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Health Environments Research & Design Journal

Housing choices and care home design for people with dementia

--Manuscript Draft--

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Abstract:	This paper reviews the current state of housing for people with dementia by exploring housing choices available to this group, and identifying potential issues with design of care homes. Older people who wish to age in place are faced with the challenge of adapting their domestic environment to ensure independence, accessibility and social connectivity. This is even more challenging for people with dementia who continue to live at home given the risks of self-harm and getting lost. More imaginative and inclusive forms of collective housing are needed. For people with dementia a move to a new environment is often a stressful experience that causes shock, withdrawal and anger. Hence more research is needed to develop more fitting long term housing options for people with dementia. The paper presents a brief review on housing choices and housing design for people with dementia. Interviews with managers of 22 care homes were conducted to explore housing choices and design issues. Results show that the main housing choices available to people with dementia offer different levels of care. The choice of care homes relates to the atmosphere of a home as some occupants favor a homely or relaxing environment and others prefer dynamic settings. A combination of appropriate level of care, a good atmosphere and design quality within the care home are elements that lead to a more enabling environment. Design of a successful caring environment also requires appropriate care and a positive therapeutic and domestic looking environment.
Response to Reviewers:	PLEASE SEE ATTACHED TABLE.

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Title Page

Housing choices and care home design for people with dementia

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Keywords:
Housing; dementia; care home; enabling environments; Lancashire.

Abstract

This paper reviews the current state of housing for people with dementia by exploring housing choices available to this group, and identifying potential issues with design of care homes.

Older people who wish to age in place are faced with the challenge of adapting their domestic environment to ensure independence, accessibility and social connectivity. This is even more challenging for people with dementia who continue to live at home given the risks of self-harm and getting lost. More imaginative and inclusive forms of collective housing are needed. For people with dementia a move to a new environment is often a stressful experience that causes shock, withdrawal and anger. Hence more research is needed to develop more fitting long term housing options for people with dementia.

The paper presents a brief review on housing choices and housing design for people with dementia. Interviews with managers of 22 care homes were conducted to explore housing choices and design issues.

Results show that the main housing choices available to people with dementia offer different levels of care. The choice of care homes relates to the atmosphere of a home as some occupants favor a homely or relaxing environment and others prefer dynamic settings.

A combination of appropriate level of care, a good atmosphere and design quality within the care home are elements that lead to a more enabling environment. Design of a successful caring environment also requires appropriate care and a positive therapeutic and domestic looking environment.

Ref.: Ms. No. HERD-D-14-00033
Housing choices and care home design for people with dementia
Health Environments Research & Design Journal

Reviewer's comment	Authors' response
Reviewer #1:	
Section 1 is challenging to follow. I would have expected to see the aim of the paper very early on. Because there was no mention of the aim, I had no way to frame the purpose of the background / literature review. Perhaps because of that, I found Section 1 to be long and rather unfocused. I think you could shorten the section quite a bit. There seem to me to be 3 points in a string of logic motivating this work - around which you could structure Section 1: 1) Individuals with dementia would likely like to live at home, but often cannot, 2) Current (non-home) housing situations are non-ideal for people with dementia, so 3) We need to better understand how to design non-home settings for people with dementia. This work aims to help satisfy #3.	A paragraph has been added at the beginning of the paper to state the aims. Some sections on older people have been removed. Now Section 1 is primarily on people with dementia. Restructured Section 1 as per Reviewer 1's comments. There are now three headings: - The challenges of living well at home with dementia. - Current housing options and their inadequacies for people with dementia. - Design of care settings for people with dementia
In Section 1, there are not good transitions between discussions of older people as a group versus older people specifically with dementia. I think outlining your logic in some way would help you with these transitions.	Restructured (as described above) to help with the transition and flow of the text. This seems more logical and sets the context of the challenges of ageing in place with dementia, then how current housing options are inadequate and how care settings may better suit this need. This then leads onto the interviews which explore design of nursing homes and how they may better fulfil the needs of the residents with dementia.
In the first paragraph, I am not sure what the authors mean by "sheltered housing" and "the Eden alternative"	We have defined sheltered housing in paragraph 1. Information on the Eden alternative and a reference to the Green House have been added.
The final paragraph of Section 1 you state "The next sections present the research methods and the analysis used in this paper in order to answer the research question that is concerned with housing options available to people with dementia and the potential design issues linked to the residential environments within care homes" but you have never stated the research question.	At the end of Section 1 we have stated the research question.
I need more details on how you chose the interview questions. Most could be answered with yes/no, so I need to better know how you conducted the sessions.	We have explained this in Section 2: Methods.
I would also like more detail on how many researchers coded the interviews and generated themes, how differences were resolved, etc.	We have given more detail about the coding of the interviews.
Figure 1 is unnecessary	We have deleted figure 1.
I can't read the text in some of Figures 2-4	We increased the size of the text in all our figures.
Please include limitations and future work into Section 4	A paragraph has been added to the end part of the conclusion. Lines 531-534 Our scope is in one geographical area. Future research should test the design recommendations we made relating to atmosphere/quality of design e.g. colour/ lighting/aesthetics (Some of the items identified in our figures).
Reviewer #2:	
While the topic of housing for dementia patients is very timely, I do not feel this article provides much in the way of new information/findings. The work would benefit from a more detailed literature review of recent research on dementia and housing. I appreciated the research methods utilized in the research. The use of qualitative methods provides rich, descriptive data.	We believe that the literature review is comprehensive and includes the most recent research on dementia and housing choices for older people. 78 leading research papers on housing for dementia people have been reviewed for the purpose of this paper. Of which 57 have been referenced in the paper.

Reviewer #3:	
Line 343-345 - I'm sure is accurate but likely needs to be restated - ie. Locked doors (at least in the this country are against the law) I don't know that it should be excluded (there is probably more of this happening than we would like to know about) but if I am not mistaken - it is illegal. [I have little doubt of the accuracy and it may be legal there (this was Great Britain I believe) - and I believe there is benefit to inclusion - just insure it is well stated -	We have addressed the issue of locked doors in the text. There was a misunderstanding here. Patients were not locked into internal rooms.
The information (especially as a comparative) is beneficial - 404] discussion of locking residents in their rooms - again is not legal in the here (USA) - I'm not suggesting it be omitted but again be very careful and clear in the statements -	See above.
Conclusion - overall - very good - ie: 425-428 re: suggestion of need for alternate housing design - if appropriate the small house design grouping originated by Bill Thomas (The Green House) - might be an appropriate inclusion - addressing advancing dementia - appropriate size, staffing, activity etc. It was not designed specifically for persons with dementia but the design, staffing etc. can be ideal. I am also not necessarily suggesting it be included - perhaps a follow up	Reference to the Green House has been added to Section 1.
Reviewer #4:	
Information on the managers' facilities: 1. Scale of facility or home	Not all nursing homes information suggested by Reviewer 4 was relevant to the study. We have inserted a table in the methodology section to describe the care homes with the information obtained during interview i.e. number of beds and type of home.
a. 'appropriate' level of care: compared to what? Does not define the level of dementia that would be tied to a level of care, which would be measurable.	We have added a sentence to explain this. Line 312
b. 'good' atmosphere is subjective terminology and not completely defined. Understand that there are components that contribute to an atmosphere that would be beneficial to residents with dementia. Would define these terms better in the reporting.	In order to describe 'good' atmosphere we have stated in the text that this is subjective but people still expect their care homes to feel homely as opposed to clinical. Lines 330-331 & Line 379. Lines 517-520.
c. design 'quality' is also not completely defined. Would recommend the factors that contribute to a beneficial design be laid out more clearly.	We have defined design quality. Factors that contribute to a beneficial design are clearly displayed in figure 3. Lines 398-401

Revised Manuscript
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1 # 1. Background

2 There is no doubt that one major challenge of population ageing is the development of more
3 imaginative and inclusive forms of collective housing. Older people who wish to age in place
4 often need to adapt their domestic environment to ensure independence, accessibility and social
5 connectivity. This is increasingly challenging for people with dementia who live at home given
6 the risks of self-harm, such as falls, leaving cooking appliances or taps running and getting lost.
7 For a person with dementia a move to a new environment such as a nursing home is often a
8 stressful experience, causing shock, withdrawal and anger. Despite recent development in
9 dementia-friendly environments, more research is still required to develop more fitting long term
10 housing options for people with dementia. This paper presents a review of the current state of
11 housing for people with dementia by exploring housing choices available to this group, and
12 identifies potential issues with design of nursing homes in the UK context through interviews
13 with facility managers.

14 ***The challenges of living well at home with dementia***

15 Most people with dementia live in their private homes while being cared for by relatives.
16 However because of rapid cognitive decline and consequently the risks of self-harm and getting
17 lost, a substantial number of older people with dementia will need to move to nursing homes
18 where care and support is provided (Matthews & Dening, 2002; Wittenberg, Comas-Herrera,
19 Pickard, & Hancock, 2004; Torrington, 2009)

20 Access to healthcare, support and social services for older people from their own home are vital
21 as they prevent the need to move. Community and family connections and place or home
22 attachment help older people to feel psychologically safe in familiar surroundings (World Health

Organization, 2007). It is not surprising thus to know that older people wish to age in place and remain in their community where they have established social networks (Burholt, 2006).

