Original Study - Brief Report

Residential Long-Term Care and the Built Environment: Balancing Quality of Life and Infection Control

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A B S T R A C T

Objectives: This article explores expert insights into residential long-term care (RLTC), specifically regarding the built environment, its impact on infection control (IC) measures and on resident, staff, and family member quality of life.

Design: The interviews discussed in this report form part of a larger mixed methods research design, examining the planning, design, and operation of RLTC. Specifically, this report discusses findings from one aspect of this research, a series of semistructured interviews.

Setting and Participants: Interviews were conducted online through video conferencing platform Zoom. The project’s steering committee was asked to suggest key organizations involved in IC and RLTC provision and policy, with 23 representatives (17 organizations) being invited to interview. Where representatives were unable to participate, they suggested alternate representatives.

Methods: The research team conducted 20 interviews with key representatives or “experts” from different aspects of RLTC provision, policy, and IC. A thematic analysis was employed to analyze and generate key themes.

Results: For brevity, the codes that had been mentioned by >5 interviewees, specific to the built environment, IC and quality of life were prioritized, resulting in 16 prioritized themes grouped according to spatial scale.

Conclusions and Implications: This research demonstrates the growing awareness of the built environment as a critical partner in the RLTC health and social care model, as well as illustrating the need for a holistic design approach across all key spatial scales to support the health and well-being of older people in RLTC. Further research is needed on various aspects of RLTC, including the impact of care models and setting size on IC, quality of life, and cost implications. RLTC policy needs a more integrated approach to planning and design, specifically around RLTC location. This research suggests that RLTC providers look to evidence-based, inclusive design guidelines to inform the design and retrofit of RLTC. Additionally, the operation and management of space should be considered by providers.

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Residential long-term care settings (RLTC) for older people are known variously as “nursing homes,” “long-term care facilities,” or “care homes.” For the purposes of this article, we will refer to these as either RLTC, RLTC settings, or settings. In 2020, there were 576 registered RLTC settings in Ireland operated by public, voluntary, and private sectors. Many of these settings were badly affected by COVID-19, with serious impacts on residents, staff, and family members. COVID-19, like other airborne infectious diseases, has many implications for spatial practices and the built environment. To date, research has identified certain built environment issues that influence infection control (IC), including the number and density of residents, numbers of staff and visitors accessing a single building, staff movement between multiple residents’ rooms, and singular high traffic communal areas such as central dining rooms or living rooms.

Funding: This work was supported by a phase 2 COVID-19 rapid response grant from Science Foundation Ireland (20/CE/8554).

The authors declare no conflicts of interest.

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https://doi.org/10.1016/j.jamda.2023.04.022
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Although IC measures are vital, they can also negatively impact resident quality of life through quarantine, constrained social interaction, restricted visits from family and friends, and cancellation of shared activities. Contextually, the role the built environment plays in achieving a balance between IC and quality of life is a critical issue that requires more research. As part of understanding this issue in Ireland, this article presents findings from interviews with a range of RLTC experts who have identified key considerations and challenges for designing or retrofitting Irish settings to balance quality of life and COVID-19 IC measures.

Methods

After receiving ethical approval from the relevant Institutional Research Board, the research project’s steering committee was asked to suggest key organizations involved in IC and RLTC provision and policy, resulting in 23 representatives from 17 organizations being invited to interview. Where representatives were unable to participate, they suggested alternate organization representatives. Using a semistructured interview template, in total 20 interviews (both individual and group) were conducted via Zoom with representatives or “experts” from various Irish organizations including health agencies, government departments, and individuals working in RLTC design.

The interview template consisted of 3 sections.

- Part A: Reflecting on the COVID-19 pandemic, and its impact on RLTC facilities in Ireland (bearing in mind the key spatial scales seen in Figure 1).
- Part B: The role of design in improving quality of life and addressing IC measures in RLTC facilities.
- Part C: The way forward—key policy and practice issues that need to be considered.

The interviews were transcribed by the research team, and a thematic analysis was conducted using qualitative analysis software NVivo. Transcribed interviews were broken down into 121 codes, mapped onto a set of key spatial scales (Figure 2), and then sorted into themes.

Results

For brevity, the codes that had been mentioned by >5 interviewees, were related to an aspect of design and built environment, and which represented an overlap between quality of life and infection control were prioritized for this publication (Figure 2). This resulted in 16 prioritized themes that are discussed below (Table 1), and grouped according to key issues: IC, quality of life, overarching issues, and key spatial scales (marked in bold).

