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The influence of the built environment in enacting a household model of residential aged care for people living with a mental health condition: A qualitative post-occupancy evaluation

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ABSTRACT

This study undertakes a spatial analysis of an Australian aged care setting where residents receive person-centred support in a specially-designed home-like environment. Focus groups were conducted with staff to explore the impact of the built environment in a new residential aged care setting that has implemented a Household Model of care for people living with mental health conditions. Drawing on Actor-Network Theory and proxemics, we mapped how the built environment supports improved behaviours and care practices in four areas: food preparation and dining, sleep and self-care, site layout, and relationships.

1. Introduction

The built environment informs and is shaped by models of care and good design practice. It has the potential to transform the quality of life people experience when they are in care. As aged-care practices transition globally from institutional residential settings to models of self-directed care and support, it is critical to examine the role of the built environment in building opportunities for independence for residents and the quality of the care provided by those who provide health and social care. Research in the field of aged care has explored how the design of environments influences care-provider teamwork (Gharaveis et al., 2018), and residents' quality of life and well-being (Fleming et al., 2016; Bengtsson and Grahn 2014; Mcgann et al. 2020). Work undertaken in the field of design and geriatrics (Miller 2021) has explored the inadequacies of current assumptions about spatial design in aged care settings. Miller has revealed how older people's relationships with space, design elements and personal possessions influence their confidence within their living environment, as well as their quality of life and wellbeing.

While the quality of the built environment in aged care settings is beginning to be given greater consideration than in the past, little research has been undertaken examining the design and nature of newer aged care settings, including their built environments, and how these affect caregiving practices. In this paper we share the findings of a study of an Australian aged care facility that has recently transitioned to a Household Model of care. A *model of care* is broadly defined as the way health services are delivered. The Agency for Clinical Innovation's definition is useful to develop an understanding of the breadth of scope of a model of care:

A model of care outlines best practice care and services for a person, population group or patient cohort as they progress through the stages of a condition, injury or event. It aims to ensure people get the right care, at the right time, by the right team and in the right place (Agency for Clinical Innovation, 2013, p1).

In this paper we show how built environment features support an applied model of care (Household Model) and influence caregiving and self-care. We provide a new way of analysing the built environment by applying a spatial framework of proxemics to explore these influences at

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a range of scales.

There is little doubt that traditional aged care settings, along with the care models employed within them, require an urgent overhaul. People living in institutional aged care report some of the lowest quality of life scores in communities across the world. Dissatisfaction with institutional models of care delivery, disempowerment of residents, and built environments that fail to support the wellbeing of staff and residents, have led to calls for more person-centred residential and community care (American Geriatrics Society Expert Panel on Person-Centered Care et al., 2016).

Since 1985, Australia has been de-institutionalising health and social care (Gibson, 1998) and the aged care sector has been evolving into a more person-centred approach to service provision (Council of Australian Governments, 2011). However, there is still a long way to go. Australia's 2019-2021 Royal Commission into Aged Care Quality and Safety (RCACQS) determined that the aged care system was in need of fundamental reform. In 2020, a team from Flinders University tested 'small scale domestic living models of care' and found these better met the needs of residents (Flinders University, Bolton Clarke Research Institute, SAHMRI, & Stand Out Report, 2020). Given the global movement towards person-centred values in health policy (Beresford, 2011; Franz et al., 2014) and the importance of creating a "home" rather than a "service", an exploration of the relationships between caregiving, receipt of care and the built environment is both timely and warranted.

This study investigates the influence of the built environment in enacting a Household Model of residential aged care for people with mental health conditions, and on the perspectives of staff charged with implementing it. A Household Model of care is defined as "*person-centred support - combining health and social care - to older people in specially-designed, small, homelike environments*" (Ahmed et al., 2019). These households can exist in combination as part of a larger residential care site, but operate independently of one another, with staff working only in the household they are assigned to.

There is evidence to suggest that staff perspectives contribute important knowledge to research seeking to improve outcomes for recipients of aged care services, and understandably so, as quality aged care requires an engaged and committed care workforce (Carroll et al., 2007; Hogan et al., 2019; Keefe et al., 2017). Applying a process of spatial analysis, we look specifically at how staff work within a household model and the influences the built environment has on their delivery of aged care services and mental health support.

1.1. Evolutions in designing built environments for aged care

Dynamic and evolving relationships exist between designed spaces and human behaviour. Research to better understand these relationships has been undertaken across a range of supported and health care settings, including hospitals (Gesler et al., 2004), clinics, aged care facilities, mental health institutions and private homes (Carnemolla and Bridge 2019; Fleming et al., 2016; Woodbridge et al., 2018). The design of these spaces influence the behaviour, power dynamics and the welfare ideologies that underpin the care and clinical services provided within these buildings (Sloan and Sloan 2003).

Across the globe, the delivery of aged care has been transitioning away from institutional facilities towards more personalised and self-directed models of care. These include small-scale group living environments that support a person-centred care approach, such as the *Household Model of Care* (Ahmed et al., 2019), the *Green House* model (Brownie et al., 2013) or the *De Hodeweyk* model (Glass 2014). Other models recognise the need for cultural change and undertake this within existing aged care spaces such as the *Eden Alternative* (Coleman et al., 2002) from which the Green House model is derived, and the *Wellspring Model* (Stone et al., 2002). These models seek to bring about cultural shifts through redesign and reflect a sensitivity to the positive influences of nature, the potential for new ways of working and the need for greater connectivity between people of all ages. This reflects an increasingly sophisticated understanding of how to design care models in a sustainable way (both economically and socially) with the agency and wellbeing of residents at the centre of that care. When Dyer et al. (2018) examined the outcomes and cost of smaller scale aged care settings (referred to as a clustered domestic aged care model) they found residents experienced a better quality of life and fewer hospitalisations without any increase in whole of system costs when compared with standard (congregate) residential aged care models.

While the wellbeing of residents and/or patients receiving care is core to the success of any aged care model, the impact of design on the caregiver and the quality of care they can deliver is also worthy of exploration. In the same way the built environment of traditional institutions helped shape the philosophies and models of care of staff working within them (Piddock 2007), the same applies to staff operating within more recently designed institutions. This leads us to question what effect smaller scale care environments, such as the Household Model, have on the values and working philosophies of their workforce.

A relatively new body of research is exploring the relationships between design of the built environment and the operational practices of care and support provision. Work by Buse et al. (2018) explored laundries and laundry work in an aged care setting (as both an activity and space) through a lens of the materialities of care. A review by Gharaveis et al. (2018) found that the design of the environment influences teamwork and communication in clinical settings. Cheng and Cui (2020) have undertaken research into optimising residential care facilities in terms of location and scale, and Naccarella et al. (2018) provide one of the few studies that examines the value placed by the residential aged care (RAC) workforce on their workplace environment. They found that domestic or home-style architectural features were important to staff in maintaining a home-like feel.

This study provides an opportunity to explore in more detail how the built environment is experienced by care workers. It examines the relationships between individual care practices and the location, types and layouts of buildings and the features within. It also shows how a Household Model of care can be implemented and supported when introduced into a new, purpose built environment, rather than a more traditional institutional setting.

In an effort to understand and describe the decision-making processes of architects and designers of aged care settings, a useful starting point is the work of Buse et al. (2017). The architects described in the study used a number of approaches to test the effectiveness of their ideas. For example, they imagined themselves as residents of one of the buildings they had designed. They also role played and explored their own lived experiences. As the research identified, this approach limited design outcomes to the architects' own vision, imagination and experience. There was little evidence that staff and visitors were considered in the design process. The findings by Buse et al. (2017) highlight the importance of employing a collaborative design approach that seeks the views of all those who will occupy the space. It also highlights the importance of a post-occupancy evaluation so that users can apply a critical lens through which to assess the architectural and urban planning decisions.

1.2. The Household Model

Environmental design lies at the core of the Household Model of care which considers the needs of both the receiver and provider. It is based on a philosophy of person-centred social and health care and is provided to older people in "*specially-designed, small, homelike environments*" (Ahmed et al., 2019). As well as being 'home-like', the model promotes an environment that enhances time with residents, maximises resident choice and fosters strong relationships between residents and staff and the wider community. Food is available at all times and waking, retiring and bathing times are relaxed. The Household Model breaks down a traditional aged care facility into separate households of 14–20 residents, each household with their own kitchen, dining room, living room.

In the case of this study, each household member had their own self-contained apartment with a bathroom, kitchenette and bedroom (Action Pact 2021).

