement and education; 3) Strategies for managing the approach to care for someone with CI, including screening for the prevention and treatment of delirium; and 4) Interprofessional rehabilitation care. In 2017, there was an interest to adapt this model of care to a more rural location, based on provincial data that showed that the rehabilitation of persons with CI and hip fracture could be improved in these contexts. A rural facility in Ontario was selected as a site for the implementation of this rehabilitation model of care. In the initial implementation stage, we conducted training for the staff and provided on site facilitators to support implementation as a key to success (16). After six months of capacity building, including workshops for staff and the hiring of part-time facilitators, focus group discussions (FGDs) were conducted to assess elements of the context that needed strengthening to support the next stages of the adaptation of the model to this rural context.

The purpose of our study was to identify key elements of the context supportive of the next implementation phase of this model of care. These key elements are differentiated into: 1) elements of the context already in place to support the implementation of the model, henceforth referred to as existing elements; and 2) elements of the context that could be introduced at this initial implementation stage to strengthen the system in preparation for the next stage, henceforth referred to as required elements. By identifying not only elements of the context which needed strengthening, but also those supporting elements already in place, we aimed at ensuring that any future system-level changes in the facility would take into account the importance of these existing elements for the successful implementation and continuation of this model of care.

## Methods

The study design takes a qualitative case study approach (17, 18) to facilitate a robust examination of the context in this facility in the initial implementation phase. This approach allowed for an in-depth exploration of the subjective accounts of the multi-disciplinary team involved in direct care at this facility (19, 20). The facility was purposefully selected as administrators of the facility wished to adapt this model of care in order to meet the provincial quality indicators related to the rehabilitation of older adults with hip fracture including those with CI. By implementing the model, they aimed at starting to provide rehabilitation services to this population. Purposeful sampling in qualitative research focuses on selecting information-rich cases to illuminate the questions under study (21). Data was collected using FGDs (n=four) with HCPs (n=27).

### Sample and recruitment

We employed a purposive (21), maximum diversity sampling strategy (21) to ensure participation of all professional backgrounds. An appraisal was completed after two FGDs to ensure that the sample included staff in all professional categories of the multidisciplinary team. In total, 27 HCPs participated: 11 Registered Practical Nurses (RPN), four Occupational Therapists (OT), four Physiotherapists (PT), three Rehabilitation Assistants (RA), two Registered Nurses (RN), one Recreation Therapist (RT), one Recreation Therapy Assistant (RTA), and one Registered Dietitian (RD). Demographics of the sampled staff are summarized in Table 1.

There was no relationship established prior to study commencement. Upon receiving ethics approval from the ethics committee [blinded for review] the PI contacted the facility management and invited them to participate in the study. Staff were invited to participate in the FGDs via email. The objective of the research was reviewed during the informed consent process. There were no dropouts from the study after informed consent was obtained.

### Data collection

In October of 2018, four FGDs were conducted in a private room at the study site with no one else present to ensure confidentiality. Interviews were conducted by an all-female team: a PhD-prepared registered nurse and senior scientist with extensive research experience in nursing studies (KM) and a PT [blinded for review] took notes during the FGDs. The expertise and professional background of the researchers were shared with participants prior to the focus groups. Topics guiding the interview focused on how various contextual factors may influence implementation and included: the influence of the roles of the team members and their interactions; the influence of the physical environment; their interactions with management; the needs of patients with CI; the needs of the staff; and their preconceived ideas about rehabilitating persons with CI. The questions were asked by the facilitator without prior testing conducted. The FG facilitator used follow up questions to probe for greater depth in participants' responses. The interview guide developed for this study is provided as Additional File 1.

There were four focus groups ranging from five to ten participants per group, with an average size of eight participants and an average length of 45 minutes. Two groups were composed of allied health professionals and two groups were composed of nursing staff. It was not possible to have a mix of interprofessional staff within the focus groups as the staff within these units had diverse workloads. Data collectors debriefed after each FGD, discussing data saturation, emerging topics, and adapting the FGDs guide. Data saturation (22) was used as an indicator to decide on the number of FGDs. Researchers involved in the data collection process took field notes on group dynamics during and after the FGDs. No member checking was conducted.