THIS IS THE PULL-OUT QUOTE. This is the pull-out quote: RUBINSTEIN (1989) ALSO ACKNOWLEDGES THAT OLDER PEOPLE PREFER TO REMAIN IN THEIR OWN HOMES TO MAINTAIN THEIR INDEPENDENCE AND PERSONAL FREEDOM, DESPITE THE ONSET OF AGE RELATED IMPAIRMENTS.

Although it is desirable to remain living at home, it is not always practical as Reimer, Slaughter, Donaldson, Currie, & Eliasziw (2004) acknowledge that people with dementia are often moved into long term care settings for the following reasons: an increased cognitive decline; an interest in improving the wellbeing of the person with dementia; and the need to provide extra support to the person with dementia and their caregivers. Due to a loss of cognitive ability, a suitable designed physical environment is recognised as important in overcoming behavioural issues, providing comfort, assisting with wayfinding and promoting independence. This is because the experience for a person with dementia becomes more sensory than intellectual (Hadjri, Faith, & McManus, 2012; Joseph, 2006). For people with dementia their condition and associated symptoms are known to be influenced by the physical environment (Ebersole, Hess, & Schmidt-Luggen, 2004; van Hoof & Kort, 2009). Hence the importance of an enabling environment that offers opportunities for change and optimum stimulation (Cohen & Weisman, 1991; Calkins M. , 1995).

Research shows that the built environment can create significant challenges to people with cognitive disabilities such as dementia (Jackson & Kochtitzky, 2001). This is why dementia requires evidence based design solutions to adapt the home environment (van Hoof, Kort, Duijnstee, Rutten, & Hensen, 2010). Nowadays designers and facility managers recognize that

46 the design of the physical environment is important in contributing to the wellbeing and
47 functionality of people with dementia (see Brawley, 1997; Calkins M. P., 1988; Cohen & Day,
48 1993; Cohen & Weisman, 1991; Day, Carreon, & Stump, 2000). People with dementia normally
49 require adaptation to the design of housing facilities, their indoor environment and any
50 technology that is used to monitor residents or support care delivery (van Hoof, Kort, Duijnstee,
51 Rutten, & Hensen, 2010).

52 From the perspective of the person with dementia, moving into a nursing home is not desirable
53 because of the consequences of leaving their familiar environment, social network, loss of
54 independence and the fear of the unknown – adjusting to communal living, a new environment,
55 and away from the family and friends (Davies & Nolan, 2004). Furthermore, there are behavioral
56 patterns associated with the move to nursing home settings, such as older people with dementia
57 spending more time in their private rooms during the day (Fleming & Purandare, 2010).

58 It has been shown that a person with dementia that has been moved to a new environment tend
59 "to suffer higher rates of depression and mortality following relocation" (Day, Carreon, &
60 Stump, 2000, p. 398). Findings from other research shows however that when people with
61 dementia are moved together to a new facility, they seem to suffer less from the impacts of
62 relocation (Anthony, Procter, Silverman, & Murphy, 1987; McAuslane & Sperlinger, 1994;
63 Robertson, Warrington, & Eagles, 1993; Day, Carreon, & Stump, 2000). Whatever the case,
64 generally a person with dementia experiences shock, withdrawal and anger immediately after the
65 move to a nursing home (Davies & Nolan, 2004). The move to a nursing home is a very stressful
66 experience to both the person with dementia and their carer, given the fact that it is a major life
67 event. Most of the time the carer has to decide on the best housing and care options (Davies &
68 Nolan, 2004).

69

70 ***Current housing options and their inadequacies for people with dementia***

71 It is inevitable that as people age mainstream housing becomes increasingly inadequate (Wright,
72 Tinker, Hanson, Wojgani, & Mayagoitia, 2009). In the UK, there are five dominant housing
73 types: own home/other family home; sheltered housing; very sheltered housing; long-stay
74 residential care; end-of-life care (O'Malley & Croucher, 2005). Sheltered housing usually
75 consists of private and secure units that are monitored by a warden (Hadjri, 2010). They are
76 commonly occupied by vulnerable, older people or disabled residents. With the aim to improve
77 the quality of life of older people with disabilities, several new home-like housing models have
78 been developed such as assisted living, continuing care retirement communities and the Eden
79 Alternative (Joseph, 2006). The Eden Alternative aims to create homelike settings in nursing
80 homes by enabling residents to interact with nature and people. This is achieved by empowering
81 staff to implement these changes and ensure residents have a better quality of life (Coleman,
82 Looney, O'Brien, & Ziegler, 2002). In line with this philosophy, the Green House Project was
83 initiated and introduced a new approach to long-term residential care for eight to ten older
84 people; that is a facility smaller in size and homelike in terms of interior design and daily
85 activities (Thomas & Johansson, 2003).

86 Clough, Leamy, Miller, Bright, & Brooks (2005) argue that the lack of housing option presents
87 itself as an obstacle to older people moving to more suitable housing, or as Brenton (2001) and
88 Dalley (2002) noted due to a need for "more imaginative forms of collective housing". Other
89 authors such as Oldman & Quilgars (1999) argue that for some people, moving into residential
90 care can be a positive experience (Means, 2007). This is true for some older people with
91 dementia who managed to improve their quality of life after moving to a nursing home (Means,

92 2007). More research has concluded that older people who moved into extra care housing
93 required less care (Croucher, Hicks, & Jackson, 2006; Wright, Tinker, Hanson, Wojgani, &
94 Mayagoitia, 2009). On the other hand, some authors recommend that the move take place as
95 early as possible after a person is diagnosed with early dementia, this is to avoid stress and
96 confusion which tend to happen when older people with moderate to severe dementia are moved
97 to nursing homes (van Hoof & Kort, 2009).

98 Marquardt & Schmieg (2009) highlight the major reasons for a person with dementia needing to
99 move into nursing care relate to a loss of independence and problems with wayfinding. This
100 move is necessary in most cases despite efforts from family and concerned older people to
101 remain at home for as long as possible. Some of the deciding factors are concerned with
102 increased care needs, high carer burden, cognitive decline and behavioral issues for example
103 (Banerjee, et al., 2003; Reimer, Slaughter, Donaldson, Currie, & Eliasziw, 2004). Recent
104 research has used individual and behavioral approaches to understand the critical factors leading
105 to institutionalization for people with dementia (Butler, Orrell, & Bebbington , 2002; Gaugler,
106 Kane, Clay, & Newcomer, 2003). Carers highlight that it is common to see older people with
107 dementia being constantly moved between care homes because of lack of qualified staff who can
108 care for people with dementia (Department of Health , 2009). However, more evidence is needed
109 such as longitudinal research in order to "to explore pathways of housing and care for people
110 with dementia" and to understand the decision-making process before relocation (O'Malley &
111 Croucher, 2005, p. 574). It appears however that extra care housing in the UK can provide a long
112 term alternative to institutional care for people with dementia if adequate specialist care is
113 available (Molineux & Appleton, 2005).

114 THIS IS THE PULL-OUT QUOTE. This is the pull-out quote: THERE HAS BEEN AN
115 INCREASE IN SERVICE PROVISION TO SUPPORT CARE AT HOME FOR PEOPLE
116 WITH DEMENTIA INCLUDING FOR THOSE WITH SEVERE DEMENTIA. Nonetheless
117 more studies are needed to establish the cost-effectiveness of these approaches to care (O'Malley
118 & Croucher, 2005).

119 ***Design of care settings for people with dementia***

120 The Bamford review consultation with service users and their carers raised issues such as ageing
121 in place. It is desirable to enable people with dementia to remain at home for as long as possible
122 in order to delay the move to a nursing home which in most cases is inevitable. This can be
123 achieved if assistive technologies and adequate adaptation of the homes are available (Northern
124 Ireland Government , 2011). For those who have to leave their home, a community based model
125 of supported housing is available where people with dementia can continue to live relatively
126 independently (Northern Ireland Government , 2011). However, more research is needed to
127 ascertain if this type of accommodation and model could be a long term option.

128 Nursing homes with fewer units or small grouping for people with dementia are more desirable
129 as they minimize overstimulation caused by noise and large number of people potentially in
130 contact with residents (Day, Carreon, & Stump, 2000). Additionally, design improvements can
131 be implemented to improve wayfinding through better signage, use of landmarks and views to
132 outdoors (Day, Carreon, & Stump, 2000). Quality of indoor spaces can also be improved to
133 avoid confusion of people with dementia through better contrast on floors and walls and better
134 lighting (Brawley, 1997; Day, Carreon, & Stump, 2000). This is echoed by other authors such as
135 Weisman (1987) and Diaz Moore, Geboy, & Weisman (2006). Wayfinding for example can be
136 improved through efficient signage, better floor plan layouts, more effective design for

137 perceptual access (Marquardt, 2011). Moreover, floor plan typology and environmental cues are
138 key in aiding wayfinding (Marquardt, 2011; Elmståhl, Annerstedt, & Ahlund, 1997; Marquardt
139 & Schmieg, 2009; Passini, Pigot, Rainville, & Tétreault, 2000; Passini, Rainville, Marchand, &
140 Joanette, 1998). For example, people with dementia are more comfortable, less aggressive and
141 sleep better if they have their own private room rather than sharing a bedroom (Morgan &
142 Stewart, 1998; Joseph, 2006).

