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Research article

The ideal and the real: Epistemic and practice tensions in renovating long-term residential care settings for persons with advanced dementia

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Abstract

Although existing research suggests the importance of physical environments on persons living with dementia in residential settings, less is known about whether and how this evidence, among other factors, shapes design processes in long-term residential care. Using process evaluation methods to explore the redesign of one residential dementia care setting in mid-Western Canada pre-pandemic, we identified and explored how the renovation of a residential dementia care setting reveals deeper epistemic and practice tensions. Qualitative data included five years of textual project documentation, and stakeholder interviews. Inductive thematic analysis was used to identify and explore three key tensions. First, complex, shifting and sometimes contradictory design goals reflected broader tensions between major goals of care. Second, multiple meanings of 'best practice evidence' and 'innovation' reflected tensions between scientific and practice knowledge, which were compounded by organizational communications strategies. Third, differing perceptions of the capabilities of persons living with advanced dementia reflected tensions between types of knowledge that may be particularly pronounced in the context of heavy workloads in these settings. We discuss the need for designers and facilities to more fully engage with evidence reviews and formative process evaluations, and to promote transparency among stakeholders about practical limitations and types of evidence.

Keywords: residential dementia care; environmental design processes; long-term residential care; process evaluation.

Introduction

"Design and construction is as much social and political as it is technical and aesthetic' (Nettleton, Buse & Martin, 2018, citing Till, 2009).

The COVID-19 pandemic revealed an urgent need for change in long-term residential care (LTRC)—resulting in calls for more attention to, regulation of, and investments in improving these facilities. To enhance care, some facilities may turn to physical redesigns that they might consider both cost-effective and feasible. Even prior to the pandemic, scholars drew attention to the outdated nature of many facilities, especially given updated evidence, emerging high-profile innovations (Van Steenwinkel et al., 2016), trends towards inclusive and participatory co-design (e.g., de Boer et al., 2020; Francis and Murtha, 2021) and significant increases in acuity of needs within LTRC populations. In addition, some research touts the promise of retrofits to dementia care units and LTRC facilities for quality of life (QoL) and person-centred care, social and leisure engagement, mood and positive behaviours (Mobley, Leigh and Malinin, 2017; Morgan-Brown et al., 2013; Schwarz et al., 2004; Van Steenwinkel et al., 2016).

Redesigning existing facilities can, however, entail challenges. Buse et al. (2017) refer to design processes that involve:

> *"incessant juggling between the competing demands of multiple stakeholders, each of whom anticipate [different] imagined bodies and seek to shape the design of buildings to meet their requirements." (1435).*

Processes such as these deserve study, and such knowledge can help with improving outcomes from facility redesigns. While evaluating the redesign of a dementia care building in mid-Western Canada prior to the COVID-19 pandemic (Porter et al., 2024), early insights within our research team identified an emergent qualitative research question: How does the renovation of a residential dementia care setting reveal deeper epistemic and practice tensions? To this end, we analyzed process evaluation data that tracked the redesign over a 5-year span.

Literature review

Insights into LTRC design from scholars grounded in critical epistemologies or new materialist approaches are under-recognized within the larger evidence on the effects of physical environments on residents. Such research has examined the complex ways that architecture and care 'co-emerge' in settings of care for older adults (Nord, 2018), and how tensions between standardisation versus personalization, and between autonomy versus risk reduction manifest in LTRC designs (Nettleton et al., 2018). Such tensions, alongside diverse meanings of home, can result in under-utilized purportedly therapeutic or diversionary design elements, and "cliched markers" aimed to signify "the symbol of care that we associate with a domestic setting" (Adams and Chivers, 2016; p.279). These critical contributions, however, generally do not focus on residents living with advanced dementia or the staff supporting them.