### Data analysis

Data analysis was conducted by a team of five researchers: a male Master's student in rehabilitation sciences [Blinded for review], a female RN student [Blinded for review], a female PhD candidate in Public Health and social scientist [Blinded for review], a female Occupational Therapist with a Master's degree in Healthcare Quality [Blinded for review], and a female Master's prepared RN [Blinded for review]. FGDs were audio-recorded and transcribed professionally. All data was anonymized using participant identification numbers. NVIVO10 and Microsoft Word 2016 were used for data management and analysis.

The qualitative data analysis was a two-step process guided by a hybrid inductive-deductive approach (23) starting with data-driven codes and followed by a theory-driven categorization. We began by coding the FGD transcripts using a thematic, data-driven approach (24). Two data analysts coded each transcript independently and met weekly to review coding, reconcile discrepancies, and further define and refine the codes. The second-level analysis was guided by the CICI framework (10). Two analysts examined the first-level, thematic codes using the CICI framework, meeting regularly to discuss doubts and discrepancies. This second-level analysis was discussed by the full analysis team. The findings below are presented using this second-level coding scheme guided by the CICI framework domains.

Participants did not provide feedback on the findings. However, multiple steps were taken to ensure rigor at different stages of the research process. Trustworthiness and credibility were warranted by incorporating researcher triangulation, practicing reflexivity, establishing a detailed audit trail of documentation, peer debriefing, managing data systematically using a project log, and examining competing explanations (25, 26).

## Results

The majority of the data from the FGDs corresponded to three of the seven CICI framework domains: 1) Political, 2) Epidemiological, and 3) Geographical. Within each of these three domains, specific themes surfaced in the FGDs, henceforth referred to as sub-domains of the context. Within each sub-domain, we differentiate between the existing and required elements noted by HCPs. Existing elements refer to components of the context already existing in the facility that would support the implementation of this model, whereas required elements were those identified by HCPs as needed in order to successfully proceed with the implementation. See Table 2 for a summary of the context assessment with the domains, sub-domains, and the key elements identified.

## 1. Political domain

The predominant proportion of the data pertained to the Political domain of the context, which focuses on the distribution of power, assets, and interests within a population, and also includes the health care system and its accessibility with respect to service delivery, leadership, governance, and human resources (10). Most data within this domain was related to two key contextual aspects within the CICI framework: power and assets. Power relates to the distribution of itself, between those in leadership positions and staff, and also within a team, such as power differences between team members. The distribution of power within a team has an impact on roles, such as how the roles are carried out. Power also relates to how leadership is carried out, especially with regards to communication, and how leadership is needed to overcome barriers to model implementation. Assets relate to access to resources, which could include human resources, such as staffing, or knowledge, examples of which include training or access to training.

The political domain was organized into five sub-domains: 1) Teamwork; 2) Facilitation; 3) Resources; 4) Communication; and 5) Preparedness for Change. These sub-domains and their corresponding *existing* and *required elements* of the context specific to this case study, are described in detail below.

### 1.1. Teamwork: Everyone needs to be on the same page

Teamwork was identified by participants as a critical component of the political domain, essential for the next stage of the implementation. Participants identified two existing elements already in place at this facility which would facilitate the implementation: the use of team rounds and effective teamwork. One participant observed that the use of rounds was an existing element which allowed the team to monitor patient goals and progress:

We have rounds once a week with the PT/OT, clinical leads, staff, recreational therapist to discuss how the patient's doing and what goals we need to move forward. It helps. [Focus group (FG) 3, Participant (P) 19, RPN]

Interdisciplinary rounds were noted as useful to enhance communication, resolve discrepancies of approach among team members, and to ensure all team members remain up to date with patients' care plans and rehabilitation goals.

In addition to team rounds, a participant remarked that good teamwork allowed them to effectively provide care to a patient with responsive behaviours:

We have a patient here that has a lot of behaviours but we all team up to provide care for him and he has his primary RPN, but if that person is on break, we'll make sure that he's being monitored closely and that his tabs monitor's are applied, and so we take care of each other that way. (FG3, P21, RPN)

This collaboration between members of the team, including the assistance from colleagues when the primary health care provider was not available, is an existing element that supports the implementation of the model of care.

Two required elements to strengthen the system before moving on to the next phase of implementation were identified: the need to understand each team member's role in patient mobilization and the need for a consistent interdisciplinary approach. The need for role clarity, in particular with respect to who is responsible for the mobilization of patients, emerged as an element that could strengthen the success of implementing the new model of care:

We need to mobilize people more, people are in wheelchairs, it was very frustrating for me because obviously, that's what we want, but... we all need to be on board and it's not just the physio's job. (FG1, P8, PT).