The Household Model has been found to promote independence, wellbeing and continuing social engagement for residents (Morgan--Brown 2013). Research has confirmed the Household Model of care supports positive ageing by enabling residents to maintain their sense of 'self' (Ahmed et al., 2019). Keefe et al. (2017) compared the Household Model with other types of care and found the physical design of the environment was significant in determining the culture that operated within it. Morgan-Brown (2013) explored in detail how spaces are used differently for people with dementia when comparing the newer Household Model of care with a congregate model. When living within a household care setting, Morgan-Brown noted residents made greater use of communal spaces and were more independent and socially engaged.

1.3. Conceptualising the built environment and ageing

The 'built environment' has been defined as the constructed surroundings that provide the setting for human activity, ranging in scale from personal shelter to neighbourhoods to the large-scale civic surroundings (Moffatt and Kohler 2008). In this paper, the examination of the built environment includes the fit-out of personal and shared spaces. It also extends to the site of a building, its outdoor areas, and its wider location within a neighbourhood.

Our constructed environment has long been recognised as being a part of a larger, complex socio-spatial system (Schneider 1987). Research fields as varied as environmental psychology (e.g., Steeg and De Groot 2018), gerontology (Lawton 1985) and geographical gerontology (Golant, 2015; Schwanen et al., 2012) have investigated and theorised about the relationship between the built environment and ageing. More recently, geographical gerontology has been distinguishing itself from environmental gerontology (Peace et al., 2019) by attempting to define a scope of work and an approach to ageing that is explicitly geographical in nature (e.g., Skinner et al., 2017).

Current geographical gerontology research is increasingly responding to issues of population ageing, as well as individual ageing. By its nature, it sits within a broader context which includes demography, epidemiology, migration, health and social geography (Feng and Phillips 2019). While past research has focused primarily on institutional and residential care, the growing shift in public policy and funding to 'ageing in place' (at home and in the community) has expanded the purview of geographical gerontology as an interdisciplinary undertaking (Milligan and Liu 2015). The international demographic trend across much of the world towards ageing populations has shone a spotlight on the role of geography and built environment, and their place within policy and funding responses by governments, not-for-profit providers and the private aged care sector.

Barnes (2002) has mapped the environmental experience of older people with dementia in care settings and devised tools to measure their wellbeing. She has looked at wayfinding, sensory experience, privacy and autonomy, and how those are affected by the built environment. Chaudhury et al. (2018) and Garcia et al. (2012) all provide valuable perspectives on the interrelationship between the built environment and dementia. Heward et al. (2020) demonstrate the importance of a 'homely feel' for residents with dementia, while O'Malley et al. (2015) examine how dementia-friendly design can improve quality of life.

Research into wayfinding for people living with dementia has illustrated the intersectionality of spatial and non-spatial factors in determining outcomes and support needs (Kuliga et al., 2021). Other research into dementia-friendly design has looked at behavioural, social and emotional consequences for individuals and carers. The evidence surrounding dementia-friendly design has continued to grow in the past two decades (e.g., Day et al., 2000; Mitchell et al., 2003; Davis et al., 2009; Gan et al., 2021). The spatial scale of research into dementia-friendly design extends from intimate spaces for individuals (as examined in our research paper), up to the institutional level and into the urban environment and open spaces. Given that individual circumstances vary considerably (e.g., the presence or absence of cognitive reserve), customisation and adjustment of designs is necessary to achieve optimal outcomes. General principles, while important, are unlikely to sufficiently address the inherent complexity in the person-design equation. In our view, design that reflects the diverse needs of people with dementia requires a multidisciplinary approach that integrates not only architecture but psychology, geography and anthropology (Niedderer et al., 2017).

1.4. Framing the built environment as part of a larger socio-technical system in a care setting

A variety of approaches have been employed by researchers to understand how the design of the built environment relates to activities undertaken by people who live (receive care) and work (provide care) within care settings. One such approach has been the use of Actor Network Theory (ANT). ANT provides a way of investigating how people and objects are connected, related and represented (Lave 2015). An *actant* within an ANT network is defined as something that attributes or is attributed agency by others (Callon 1990). ANT has been applied in aged care settings (Nguyen et al., 2015), hospitals (Gesler et al., 2004) and ageing-in-place environments (Carnemolla 2018). Mapping the relationships between the built environment and those who work or reside within it in this way enables the influence of the built environment to be properly considered in the provision of resident-centred support (Fig. 1).

1.5. Environmental scale

The built environment can be classified across a range of dimensions including physical scale, proximity, use and social context. Edward T Hall's seminal 1966 research in proxemics, the study of the human use of space and human-to-human interaction, classifies personal space into four categories: intimate, personal, social and public. Hall's classifications can be usefully applied to schematically represent the built environment of an aged care facility, where spaces are mapped according to who in habits them and how they are used. How the physical scale of the built environment is conceptualised in this paper is shown in Fig. 2.

One way of categorising the spaces around us is to think of them as layers, starting at the centre with personal spaces such as bathrooms and

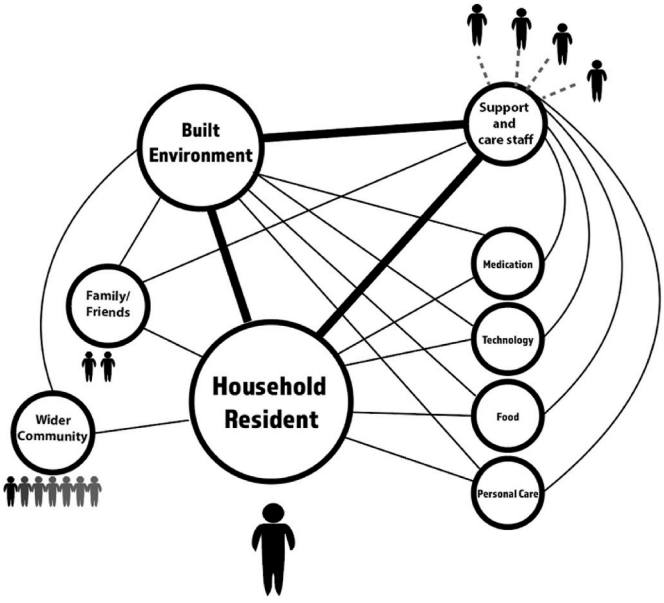

Fig. 1. Actor Network Theory Model applied to Household Model of Aged Care.

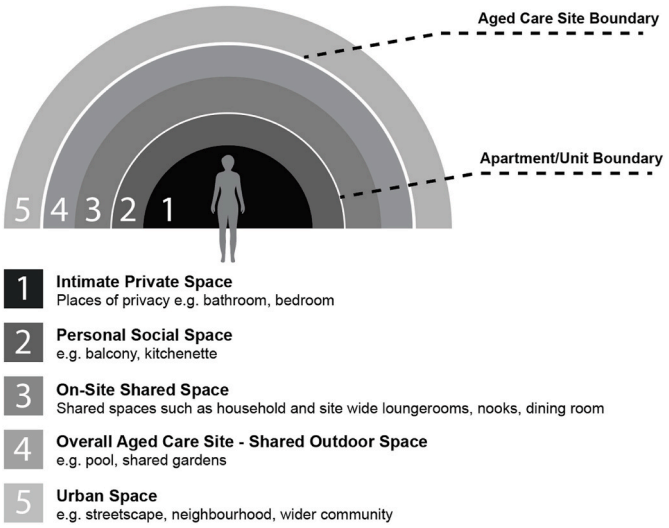

Fig. 2. Classification of built environment scale based on Hall's theory of proxemics – generated to correspond to Aged Care/Mental Health setting.

bedrooms, expanding outwards to include shared social spaces, and finally outside into neighbourhoods. Thinking about the built environment in this way helps us to identify how best to support the people that live, work and play within those different environments, and is a useful framework upon which to examine the implications of support and provision of health and social care.

1.6. Contribution of this paper

This paper examines a case study of the Household Model of aged care using an adaptation of Hall's proxemics scale. It explores the relationship between the design of the built environment and its effect on the provision of person-centred care in a residential aged care setting for people living with a mental health condition. It contributes to research in design, health and environment and the social study of space. It also describes how the built environment works interdependently with health care to encourage autonomy and wellbeing for people living in an aged care setting. The use of a spatial framework based upon Hall's theory of proxemics is a useful way of examining buildings as places where care and support are received. In addition, the application of a spatial framework across a range of care settings enables a deeper understanding of how space is used by diverse community groups including older people, people with disability, and people with a mental health condition.

2. Methods

We conducted a qualitative study of staff involved in providing care to older people with long-term mental health conditions. We selected a facility that had transitioned from a traditional aged care setting to a new purpose-built one using the Household Model of care. Fieldwork was undertaken in May 2019 and involved focus groups with staff members.