Evidence suggests the importance of environmental design features for outcomes among residents living with dementia, although many studies do not address the severity of dementia in the residents (Edgerton and Richie, 2010). Research highlights the importance, for QoL and other outcomes in residents living with dementia, of: smaller unit sizes/layouts; multisensory stimulation and/or modifiable and controlled sensory input; environmental and wayfinding cues; bright/natural lighting, appropriate noise and temperatures; design features that promote a 'homelike character'; and aesthetic indoor and outdoor, public and private spaces (Chaudhury et al., 2018; Edgerton and Richie, 2010; El Haddad et al., 2018; Fleming and Purandare, 2010; Fleming et al., 2016; Joseph et al., 2016; Lee et al., 2016; Marquardt et al., 2014; Mobley et al., 2017; Morgan-Brown et al., 2013; Schwarz et al., 2004; Zeisel et al., 2003).

Such research is complex and difficult to interpret, however. Some changes can improve some outcomes but exacerbate others; as such, clarification around key goals or outcomes is needed when reviewing research (e.g., Chaudhury et al., 2018; Joseph et al., 2016). Furthermore, design goals may include not only improving resident outcomes but also maximizing family satisfaction and benefitting staff. In addition, more ‘innovative’ or radical models of LTRC are emerging (Miller and Osborne Burton, 2019; Pedro et al., 2020; Zimmerman et al., 2015) that may be intuitively appealing, yet are rarely rigorously evaluated. Challenges exist in definitively linking particular design features to specific resident outcomes, especially as some redesigns also transform care delivery (Joseph et al., 2016). In fact, Morgan-Brown, Newton and Ormerod (2013) and Chaudhury et al. (2017) suggest changes to physical environment alone are insufficient in the absence of systemic and cultural change, and Padhila (2011) recommends combining specific features, since independent features on their own may lack long-term effects.

Answering calls to better understand the underlying programme theory behind complex interventions and how context shapes the implementation of interventions (Brand et al., 2018; Kay Bartholemew et al., 1998), our team conducted a process evaluation (e.g., McGill et al., 2020; Murdoch, 2016). This evaluation was part of a larger study of the effects of a redesign and renovation to a specialized care building for residents living with advanced dementia. In this analysis, we focus on how various kinds of goals, assumptions and evidence were used or invoked in the implementation process by facility leaders and design stakeholders, as well as the contextual factors shaping these processes.

Methods

Setting and Context

In 2015, a non-profit care facility in mid-western Canada initiated a redesign to their residential care units for residents living with intermediate and advanced dementia. Soon after that, they sought to enhance staff training in dementia care. Four units on two floors of one building accommodated 60 residents, with private bedrooms. One unit was designated for residents with particularly responsive behaviours. The redesign was positioned as enhancing residents’ QoL and reducing these stress-related behaviours. From the outset, the project was spoken of by facility leaders and in promotional materials as evidence-based and representing excellence. Numerous updates to units were planned, along with the addition of an activity pavilion and courtyard to which residents would have free access.

The redesign project experienced implementation challenges including cost escalation, staff turnover and disruption, and construction and administrative delays especially related to resident tracking technology (which was essential to the free-roaming design). Mechanical and electrical designs, and other features (e.g., cupboard locks) had to be reworked ‘on the fly’ based on discoveries during the renovation. New funding and donors were being solicited throughout the project, allowing the re-introduction of some design features that had initially been omitted due to cost.

Technical and logistical issues and glitches also created inconveniences and inefficiencies for staff, affecting some early staff appraisals of the redesign. Pavilion opening and full utilization were significantly delayed, and the COVID-19 pandemic also affected the project's finalization.

Methodology

We used process evaluation to obtain and synthesize rich, contextualized information about how the redesign processes were implemented and interpreted by stakeholders (McGill et al., 2020; Murdoch, 2016). This approach relies on various qualitative methods and helps uncover explicit and implicit theoretical assumptions underpinning intervention designs as these are operationalized or refracted throughout the planning and change process. In our analysis, the method's value is not in assessing the renovation's objective effectiveness, but rather, to provide contextualized insight into the process and its nuances and key tensions.

Our approach drew on our informal reflections (at meetings) as the independent research team for the project, and formal collection and analysis of design materials, renovation team minutes, interviews, and other sources covering a 5-year span. The ethics protocol was approved by our academic institution and the participating facility.