143 Hence care facilities must continue to improve the design of their accommodation, particularly
144 for people with dementia to minimize the effect of the disease on their cognitive abilities and
145 quality of life. For instance, research on housing needs of people with dementia experiencing the
146 various stages of the disease could be useful (Alzheimer's Australia, 2004).

147 Another option would be to assess the potential of sheltered housing to offer an alternative
148 housing option to people with dementia. Sheltered housing has the potential to offer a positive
149 environment for people with dementia if there are adequate opportunities for social interactions
150 (Department of Health, 2009, p. 55). There is a need now for interdisciplinary research that
151 examines further the relationship between housing and dementia and associated care (Heywood,
152 Oldman, & Means, 2002; Cantley, 2001; Manthorpe & Adams, 2003).

153 Still more research is needed to develop more fitting long term housing options for people with
154 dementia. This can be achieved by involving this user group and their carers in the development
155 of these alternatives, and by monitoring the development of models, training staff in care
156 delivery at home, and identifying which assistive technology and telecare options have potential
157 for implementation (Department of Health, 2009).

158 The next sections present the research methods and the analysis used in this paper in order to
159 answer the research question: What are the main housing options available to people with

160 dementia? Alongside this, potential design issues linked to the residential environments within
161 care homes will be explored.

162 2. Methods

163 A list of care and nursing homes operational in [location hidden for peer review] was produced
164 to identify those that currently care for people with dementia. [location hidden for peer review]
165 has 329 care homes located in 31 urban or rural settlements in [location hidden for peer review].
166 These offer 11,202 beds. Of these homes, 305 are private while 15 are under local authority
167 control, and nine are run by voluntary organizations. Of the 329 homes, 165 provide care for
168 people with dementia. Managers of this latter group were contacted by phone to gauge their
169 interest in the study and ask them whether they will be willing to be interviewed. Twenty two
170 managers agreed to be interviewed within two weeks. Table 1 below offers a brief description of
171 the managers' care home facilities:

172 Table 1: Description of care homes

Participant code name	Number of beds	Type of care
A	50	Old Age Dementia
B	11	Old Age Dementia
C	44	Dementia Mental Disorder
D	30	Old Age Dementia
E	50	Old Age Dementia Physical Disability
F	14	Old Age Dementia Physical Disability
G	29	Old Age Dementia

Participant code name	Number of beds	Type of care
H	24	Old Age Dementia
I	32	Old Age Dementia Physical Disability
J	31	Dementia
K	54	Dementia Mental Disorder
L	49	Old Age Dementia
M	26	Old Age Dementia
N	27	Old Age Dementia
O	24	Old Age Dementia
P	65	Old Age Dementia
Q	26	Old Age Dementia Learning Disability
R	41	Old Age Dementia
S	27	Old Age Dementia Physical Disability
T	38	Old Age Dementia Physical Disability
U	64	Old Age Dementia
V	15	Old Age Dementia

173

174 Ethical approval for the interviews was obtained from the University of [location hidden for peer

175 review] Ethics Committee prior to the fieldwork starting. As a result a participant information

176 sheet and consent forms were produced in preparation for the interviews.

177 The interview questions were developed based on findings from the literature review and
178 previous research by the authors, and were concerned with housing choices and potential design
179 issues of existing nursing homes. The interview schedule contained nine questions as follows:

180 1. Housing Choices: what are the decisive factors in terms of older people's choices of
181 moving to nursing homes, and why?
182 2. Do you think that nursing homes design needs to address new requirements related to
183 accessibility, comfort, or health and safety or not?
184 3. Are you aware of any environmental, social, behavioral and healthcare issues caused by
185 the design of care environments?
186 4. Are you aware of any best practice in the design of care environments for people with
187 cognitive impairments/dementia?
188 5. Do you think that the design of the physical environment matters and makes a difference
189 to people who suffer from dementia and their carers or not?
190 6. Has a Dementia Design Audit been carried out or not (DSDC Dementia Services
191 Development Centre, University of Stirling)?
192 7. Do you have any comments on the layout and general design of the facility?
193 8. Do you think staff needs training (communication) in order to care for people with
194 dementia or not? Are there any staff related issues that may impact on care delivery?
195 Nursing, training, education?
196 9. How would you decide on a personalized care in relation to the physical and social
197 environment?

198 Interviews with managers of 22 nursing homes were therefore conducted to explore design and
199 housing choices issues for people with dementia. Interview conditions such as timing were tested

200 through pilot interviews. They were carried out in comfortable and familiar settings at agreed
201 times to help participants to feel at ease. The purpose and duration of the interviews were
202 explained to participants at the start of the interviews. Researchers followed the advice of Kane
203 & O'Reilly-De Brun (2001), who state that the behavior of the interviewer is important.
204 Therefore during interview sessions researchers remained as neutral as possible and encouraged
205 responses with non-committal body language. The researcher did not interrupt participants and
206 allowed silences to give respondents time to think.

207 The interviews were tape recorded and lasted between 30 minutes and an hour. Interviews were
208 then transcribed verbatim and analyzed using NVivo. Thematic analysis was used to examine the
209 choice of dementia care homes available and the design issues associated with them. The
210 analysis was carried out in line with guidelines as outlined by Braun & Clarke (2006). Firstly, the
211 interviews were transcribed from tape recordings into both electronic and printed forms. The
212 second phase was to familiarize oneself with the data; this involved reading and re-reading the
213 text. Similarities, differences and contrasts between transcripts were noted. Thirdly, initial codes
214 were generated. This involved writing in the margins of the texts and similar codes were
215 assembled together in a process described by Saldaña (2009). Fourthly, themes were sought and
216 a record of all emergent codes was kept in the NVivo 10 software program for organizational
217 purposes. In the fifth phase the themes were reviewed; themes that the researchers felt did not
218 support enough data were discarded, whilst themes that were too broad were subdivided. Finally,
219 themes were re-arranged to form clusters of organizing themes and global themes. Diagrams
220 were developed using the same software to summarize the findings of this study and to depict
221 themes (Figures 1-3). To ensure reliability, consistency and to minimise bias interviewers were
222 coded collaboratively between three members of the researcher team. This process involved the

223 cross-checking of codes and interpretation of data between researchers (Barbour, 2001).
224 Researchers agreed or refined themes and codes at regular meetings where they also posed
225 provocative questions to generate new codes. Differences of opinions concerning the definition
226 of themes were resolved through intensive group discussions. As recommended by Saldaña
227 (2009), one member of the researcher team acted as a code book editor which involved revising
228 and maintaining the master list of themes for the group.

229 3. Analysis

230 In addressing the research question about the housing choices available to people with dementia
231 and the design issues associated with these, this paper focuses on three particular, but
232 interconnected aspects of participants' experiences of care homes. These are: the level of care
233 required by a resident, the atmosphere of a home and the design quality of a care home.
234

235 ***Level of care required***
236 Participants stated that residents made the decision to move to a care home for a variety of
237 reasons including a need for extra support, safety concerns, health challenges and an inability to
238 cope at home. It was acknowledged that people moved to care homes out of necessity and that
239 very few people viewed it as a positive lifestyle choice. In many cases the decision to move was
240 reached by social workers, family members or hospital staff. Participants maintained that despite
241 the help of community support teams, residents with dementia came to a stage where they found
242 it too challenging to cope at home. Therefore occupants needed the extra support that a care
243 home afforded them:

244 *"I think…people move here because…they are not able to manage themselves*
245 *independently or their relatives are sort of…struggling to cope with their needs. I think a*
246 *lot of the time…it's…the last resort for many people"* (Participant K).

247 Some participants noted that people who had dementia required extra care and care homes
248 afforded provision of 24-hour support and expertise which they may not receive at home. In
249 terms of safety, many participants commented that residents can "wander"[1] due to dementia.
250 THIS IS THE PULL-OUT QUOTE. This is the pull-out quote: IN LIGHT OF THIS, CARE
251 HOMES WERE VIEWED AS SAFE ENVIRONMENTS BY RESIDENTS BOTH IN TERMS
252 OF LAYOUT, DESIGN OF BUILDINGS AND ALSO DUE TO THE PROFESSIONAL CARE
253 OFFERED BY STAFF. When selecting a residential care home, occupants considered the safety
254 aspects of the home:

255 *"They then look for…a…safe environment, so that the initial safety will be secured, they*
256 *cannot just walk out of the door"* (Participant B).

257 Others believed that the building design was fundamental to maintaining safety in care homes as
258 residents required an environment protecting them from injury, yet allowing them to feel safe
259 while maintaining their mobility. The choice of home was based on the individual's required
260 level of care for example different residents required various equipment items, many had lived in
261 a care home before while others had not and others had multiple impairments. Various occupants
262 had different levels of dementia and many participants commented that residents elected to live
263 in homes with individual or personalized care plans:

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[1] "Wandering (or exploring) is a term that refers to a type of persistent walking behaviour that may occur as a result of dementia. It may appear to be aimless but the person with dementia may be walking with a purpose."

264 *"We offer person-centered care by meeting the needs of individual residents based on*
265 *their life history and the information we gather about them"* (Participant U).