Although participants commented on having effective teamwork, inconsistencies remained in terms of how individuals perceived their roles and carrying out certain rehabilitation activities. Another required element identified was the need for a person-centred approach involving multiple HCPs. One participant weighed in on the importance for all team members to embrace a consistent, person-centered team approach:

It all has to do with an interdisciplinary type of approach, it's not solely one person's responsibility to be walking a patient to the meal. It's not the PT role. It's everybody's role and it comes back to the whole common goals. And it's not just the OT's role to do ADLs [activities of daily living], nursing can do that as well. (FG1, P10, OT)

Thus, another element that potentially could improve the context in preparation for implementing the next stage of the rehabilitation model is a consistent interdisciplinary approach. In order for all team members to be on the same page, the continuation of weekly rounds and effective teamwork (existing elements), and the introduction of role clarification and a consistent interdisciplinary approach (required elements), were recommended.

### 1.2 Facilitation: Imperative for change

Facilitation was identified by participants as being critical to bringing about organizational change through the translation of knowledge into practice. One existing element within the organization, and one required element were identified as important factors to support progress towards the next phase of implementation. An existing element included instances where individual team members provided facilitation to support a change in care. A participant provided an example of a team member who not only verbally informed but also physically demonstrated to a colleague how to carry out a new way of transferring a patient:

I'm a part-timer so when I do come in I've noticed that OT [occupational therapist] will spot me and go, "Oh, you're here today. You have that patient, so let me just update you on her transfer status." Then he'll actually bring me down to the room and we'll do the transfer together so that I have better understanding of how that person pivots, how they transfer exactly like step by step, which is very helpful. (FG3, P16, RPN)

The updating of the participant on the transfer status of the patient, and the demonstration of the transfer facilitated the participant's uptake of a safe, up-to-date transfer.

A required element identified was the need for a dedicated facilitator to translate knowledge into practical change. Several participants remarked that this type of facilitator role was required to integrate new knowledge (strategies used outside this facility) into practice within the local setting:

I think the idea of a facilitator to help us create what we need, using strategies from outside, but adapting it to what we need here. Someone who's flexible and can help us work through the challenges of what we face in this system. (FG2, P11, OT)

Participants identified the need for a focused resource available for the duration of the implementation project to assist with translating newly acquired knowledge into daily practice changes within patient care. Therefore, in order to enable the facilitation required to support organizational change, ongoing patient-based facilitation by individual team members as well as the availability of a dedicated organizational resource for facilitation, such as a facilitator, would be needed.

### **1.3 Resources: Quality and quantity matter**

The availability of resources, including adequate staffing and continued access to knowledge by all staff was a recurrent topic in the discussions. One existing element already in place within the organization and two required elements were mentioned as essential to implement this model of care in this context. As an existing element, FGD participants described how the recent addition of a staff member, a physiotherapist, to their team was an important factor to supporting the delivery of quality care, which allowed for a more manageable amount of work:

It's always time management ...running after it and having to chase after it, and I think things are going to be better now that we have some more staffing here. We have another therapist with us now so workload will be a little bit more manageable. (FG1, P8, PT)

Participants expressed that having a manageable daily workload would support the upcoming changes at the facility.

Although having an additional staff member was highlighted as an important existing element, FGD participants identified the need for even further staffing increases as one of two required elements for future implementation. Participants consistently reported on challenges they faced because of inadequate staffing, and the need for more team members, especially in order to make rehabilitation available on evenings and weekends. When asked about the type of resources required to provide care to patients with CI, participants noted the need for more nursing staff as well as more allied health staff, due to the rehabilitation needs of the patients:

And I think having more support. Like I think that often right now we're having no rehab assistance, no rehab OT/PT available on weekends. And evenings (FG4, P23, RN)

Thus, from the perspective of participants, a staffing complement to match patient care needs would enable the provision of better-quality rehabilitative care. The second required element that emerged from the FGDs revolved around the need for access to knowledge for all team members. As one staff member described, this related specifically to making education available to those who work part-time, night shift, or weekends:

...All of us had the opportunity to participate in the training and a lot of nurses did too, but I'm not sure if people who work night shift, people who work part-time and doing weekends they got that training too because many times – majority of times we're here only seven hours a day working with the patient but the majority of time it's the nurses who are with the patient they keep rotating. Their shift changes, not like ours which is steady. So, probably that will help if everybody got that training and also that'll help them feel like part of the team. (FG1, P4, PT)

Providing training to staff from all shifts and disciplines would allow for a consistent knowledge base, thus building capacity and promoting the uptake of the next stage of the implementation of the rehabilitative model. Thus, ensuring availability of required resources for teams, achieved through adequate staffing and equitable access to knowledge, is recommended to improve the context in preparation for the next stage of implementation.