We identified and reviewed relevant, accessible organizational documents (e.g., design concepts, project charter, environmental scans, project workplans and reports, change management and communications plans, training manuals) associated with the redesign. This included minutes from committees that met regularly over a five-year period, (project steering committee and a broader facility committee). Minutes reflected views expressed by key stakeholders; other material represented formally crafted communications about the project to families, staff, potential funders, and the provincial government.

Stakeholders were also actively recruited for interviews. Email requests were sent to those closely involved with the redesign and representatives from unions, key departments and services. Interested participants contacted the research team to participate. After confirming written informed consent, semi-structured qualitative interviews were conducted with six stakeholders. The initial goal was to interview the same stakeholders pre- and post-renovation. However, due to recruitment challenges and construction delays, two interviews were completed prerenovation, two during construction and two completed after the first units were renovated, but the pavilion was not yet fully accessible (a modified 'post' renovation).

Interview questions were tailored to each interviewee's role or position and in fitting with a qualitative approach, were adapted to obtain rich, in-depth information about perceptions of the space and intended redesign process and goals. Four interviews included a 'walk-through' component in which the stakeholder was asked to comment on aspects of the physical environment of public spaces of the units (and one unoccupied bedroom), and how the space is used and maintained by those who work within it. Digitally recorded interviews lasted around 60 to 90 minutes and were later transcribed and de-identified.

Both textual and interview data were analyzed to identify and explore insights about stakeholders' interpretations of the goals and intended outcomes of the renovation (including both explicit statements and more implicit meanings), as well as impressions of why intended outcomes may or may not have been achieved. Three coauthors synthesized data into three identified points of tension. Analyses were verified through the larger research team's tacit knowledge of the design process derived from their immersion in the project during the renovation period.

Findings

Our analysis illuminated three points of tension during the evolution of the redesign: 1) shifting, complex, and sometimes contradictory goals; 2) multiple meanings of both 'best practice evidence' and 'innovation' manifested in the project; and 3) differing perceptions of the capabilities of residents living with advanced dementia.

Shifting, complex, and/or contradictory goals

The redesign's explicit and implicit goals were gleaned from key documents and communications materials, particularly earlier in the project. Multiple, shifting and/or unclear goals not only impacted the broader research evaluation of the project, but provided insights into the nuances and tensions involved in LTRC redesign processes.

At a facility committee meeting in November 2015, it was stated that the building needed upgrading given increased resident acuity/complexity as well as physical wear and tear. This theme ('refreshing an outdated structure') continued in communications throughout the project. In addition, early design presentations/documents emphasized *enhancing resident QoL* through personalized space (e.g., recognizable cues), free movement, and opportunities for social interaction. In addition, the design was emphasized as aligning with the facility's goals of care: "to relieve anxiety, confusion and stress while maximizing active lifestyle." One stakeholder, interviewed during construction, commented retrospectively about the design's initial goals, expressing a vague sense of improving residents' lives:

> *…was to make life better for our residents. To make a lot more nuances for them. Like the memory doors… the memory cues. The busy boards at the pavilion with activity stations. It was to make our life better for our residents.*

In November 2016, communication materials indicated the project would result in "greater mobility, interaction and activity areas for residents, living units designed specifically for their needs and the use of the most up-to-date technology to assist residents and staff in their interactions."

Addressing responsive behaviour was another commonly stated goal, usually framed in communications of therapeutic benefit, but also as instrumental in improving working conditions. In messaging to staff (February 2017), it was noted that "residents will show less frustration, agitation, and aggression" through improved surroundings, freer movement and more therapeutic activities. In some ways the design itself was positioned as a 'treatment' although it was also positioned as helping free up staff time to provide more/better care for residents (thereby enhancing care quality).

Throughout the project QoL was emphasized, although it became accompanied by more emphasis on *benefits for staff* (especially in communications to staff). In June 2016, the Facility issued a Project Charter listing critical outcomes of project success, which further blended the narrative of resident safety and QoL with staff workflow and care management needs. Emphasis was on staff safety, mitigating residents' responsive behaviours, the intuitive use of the space, and the idea that technology will save staff time, "thereby increasing staff time available for direct patient care." In other materials, claims were made that the design would enhance 'staff flexibility.'