Key Findings and Discussion

Infection Control

Lack of space (n = 6)

In the opinion of interviewees, lack of excess or unassigned space in RLTC is common, making creation of IC spaces, for example, de-gowning areas, PPE (personal protective equipment) stations, challenging. In settings with multipurpose spaces (eg, activity and sensory rooms), these spaces were often repurposed for clinical use during pandemic restrictions.

Visiting and safeguarding during pandemic (n = 11)

Interviewees noted the importance of quality visiting spaces during the pandemic. In their opinion, window visits were not ideal, especially where these were only possible on the ground floor of multistorey settings, with sheltered/heated outdoor spaces needed to keep residents comfortable. In the opinion of interviewees, visiting restrictions were also problematic in terms of safeguarding, as family members were unable to ascertain the welfare of their loved ones in-person, and sometimes caused secondary IC effects, for example, loneliness/isolation.

Quality of life

Allowing for choice of care type (n = 5)

Interviewees discussed the importance of choice for RLTC residents, from the type of care setting to the choice of activities and how they spend their time.

Overarching Issues

Larger settings do not work as well, in terms of IC and quality of life (n = 9)

Interviewees noted the trend toward larger setting sizes in Ireland and its impact on both IC and quality of life. In their opinion, smaller settings have more flexibility to respond to infection risk, and often provide a better resident quality of life. Interviewees stated that larger settings tend to appear more institutional, owing to their size, whereas smaller settings are often more homely and integrated into their community.

Models of care (n = 8)

Interviewees remarked on the trend toward for-profit and corporate models of care in Irish RLTC, with one interviewee adding that “as long as a ‘business case,’ or profit-driven model is informing the brief and schedule of areas for RLTC homes, there will be an impetus to increase household size, and reduce the size and quality of ancillary spaces.” Comparatively, interviewees commented on the benefits of smaller-scale, homelike models of care in terms of both quality of life and IC.

Site Design

Design providing connection to the community, especially during the pandemic (n = 7)

In the opinion of interviewees, outside of pandemic restrictions, it is important for RLTC settings to encourage connection with the community, both in terms of the built environment and care culture. They note that the built environment should create spaces that facilitate access and egress to the setting by both residents and by members of the community. They add that even during pandemic restrictions, views from the setting into the community were still beneficial in negating resident isolation and ensuring safeguarding (see “Visiting and Safeguarding During Pandemic” section above).

Overall Building Layout and Circulation

Importance of access to outdoor space, even in multistorey settings (n = 14)

The importance of outdoor space, specifically for multistorey settings, was mentioned by several interviewees who agree that multi-storey settings rarely facilitate independent access to outdoor space for residents on upper floors. They add that terraces and balconies can allow for contact with nature on all floors through planting and access to the outdoors. Interviewees note how essential nature is for quality of life, and how outdoor spaces facilitated lower-risk visiting during COVID-19, because of natural ventilation.

Subdivision of settings and cohorting (n = 9)

Interviewees mentioned that the subdivision of settings was helpful for reducing and preventing infection spread: “One of the key...
things that slowed or stopped infection, was the ability to move into smaller units.” Interviewees believed that cohorting residents according to infection status or risk may cause infection spread or emotional distress due to moving residents to unfamiliar environments.

**Key Internal and External Spaces**

**Good-sized, single rooms with ensuites are preferable** *(n = 7)*

Interviewees raised the issue of insufficient minimum standards for resident bedroom size, explaining that resident bedrooms should ideally be single, ensuite rooms including more than just a bed, that is, should also have enough space for visitors, personal belongings, storage, etc. One interviewee noted the importance of this in the context of COVID-19 restrictions, where residents were often confined to their rooms for IC purposes.

**RLTC settings need to build in clinical spaces** *(n = 6)*

Regarding the lack of flexible and unassigned space in RLTC, again interviewees noted that existing communal spaces were often repurposed for clinical use during COVID-19: “clinical drift takes over. As a result, internal space becomes very restricted for residents.” Interviewees suggest that this needs be considered during setting design, allowing for multipurpose spaces that can be repurposed for staff use during periods of IC measures, without encroaching on resident spaces.

**External spaces are important and should be comfortable/accessible for all** *(n = 15)*

Interviewees discussed the importance of outdoor access for RLTC quality of life, particularly private and personal outdoor space, during pandemic restrictions and outdoor visiting. Interviewees added that these spaces should be accessible, without supervision, and utilize shelters, heaters, etc to create a more comfortable environment. This

![Fig. 1. Spatial scales.](image1)

![Fig. 2. Thematic analysis prioritization flow chart.](image2)
is of particular importance in older populations who can be especially susceptible to the adverse effects of the cold.

Outdoor visiting was often used during COVID-19 (n = 9) Interviewees noted the pervasiveness of outdoor visiting during COVID-19 restrictions, where settings with appropriate outdoor seating areas were better able to facilitate visiting, reducing resident isolation.