### **1.4 Communication: Effective information sharing to enhance care delivery**

Communication was recognized as a critical consideration for the implementation of a new model of care. One existing element and one required element emerged as important for implementation preparedness. An existing element involved the use of written documentation, such as goal posters, care plans, and whiteboards. This participant identified the use of care plans to share updates regarding a patient's status:

Our physio team is usually pretty good with assessing transfers and then they let us know what we're going to do and they update the care plan. (FG3, P19, RPN)

This example demonstrates how the use of care plans to record and communicate information is a current approach within the facility that can be leveraged for future implementation of the model of care.

To further support preparedness for implementation, one required element was identified by participants. The need for in-person communication – beyond email – for use in conveying changes in processes was highlighted as an opportunity:

People think the easiest way is to communicate through email, but a lot of times it's not the best way. It's not – it needs to be explained in person. (FG3, P22, RPN)

Participants observed that general or update emails can be ineffective as they do not promote the asking of clarification questions and thus can limit the use of new resources or uptake of processes that are communicated; an increase in face-to-face communication can facilitate clarification in the form of questions if the need arises. As such, communication is integral to preparing the local context for implementation and would be enabled through the consistent use of both in-person interactions and written documentation.

### **1.5 Preparedness for change: At all levels**

Preparedness for change is the final sub-domain within the political domain. One existing element and one required element were identified as important means to support the implementation of the rehabilitation model. A positive attitude to new initiatives was recognized:

I think we're always open to trying new things, ...I feel like we're always evolving here and it's really good. (FG2, P14, RD)

The staff's willingness to embrace change was noted as an important factor for the implementation of a new model of care. The need for organizational leadership to create a vision and an action plan at the facility level emerged as a required element to bring about organizational practice change. One participant reflected on how there is a need for a leader to take action:

Somebody needs to say "Okay, you guys over there and you guys over there, let's meet in the middle". Because we'll sit and we'll have these great discussions about things and then reach no conclusion. There's no action plan, ...it's just let's discuss all the problems and then leave the room. So lots of great ideas that float around. (FG2, P13, OT)

Leadership to provide a vision for a plan of action and to coordinate how to bring about change would also enable the success of the next implementation phase. Therefore, the staff's willingness to change and the need for leadership to take action at the facility level were identified as essential for successful program implementation.

## **2. Epidemiological domain**

The epidemiological domain, although not as frequently mentioned by participants as the political domain, was also relevant in terms of the context. The epidemiological domain involves the distribution of diseases or conditions, the attributable burden of disease, and the determinants of population needs (10). The key contextual aspect from this domain was the attributable burden of disease, which includes knowledge related to diseases, including clinical presentation, health management, and care needs.

Within the Epidemiological domain, there is one prominent sub-domain: Caring for Persons with Cognitive Impairment. This sub-domain, including its existing and required elements are detailed in the following section.

### **2.1. Caring for persons with cognitive impairment: It's not one size fits all**

An individualized, person-centred approach to care was identified by participants as a central tenet of this sub-domain. Participants highlighted that individuals with CI, specifically delirium and dementia, have unique needs that require a tailored response. Two existing elements and two required elements were identified. Existing elements consisted of the use of specific models of care and family involvement. The use of known care models was an existing element within the context that supported management of this patient population, as highlighted in the following quote:

I've done gentle persuasive approach training and I find that's been pretty useful. I know that that has come out in the last three years or so...that's helped me work with patients with behaviors and dementia. (FG3, P21, RPN)

Thus, the provision and use of an effective model of care for the care of persons with CI would be helpful in the implementation of a rehabilitation model. Likewise, leveraging family involvement in care delivery emerged as an important supporting element existing within this context:

Especially with dementia because they [the family] can give you tips on what they know works and a little bit of their history ...[I] had a few patients that were quite challenging behavior wise and even involving the family to bring in personal belongings and stuff to help the patient feel like it's more like their home environment helped with some of the behaviors and the anxiety. (FG3, P22, RPN)

Families provide knowledge and context about persons with CI for HCPs, enabling an individualized approach to care. Using effective care models and including families as partners in care would serve to support the next implementation phase.