In the change management plan, very few measures of design success pertained to 'resident engagement' or broader QoL; instead, most measures prioritized reduced resident agitation and workflow issues. In addition, one stakeholder interviewed prior to the renovation hoped the design could help with:

> *…the ability the staff to control the environment more… which I'm hoping that's gonna happen with the changing of where the nursing station is, with the ability to close doors, with some of the closet things in the room and all that stuff…So, we have more control over the situation, right?*

Another stakeholder, interviewed one year later (during construction) interpreted the initial project goals as not only about helping residents, but also about improving staff work:

> *…some of the town halls I went to, there was supposed to be more flow for staff too, just in terms of the nursing station, the med rooms, the old units - which again now I see both [goals], the nursing stations are tiny. The med room is way in the back. There's no window. So my understanding was that it was supposed to be better for staff as well.*

Early in the project (March 2016), facility physicians and local dementia organizations suggested the design incorporate an additional change in the current 15 bed units towards smaller groupings on each unit, or smaller unit sizes. Resulting 'pod' designs incorporated three smaller dining/lounge areas (each separated by swinging doors) in each of the four units, characterized as "allowing for more movement and less containment which is shown to reduce anxiety in this patient population." In February 2017, a communication to staff noted that this design facilitates resident separation if needed, and that user groups had expressed that this could help in managing residents who are easily distracted (e.g., supporting behavioural/care management goals). This highlights a developing tension between the goals of free movement within the units and into the pavilion while organizing and separating residents within smaller units.

Indeed, free movement for first floor residents (throughout the floor and into the pavilion) was a consistent goal in early design documents. Ultimately, however, residents' access to the pavilion was restricted to limited daytime hours. Access beyond these hours, and in particular, by 2nd floor residents at any time would be reliant on family, volunteers, and/or recreational staff. Such decisions indicate the goal of free movement became backgrounded against concerns about staff workload and resident safety.

In February 2017, external communications were also emphasizing natural settings/home-like conditions, and the 'pods' were now characterized as 'family scale' groupings. The project was posited as moving away from an 'incarceration model', in part through providing more opportunities for mobility, outdoor stimulation and recreation. This goal (*becoming more 'home-like'*) was emerging as a consistent theme in communications. A home-like aesthetic was indeed emphasized throughout the project, albeit with some ambivalence at times among stakeholders. One stakeholder (interviewed pre-renovation), in the context of their concerns with cleaning various articulated surfaces (without increase in cleaning staff), expressed, "obviously, you want it to look inviting and homey and stuff like that, but…" Some stakeholders also believed they needed to be able to separate residents and limit mobility, to control resident behaviours. Similarly, another stakeholder (interviewed during construction) spoke about how aspects of the redesign might negatively impact their work, making it difficult for them to keep residents safe.

In sum, although the stated redesign goals included moving away from an institutionalized model and promoting resident QoL through independence, free movement, personalization and social engagement, other concerns dominated among stakeholders. This might partly reflect differing facility communications strategies for different user groups; however, it may also be explained by their perceptions of a lack of fit between the design and the nature of the resident population (we return to this in a later section).

In addition, although 'community', 'congregation', and 'socialization' were stated goals of the initial design, project documents contain few details about social interactions or human connection with others. Instead, they emphasize providing a variety of *stimulating and/or diversionary activities for residents to engage in on an individual basis*. The pavilion, for instance, is positioned as a place of diversion therapy to trigger memories and encourage 'solitary forms of engagement.' Moreover, features of the unit design such as plexiglass shields on nursing stations prioritize staff safety over humanistic, interpersonal interactions between staff and residents, as this quote from one stakeholder (interviewed during construction) indicates:

> *If I'm at the desk…it was hard to hear [residents]. And there was just this little opening. And I didn't like it because I'm trying to interact with my residents and – when I'm charting, I'm happy to talk to them, like some…are cognitively well and like the chit chat – but glass to me is very… I always have to then get out of the nurse's station because you can't have a good conversation. The glass to me is… acts as a sound barrier. So my personal opinion, I like it without the glass. But that's the quality of life versus safety part, right?*

Multiple meanings of evidence, best practice, and innovation

Emphasis on evidence

Early on, the facility encouraged the designers to ground the project in research evidence:

> *In response to a question regarding available data supporting a positive outcome of these lifestyle models, [designers] can collect data to look at the evidence once the project receives approval to proceed… there is some evidence associated with a reduction of agitation and anxiety in an environment free of physical restraints. Doing activities that emulate daily living is also beneficial as supported by the literature (November 2015 facility committee minutes).*

The subsequent research review (December 2015) was not extensive, relied heavily on grey literature, and did not assess the methodological rigour of studies. There was an emphasis on person-centric care and minimizing agitation and aggression through design changes, music, outdoor spaces, lighting/spectrums, and so on. A 'cottage' model was noted as best practice. Some visits to other LTRC sites were made around this time, and dementia care specialists consulted.

The characterization of the project as evidence-based continued throughout the project. For instance, media messaging in November 2016 noted "the new centre has been designed through extensive consultation with local, national and international Alzheimer and dementia experts…" One stakeholder (interviewed during construction) expressed their sense of the goal of the redesign as reflecting updated evidence:

> *They put more research into now current practice, evidence-based practice. Twenty years ago, when they designed the units … that was current research. Now twenty years have evolved so they wanted to update the units to reflect what research has gone on, how practice has evolved…*

Various aspects of the design, such as sensory elements, free roaming design and the pod groupings, were flagged as aligning with current research evidence. Some stakeholders however, dismissed research evidence as not applicable to residents living with advanced dementia, or emphasized the need for a differing conceptualization of expertise:

> *They've started to listen to us in the last year, and they've made some changes to that plan, but they still... none of us were ever; no one ever came and asked us as the experts that work in this field, what needed to happen. (stakeholder interviewed pre-renovation)*

Users as experts – the role of consultation

As the preceding quote highlights, consultations with local site experts and/or space 'users' could be considered as another kind of evidence informing design, in addition to scientific research. Facility committee minutes, promotional materials and a memorandum to families collectively featured the design as having been informed by extensive consultations (especially focus groups) with unit staff and physicians, residents, visitors, families and experts; a planning process was also conducted.[1] A February 2017 memorandum to families states that "focus group sessions will be held to review the detailed design, proposed materials and finishes, infection control factors," housekeeping and dietary requirements.

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[1] Since our team could not access further information on the content or process of these consultations, we gleaned what we could from other project documentation.

As the project progressed, user inputs and consultations began to be utilized more as a change management strategy than as a design strategy. Negative reactions from some staff during the project may have prompted the hiring of a change manager. Indicative of this issue, in July 2017 it was noted that "there have been numerous concerns raised by the front-line staff regarding a perceived lack of communication" and that the change manager has increased communication efforts (posting drawings, suggestion boxes in staff spaces). In September 2017, it was stated that most staff suggestions "have already been captured by the current project design and construction documentation. The implication of their suggestions will be some additional costs to the project, which will be borne by the project contingency and must be approved by the [facility] Executive prior to proceeding."

Comments from five of the six stakeholders revealed some concerns about the extent to which they (and possibly other staff) felt consulted during the process. These concerns centred primarily around whether user feedback was incorporated into the redesign, and concerns about the inapplicability of research knowledge for their resident population. Two stakeholders conveyed concerns that historically, facility decisions had often been made that affect their work, without their input or advance notification.