2.1. Setting

The study was undertaken in a relocated 86-bed residential aged care facility in Sydney, Australia, that catered for older people living with a mental health condition. The relocation took place in June 2017 and involved moving a large group of residents, and many staff to a new facility that clustered residents into small household groups. Staff were assigned to individual 'households'.

Most residents lived in their own self-contained apartment equipped with a kitchenette and bathroom. The apartments were arranged into households on the site. The facility had four 'households' of varying sizes, each accommodating 16 to 30 residents. Residents were engaged in the design of the households and named them, prior to the move, after local sites that were significant to them. Each household had a kitchen, dining room and living room. Most residents had their own room and ensuite. The facility had zoned common areas, a café and a designated sacred space.

The refurbishment provided access to outdoor spaces with options for group separation and integration. There was an outdoor swimming pool maintained with the assistance of residents. The facility was on a main road, close to public transport.

Staff rostered to each household (care workers, kitchen and cleaning staff) were encouraged to work autonomously. They performed blended roles, functioning as a 'universal worker'. The staff member responsible for running/coordinating the household was given the title of Homemaker.

3. Methodological approach

In order to understand the influence of the built environment on the Household Model we used a qualitative methodological approach. This allowed participants to describe their understanding of the Household Model in their own words, building on an understanding of 'real-life' contexts (Bradshaw et al., 2017; Keeble et al., 2020).

The participants in this research project were staff, rather than residents. Comparing traditional and household models from a staff perspective acknowledges that resident outcomes are influenced by the way services are implemented and the context in which the services are provided (Carroll et al., 2007; Hogan et al., 2019). We wanted to hear staff perspectives on how the Household Model affected the wellbeing and daily activities of residents. We also wanted to learn how the new physical environment affected work culture. The participants had worked in the facility for at least six months and a majority (15 out of 16) had relocated with residents from the original facility that operated according to a more traditional model. Staff experiences pre- and post-move provided an insight into the differences that the design of the built environment made in supporting a person-centred approach to mental-health care, which underpins the Household Model.

3.1. Participants and recruitment

The University of Technology Sydney Human Research Ethics Committee provided ethical approval for this study (Reference: ETH18-2497).

In this study we recruited staff from four groups:

- Household Staff - staff rostered to one or more households such as homemakers and care workers
- Care Staff - support staff that work across households, for example physiotherapists, nurses, mental health workers, leisure and lifestyle workers and caterers
- Management – those responsible for overseeing the daily running of the facility
- Ancillary Staff – staff rostered across multiple households such as cleaners and kitchen staff.

Household and support staff were notified of the study through the facility newsletter and flyers put up in the households. Facility managers disseminated the study participant information sheet to all eligible participants.

We sampled staff from all four groups because we wanted to gain the broadest understanding possible of the impact of the built environment on the Household Model of care. As per the requirements set out in the ethics approval, researchers negotiated informed consent prior to the focus group. The researchers ensured staff did not feel compelled to take

part in the study, and participants were reminded throughout the focus group process that participation was voluntary. The researchers also explained participants could remove themselves at any time.

3.2. Data collection

Four focus groups were conducted with a total of 16 staff who transitioned to the new Household Model of support. Focus groups were selected as the data collection method because they encourage the generation of ideas through group interaction (Morgan 1996). The focus group is particularly useful for garnering different perspectives and shared understandings about the same topic (Gibbs 1997).

Staff were allocated according to their role, to one of the four focus groups:

1. Care Staff & Ancillary staff (n = 4)
2. Household Staff (n = 4)
3. Household staff (n = 5)
4. Management staff (n = 3)

We selected groups according to staff type for two reasons. Firstly, the research design acknowledged the power differential across the facility hierarchy and participants needed to feel they could speak freely, without fearing it might affect their job security. Secondly, it allowed researchers to have a clearer understanding of how different job roles were affected. Fig. 3 illustrates how the data logic informs the methodological approach undertaken in this research.

The focus group discussions ran for between 69 and 80 min and were conducted in a quiet room at the facility. Discussions were digitally audio-recorded and participants provided verbal consent before questions began (Jacob and Furgerson 2012). Field notes were made by facilitators to assist with data analysis (Marshall et al., 2013). Afterwards, recordings were transcribed verbatim.

A focus group guide was developed based on the aims of the research. The groups were run using an open semi-structured format. This enabled two-way conversations to develop between facilitators and participants (Mason 2017), opening up the opportunity to reach a deep understanding of the inter-relationships between staff, residents, the Household Model and the built environment. (Denzin and Lincoln 2008).

Two of the authors of this paper facilitated the focus groups. One (DD) has expertise in healthcare quality and patient safety. The other (PC) has a background in design and inclusive built environments. In three of the four focus groups both facilitators were present (DD and PC), in the final focus group, a single facilitator (PC) was present. Participants were asked at the start to consider their experience of providing care to residents in the Household Model and to reflect on their previous workplace model of care and building design. They were then asked a range of probing questions about the impact of the household design on both staff and residents.

3.3. Data analysis

The analysis was conducted in two parts. The researchers firstly conducted a reflexive thematic analysis of the focus group data using an inductive approach to identify broad patterns of meaning (Braun et al., 2018; Braun and Clarke, 2019b). Theme development was organic and iterative (as described below and illustrated in Fig. 4) and resulted in the generation of four themes. We then used a deductive approach to map themes and data within the spatial framework using Hall's scale of proxemics. In other words, we mapped our data according to a built environment scale (as demonstrated in Figs. 5–7). The second part of this analysis enabled the data to be contextualised within the realm of the built environment and spatiality, enabling health and care outcomes to be viewed through a lens of design, space and place.

Following the completion of the focus groups the transcripts were checked for accuracy and anonymised by researchers. They were not viewed by participants. After each focus group, facilitators met to reflect on their individual experiences and discussed initial patterns of meaning identified in focus groups. Facilitators (researchers) incorporated reflections from their respective disciplinary expertise.

Initial themes (and accompanying codes) were mapped and visualised and the transcripts were independently coded by researchers (PC and DD) to describe and summarise factors related to the built environment. DD and PC read each transcript, focusing on understanding the overall content. Guided by both the research aims and the post-focus group discussions, DD and PC generated the themes and sub-themes identified in the data (Braun and Clarke, 2019a). This was an iterative process by which the researchers re-read the transcripts independently, discussed them together, took notes and then revised coding. This cyclical process was repeated until both researchers concluded the themes and coding were complete (Fig. 4).

Finally, the framework of proxemics was applied to all four transcripts which were mapped according to the Hall's built environment scale:

1. Intimate/private space
2. Personal social space
3. On-site shared spaces
4. Overall shared outdoor space
5. Urban Space

4. Results

In the first part of our analysis we generated four themes that arose from changes in the built environment:

1. Flexibility in food and eating
2. Improved sleep and hygiene - autonomy, flexibility, privacy

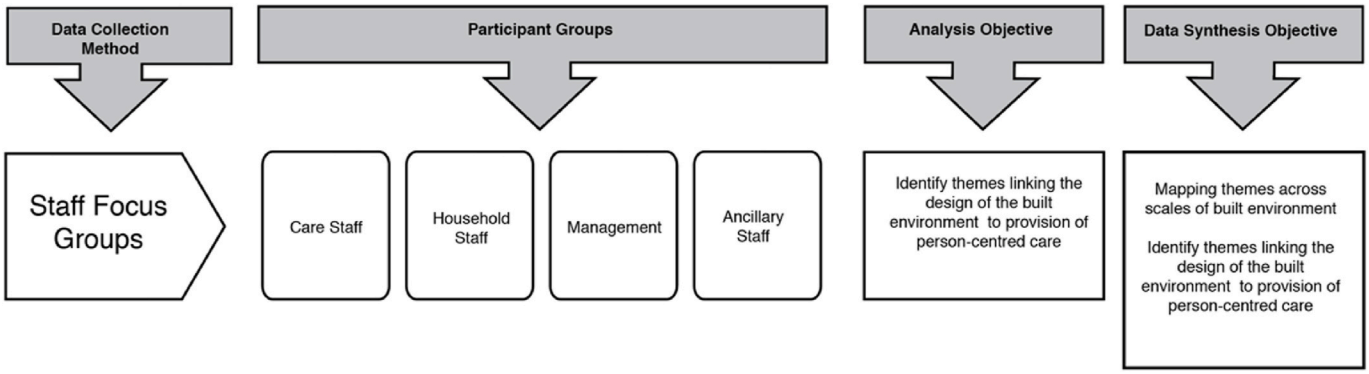

Fig. 3. Data logic model.