In anticipation of meeting the specialized care needs of this population, participants identified two required elements that would further support population-specific, individualized care delivery. For patients with dementia, for example, these included incorporating familiarity and a routine into processes of care, as demonstrated in the following quote:

I feel like that type of patient [with dementia] that we're focusing on needs routine, needs a familiar face, needs a schedule. They would thrive on that and needs certain prioritizing. (FG1, P2, Rehabilitation Assistant)

The use of routines could assist in the provision of quality care to patients with CI and support the next phase of implementation. Moreover, the need for an individualized approach in patients with dementia and delirium was identified as a second required element, as highlighted in the following quote:

In acute care there's that focus and everyone has that same level of knowledge, but here those patients will come in and they'll be mixed with everybody else. They're not necessarily going to be in a pocket. So...you have to shift your mindset between patients, that this patient doesn't need what this patient needs, and I feel like a lot of times there's a bit of a one size fits all kind of approach here. (FG2, P11, OT)

Participants identified that in this context there needed to be a shift in mindset, from the one-size-fits all approach, to a more individualized approach, in order to provide effective care to patients with cognitive impairment. Therefore, the use of known models of care, involvement of family members, incorporating routine and familiarity, and an individualized care approach emerged as important elements to support the provision of care to persons with cognitive impairment, and to enable the next implementation phase.

### 3. Geographical domain

The third domain that emerged as significant for consideration within the context was the Geographical domain, understood as the broader physical environment, landscapes, and resources, including infrastructure, that are available in a specific setting (10). Infrastructure was a key aspect of this domain, related to the one sub-domain identified in the analysis, the facility's physical layout.

#### 3.1 Physical layout: Impact of design on care delivery

The physical layout of the rehabilitation environment was identified as having a significant impact on care delivery and potentially affecting the next phase of the implementation. One existing element and one required element were identified. Participants identified that the location of the dining room, which was part of the physical environment, was leveraged in order to incorporate additional therapy activities during the day:

Everyone does go to the dining room for meals. Breakfast, lunch and dinner they go to the dining room. Ideally with everybody if they are able to ambulate with the required assistance to and from meals as part of their therapy. (FG1, P1, PT)

As the dining room was at a distance for the patients, the design of the unit facilitated patients ambulating more often, which facilitated their recovery.

However, one element of the physical layout required a change as was identified by numerous participants. Within the current geographical context, therapy and nursing were described by HCPs as being siloed from one another, ultimately impacting care delivery. Nursing staff had their station while the allied health care team charted in a different location. Therefore, the full team did not see each other very often. As such, participants identified that re-designing the unit's workspace to support staff collaboration would be an important required element for implementation:

So maybe just being more incorporated, being closer to being on the floor, maybe that would just help to influence people, and people, like other staff, would be able to influence us and maybe it would make change smoother. (FG1, P7, OT)

Bringing team members closer in proximity to each other would enable smoother team efforts to provide care to patients. Therefore, maximizing the use of the current physical environment to provide care and enabling the modifications to the layout to bring team members closer together were identified as ways to support the next implementation phase.

## Discussion

Implementing a new model of care implies a change in practice and routines for HCPs. In clinical practice, the context in which HCPs work can facilitate or hinder the staff's individual responses to these changes in practice. We found the CICI framework proposed by Padenhauer useful for understanding how HCPs viewed the context when implementing a patient centred rehabilitation model of care targeting persons with CI (10). We identified that the FGD data mapped mainly onto three key contextual domains (i.e., political, epidemiological and geographical) of the framework. We modified the framework for the purposes of our study to focus on key existing elements which were supporting the implementation of the model, and those that were required to strengthen the context for implementation of the model. A better understanding of the contextual factors that were existing and those that were required to further facilitate the continued implementation of the model of care were considered by HCPs, which yielded useful considerations for methods to facilitate practice changes in the future.

The majority of the participants spoke about the necessity of key elements within the political context for implementation of a new model of care. Specifically, effective teamwork, facilitation, adequate resources, effective communication strategies, and a vision for change were considered essential. Worth noting is that staff perceived some of these elements already in place within the facility, while the majority felt more changes were required in each of the elements to fully embrace the model of care. Most staff perceived that the vision of what the adapted model of care might look like in their context was not clear nor were the necessary processes to enact the vision. For instance, staff perceived there was a vision for the unit to be more focused on rehabilitation; however, key elements like staffing, changing pre-existing beliefs about rehabilitating persons with CI, and lack of team work challenged the execution of this vision. These findings are in line with previous research which suggests that determining the desired end state is essential for successful transformations of health care organizations and that the organization is sufficiently aligned to support the change (27).