266 Care plans were developed through consultation with family members, doctors or friends. Plans
267 were sometimes altered and reassessed according to occupants' changing needs. Some
268 participants stated that the care homes in which they worked had rooms of varying sizes and
269 decor to suit a diverse range of residents. Applicant's background as well as mental and physical
270 needs are assessed before making an offer to them. The choice of home was also based on
271 selection criteria for example care homes had exclusion and inclusion criteria that were based on
272 the level of care required by the future occupant. Participants said that residents checked for
273 specific facilities provided, for instance physiotherapy rooms, when selecting a home. They also
274 considered the level of communication between residents and care home staff:

275 *"We take the lead from them, listen to them and address their comments. They scrutinize*
276 *the person-care plan. If they feel that there is something missing generally in our care*
277 *plan, we address and report back to them"* (Participant N).

278 However, most participants did not produce audits in the workplace. An inhabitants' background
279 influenced their selection for instance if a home related to their birthplace or met with their
280 individual taste. Care workers try to get a history of the occupant's previous lifestyle and relate it
281 to their new environment. If someone was interested in gardening then they chose homes with a
282 garden and staff encouraged them to participate in activities in the garden.

283 Leaving design considerations aside, participants asserted that staffing influenced future
284 occupants' choice of care home. They believed that working in a care home was a vocation and
285 that staff should be sympathetic and caring towards residents. They required an understanding of
286 the effects of dementia: *"You can't train somebody to love and care"* (Participant D).

287 Participants discussed the importance of a balanced staff to occupant ratio for safety of residents.
288 Existing homes had staff to resident ratios of 1:3 or 1:5. Experience and training received by
289 staff were also important considerations. Many participants were involved in internal and
290 external training. This also incorporated learning about communication to improve the level of
291 care in a home. Participants noted that residents had the opportunity to choose homes where
292 National Vocational Qualification (NVQ) training and Continuing Professional Development
293 (CPD) training took place. One participant had put a personalized training scheme in place that
294 was adapted to meet resident's needs. There was an overriding requirement for suitable staff to
295 meet the care needs of occupants:

296 *"What is the use of adapted buildings if you have not got the staff to look after dementia*
297 *residents? You must treat them and have a passion for the dementia"* (Participant F).

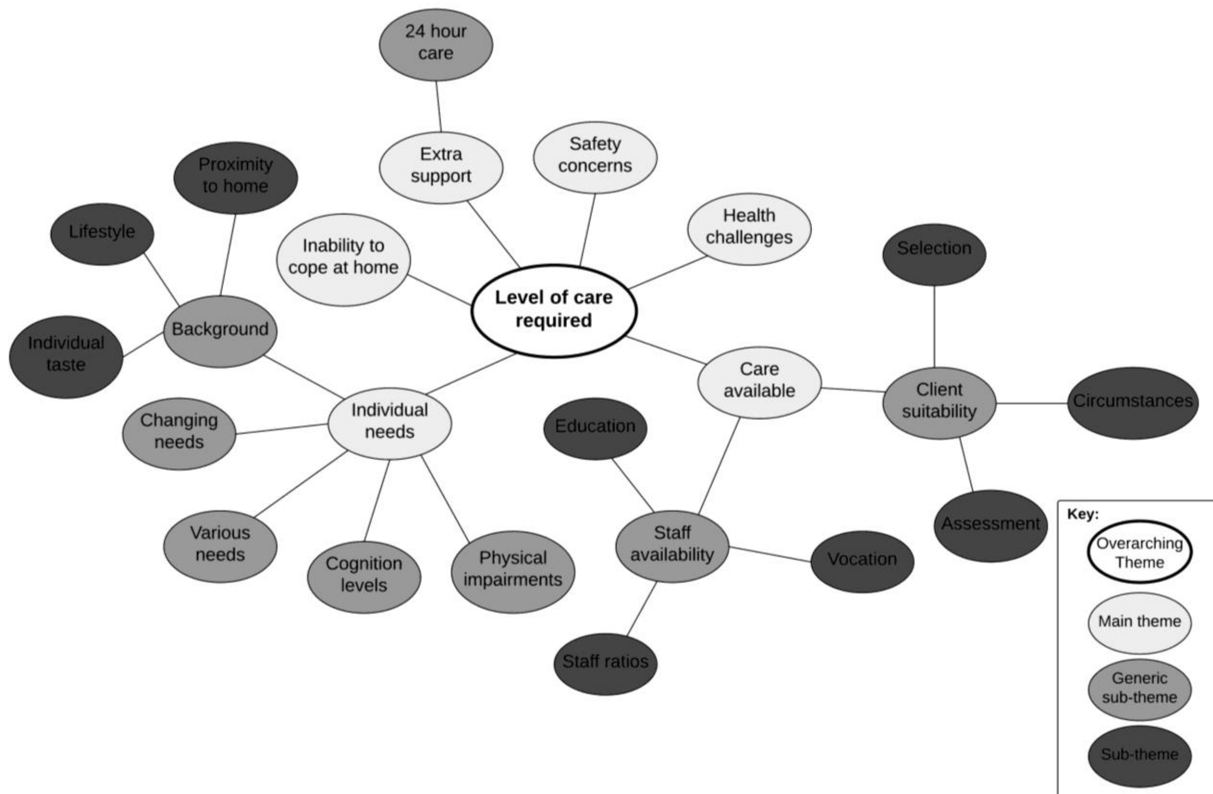
298 Participants stated that the choice of homes was based on both the building design and the
299 quality of staff available. A well-designed building was ineffective alone without appropriate
300 staffing. Participants reported that residents sometimes moved to more specialized homes as
301 their dementia symptoms increased and some homes catered for some or all stages of dementia.
302 In line with this, one participant changed the registration of their care home to meet dementia
303 needs. Other participants mentioned homes that employed dementia strategies for occupants to
304 choose from and many used diary sheets to keep track of a resident's needs. However, another
305 participant felt that there was little choice for couples who wished to live together in a care
306 home:

307 *"New homes are built to have just one person in a room. So what happens when you get*
308 *a married couple...You haven't even got a choice"* (Participant P).

309 All of these factors impacted upon future residents' choice of care homes yet it appeared from
310 interview analysis that a variety of choice was available for future tenants, however in many
311 cases, their selection depended on the level of care they required and their individual preferences.
312 The choice of home was linked to the type of care that the care-home catered for (Table 1).
313 Figure 1 summarizes the subthemes associated with level of care required.

314

Figure 1: Bubble Diagram depicting level of care required



Atmosphere

A common issue facing housing choice was the atmosphere perceived by residents in care homes. Whilst the feelings conveyed by ones environment are in many ways subjective participants outlined features that could contribute to a positive atmosphere for residents. THIS IS THE PULL-OUT QUOTE. This is the pull-out quote: PARTICIPANTS STATED THAT OCCUPANTS WISHED TO LIVE IN HOMELY ENVIRONMENTS. IT WAS IMPORTANT THAT DESIGNERS ENSURED THAT CARE HOMES ARE PERSONALIZED TO HELP THEM TO ‘FEEL AT HOME’:

336 *"FROM A COMFORT POINT OF VIEW, IT HAS TO FEEL AND BE LIKE A HOME*
337 *WHERE OLDER PEOPLE FEEL FAMILIAR WITH"* (PARTICIPANT A).

338 Participants encouraged family members and residents to bring familiar objects to the home such
339 as flowers, pictures and ornaments and some residents brought their own furniture to enhance the
340 bedroom. They decorated public areas and planted flowers outside to make residents feel
341 welcome. Participants noted that occupants had the choice between purpose built and pre-
342 existing homes. There was a feeling amongst some participants that newer homes had a more
343 clinical feeling than older buildings. When choosing a color scheme, warm colors were selected
344 and there was an attempt to use furniture and fittings that were found in a home environment.
345 There was a sense that the design of a home could have a positive effect on both staff and
346 residents:

347 *"The design does matter for carers and dementia residents. It raises staff morale,*
348 *because people enjoy coming to work because the environment is friendly, homely and*
349 *comfortable. That happiness also affects the residents"* (Participant K).

350 Other participants stated that their care homes had a holiday atmosphere as the bedrooms were
351 decorated similarly to a hotel. Overall the care homes' staff aimed to avoid clinical decor to
352 maximize residents' comfort as the design of the built environment could reduce the stress
353 experienced by people residents with dementia. Participants aimed to provide relaxation and
354 happiness to residents. One participant believed that care homes should offer residents the
355 opportunity to choose their own bedroom. Bedrooms were nonetheless laid out to suit the
356 individual. Some occupants felt more comfortable in smaller bedrooms yet others preferred
357 larger bedrooms or did not spend much time there. Participants contended that residents chose
358 homes in areas that were familiar to them: *"Staying in an area that they are familiar with so that*

359 *care assistants can help them when going to shops"* (Participant T). Participants felt that good
360 aesthetics encouraged future residents to choose particular homes as their first impression related
361 to homes decor which acted as a marketing tool. The decor in one home mirrored the culture of
362 the residents:

363 *"We have assorted appliances like African bathrooms, London bathrooms and French*
364 *bathrooms that bring home memories to residents"* (Participant K).