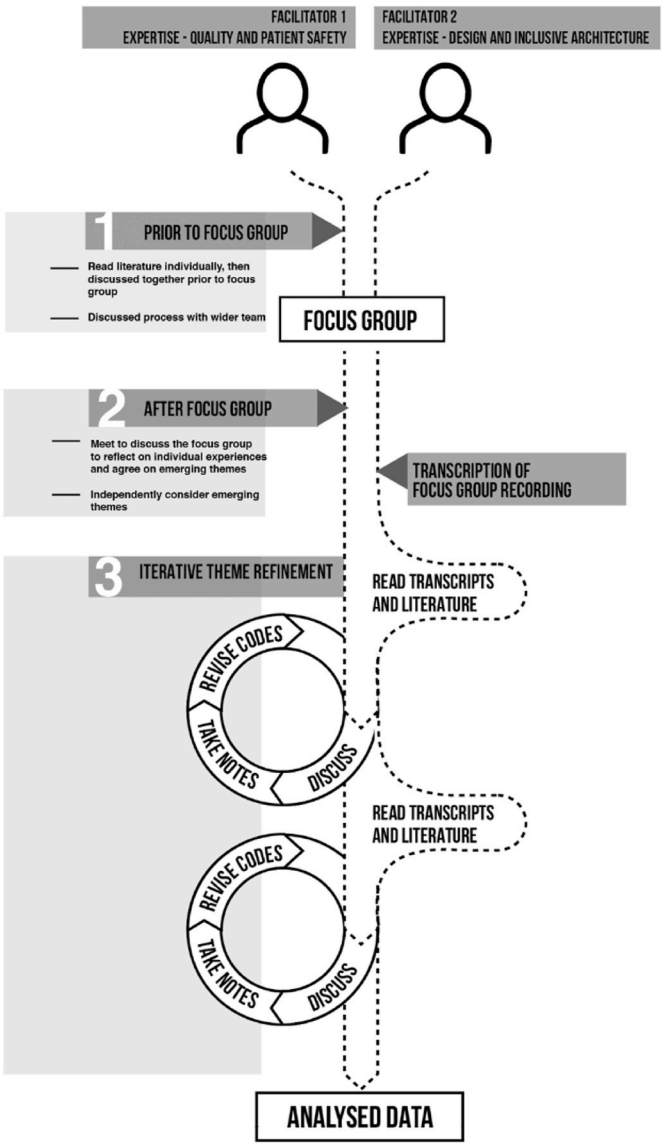

Fig. 4. Approach to focus group data analysis -influenced by a reflexive thematic analysis.

3. New opportunities for social connection/interconnectivity at different scales
4. Transforming staff and resident relationships.

The first two themes are key to the original intentions of the Household Model of providing a better way of living for people who require care. The third and fourth themes offer an insight into how the model affects the social context – in particular how it changes opportunities for social participation, connections with families and the broader community, and relationships between staff and residents.

These four themes are described below and in Tables 1–4 compare the key differences between the old and new models of care. Staff quotes reflect how the built environment interacts with their care and support for residents, and wellbeing outcomes for the residents themselves. The tables focus on the *differences* found between the models of care – and do not examine similarities. Each table has four columns. The first column describes an identified activity as it happens in the institutional model of care, the second describes the activity in the Household Model of care. The third column goes into further detail about the Household Model of care through a built environment lens. The fourth and final column contains supporting quotes about the activity from the focus group data.

Following the tables, the results are analysed by spatiality incorporating the framework illustrated in Fig. 2. The implications for both residents and staff of these differences between models are visualised in Figs. 5–7.

Theme 1: Flexibility in food and eating

Access to food at all times and the ability to choose what to eat is central to the Household Model. In order to make this possible, the kitchen, food preparation surfaces, serving and dining areas must be appropriately designed. In the new facility, design modifications extended to whitegoods such as the installation of a clear-fronted refrigerator. This was necessary to keep food temperatures to within safe levels as residents constantly using the refrigerator were keeping doors open for too long.

Table 1 demonstrates how staff saw this change from set food times as offering real flexibility for residents. They could go to the fridge any time as though they were 'at home' and choose where they ate, whether in their room, the dining area, or outside. They could participate in setting tables and cleaning up after meals, indeed such participation was actively encouraged. An unexpected finding was that having more agency in food selection and dining choice resulted in more food and beverages being consumed than in the traditional model of care. This finding may have broader implications on nutrition in an aged care setting, particularly given the prevalence of malnutrition in older people in residential aged care facilities (Banks et al. 2007; Garcia et al., 2012; Guaitoli 2014).

Theme 2: Improved sleep and hygiene

In the traditional model of care, residents were expected to wake and shower at set times to accommodate the needs of staff working under a task-based shift structure. As shown in Table 2, there was much more flexibility and autonomy in the new facility with sleep and shower times. Residents had their own bathrooms which gave them privacy. A resident could wake and shower when they chose without having to worry about missing breakfast. This granted them a much more autonomous and 'home-like' life.

The new facility also incorporated a new salon-type space enabling personal hygiene and self-care practices to be accommodated in different ways. Residents could freely choose to experience self-care in a salon environment. It offered staff new approaches to encourage self-care with residents who may have refused to shower for an extended period of time.

While not unexpected, this showed the Household Model of care was working as planned. It gave people a home-like experience of eating, sleeping and showering according to their own timetable. Their choices were actively encouraged.

Theme 3: New opportunities for social connection

This third theme was generated when researchers reviewed the data to identify links between private and shared spaces in the design of the site and the associated activities that took place in each. In Table 3, we show how the spatial layout had a clear effect on how private and public daily activities were undertaken. For example, having more shared open spaces such as an on-site café changed how residents connected socially. Families could come and visit their family member and stay onsite for the duration of their visit. At the old facility, there had been nowhere for people to cluster so gatherings with visitors were mostly held off-site in a local café.

Having the choice of larger, open spaces also made a difference to the way staff could plan and conduct activities for residents. In the older facility, there was only one shared, indoor dining and lounge area. This meant that any additional activities would be disruptive for those trying to relax in that shared space. There were no outdoor recreation or relaxation areas. In the new design, there were a range of indoor and

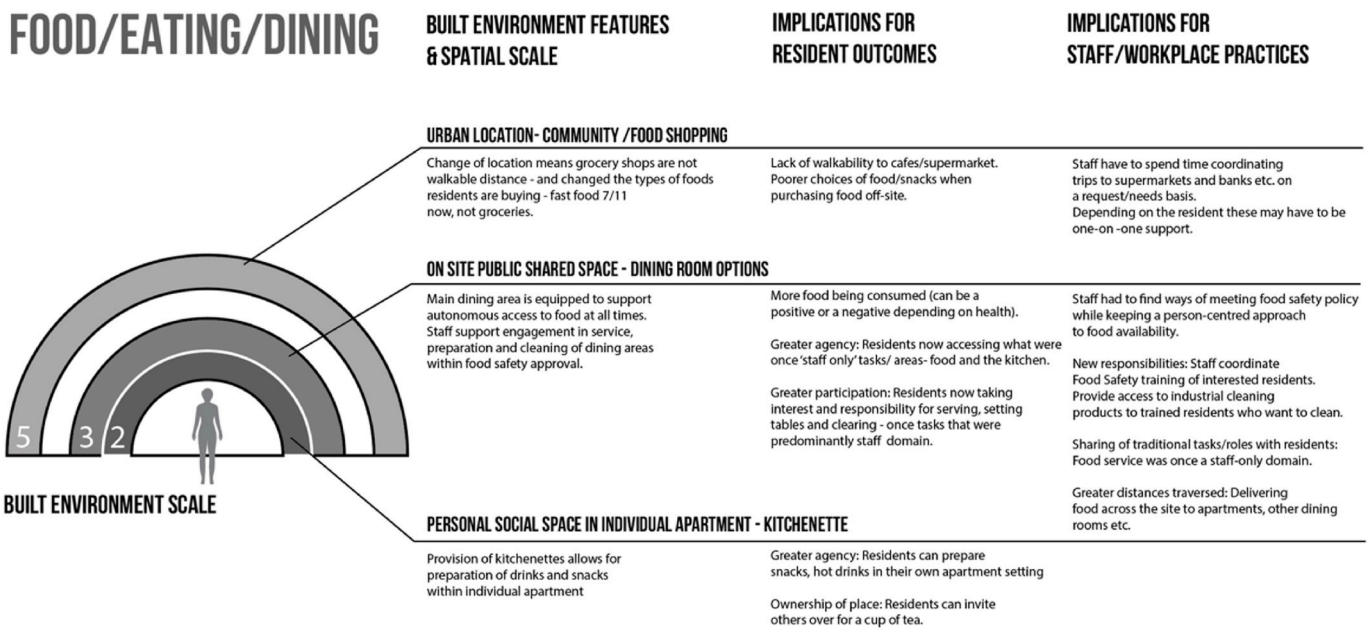

Fig. 5. Food and person-centred care. Implications for resident outcomes and workplace practices.