Proven effectiveness versus innovation: technologies and change models

There was an early emphasis in project communications on incorporating new, innovative technologies, characterized as producing various potential goals/benefits for different users.[2] Facility research affiliates[3] met in early stages to discuss options and form a committee. After this, the technology focus both waned and narrowed in on resident tracking and staff communication, as well as on iPads installed at the entrance to resident rooms (used as digital photo frames). Other options were discussed or even briefly beta tested, but to the research team's knowledge none were integrated fully.[4]

There was some tension between the aim of being 'evidence-based' and using the renovated units as a testing ground for new technologies not used elsewhere, to help distinguish the project and its reputation, perhaps attracting additional funders.[5] In October 2017 it was stated that technology decisions were informed by best practice principles for dementia care and government expert advice.

In some ways, best practice appeared to signify innovation that could be creatively adapted to suit practical needs, rather than rigorously evaluated interventions. This is illustrated in the project's attempt to shift the care approach used by staff. Although an earlier document highlights families' feedback that the staff are patient and respectful, minutes from March 2016 onwards indicated that some key stakeholders repeatedly advocated for the physical redesign to be accompanied by

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[2] e.g., increasing staff time for resident care and/or mitigating demands on staff involved in a larger floor plan, improving staff 'work life', promoting resident and worker safety, enhancing resident quality of life (and less clearly specified benefits around independence, memory, and reducing resident distress).

[3] Academics associated and involved with research at the facility, but not members of the research evaluation team

[4] Some projects piloted or considered were too costly, had incompatible requirements, or had unclear benefit.

[5] Innovative technologies were often emphasized as a key promotion point of the redesign in communications materials.

a changed approach and/or attitudes of staff: "it's nice to have a state-of-the-art physical environment but it will not work unless you change the mindset and culture of the staff who provide the direct care."

There was initial consideration of adapting an existing care model which one facility physician had expertise in. However, by April 2016 a staff member and librarian were tasked with conducting an international "comprehensive research process" to assess other care models and "determine which one is best suited to [facility] mission and project goals." Development also involved consultation with a regional dementia care team and dementia organizations. The review process ended in the fall, and included a wide list of approaches, therapies, models and concepts. There was no documented methodological assessment of the studies or systematic comparison between approaches. A listing and brief description of a few selected models were provided at a staff town hall, foregrounding how these approaches prompt a change in staff culture, for instance towards allowing residents more opportunities to make choices. Through understanding how responsive resident behaviours communicated needs and were responses to environmental stress, and by providing meaningful and positive engagement, the goal was to reduce resident anxiety.

The end result of the process was the selection of a dementia care approach/educational training model advocated by one highly charismatic speaker and educator, which appeared to have wide support among clinicians (and the local dementia community). The approach is focused on changing direct care staff's attitudinal and interactional approaches, to prevent and manage residents' responsive behaviour, and promote QoL[6] and quality of care. At the town hall, this approach was presented as "based on strategies and techniques that integrate what is known about brain function and changes that happen with dementia" (i.e., that the techniques were evidence-informed). However, our team could locate no rigorous peer-reviewed scientific evidence evaluating the approach, and the approach was absent in the original evidence review from the librarian. The decision may have been made because of its intuitive appeal and novelty, strong support among facility clinicians and a key organizational stakeholder, and because it was a relatively feasible, brief educational intervention that could easily be delivered (i.e., it did not require systemic change or costly intervention).

Project documents emphasized a 'synergistic effect' of combining the new care model and physical redesign. However, there was nothing that specifically integrated the physical redesign with the new care model (likely because this idea emerged later). An advisory group (April 2018) stated that the new care model could be implemented in any physical environment.

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[6] From our research team's perspective, the care model's emphasis on 'doing with' rather than 'doing to' did seem to align with the design's stated principles of independence and resident-centredness.

Differing perceptions of fit between design goals and capabilities of residents living with advanced dementia

> *. . .the thing that I notice in the literature . . . I don't see much that makes the distinction for this severity of dementia. And it is significantly different. It doesn't mean there weren't advantages of the design. It just means that I think some of the goals are not going to be achievable. Just because of the advanced level or degree [of dementia]. . .*

The above excerpt from one stakeholder (interviewed towards the end of renovation) underscores another emergent tension that began to contrast against early design goals. Some stakeholders expressed consistent concern that redesign was not congruent with the acuity and severity of the dementia experienced by the units' residents. This perceived lack of fit between residents' capabilities (and/or assumptions about this) and the design (and/or research on which it was presumed to be based) emerged not only in process documentation and stakeholder interviews, but also in other forms of evaluation data collected by our team from family members and staff.