365 Participants revealed that different areas of the homes had different atmospheres. They facilitated
366 people who liked to withdraw to tranquil, relaxing spaces by providing them with relaxation
367 rooms and quiet sitting areas. They also provided private meeting rooms for families and sensory
368 rooms. This was not the case with all homes but they sought to include these spaces in their
369 layouts. The quiet rooms were in contrast to the lounge and dining areas that were included to
370 encourage interaction between residents. Participants expressed the issues relating to perceived
371 challenging behaviors which may present and the need to ensure this did not affect other
372 occupants. This usually involves them identifying the cause or root of why residents are
373 agitated/anxious/waking up in the middle of the night, and in response to this staff may facilitate
374 something they want to do (go a short walk-related to their past employment, e.g. security
375 guard). It was also noted that residents had the choice of staying in quiet areas or accessing
376 activities in more public areas. They tried to instill a sense of community by expanding the
377 numbers of lounge areas and organizing group activities such as tea parties, painting, music or
378 games which also helped to prevent loneliness or isolation. Figure 2 below highlights the themes
379 associated with the atmosphere of care homes. It includes components that contribute to an
380 atmosphere that would be beneficial to residents with dementia.

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382 *Figure 2: Bubble Diagram depicting atmosphere*

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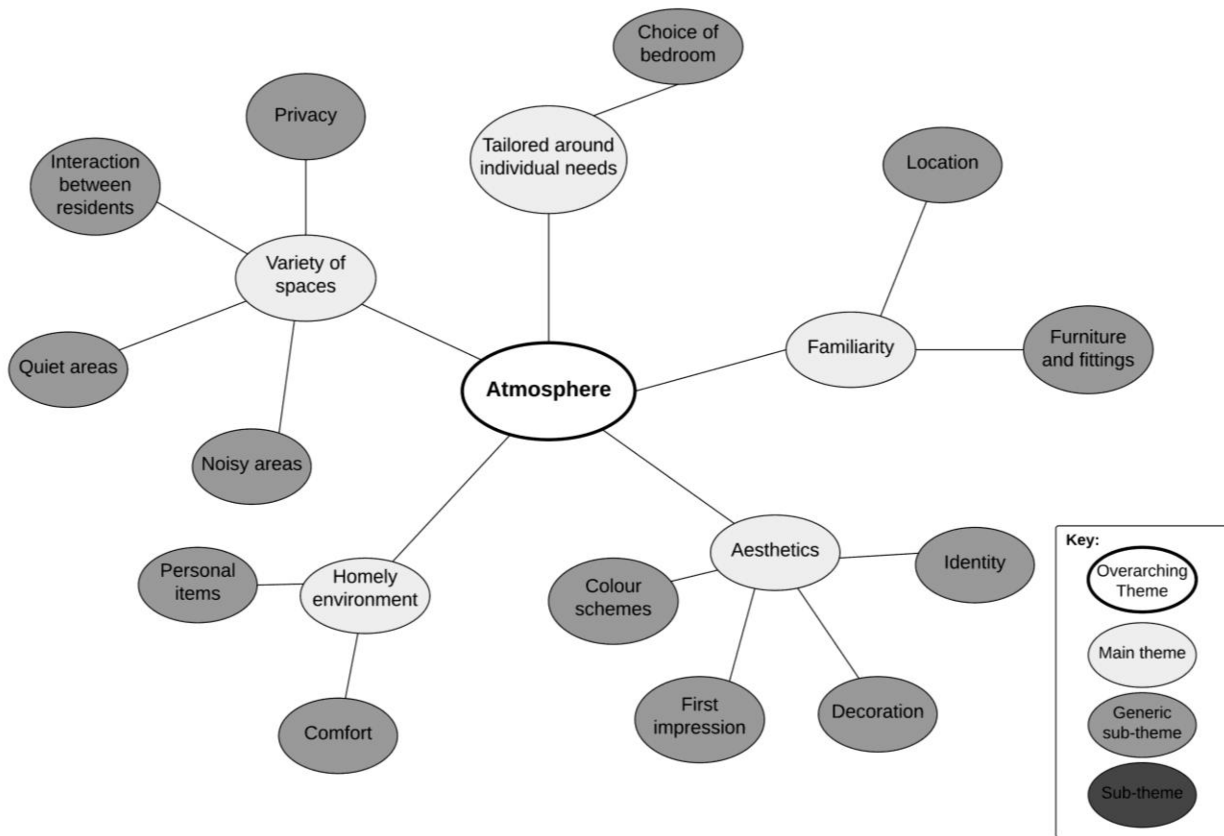

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396

397 ***Design quality***

398 Aside from the emotional aspects in choosing available housing, participants also discussed

399 design issues associated with them. Garmonsway (1991) defines quality as a degree of

400 goodness, value or excellence. In architecture, design quality "embraces all the aspects by which

401 a building is judged." (Volker, 2014, p. 16)

402 In terms of design quality of nursing homes, key areas highlighted were wayfinding strategies,

403 maintaining control, space, purpose built homes, lighting, color, and facilities. Participants also

404 described negative housing choices available. They acknowledged that the design of the built

405 environment had an impact on the behavior of residents as it could either trigger or remove anti-
406 social behavior. Furthermore, it was important to prevent residents from losing their way which
407 was achieved through signage, pictures and the use of color:

408 *"Door signs, photographs, color blinds on the floor and walls to follow, our bathroom*
409 *doors have door frames painted in red to identify bathrooms, different seat colors,*
410 *flooring etc."* (Participant J).

411 Participants used landmarks and images on the walls to help occupants to find their rooms and
412 images used were often personal to the residents. All participants reported the importance of
413 monitoring residents and the layout of a building's design needed to respond to this. While many
414 participants used locks on external doors to control the movement of occupants, it was more
415 appropriate to design layouts where staff were able to monitor residents from their work stations:

416 *"If you have a work station on the ground floor, you will see all the rooms, this would*
417 *help to reduce the risk to the patients"* (Participant F).

418 One participant stated that there were areas in their home that were difficult to observe: *"There*
419 *are three areas where they can come down without anybody seeing them"* (Participant L). Yet
420 other designs enabled staff to observe residents with ease and Participant M stated that their
421 design incorporated a wander path.

422 Participants determined that space was an important design issue in the choice of care homes and
423 it was necessary to design rooms that accommodated equipment for handling purposes. One
424 participant commented that, although rooms were built to meet the requirements of legislation,
425 many were too small to accommodate equipment. Large spaces were required to allow residents
426 freedom of movement, yet they would be less likely to get lost in smaller spaces. In some homes

427 bedrooms were extended to incorporate wet rooms and participants were satisfied with the
428 results. However Participant P believed that en-suites were awkward as some residents were
429 confused and thought that the toilet contained drinking water. Many participants wished to
430 improve the corridor spaces in their care homes as they felt that they were often too long, and
431 narrow and residents experienced difficulty when maneuvering in them. Whilst Participant K
432 was satisfied that their home was spacious, they acknowledged that large spaces were confusing
433 at times for dementia residents:

434 *"It is a big building and could be confusing....But I think I am quite happy with the*
435 *design, its lounge is quite spacious, there is room for people to walk in the large garden,*
436 *go outside, floor level anytime"* (Participant K).

437 Whilst many of the participants preferred to work in purpose built properties, many of the care
438 homes were converted or adapted to meet residents' needs. They compared the merits of purpose
439 built properties to older homes:

440 *"It is very difficult for things already built but in new modern buildings everything should*
441 *be taken into consideration...Purpose built buildings will enable the architect to be more*
442 *mindful of design requirements"* (Participant G).

443 In the case of existing buildings, some participants were dissatisfied with the original designs
444 and built extensions to improve the homes. There was a sense that purpose built homes were
445 more likely to locate all the accommodation at ground floor level to prevent falls. Nonetheless
446 older homes had a greater variety of room sizes and may have felt more homely.

447 The use of lighting and color in the home was highlighted and some participants were aware of
448 past studies carried out in these areas. Participants updated existing homes by installing bright

449 lights and using indicative color schemes. For instance, some homes used color palettes where
450 doors were assigned colors according to the function of the room and this helped the residents to
451 identify rooms. Some participants felt that the color of the flooring in their homes should change
452 from patterned carpets to a plain and less confusing surface and others maintained that the choice
453 of colors had an impact upon the behavior of occupants.

454 THIS IS THE PULL-OUT QUOTE. This is the pull-out quote: IN TERMS OF FACILITIES
455 PARTICIPANTS DISCUSSED THE USE OF SENSORY ROOMS AS THERAPY FOR
456 ANXIOUS OR AGITATED RESIDENTS. THEY ALSO FAVORED THE INCORPORATION
457 OF GARDEN SPACES IN CARE HOME DESIGNS AND VIEWED THEM AS ENCLOSED
458 SAFE AREAS WHERE RESIDENTS COULD RELAX. In particular participants endorsed the
459 design of sensory gardens in care homes:

460 *“Sensory gardens are incredible....and provide the residents with access to walk around*
461 *for about 5 to 10 minutes with something to look at. It’s calming and entertaining”*
462 (Participant H).