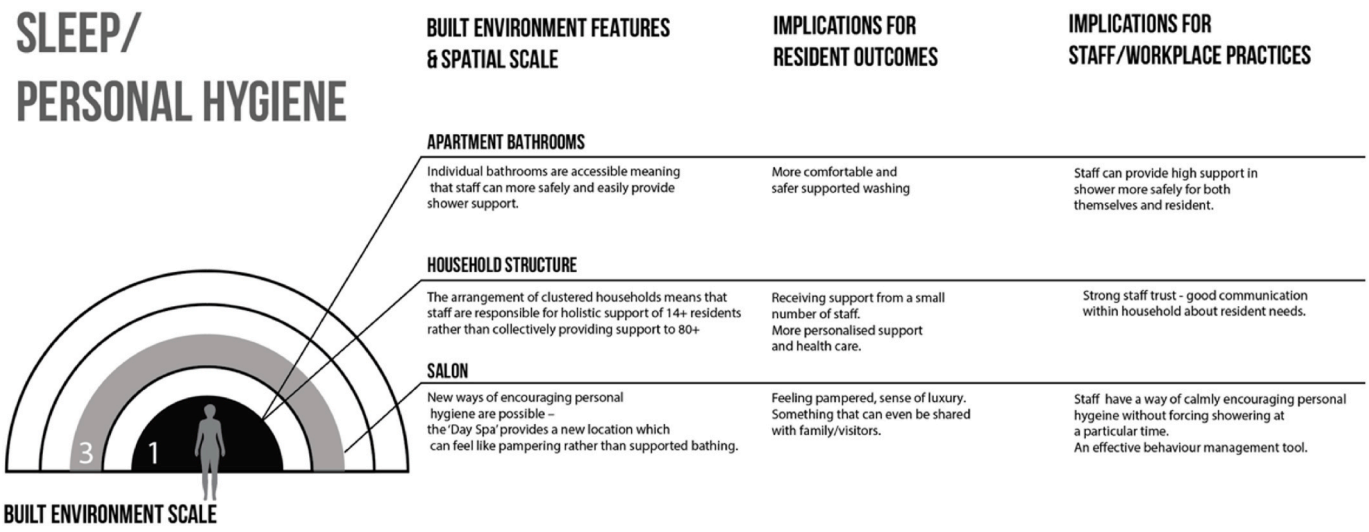

Fig. 6. Sleep and Personal hygiene.

outdoor spaces where social activities such as exercise, or arts and crafts could be enjoyed by multiple residents. The landscaped gardens and the pool at the new site were highly valued by both staff and residents and were recognised as integral to the wellbeing of everyone. Families of staff were welcome to swim in the pool and enjoy the outdoor surroundings, another example of the permeability of the facility with the wider community. Importantly, staff perceived the outdoor areas as 'beautiful' spaces that everyone could enjoy and feel a part of.

In this Household Model, home-like activities, autonomy and social engagement took priority over clinical practices undertaken by staff. Medicines were administered in the privacy of apartments, as were professional medical services. Common spaces were reserved for social daily living and activities shared by residents and the wider community. The spatial layout of the new facility offered greater opportunities for social activities and connection.

One downside of the new site, by virtue of its location in the new neighbourhood (rather than its built environment), was that it seemed to limit the agency of residents to some extent. Unlike the former facility, the new one did not have a bank or supermarket within walking distance, and in some instances, residents had to rely on staff to take them on dedicated shopping trips.

Theme 4: Transforming staff and resident relationships

In our fourth theme, we found that with residents occupying their own private apartments they developed a greater sense of ownership of their own living space. As shown in Table 4, the ability to choose what happened to them and when led to less resistance to care by staff, something that increased both staff and resident wellbeing. The staff felt this new approach built greater trust with residents.

For staff, the change in model meant that their tasks and responsibilities were much more diverse and delivered more flexibly, which also meant that they could allocate more time to their administrative responsibilities. This shows that the nature of the care work had changed significantly. The preparedness and ability to respond to residents' needs and preferences in a varied and flexible way are

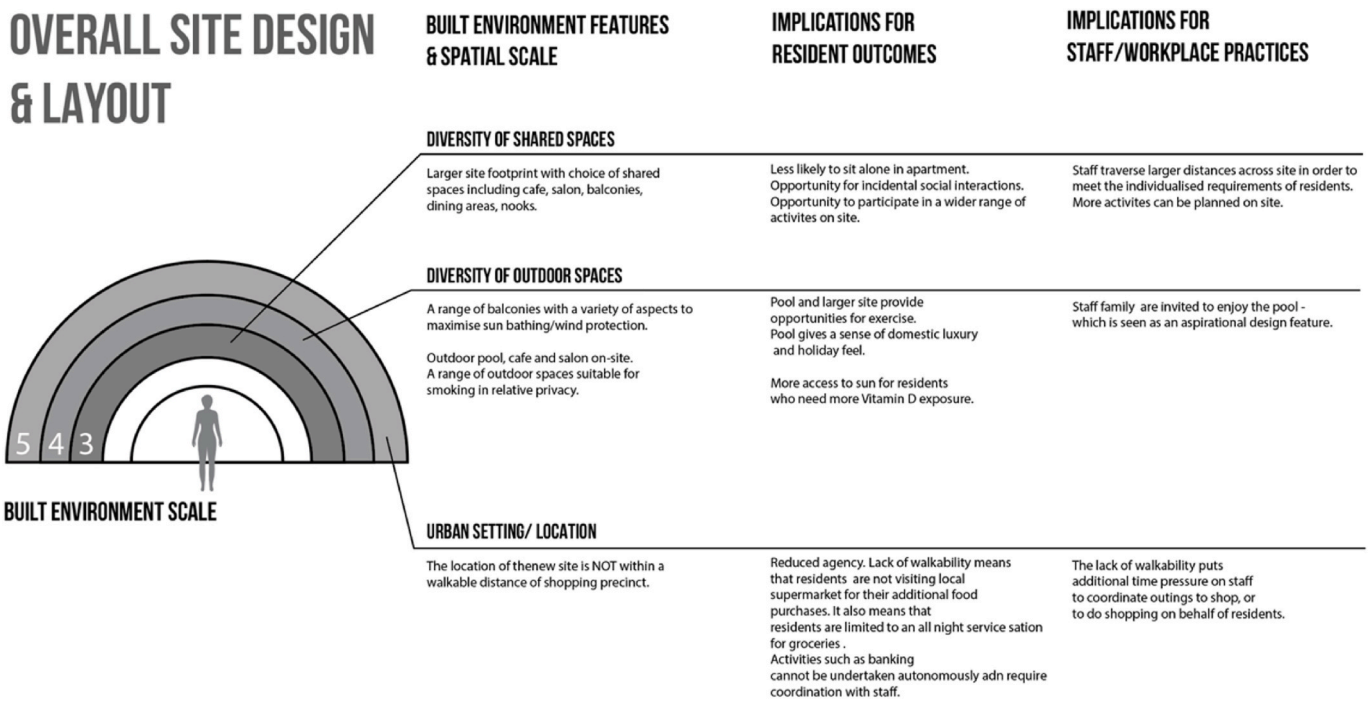

Fig. 7. Overall Site design and layout.

professional skills that would be highly valued in a Household Model of care.

Some participants had observed that in some cases, residents' relationships had been challenged by the spatiality of the new facility – specifically its larger footprint, or site area. For example, there were established friends who were now in different households. Although the site had been designed with a continuous accessible path of travel, the increased effort and distance for residents to visit one another (in particular, residents with mobility limitations) was initially, for some, a challenge. Staff acknowledged that the complexity of navigation also contributed to a reluctance of residents to visit others, something that was overcome by increased familiarity with the site.

4.1. Second stage of analysis: power and permeability

In this second part of the analysis, we mapped our coded data onto a spatial framework of proxemics, based on Edward T Hall's 1966 scale. This was an important secondary step because it allowed us to understand the meaning and experiences of space at different levels. It also allowed us to produce knowledge to help optimally design and implement household care-style aged care facilities in the future. We illustrated our findings within a built-environment scale indicating how each of the five proxemics (ranging from private space through to urban scale) were affected by our findings – these are shown in Figs. 5–7.

Firstly, we found the location of the site and the relationality of shared and private spaces have implications for the permeability of boundaries, including boundaries between the facility and the wider community. This is an important finding, because aged care facilities have a history of being very much isolated from the wider community with little permeation of either aged care residents into the community sphere, and vice versa (Thomas et al., 2013). Recognising the importance of articulating between neighbourhood, shared and private spaces can inform further exploration about the nature of social participation and connection in a supported aged care setting.