Teamwork was viewed as essential and there was consensus that more interactions across the disciplines and role clarity were required to fully implement the model of care. Effective teamwork has been described as key to rehabilitation of older complex adults as team members are required to share and exchange practices that are effective (6, 8, 28). Utilizing verbal reports, team rounds, huddles, conversing in the hallways, and completing and updating care plans and goal posters were all ways HCPs discussed could be used to enable team collaboration which were not always utilized. Part of developing effective teams was the need to focus on clarifying roles in order to meet the needs of the patients. In previous work, staff who have implemented best practices related to rehabilitating persons with CI have discussed the need to work outside of their silos and adopt a patient centred approach by being responsive to the needs of

all patients (6) which included nurses walking patients and PTs assisting with helping persons who had responsive behaviors. The building of effective collaboration between team members can be enhanced by the unit manager setting the tone and supporting this type of collaboration and assisting team members to realize the importance of each other's role. These findings suggest power differences occurred between team members and it influenced how the roles were carried out. In addition, the leadership of the unit manager was not visible, in terms of communicating the vision and providing a focus on effective interdisciplinary practices and this made overcoming barriers to model implementation difficult to achieve. As a result, during the project implementation, the unit manager was redeployed.

Another essential context domain that mapped onto the framework was the epidemiological domain. Learning to care for persons with CI and the tailoring that was required as one size did not fit all, was expressed by many HCPs in this study. Previous research has suggested that rehabilitation of persons with CI is achievable and HCPs can learn to modify their practices to achieve positive outcomes; however, it takes creativity, ingenuity, and tailored approaches to rehabilitate persons with CI successfully (6). These tailoring approaches involve knowing the individual, maintaining routines, and learning the best ways to engage and motivate the person during their rehabilitation journey (6, 7). These findings suggest that in terms of the epidemiological context, the HCPs perceived that they did not have the knowledge of caring for older complex patients with CI, including delirium, and how to manage their rehabilitation journey and care needs. Furthermore, even though a part time resource was hired to facilitate educational workshops, and implement and maintain momentum of the project, the remote location of the adaption site made it difficult to sustain the facilitator's physical presence. The need for full time presence of an external change agent has been highlighted as a required element when implementing best practices in dementia care (29).

The geographical domain was highlighted by the majority of the HCPs as a requirement for successful implementation of the project that required attention. The CICI model brought to light the importance of the geographical context in order for the political and epidemiological contextual requirements to be enacted in practice. In order for staff to work as a team and for staff to tailor rehabilitation approaches to care, update goal posters, allied health staff and nursing staff had to interact and work together. In this facility, the allied health staff were located on a different unit and as such they did not frequently communicate with the nursing staff. The divide in allied and nursing staff resulted in difficulty in sharing successful approaches for specific patients, deciding who should do the goal setting, updating the goal poster board, and ensuring disciplines were more collaborative. In terms of this study, as a next step, the administrator revised the workspace on the unit and allied staff were relocated onto the same unit as the nursing staff. Future work should involve understanding which elements of the framework should be prioritized when introducing a practice change.

## Study Strengths And Limitations

This study provides an in-depth examination of the utilization of the CICI framework to understand the implementation process, but further research is required to understand how these findings are applicable to other situations. Some methodological issues must be considered when interpreting the findings. We only interviewed HCPs at point of care and interviews with managers may have revealed different issues related to the context. Interviews with management could have yielded different perspectives and more insights into higher-level, systemic issues to overcome when implementing a new program of care and more domains of the CICI may have become more apparent. Strengths of this research include multiple HCPs and the use of a guiding framework to capture the complexity of the implementation process. The findings make an important contribution to understanding how to improve the care of older adults with CI requiring rehabilitation care.

## Conclusion

The CICI framework and the results demonstrate how complex implementation of a new model of care is and the importance of context. This work suggests that when implementing a new program of care, strong consideration should be paid to the geographical, political, and epidemiological aspects of the context. A careful understanding of the geographical context and its interaction with the other domains highlight the need for prioritizing which elements are required to be in place before successful implementation is feasible. Numerous models have been developed to assess implementation but fewer have been created to assess context (10). The framework was a useful guide to understand which elements existed and which were still required for successful implementation of the model of care. Future research should also assess if the other four domains in the CICI framework are more suited for other practice changes. As well, as there continues to be a lack of evidence on specific strategies for implementation of models of evidence-based dementia care (30), the CICI framework may serve as a useful guide going forward.