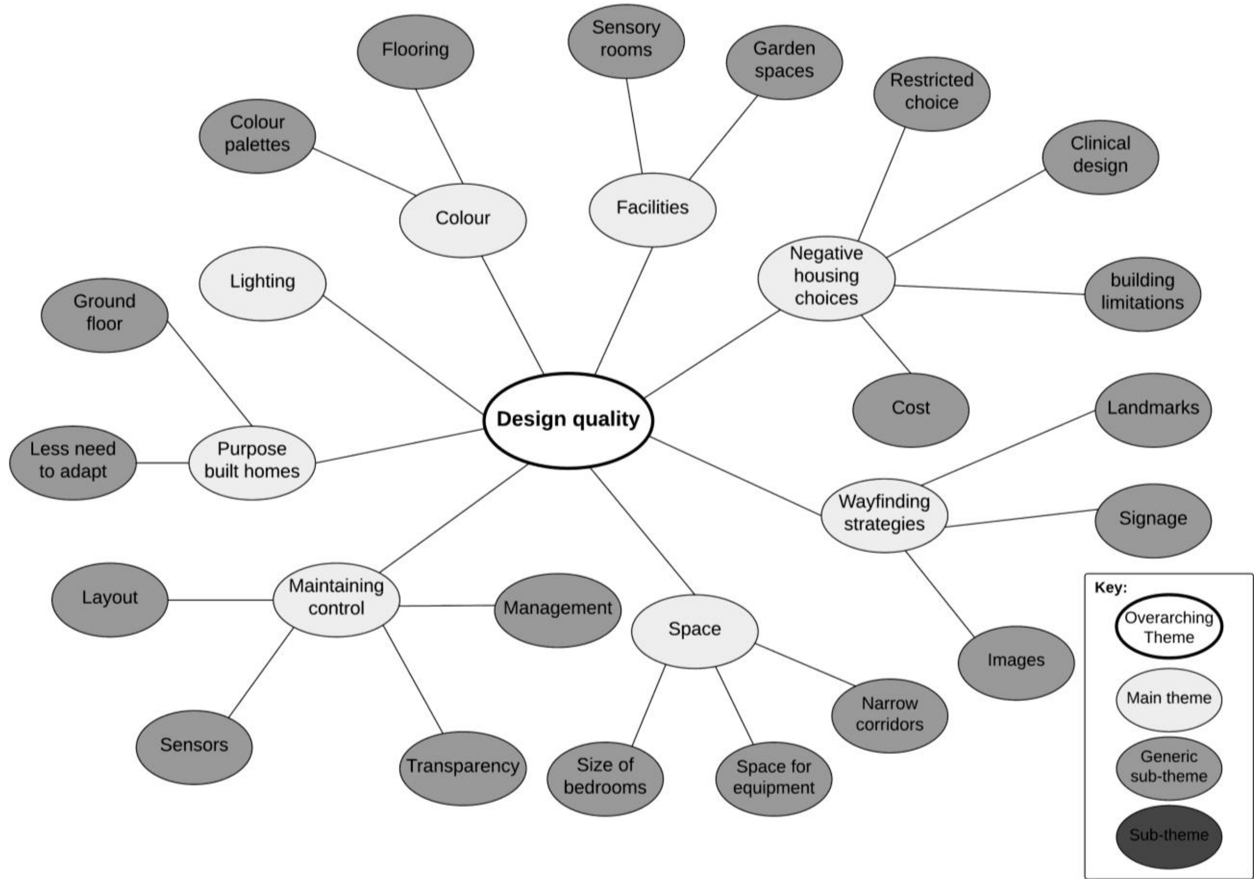
463 Some homes were designed around bright, colorful and safe gardens and Participant U noted that
464 their home included hair dressing, pub and cafe facilities to help residents to feel comfortable.
465 The use of technology was important for another participant in ensuring that residents were safe
466 and they installed sensors to monitor residents who are prone to getting up at night. It was
467 important to ensure that facilities were fully accessible and some participants working in existing
468 homes highlighted the stairs in their facility as a potential hazard. Some participants did not cater
469 for occupants who used large four wheel chairs whereas other participants asserted that the
470 shower facilities and en-suites were fully accessible in their homes. Furthermore, in some
471 homes, people with dementia were accommodated on the ground floor and lifts were installed.

472 Participants described negative aspects of housing choices available and some participants were
473 forced to use locks on external front doors to restrict the movement of residents. Designing
474 homes which consider monitoring would reduce this problem: *"But at the moment people are*
475 *locked in and you tell them that they can't leave, it affects their behavior"* (Participant G). Some
476 participants felt that there was limited availability of dementia accommodation for people under
477 65 and a need for a greater number of dementia care homes in the [location hidden for peer
478 review] area. Many of the care homes were limited in terms of space with narrow corridors and
479 one participant said that they would like to make their garden more dementia friendly.
480 Participants maintained that many homes were decorated in a clinical or institutional way. Not
481 all homes had rooms with a variety of shapes and sizes. Variety was important to cater for a
482 range of needs. It was challenging for homes to keep up to date with new trends or legislation
483 and to adapt their homes accordingly. When construction work was taking place, it had the effect
484 of confusing or upsetting some of the residents. Cost was a concern as smaller care homes
485 sometimes struggled to fund building projects and also had to compete with consortium homes.
486 It appeared also that smaller homes were more focused on customer care than profit. Figure 3
487 below highlights the themes associated with the design quality of care-homes.

488

489 *Figure 3: Bubble Diagram depicting design quality*

490



491 ## 4. Discussion and Conclusion

492 One of the biggest challenges facing older people's wish to age in place is the capability of their
493 domestic environment to offer independence, accessibility and social connectivity. This is even
494 more challenging for people with dementia who continue to live at home given the risks of self-
495 harm and getting lost. Hence more imaginative and inclusive forms of collective housing are
496 needed. If this is not achieved in the short term then a substantial number of older people with
497 dementia will be forced to move to nursing homes. For people with dementia a move to a new
498 environment is often a stressful experience that causes shock, withdrawal and anger.

499 Hence the design of the physical environment is important and can enhance behavioral, cognitive
500 and comfort issues of people with dementia. Adapting home environments is therefore important
501 to support the development of evidence based design solutions. There is no doubt nowadays that
502 the design of the home environment has the potential to contribute to the wellbeing and
503 functionality of people with dementia.

504 These issues were explored through semi-structured interviews with 22 managers of care homes
505 in [location hidden for peer review] in order to explore design and housing choices issues for
506 people with dementia. Findings suggest that there are three interconnected themes emerging
507 from participants' experience of managing a care home where some residents have dementia.
508 These themes are concerned with the level of care required by the resident, the atmosphere of a
509 home and the design quality of the care home. The level of care required was the main reason
510 behind the move to a care home, this includes the need for extra support, health and safety
511 concerns, and inability to cope alone at home. Ultimately the move to a care home is out of
512 necessity and it is not viewed as a positive lifestyle choice. Care homes offer safe and caring

513 environments where residents can be safe and mobile. Personalized care plans also contribute to
514 a better fit between the person with dementia and the service and environment provided by the
515 care home. Training of carers emerged as an important aspect necessary to meet the care needs
516 of residents.

517 The atmosphere provided by the care home was another important theme. Residents' perception
518 of this has to some extent guided the design, refurbishment and use of spaces in care homes. For
519 example the domestic character of the home, the display of familiar objects, accessible gardens,
520 quiet areas, and the use of warm colors.

521 Design quality of the care home is also an important factor likely to improve the general
522 wellbeing of residents. Wayfinding cues, efficient lighting and color schemes for example are
523 key aspects that can improve the way people with dementia use the physical environment. This
524 can effectively reduce the risk of anti-social behavior and getting lost. Participants acknowledge
525 that space design is an important factor in the choice of a care home. Facilities such as sensory
526 rooms and sensory gardens are key elements of a dementia friendly home or an enabling
527 environment. Some homes needed to be more inclusive in terms of mobility for wheelchair users
528 while others had dangerous stairs. Locating residents with dementia on the ground floor seems a
529 sensible measure to avoid accidents. Additionally, some homes installed sensors to monitor
530 residents movements at night.

531 The study was limited to one county in England due to available resources. Future research will
532 conduct a post-occupancy evaluation of these facilities using the DSDC Design Audit tool to
533 establish the level of compliance in dementia nursing homes and suggest potential design
534 improvements.

535

536 ***Implications for Practice***

537 It emerged thus from this study that a combination of :

538 - a suitable level of care,

539 - a positive atmosphere, and

540 - design quality within the care home,

541 are elements that lead to a more enabling environment.

542 Design on its own will not lead to successful caring environment unless appropriate care is
543 provided and a positive therapeutic and domestic looking environment is also available and
544 accessible to people with dementia.

Implications for Practice

Design issues include the suitability of a home for wayfinding, the appropriateness of housing layouts, the amount of space afforded by a home, use of lighting and colour schemes. The study identified housing choices and design issues that affect people with dementia, and the main thematic areas that help achieve enabling environments. These themes are concerned with the level of care required by the resident, the atmosphere of a home and the design quality of the care home.

The design of the physical environment is important and is known to enhance behavioural, cognitive and comfort issues of people with dementia. Hence adapting care home environments is crucial in the context of supporting the development of further evidence based design solutions.