Level 1: Intimate Private Space

The private individual apartments are one of the most important aspects of design where the agency of residents is prioritised. Residents can choose to sleep, eat and self-care at their leisure. The role of the design of these apartments was highlighted in discussions about showering practices and medicine administration. Staff commented that the showers were well-designed for supported showering, but the apartments were not as well thought through when it came to medicine and personal protective equipment storage.

Level 2: Personal Social Space

This personal social space is a second tier within the apartment – different to the bed and bathroom where activities are private, personal and for the most part solitary. The personal social space in their apartment, the kitchenette, is one where social activity can take place, such as sharing a cup of tea with residents having total control over who enters these spaces.

Level 3: On-site shared spaces

Shared on-site spaces include the indoor dining rooms, salon and community café. These spaces represented a new opportunity to increase the permeability of the site to the wider community by making families welcome and giving them a space and activity to connect with residents. The salon also represented a new way to encourage personal hygiene and help reframe supported-bathing as pampering.

Level 4: Overall Aged Care Site shared outdoor space

Examples of shared outdoor spaces included the gardens and pool. These facilitated group activities, health and wellbeing through outdoor participation. Similar to the previous level (Level 3: Onsite shared spaces), these outdoor areas presented opportunities to increase the permeability of the facility with the wider community. Residents seeking the opportunity for incidental social interactions could find a place to sit where people pass by. Considering the outdoor spaces in this way has implications for how a planner or developer chooses a potential site design, and how movement across the site is supported through its landscape architecture.

Table 1
Flexibility in Food and Eating Food access, service delivery and consumption.

Theme 1: Flexibility in Food and Eating Food access, service delivery and consumption			
Institutional Model of Care Activity relating to food access/ service/delivery and consumption	Household Model of Care Comparing the activity as it takes place in the Household Model of care	Built Environment Influence/Impact Viewing the activity through the lens of the built environment	Supporting Quotes
Food was available at set mealtimes in a single dining room	Food is available 24/7. Residents can choose to have breakfast at any preferred time.	The new site has defined areas for fridges, fruit and snack/drink preparation is available. There were some issues with food safety certification because of the increased access to food by residents, resulting in purchase of a glass fronted fridge to minimise 'open fridge gazing', and pre-packaged drinks.	"Before in the old kitchen, all the residents [were] together and we'd serve them all [together] but now the chef, he goes up to a [particular household] and helps with lunch" "We are ordering more food in this [new setting]. I think the juice bills has about tripled … if they don't want lunch, they can prepare a sandwich … we provide a choice of food here and the [residents] are eating more over the course of a day." "I think the residents are eating more now … they have access to a lot of food … food is not rationed. They could still have as much as they wanted at the [old site] but they tended not to ask."
Snacks available only when asked for –and prepared by trained staff in the commercial kitchen setting with no resident access.	Residents are encouraged to autonomously access drinks (hot and cold) and prepare snacks if and when they want to.		"The food is fairly similar [to the old site] it's just that there is more choice and [residents] can help themselves." "At the [old site] the residents could only get biscuits at morning tea, now they can have biscuits all day long." "If [the residents] lived at home they could go to their fridge or a kitchen cupboard and make something and that's exactly what they can do here."
Residents eat their meals as a single large group in a shared dining area at fixed times	Residents can choose to eat their meal in a larger dining area, their household area, or their own apartment.	There are a range of spaces where dining can take place – main dining area, household dining area, individual apartments, or even in nooks across the site.	"Many of the residents have meals in their rooms … if they want to have meals there, we support them to. It is about choices."
Staff were not able to let residents participate in preparation of food/setting of tables/ cleaning	Residents are able to participate in 'chores' if/when they wish. Interested residents are trained in cleaning and setting of tables, and food safety in certified training packages.		"[The residents] are independent and they set the table, do activities and clean up after food. We also have a [resident] who is doing admin in reception and also helping in the coffee shop." "Providing residents access to the kitchen enacted a new set of rules … at the old site residents had access to food but it was through staff … after hours when the kitchen staff had gone home, the guest staff had access to the kitchen. They could make a sandwich … everything … but it all came through staff. …. also, I get residents come from [a different household] and they come up to the [large] dining room, …they think the restaurant's better than the one downstairs … I think allowed them to feel comfortable doing, not jobs but, they're just activities of daily living normal jobs"

Level 5: Urban Space

The location of a site is critically important because it determines the walkability and connection for residents to retail, banking, and hospitality services. This shows how a specific aspect of the built environment can significantly influence whether a site is isolated form the wider community or embedded within it. This, in turn, affects the capacity for independence and agency of the residents. If they cannot walk to shops

Table 2
Improved sleep and hygiene – autonomy, flexibility and privacy.

Theme 2: Improved Sleep and Hygiene – Autonomy, Flexibility and Privacy.			
Institutional Model of CareActivity relating to sleeping and personal hygiene	Household Model of Care Comparing the activity as it takes place in the Household Model of care	Built Environment Influence/Impact Viewing the activity through the lens of the built environment	Supporting Quotes
Staff task requirements of incontinence management, showering, feeding residents took precedence over resident preference of sleeping patterns.	Resident preferences of sleeping times are respected and taken into account by staff. This includes any preference for sleeping in.	Individual apartments, dining practices that do not require everyone to eat at the same set times, availability of food all the time makes this practice possible.	"Residents can get up whenever they want … before they had to get up before 8 for breakfast and medication. But now they just go back to bed if they don't want to have a shower, they don't have a shower."
Staff were expected to complete tasks including showering residents who were resistant to washing. All bathing takes place in small inaccessible bathrooms.	Personal hygiene can be encouraged in new ways – smaller teams mean closer relationships and greater trust between staff and resident.	New ways of encouraging personal hygiene are possible – the 'Day Spa' provides a new location. Accessible bathrooms in apartments means safer, easier supported showering. Smaller "household" teams mean that staff communicate closely around any personal hygiene issues, established trust with staff. Greater flexibility around bathing times means resistant residents are able to be encouraged to participate in personal hygiene.	"We had one lady who would not shower … through time she would have a shower every Sunday and allowed the staff to give her a haircut … that was because of the [household] model. Because she was seeing the same people, there was trust there."

Table 3
New opportunities for Social Participation.

Theme 3: New opportunities for Social Participation			
Institutional Model of Care Activity relating to overall site design and layout	Household Model of Care Comparing the activity as it takes place in the Household Model of care	Built Environment Influence/ Impact Viewing the activity through the lens of the built environment	Supporting Quotes
Overall building footprint smaller. Single dining area for all which doubled as an activity space.	Larger footprint with a number of households and shared spaces spread over a larger site areaOpportunities for a choice of activities in spaces suitable for the activities (exercise, gardening, creative, social etc.).Choice in where resident can dine or sit to read or relax outside of individual sleeping quarters.	A greater diversity in private, semi-private and shared spaces for a wider range of activities. Opportunity for on-site exercise, physiotherapy. Clinical practices and medicines are administered in private apartment setting. The shared spaces are reserved for social. More physical movement by both staff and residents across site.	"The big difference I see is with the families. [In the new site] I think they have more space to do things and enjoy private space and also common areas. At [the old site] there was only one outside area which was the smoking balcony at the back, and it was pretty smelly. Here they've got the café, they can go down and sit around the pool area." "I think the space is the biggest difference, more space and more areas to run activities in - that was one of problems I had in the old space … you could be running an activity in the lounge room when others just want to sit. Here you don't have to invade into people's space to run activities" "I am moving around the site more in [this staff role] than I was at OA." "At the [old site] we had all the meds (medications) on a trolley in the dining room and if anyone wanted to go out, they could just come to the trolley … we are non-stop all day now. I come at 6am and don't really sit down until my break."

(*continued on next page*)

and services themselves, they must rely on staff (which increases *their* workload) or else miss out entirely. As staff reported, if residents cannot easily shop at a supermarket, they tended to buy more fast food from the only nearby service, a 7–11 outlet. This had implications for their daily diet and health.

In the following figures the implications for resident outcomes and workplace practices are visualised in fine detail through a proximity lens of built environment and spatial scale, described earlier in Fig. 2.