## Abbreviations

CI

Cognitive Impairment; CICI:Context and Implementation of Complex Interventions (CICI); FGDs:focus group discussions; HCPs:health care professionals; RPN:Registered Practical Nurses; OT:Occupational Therapists; PT:Physiotherapists; RA:Rehabilitation Assistants; RN:Registered Nurses, RT:Recreation Therapist, RTA:Recreation Therapy Assistant, FG:focus group; P:Participant

## Declarations

### Ethics approval and consent to participate

Ethics approval was obtained from the Health Sciences North Research Ethics Board (project number 18-070). Written informed consent to participate was obtained for all participants.

### Consent for Publication



Not applicable.

### Availability of data and materials

The datasets generated and/or analysed during the current study are not publicly available due to possibility of confidentiality being compromised, but are available from the corresponding author on reasonable request.

### Competing Interests

The authors have declared that no competing interests exist.

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### Authors' contributions

KM, SG, and NZ did the literature review and wrote the introduction. AEP wrote the methods section. AEP and NZ conducted first-level analysis. AC and DC conducted second-level data analysis. AEP, KM, and SG provided assistance to resolve discrepancies in data analysis. AC and DC wrote the results section, with assistance from NZ, AEP, and KM. KM wrote the discussion. All authors read and approved the final manuscript.

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## Tables

Table 1  
Demographics of focus group discussion participants

<b>Variable</b>	<b>Results (N = 27)</b>
<b>Age</b>	
Range	25–47
Mean (± SD)	32.41 (± 6.52)
<b>Gender</b>	
<b>n (%)</b>	
Male	1 (3.70)
Female	26 (96.30)
<b>Job title</b>	
<b>n (%)</b>	
Occupational therapist	4 (14.81)
Physiotherapist	4 (14.81)
Rehab assistant	3 (11.11)
Recreation Therapist	1 (3.70)
Recreation therapy assistant	1 (3.70)
Registered Dietitian	1 (3.70)
RPN	11 (40.74)
RN	2 (7.40)
<b>Highest education</b>	
<b>n (%)</b>	
High school	0 (0)
College	13 (48.15)
University degree	7 (25.93)
Master	6 (22.22)
<b>Specify master: n (%) from 6 masters</b>	
- Physiotherapy	3 (50.0)
- Occupational therapy	3 (50.0)
<b>Other:</b>	
- Postgraduate diploma	1 (3.70)
<b>Previous years &amp; months in rehabilitative care</b>	
Range	1 month – 23 years
Mean (± SD)	6.86 (± 5.93)
<b>Years &amp; months in current position</b>	
Range	1 m – 9 years
Mean (± SD)	3.57 (± 3.52)

Table 2  
Context assessment summary: Domains, sub-domains, and key elements

Domains	Sub-Domains	Key Elements	
1. Political	1.1. Teamwork: Everyone needs to be on the same page	<b>Existing Elements</b>	<b>Required Elements</b>
		a. Weekly team rounds	c. Role clarity
		b. Effective teamwork	d. Consistent interdisciplinary approach
	1.2. Facilitation: Imperative for change	a. Periodic facilitation from team members	b. A dedicated facilitator for implementation
	1.3. Resources: Quality and quantity matter	a. Adequate staffing	b. Staffing complement to match patient care needs
		c. Equitable access to capacity building opportunities	
	1.4. Communication: Effective information sharing to enhance care delivery	a. Written documentation (goal posters, care plans, whiteboards)	b. An increase in face-to-face interactions
	1.5. Preparedness for change: At all levels	a. Positive staff attitude to new initiatives	b. Organizational leadership to create a vision and an action plan at the facility level
2. Epidemiological	2.1. Caring for persons with cognitive impairment: It's not one size fits all	a. Use of specific models of care	c. Incorporating routine and familiarity into processes of care
		b. Family Involvement	d. An individualized care approach
3. Geographical	3.1. Physical layout: Impact of design on care delivery	a. Leveraging the physical environment to incorporate therapy activities	b. Re-designing the unit's workspace to support staff collaboration

## Supplementary Files

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