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1. Background

Housing choices for people with dementia

It is inevitable that as people age mainstream housing becomes increasingly inadequate (Wright et al., 2009). In the UK, there are five dominant housing types: own home/other family home; sheltered housing; very sheltered housing; long-stay residential care; end-of-life care (O'Malley & Croucher, 2005). With the aim to improve the quality of life of older people with disabilities, several new home-like housing models have been developed such as assisted living, continuing care retirement communities and the Eden Alternative (Joseph, 2006).

In terms of accommodation options for older people, affordability is a major factor in the decision process. The high costs associated with moving house is also another factor that discourages older people from moving to smaller homes (EAC, 2014). Access to healthcare, support and social services for older people from their own home is very important because it prevents them from needing to move. This is partly caused by place or home attachment and community and family connections available in the neighborhood; older people feel psychologically safe in familiar surroundings (WHO, 2007). It is not surprising thus to know that older people wish to age in place and remain in their community where they have established social networks (Burholt, 2006).

Clough et al. (2005) argue that there are obstacles that prevent older people from moving to better housing due to lack of housing options or as Brenton (2001) and Dalley (2002) noted due to a lack of "more imaginative forms of collective housing". Other authors such as Oldman and Quilgars (1999) argue that for some people, moving into residential care can be a positive experience (Means, 2007). This is true for some older people with dementia who managed to

23 improve their quality of life after moving to a nursing home (Means, 2007). More research has
24 concluded that older people who moved into extra care housing required less care (Croucher et
25 al., 2006; Wright et al., 2009). On the other hand, some authors recommend that the move take
26 place as early as possible after a person is diagnosed with early dementia, this is to avoid stress
27 and confusion which tend to happen when older people with moderate to severe dementia are
28 moved to nursing homes (van Hoof & Kort 2009).

29 THIS IS THE PULL-OUT QUOTE. This is the pull-out quote: IT IS KNOWN THAT THE
30 PREFERENCE OF OLDER PEOPLE TO REMAIN AT HOME DESPITE AGE RELATED
31 IMPAIRMENTS AND DECLINE IS MOTIVATED BY PERSONAL CHOICES AND
32 NOTIONS SUCH AS INDEPENDENCE, NORMALCY AND CONTINUITY (Rubinstein,
33 1989). For people with dementia their condition and associated symptoms can be influenced by
34 the living environment (Ebersole et al., 2004; van Hoof & Kort 2009).

35 Most older people with dementia live in their private homes while being cared for by relatives.
36 However because of rapid cognitive decline and consequently the risks of self-harm and getting
37 lost, a substantial number of older people with dementia will need to move to nursing homes
38 where care and support is provided (Matthews & Dening, 2002; Wittenberg et al., 2004;
39 Torrington, 2009)

40 From the perspective of the person with dementia, moving into a nursing home is not desirable
41 because of the consequences of leaving their familiar environment, social network, loss of
42 independence and the fear of the unknown – adjusting to communal living, a new environment,
43 and away from the family and friends (Davies & Nolan, 2004). Furthermore, there are behavioral
44 patterns associated with the move to nursing home settings, such as older people with dementia
45 spending more time in their private rooms during the day (Fleming & Purandare, 2010).

46 Relocating people with dementia to new living environments is not desirable particularly if these
47 are moved individually. Research shows that a person with dementia that has been moved to a
48 new environment tend "to suffer higher rates of depression and mortality following relocation"
49 (Day et al., 2000, p. 398). Findings from other research shows however that when people with
50 dementia are moved together to a new facility seem to suffer less from the impacts of relocation
51 (Anthony et al., 1987; McAuslane & Sperlinger, 1994; Robertson et al., 1993; Day et al., 2000).
52 Whatever the case, generally a person with dementia experiences shock, withdrawal and anger
53 immediately after the move to a nursing home (Davies & Nolan 2004). The move to a nursing
54 home is a very stressful experience to both the person with dementia and their carer, given the
55 fact that it is a major life event. Most of the time the carer has to decide on the best housing and
56 care options (Davies & Nolan 2004).

57 THIS IS THE PULL-OUT QUOTE. This is the pull-out quote: FOR PEOPLE WITH
58 DEMENTIA, A LOSS OF AUTONOMY AND DIFFICULTIES IN WAYFINDING ARE
59 ASSOCIATED WITH THE MOVE TO UNFAMILIAR SETTINGS SUCH AS NURSING
60 HOMES (Marquardt & Schmieg, 2009). This move is necessary in most cases despite efforts
61 from family and concerned older people to remain at home for as long as possible. Some of the
62 deciding factors are concerned with increased care needs, high carer burden, cognitive decline
63 and behavioral issues for example (Banerjee et al., 2003). Recent research has used individual
64 and behavioral approaches to understand the critical factors leading to institutionalization for
65 people with dementia (Butler et al., 2002, Gaugler et al., 2003). Carers highlight that it is
66 common to see older people with dementia being constantly moved between care homes because
67 of lack of qualified staff who can care for people with dementia (Department of Health, 2009).
68 However, more research is needed such as longitudinal research in order to "to explore pathways

69 of housing and care for people with dementia" and to understand the decision-making process
70 before relocation (O'Malley & Croucher, 2005, p. 574). It appears however that extra care
71 housing in the UK can provide a long term alternative to institutional care for people with
72 dementia if adequate specialist care is available (Molineux & Appleton, 2005). There has been
73 an increase in service provision to support care at home for people with dementia including for
74 those with severe dementia. Nonetheless more studies are needed to establish the cost-
75 effectiveness of these approaches to care (O'Malley & Croucher, 2005).

76 The Bamford review consultation with service users and their carers raised issues such as ageing
77 in place. It is desirable to enable people with dementia to remain at home for as long as possible
78 in order to delay the move to a nursing home which in most cases is inevitable. This can be
79 achieved if assistive technologies and adequate adaptation of the homes are available (Northern
80 Ireland Government, 2011). For those who have to leave their home, a community based model
81 of supported housing is available where people with dementia can continue to live relatively
82 independently (Northern Ireland Government, 2011). However, more research is needed to
83 ascertain if this type of accommodation and model could be a long term option.

84

85 ***Housing design issues for people with dementia***

86 THIS IS THE PULL-OUT QUOTE. This is the pull-out quote: THE DESIGN OF THE
87 PHYSICAL ENVIRONMENT IS KNOWN TO AUGMENT BEHAVIORAL, COGNITIVE
88 AND COMFORT ISSUES OF PEOPLE WITH DEMENTIA GIVEN THEIR INTERACTION
89 WITH THIS ENVIRONMENT IS SENSORY RATHER THAN INTELLECTUAL (Hadjri et
90 al., 2012; Joseph, 2006). Hence the importance of an environment that offers opportunities for
91 change and optimum stimulation (Cohen & Weisman, 1991; Calkins, 1995).

92 Research shows that the built environment can create significant mobility challenges to people
93 with disabilities such as dementia (Jackson & Kochtitzky, 2001). This is why dementia requires
94 evidence based design solutions to adapt the home environment (van Hoof et al., 2010).
95 Nowadays designers and facility managers recognize that the design of the physical environment
96 is important and contribute to the wellbeing and functionality of people with dementia (see
97 Brawley, 1997; Calkins, 1988; Cohen & Day, 1993; Cohen & Weisman, 1991; Day et al., 2000).
98 People with dementia normally require adaptation to the design of housing facilities, their indoor
99 environment and any technology that is used to monitor residents or support care delivery (van
100 Hoof et al., 2010).

101 Nursing homes with fewer units or small grouping for people with dementia are more desirable
102 as they minimize overstimulation caused by noise and large number of people potentially in
103 contact with residents (Day et al., 2000). Additionally, design improvements can be implemented
104 to improve wayfinding through better signage, use of landmarks and views to outdoors (Day et
105 al., 2000). Quality of indoor spaces can also be improved to avoid confusion of people with
106 dementia through better contrast on floors and walls and better lighting (Brawley, 1997; Day et
107 al., 2000). This is echoed by other authors such as Weisman (1987) and Diaz Moore et al.
108 (2006). Wayfinding for example can be improved through efficient signage, better floor plan
109 layouts, more effective design for perceptual access (Marquardt, 2011). Moreover, floor plan
110 typology and environmental cues are key in aiding wayfinding. (Marquardt, 2011; Elmståhl et
111 al., 1997; Marquardt & Schmieg, 2009; Passini et. al., 1998 & 2000). For example, people with
112 dementia are more comfortable, less aggressive and sleep better if they have their own private
113 room rather than sharing a bedroom (Morgan & Stewart, 1998b; Joseph, 2006).

114 Hence care facilities must continue to improve the design of their accommodation, particularly
115 for people with dementia to minimize the effect of the disease on their cognitive abilities and
116 quality of life. For instance, research on housing needs of people with dementia experiencing the
117 various stages of the disease could be useful (Alzheimer's Australia, 2004).

118 Another option would be to assess the potential of sheltered housing to offer an alternative
119 housing option to people with dementia. Sheltered housing has the potential to offer a positive
120 environment for people with dementia if there are adequate opportunities for social interactions
121 (Department of Health, 2009, p. 55). There is a need now for interdisciplinary research that
122 examines further the relationship between housing and dementia and associated care (Heywood
123 et al., 2002; Cantley 2001; Manthorpe & Adams 2003).