5. Discussion

A user-centred theory proposes that the *"built environment exists to support the activities of the users it shelters"* (Vischer, 2008, p. 231). Locating 'sites of caring' with reference to spatiality (Milligan 2000) has been studied for a range of settings including home hospices (Brown 2003). Increasing our understanding of how the physical environment influences the daily lives and activities of residents and staff provides the opportunity to optimise a person-centred approach to support. Previous research identified the built environment as a significant enabler of the Household Model (Ahmed et al., 2019); this study contributes to that body of knowledge by mapping the activities and experiences of staff

Table 3 (*continued*)

Theme 3: New opportunities for Social Participation			
Institutional Model of Care Activity relating to overall site design and layout	Household Model of Care Comparing the activity as it takes place in the Household Model of care	Built Environment Influence/ Impact Viewing the activity through the lens of the built environment	Supporting Quotes
No outdoor balcony space. A single outdoor shared area for smoking.Small shared gardens with pot plants	Greater choice in finding a sun filled outdoor space to have a sun-bath or a walk through the garden, or a swim in the pool. Smokers are not overtaking outside areas and can find a range of places to smoke without impacting on others.	Sunny outdoor balconies: More opportunities for going outside improving access to Vitamin D and better health outcomes. Wellbeing associated with gardens and pool.Pool gives the site a sense of a holiday location – promotes exercise and wellbeing.	"We have residents who use the pool regularly … and sometimes staff will get in … and one weekend I saw some grandkids." "One of the residents could get very aggressive and react to other residents so we would say 'come on, let's go to the pool' to calm them down." "The big difference I see is here at the [new building] residents have more space to do things and enjoy private space … and also the common areas. At the old [facility], the only outside area was the smoking balcony at the back, and it was pretty smelly"
Location/urban setting. The old setting was located in the very centre of a café hub, with walkable access to cafes and supermarkets.	The new setting is on a busy road in a suburban residential setting. Visiting cafes and supermarkets requires public transport or car.	Residents need to ask for shopping to be done for them or wait for staff to organise a shopping trip. The in-house café is used frequently to socialise, catch up with gossip and to meet with family and friends who visit.	"We have some residents who go to do shopping … to 7/11. … at [the old site] they would go to Coles or Woollies or IGA around the corner. Their shopping is [now] limited - we have to watch what they bring back now. [In the old site] we never watched what they brought back." "The residents miss the shops … They did their own shopping now they have to depend on someone here to do their shopping …. The residents ask us to do it for them …. We have some residents who do their own shopping but not many now since the move." The residents miss the shops at [suburb]. They always say that they miss the shops. [At the old model] most of [the residents] did their own banking, but now we have to organise trips to the bank.

and residents to spaces and places within the built environment.

This paper provides evidence that the built environment influences the provision of person-centred care for residents in many ways and at many levels, from the private, personal care tasks provided in the bathroom and bedroom through to wider urban/neighbourhood settings, such as the likelihood of visits to the local shops and what supplementary food items are purchased.

This study is foundational in its approach to analysing caregiving against a framework of proxemics in the built environment. It considers new ways of interpreting the impact of a site, its shared and private spaces, and the implications these have for care practices and outcomes for the aged-care workforce and care recipients. The study is however limited by being a single site study. The research field would benefit from a much wider analysis across organisations, setting types and transnational locations.

5.1. Classifying the built environment spatially in a care setting

Classifying space and activity in terms of proxemics has proved to be a useful way of mapping and understanding the way the built environment and support practices interact. The proxemics scale of five levels (from 1 being intimate private spaces to level 5 being urban setting) aligns not only with physical scales of use, but social scales as well. The closer layers of private space are more about private activities and self-care while the outer layers are more likely to include elements of social care, relationships, public facing activities and tasks. This approach could be applied in further research to map the pathways of daily activities of residents to build a story of where people spend their time and what activities they are performing.

The results of the study confirm the overlapping ways the built environment supports and enhances the delivery of a Household Model of care. A facility designed so that there are spaces at a range of scales available for residents at all times means that private care and support can be provided in suitably private spaces at preferred times. It also means that more social public activities can be held in specially

Table 4
Transforming staff and resident relationships.

Theme 4: Transforming Staff and Resident Relationships			
Institutional Model of Care Activity relating to relationships	Household Model of Care Comparing the activity as it takes place in the Household Model of care	Built Environment Influence/Impact Viewing the activity through the lens of the built environment	Supporting Quotes
Staff to staff relationships. Hierarchical model of care provision. Task focused and skill specific. Shift specific tasks.	Non-hierarchical model of staff management. Holistic approach to care provision. Diverse skill application for every role.	Individual apartments, dining practices that do not require everyone to eat at the same set times, availability of food all the time makes this practice possible.	"We are doing more administration and more tasks now - we do the kitchens, temperatures etc, where the kitchen staff used to do that. Before the kitchen staff would clean the kitchens but now the care staff do that. They also record all the temperatures in the fridge."
Staff to resident relationships. Support was task specific and time focused.	Staff provided more holistic support within household rather than across entire site.	Smaller household clusters means that trust builds between household staff and residents.	"I think also our residents are accepting more care, not being so resistive, and that's I think, because of the model, because they're seeing the same staff, they have a relationship with them, there's a lot of trust there."
Resident to resident relationships Each person is one resident out of a site of 80+	Each household clusters residents into smaller, tight-knit groups which were carefully matched at the time of transition.	Some existing relationships have been more difficult between households. Other friendships and even relationships have flourished within households.	"There was another one that never really sat down at the dining room but would sit down at a dining room to eat a meal, probably not interacting so much with the residents but the fact that she was there eating, showing she was safe, she was happy … whereas for the staff adjusting that household, there were those 14 people, so those relationships can really form."

designed, shared social zones. This contrasts with how space has historically been used in congregate care settings where, for example, medication was often administered in a public setting (Dickens et al., 2007). In a traditional congregate model of care, a lack of flexibility about where and when people shower or eat meant that people had to be in particular spaces at particular times for pre-determined daily activities (such as eating, showering) which discouraged "… *variability and spontaneity and encourage[d] routinisation and regimentation within everyday life*" (Mortenson et al., 2015, p. 521). Having smaller apartments and a choice of shared dining areas in the new building meant that residents could choose the level of social activity and engagement they felt comfortable with. The inclusion of individualised spaces – apartments with kitchenettes, bathrooms and televisions, meant that residents had more options to eat outside standard mealtimes. The design of kitchen and dining spaces allowed residents to actively participate in cooking and serving. It makes sense that more home-like scale of environments result in practices that support home-like activities.

One of the most significant changes following the transition to the Household Model in a new building was the way food was purchased, prepared, served, accessed, stored and consumed. Staff had to significantly adjust their work style to ensure the flexible meal choices of residents were met and food safety requirements were addressed. In the previous institutional model of care, more than 80 residents met in a single dining room at mealtimes. Under the new arrangement, residents could dine in smaller household clusters of 14–30, or else eat in the privacy of their apartment. The commitment to increased agency in a built environment that residents are proud of, has resulted in a shift in how space is 'owned' between staff and residents. This renegotiation of space highlights the changing power dynamics between staff and residents in aged care as analysed by Gharaveis et al. (2018).

Similarly, there was also less delineation around staff only-spaces. For example, residents could now freely use the commercial kitchen. The design of the built environment and layout of the spaces meant staff had greater opportunities to include residents in self-care (getting own food and drinks, showering autonomously) and engage in activities to support participation and inclusion. Residents undertaking table setting, food preparation and table clearing is evidence of pride of place and an interesting blurring of staff/resident roles that should be explored further in subsequent research.

The Household Model of Care, facilitated by the built environment, builds new power dynamics which in turn create permeability between private and shared spaces. Staff are less able to intrude into private spaces and residents can freely move between spaces and invite family and friends into those spaces.

We found the relationality of shared and private spaces has implications for the permeability of boundaries between private and shared spaces, and between the facility and wider community. This is an important finding because aged care facilities have a history of being very much isolated from the wider community (Thomas et al., 2013). A better understanding of the relationships between neighbourhood, shared and private spaces opens up opportunities to build stronger social connections with the wider community, directly addressing the disconnection so common with a traditional facility.

Along with the philosophy of care and the workforce, the built environment is a core component of the Household Model of care. Our results indicate that the built environment enables the workforce to adapt to and deliver the person-focused, process-oriented and holistic philosophy of care model (Ahmed et al., 2019). Our findings are distinct from other studies of the Household Model in that we emphasise the role of the built environment, using proxemics as a framework for analysis. The paper also contributes theoretically, by adopting an ANT approach – that highlights the ways in which staff, residents, buildings and environment interact in a network to 'co-produce' care, 'autonomy' and 'independence'.

5.2. Site design and layout

One feature of the Household Model is that personal support and health care is provided in a person's individual unit. In addition, the new site's larger and more diverse shared spaces mean that residents can find private and semi-private spaces, both indoors and outdoors to enjoy activities, read, eat or relax. A consequence of this larger site area, coupled with the person-centred focus of individualised support, is that staff are moving around the site much more and traversing greater distances between apartments. While staff felt this added pressure onto an already time poor working day, they acknowledged this offered residents the real benefits of agency within a quality built environment.