For instance, stakeholder interviewees emphasized the distraction, control and separation of what was characterized mainly as a resident population beyond potential for improvement through design changes. They hoped that redesign features would divert or minimize residents' potentially inappropriate, responsive and/or risky behaviours, or would change (remove, lock, disguise) features characterized as being under or misused by residents. Although safety was emphasized, such behaviours could also generate greater workload for or vigilance by staff. One stakeholder expressed concern with residents' fixation with polishing or pulling at hallway handrails or touching them with soiled hands (requiring frequent cleaning). They also spoke about needing to affix furniture to the walls ("they pull the whole chest of drawers over onto themselves or onto staff or another resident"); move breakable personal objects where residents cannot see or reach them; and avoid enclosing photos in glass (for safety concerns). An excerpt from this same interviewee highlights how staff workload concerns shaped redesign perceptions in this regard:

> *We've asked [the designers] to do magnetic closets where there are no handles on any of our furniture because it's a huge issue with dementia people, because they rummage. They open up the cupboard. They rummage other people's rooms. They gather up other people's things. Our staff spend 50 percent of their time looking for missing items from people's rooms.*

Another stakeholder (interviewed during construction) was concerned about risks of an unlocked fridge in the pavilion design, and about managing a large number of residents in the pavilion space. Another stakeholder (interviewed prior to renovation) suggested bathroom fixtures needed an auto-shut off or a floor drain as residents may not turn off faucets. Again, connections not only to safety concerns but to workload were directly apparent.

Stakeholders also variously expressed their sense of the futility of redesign changes as an intervention for residents. For instance, one stakeholder (interviewed after unit completion) believed that changes made to facilitate independent wayfinding (such as unique door decals) were unhelpful because wayfinding was not possible for residents living with advanced dementia. Other interviewees also seemed to characterize responsive behaviours (especially those resulting in violence) as an almost inevitable part of dementia; they hoped the redesign could mitigate the impact of these behaviours on others (by sound-proofing, enhanced surveillance and communication, and control over resident mobility).

In this regard there was uncertainty about the design's unrestricted movement philosophy. Although there was some sense that giving 'room to wander' (space) could prevent resident altercations, there was greater emphasis on reducing the risk of particular residents interacting.[7] Even as another stakeholder (interviewed towards the end of renovations) ventured an exception in this regard ("the whole idea of communal dining is good"), they then suggest that perhaps it is of no benefit:

> *With the dining area, the pods. They're not really – we don't say, you know, [that] Mrs. Jones is getting to know Mrs. Whoever because they're sitting together all the time. It's not enhancing that piece of it.*

In addition, there were repeated statements in project documentation that residents with advanced dementia do not benefit as much from social engagement or recreation as other residents; that they prefer solitary, individual activities[8] to group activities and do not interact meaningfully with others. Promotional material designed for potential donors (no date) explained that the smaller, "family sized" living groups would promote solitary activity which these residents preferred. A decision to relocate one unit designated for residents with the greatest potential for responsive behaviours from its 1st-floor location pre-renovation to the 2nd floor (which would limit their access to the pavilion and ability to roam freely) was justified in part because "given the condition of some patients, they will never leave the unit" (facility committee minutes).

There was also little focus among interviewees or in project documentation on relational engagement between staff and residents, although two stakeholders suggested the digital photo tablets mounted at the entrance to the residents' rooms helped stimulate conversation between staff and residents, and facilitated staff connecting with aspects of residents' life histories when providing care.

Interviewees rarely spoke of how either previous or new design features did or might contribute to resident QoL, which may reflect an assumption that there is little that can be done to enhance resident QoL. Indeed, personalized features such as curio cabinets and resident 'trinkets' were described by two interviewees (interviewed after unit completion) as more helpful for, and appreciated by, families in contrast to residents (embedding assumptions that residents are largely unaware of their surroundings). Another interviewee (interviewed after unit completion)

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[7] In such sentiments, it seemed implied that resident interaction contributes to aggression.