Lack of appropriate visiting areas (n = 10) Interviewees noted RLTC’s difficulty creating appropriate visiting areas during COVID-19 restrictions, specifically where visitors had to pass through the main parts of the building to gain access. One interviewee mentioned a setting they felt had high-quality outdoor sitting areas that were well suited to visiting, that is, sheltered, and accessible without passing through the main building.

Building Elements and Components Overall design should be homely and IC compliant (n = 10) Interviewees discussed the importance of including homely finishes and furniture, that is, wallpaper, ornaments, etc and that RLTC should feel homely, not institutional. They add that IC-safe fittings and furniture can often seem institutional and recommend that furnishings be both homely and IC-compliant.

Internal Environment Ventilation is important for IC (n = 11) Ventilation was discussed by interviewees in various contexts, for example, preventing COVID-19 spread, general IC, and RLTC air quality. Interviewees discussed the importance of good ventilation in reducing COVID-19 airborne transmission (the primary transmission pathway). They added that RLTCs tend to be overheated and that this may negatively affect the quality of the indoor environment.

Technology and Information and Communications Technology Importance of connectivity and video calls (n = 6) Interviewees mentioned the importance of good connectivity and access to technology for communication between residents and family and friends during visiting restrictions. They add that Wi-Fi connectivity can be poor in some settings and that there was a tendency to underestimate or overlook the importance of this prior to the pandemic.

Conclusions and Implications The lack of resilience in RLTC has been made apparent by COVID-19 and must be considered when planning future builds and retrofitting existing settings. Although many concerns related to the built environment were identified by experts as part of this research, several represented a large overlap between quality of life and IC issues. For example, interviewees (n = 14) discussed access to quality outdoor space, even in multistorey settings, and added that comfortable and accessible high-quality outdoor spaces improve resident quality of life as well as help to facilitate visiting during pandemic restrictions (n = 15).

Additionally, regarding Overarching Issues, interviewees discussed the negative impact of increasing setting sizes on both resident quality of life and the flexibility of settings to respond to infection risk (n = 9). Similarly, interviewees commented on the benefits of small-size, homelier models of care in terms of both quality of life and IC (n = 8).

Regarding Internal Environment, numerous interviewees mentioned the importance of good ventilation for infection control, specifically for airborne viruses such as COVID-19, and noted how this is rarely considered in RLTC design. This is very consistent with literature that suggests good air quality supports the well-being of older people in RLTC, as well as evidence that the virus (SARS-CoV-2) that causes COVID-19 is primarily transmitted through airborne pathways.

Under the spatial scale Technology, interviewees did not mention hygiene technology as an effective COVID-19–related infection measure to be considered or implemented in RLTC. This is consistent with growing evidence that contact transmission of COVID-19 is generally lower risk, and as such, hygiene technology is likely not a priority issue in the context of COVID-19.

Research Implications

• More transdisciplinary research is required to support an integrated approach between health and social care, the design of the built environment, and operation and management of settings.
Based on the responses of interviewees, further research is needed to investigate the impact of increasing RLTC size on both IC and quality of life.

Despite discussing the impacts of various models of care as well as RLTC size and scale, the economic or cost implications of such care models were not mentioned. More research is therefore needed to identify the economic implications.

**Policy Implications**

- RLTC policy and standards require a more integrated and detailed approach to planning and design to ensure that all relevant aspects of the built environment are fully considered in the RLTC sector (eg, policy on air quality and ventilation of RLTC, and insufficient minimum standards around bedroom size).
- RLTC should be located in areas that support and facilitate community integration outside of pandemic restrictions.

**Practice Implications**

- RLTC providers should look to evidence-based guidelines to inform the design of inclusive new settings, as well as retrofit of existing ones.
- Considering that lack of space was raised by interviewees, improved operation and management of space should be considered by providers, for example, creating more multi-purpose spaces that can be repurposed for IC measures where necessary, without encroaching on resident spaces. Providers must consider how to best use and protect spaces, both in and out of IC periods.
- RLTC providers must consider and implement policy around air quality and ventilation, with particular emphasis on its role in reducing the primary transmission of SARS-CoV-2 and other airborne viruses.

This research demonstrates the growing awareness of the built environment as a critical partner in the RLTC health and social care model, as well as illustrating the need for a holistic design approach across all key spatial scales to support the health and well-being in RLTC.

**Acknowledgments**

The authors acknowledge the experts and organizations who participated in the research as interviewees. The authors also acknowledge Science Foundation Ireland for supporting the research. The authors declare no conflicts of interest.

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