Staff noted the significant benefit of the larger size of the site and the arrangement of shared spaces in supporting a diverse range of activities. The existence of the café and the courtyard with a pool were important social places where connections took place between residents, staff and visitors. All these were new site spatial design features that were not part of the old site.

The location of the site had a strong influence on how residents participated in the local community. Firstly, the old setting was located in the very centre of a suburban café hub with walkable access to cafes, banks and supermarkets. The new setting was on a busy road in a suburban residential setting with cafés and supermarkets so far away they had to be reached by public transport or car. This change of location influenced how autonomous residents were able to be in their shopping and banking. Secondly, the presence of greater outdoor spaces, a pool and on-site café, meant more activities and interactions could occur between residents, families and friends than was possible at the old site.

5.3. Application of Actor-Network Theory (ANT) to demonstrate how the built environment intersects across a care receipt and care provision activities

Although acknowledged as a significant factor in care provision, the built environment has tended to be discussed and analysed in the health and care literature as a homogenous entity and considered separately to interactions that take place between care recipients and providers. This paper broadens our understanding of the way elements and scale within the built environment interact with care delivery in a new facility that operates using a Household Model of care. These results suggest an expansion of the way the built environment is considered when designing aged care to include private spaces, shared spaces, public spaces and neighbourhood streetscapes. We also recommend that future research should frame the effect of the built environment as an active participant in successful care provision connected to all people and activities performed within it – as conceptualised in Fig. 8.

5.4. Policy considerations

The built environment is an integral part of any new successful model of care. It is equally crucial in enacting the philosophies behind that model of care. In this study we found that the built environment, at a range of scales, directly affects operational issues of compliance and practice and whether the principles underpinning a model could be upheld.

Our research has implications for professionals involved in the design, planning and site selection of residential aged care. For example, we have shown that site location, its proximity to services, shops and transport, is crucial if residents are to maintain levels of independence and community participation. A site disconnected from shops and community services in many ways counters the intention of the Household Model and curtails opportunities for independence/autonomy.

Architects and designers would benefit from paying close attention

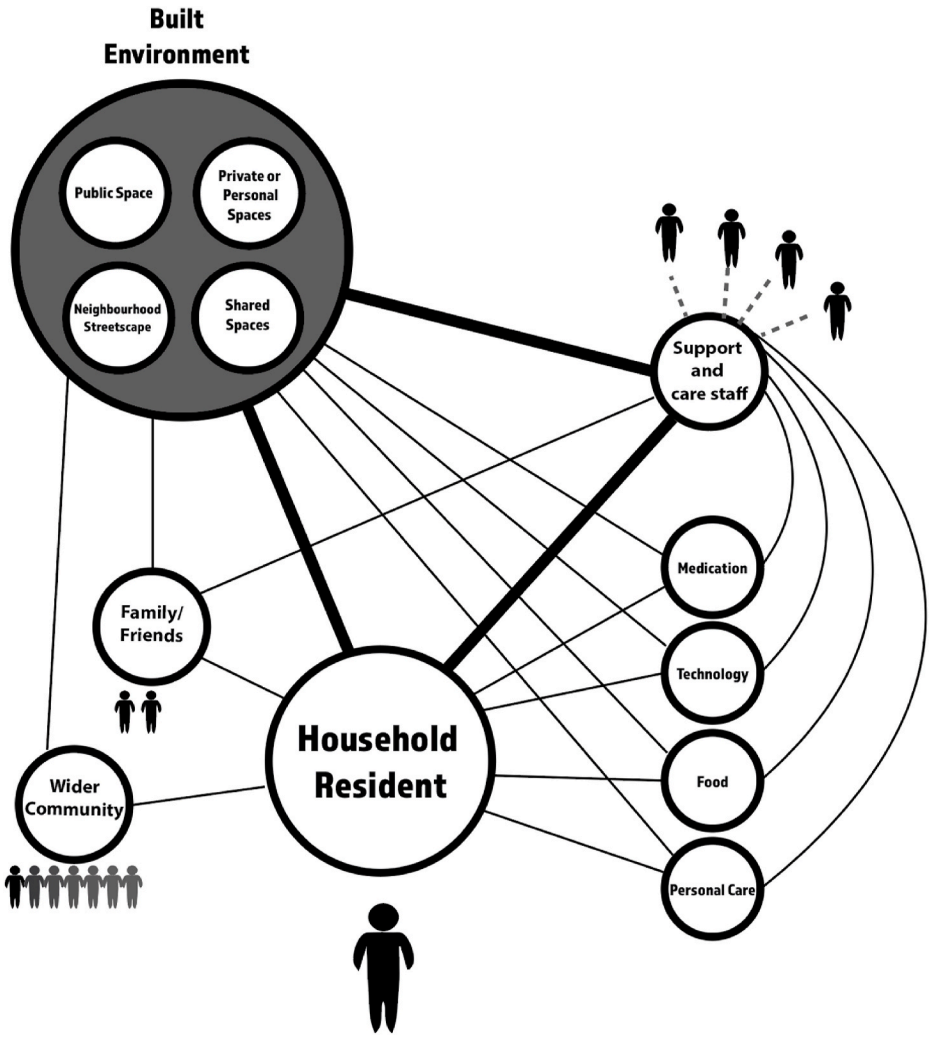

Fig. 8. Expansion of the understanding of the built environment into multiple actants using Actor Network Theory (ANT).

to the intended care practices of any new facility and the philosophies underpinning them. They should also seek first person accounts of those who work and receive care. An inclusive approach to design will mean that environmental innovations will take into consideration the needs and preferences of all.

This study has revealed the impact of changes in models of care on food handling practices and policies. Environmental design details can act as a critical bridge between rapidly transitioning care innovations and the less-nimble legal and accreditation frameworks underpinning quality in aged care provision. The design of the environment can also play a role when changes in care philosophy pose a health risk. This is evident in the installation of a clear-fronted fridge to address the problem of food temperatures rising too high through heavy use. Aged care and safe food handling policies will need to find design solutions to address such unexpected compliance issues.

The research also identified that changing the way food was offered to residents, making food and drinks available 24 h a day and with main meals being offered at flexible times, resulted in an increased in food being consumed. This highlights opportunities to explore malnutrition prevalence in aged care settings in new ways that include the way food is made available and offered.

The built environment has been pivotal in increasing the experiences of privacy and autonomy for residents and in changing the practices of care for the workforce. This represents a significant cultural change for staff in terms of personal care practices, team structure, scope of task, physical distances traversed each day and structure of each day being led by resident needs. Staff training should reflect these changes.

Finally, the research has revealed some underexplored implications of a person-centred model of care on staff and their relationship to the built environment. Delivering clinical and personal care in individual settings places additional physical demands on staff (e.g. traversing longer distances on a site to provide individualised support for each resident). In addition to this, a person-centred approach also changes how staff skillsets are valued (from specific to broad skills) as well as adaptability and flexibility. Adaptability becomes increasingly valued because residents are driving their own support needs, resulting in a lack of predictability for staff across any given shift.

6. Conclusion

The built environment is intrinsically linked to the philosophies of care being implemented in an aged care setting. Examining these links in detail and in terms of scale helps aged care providers, healthcare planners, developers, architects and managers better understand the implications of multiple design decisions in an aged care site's development and/or redesign. Our results highlight that in order for people receiving care to maintain agency and identity as well as social and community connections in a congregate care setting, it is the design of environments at a range of scales, as much as a shift in workplace and care culture that makes this possible. A unique feature of this study lies in the fact that the new site and its buildings were specifically designed to allow staff and residents to experience and deliver the Household Model of Care.

This paper demonstrates the nature of relationships between the built environment of an aged care/mental health residential setting and the social and cultural meanings of 'home'. It asks whether the built environment influences how care can be provided in a way that does not interrupt these social and cultural meanings of home, but rather supports the wellbeing and autonomy of residents in a model of support that is also effective and sustainable for staff. The findings indicate that the built environment is pivotal in upholding the values of the Household Model of care with person-centred support in a homelike environment.

This paper has identified and mapped the unique ways the built environment directly relates to improved outcomes through changed behaviours and care practices. It builds upon previous research which, while acknowledging the importance of the built environment, has tended to speak in more general terms about its impact. Here we have identified four key areas where the built environment significantly enables support provision, including how food and dining is experienced, how the overall layout influences behaviour, how sleep and hygiene practices are changed, and how relationships are transformed. We also reveal how the built environment, in tandem with a person-centred model of care, influences the physical demands on staff and the way their skillsets are valued.

The research demonstrates how a model of person-centred care is interdependent with the design of the built environment at a wide range of scales, all of which requires consideration in terms of values and support provision. This has sector-wide implications for how providers of aged care can improve the design, layout and location of long term accommodation with person-centred support.

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