[8] However, one stakeholder (interviewed during construction) also expressed that the residents' advanced dementia meant they were unable to occupy themselves on their own with certain activities.

also stated that although the redesign 'looks nicer,' that the design changes meant to maintain or improve resident function or independent movement were unrealistic goals, because residents' dementia is too advanced, and on a downward trajectory.

Discussion and conclusion

Our analysis develops important critical awareness of different knowledge assumptions and practices that inform LTRC renovations. Such knowledge is essential as the upheaval and resulting renovations affect the lives of residents living with advanced dementia, their families, and staff. The limitations of our analyses pertain to our inability to recruit a larger, wider range of project stakeholders. Those who consented to participate may have expressed differing views than those who did not. Moreover, there may have been additional documentation that our team was either unaware of or did not have access to as part of the process evaluation. Although the focus of this project on one facility may be seen as a further limitation, this also allowed us to be most fully immersed as a research team in the renovation process over time, strengthening analytic rigour. In our estimation, the key tensions and issues we identified through this analysis are likely not in themselves unique to this particular facility, even though they may have manifested in specific ways in this bounded example.

That redesign processes involve negotiation and shifting between multiple, and sometimes conflicting or contradictory goals and stakeholder interests, can be extended and enhance existing scholarship about how LTRC design more broadly manifests and reflects broader tensions between major goals of care in LTRC – e.g., between autonomy and security (Armstrong, 2018). Redesign processes could be better informed by theories of complex health promotion interventions, wherein clearly specified links between goals and intended outcomes in residents, staff and families is essential, as is clear indication of how abstract design principles (such as 'autonomy') will be operationalized through design.

Findings from the present study highlight the importance of greater involvement of researchers in evidence-based design processes, whether to assist in distilling and comprehending complex research evidence or grey literature, and/or to identify and engage with programme theory at the outset of a study and in formative evaluation (Brand et al., 2018). As researchers, we were surprised to find that evidence, in this project, could mean: consultations and focus groups with space users; anecdotal feedback; information gained through planning processes; the embodied expertise of a small number of researchers and clinicians; tours of other facilities; beta testing; and fairly limited 'best practice' reviews. Discursive tension manifested in positioning new technology as paradoxically innovative and new, yet evidence-based. Budget-related and market pressures on key stakeholders may lead them to rationalize design and implementation decisions by invoking ideas of scientific evidence rather than acknowledging more political, logistical, personal, or practical considerations. It is imperative to more fully involve researchers to enhance design consultation through comprehensive and systematic literature reviews and more rigorous collection of stakeholder opinions.

Existing research also needs to be more explicit about the characteristics of LTRC sample populations, and whether these included those living with advanced forms of dementia. This would assist designers and facilities in better extrapolating from research about the impacts of design features on these groups and to use this research to inform designs, while being transparent about other features also shaping designs and thus their potential outcomes.

Our process evaluation emphasizes how LTRC stakeholders may view certain redesign features (and scientific and/or consultative evidence) with ambivalence, whether because they prioritize innovation, novelty and charisma, or view design goals as incompatible with the daily contexts of care. Limiting conceptions of the capabilities of persons living with intermediate and advanced dementia may shape perceptions of the possibilities of interventions in ways that impede progress in enhancing their QoL in LTRC (Dobbs et al., 2008). However, these findings, alongside staff concerns with risk management and control of residents, are also closely tied to concerns about workload and staffing. Education may enhance awareness about how residents living with advanced dementia express agency, and how different facility stakeholders apply these ideas in practice. However, although strengths-based approaches and education might be helpful, our findings suggest this needs to be accompanied by actions addressing staffing ratios and workloads.

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Declarations of competing interest

None

Data availability

The data cannot be made identifiable as it is confidential as per our ethics protocol.

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The ideal and the real: Epistemic and practice tensions in renovating long-term residential care settings for persons with advanced dementia

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