124 Still more research is needed to develop more fitting long term housing options for people with
125 dementia. This can be achieved by involving this user group and their carers in the development
126 of these alternatives, and by monitoring the development of models, training staff in care
127 delivery at home, and identifying which assistive technology and telecare options have potential
128 for implementation (Department of Health, 2009).

129 The next sections present the research methods and the analysis used in this paper in order to
130 answer the research question that is concerned with housing options available to people with
131 dementia and the potential design issues linked to the residential environments within care
132 homes.

133 2. Methods

134 A list of care and nursing homes operational in [location hidden for peer review] was produced
135 to identify those that currently care for people with dementia. [location hidden for peer review]

136 has 329 care homes located in 31 urban or rural settlements in [location hidden for peer review].
137 These offer 11,202 beds. Of these homes, 305 are private while 15 are under local authority
138 control, and nine are run by voluntary organizations. Of the 329 homes, 165 provide care for
139 people with dementia. Managers of this latter group were contacted by phone to gauge their
140 interest in the study and ask them whether they will be willing to be interviewed. Twenty two
141 managers agreed to be interviewed within two weeks.

142 Ethical approval for the interviews was obtained from the University of [location hidden for peer
143 review] Ethics Committee prior to the fieldwork starting. As a result a participant information
144 sheet and consent forms were produced in preparation for the interviews.

145 The interview schedule contained nine questions as follows:

146 1. Housing Choices: what are the decisive factors in terms of older people's choices of
147 moving to nursing homes, and why?
148 2. Do you think that nursing homes design needs to address new requirements related to
149 accessibility, comfort, or health and safety?
150 3. Are you aware of any environmental, social, behavioral and healthcare issues caused by
151 the design of care environments?
152 4. Are you aware of any best practice in the design of care environments for people with
153 cognitive impairments/dementia?
154 5. Do you think that the design of the physical environment matters and makes a difference
155 to people who suffer from dementia and their carers?
156 6. Has a Dementia Design Audit been carried out (DSDC Dementia Services Development
157 Centre, University of Stirling)?
158 7. Do you have any comments on the layout and general design of the facility?

159 8. Do you think staff needs training (communication) in order to care for people with
160 dementia? Are there any staff related issues that may impact on care delivery? Nursing,
161 training, education?
162 9. How would you decide on a personalized care in relation to the physical and social
163 environment?

164 Interviews with managers of 22 nursing homes were therefore conducted to explore design and
165 housing choices issues for people with dementia. The interviews were tape recorded and lasted
166 between 30 minutes and an hour. Interviews were then transcribed verbatim and analyzed using
167 NVivo. Thematic analysis was used to examine the choice of dementia care homes available and
168 the design issues associated with them. The analysis was carried out in line with guidelines as
169 outlined by Braun & Clarke (2006). Firstly, the interviews were transcribed from tape recordings into
170 both electronic and printed forms. The second phase was to familiarize oneself with the data; this
171 involved reading and re-reading the text. Similarities, differences and contrasts between transcripts
172 were noted. Thirdly, initial codes were generated. This involved writing in the margins of the texts
173 and similar codes were assembled together in a process described by Saldaña (2009). Fourthly,
174 themes were sought and a record of all emergent codes was kept in the NVivo 10 software program
175 for organizational purposes. In the fifth phase the themes were reviewed; themes that the researchers
176 felt did not support enough data were discarded, whilst themes that were too broad were subdivided.
177 Finally, themes were re-arranged to form clusters of organizing themes and global themes. Diagrams
178 were developed using the same software to summarize the findings of this study and to depict themes
179 (Figures 2-4).

180 ## 3. Analysis

181 In addressing the research question about the housing choices available to people with dementia
182 and the design issues associated with these, this paper focuses on three particular, but
183 interconnected aspects of participants' experiences of care homes. These are: the level of care
184 required by a resident, the atmosphere of a home and the design quality of a care home (Figure
185 1).

186

187 *Figure 1: Core themes associated with housing choices available to people with dementia and*
188 *care home design issues*

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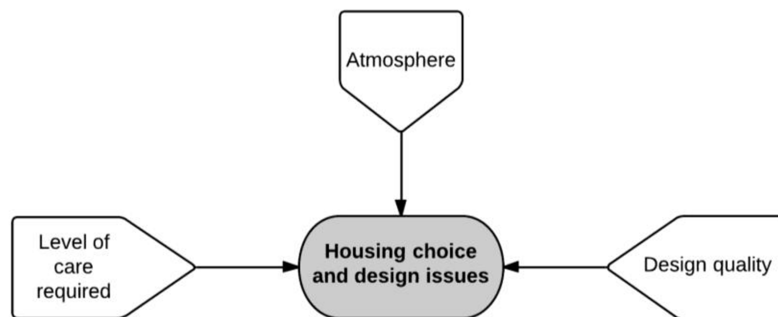


196 ***Level of care required***
197 Participants stated that residents made the decision to move to a care home for a variety of
198 reasons including a need for extra support, safety concerns, health challenges and an inability to
199 cope at home. It was acknowledged that people moved to care homes out of necessity and that
200 very few people viewed it as a positive lifestyle choice. In many cases the decision to move was
201 reached by social workers, family members or hospital staff. Participants maintained that despite
202 the help of community support teams, residents with dementia came to a stage where they found

203 it too challenging to cope at home. Therefore occupants needed the extra support that a care
204 home afforded them:

205 *"I think…people move here because…they are not able to manage themselves*
206 *independently or their relatives are sort of...struggling to cope with their needs. I think a*
207 *lot of the time…it's…the last resort for many people"* (Participant K).

208 Some participants noted that people who had dementia required extra care and care homes
209 afforded provision of 24 hour support and expertise which they may not receive at home. In
210 terms of safety, many participants commented that residents can "wander"[1] due to dementia.
211 THIS IS THE PULL-OUT QUOTE. This is the pull-out quote: IN LIGHT OF THIS, CARE
212 HOMES WERE VIEWED AS SAFE ENVIRONMENTS BY RESIDENTS BOTH IN TERMS
213 OF LAYOUT, DESIGN OF BUILDINGS AND ALSO DUE TO THE PROFESSIONAL CARE
214 OFFERED BY STAFF. When selecting a residential care home, occupants considered the safety
215 aspects of the home:

216 *"They then look for…a…safe environment, so that the initial safety will be secured, they*
217 *cannot just walk out of the door"* (Participant B).

218 Others believed that the building design was fundamental to maintaining safety in care homes as
219 residents required an environment protecting them from injury, yet allowing them to feel safe
220 while maintaining their mobility. The choice of home was based on the individual's required
221 level of care for example different residents required various equipment items, many had lived in
222 a care home before while others had not and others had multiple impairments. Various occupants

[1] "Wandering (or exploring) is a term that refers to a type of persistent walking behaviour that may occur as a result of dementia. It may appear to be aimless but the person with dementia may be walking with a purpose."

223 had different levels of dementia and many participants commented that residents elected to live
224 in homes with individual or personalized care plans:

225 *"We offer person-centered care by meeting the needs of individual residents based on*
226 *their life history and the information we gather about them"* (Participant U).

227 Care plans were developed through consultation with family members, doctors or friends. Plans
228 were sometimes altered and reassessed according to occupants' changing needs. Some
229 participants stated that the care homes in which they worked had rooms of varying sizes and
230 décor to suit a diverse range of residents. Applicant's background as well as mental and physical
231 needs are assessed before making an offer to them. The choice of home was also based on
232 selection criteria for example care homes had exclusion and inclusion criteria that were based on
233 the level of care required by the future occupant. Participants said that residents checked for
234 specific facilities provided, for instance physiotherapy rooms, when selecting a home. They also
235 considered the level of communication between residents and care home staff:

236 *"We take the lead from them, listen to them and address their comments. They scrutinize*
237 *the person-care plan. If they feel that there is something missing generally in our care*
238 *plan, we address and report back to them"* (Participant N).

239 However, most participants did not produce audits in the workplace. An inhabitants' background
240 influenced their selection for instance if a home related to their birthplace or met with their
241 individual taste. Care workers tried to get a history of the occupant's previous lifestyle and relate
242 it to their new environment. If someone was interested in gardening then they chose homes with
243 a garden and staff encouraged them to participate in activities in the garden.

244 Leaving design considerations aside, participants asserted that staffing influenced future
245 occupants' choice of care home. They believed that working in a care home was a vocation and
246 that staff should be sympathetic and caring towards residents. They required an understanding of
247 the effects of dementia: *"you can't train somebody to love and care"* (Participant D).
248 Participants discussed the importance of a balanced staff to occupant ratio for safety of residents.
249 Existing homes had staff to resident ratios of 1:3 or 1:5. Experience and training received by
250 staff were also important considerations. Many participants were involved in internal and
251 external training: This also incorporated learning about communication to improve the level of
252 care in a home. Participants noted that residents had the opportunity to choose homes where
253 National Vocational Qualification (NVQ) training and Continuing Professional Development
254 (CPD) training took place. One participant had put a personalized training scheme in place that
255 was adapted to meet resident's needs. There was an overriding requirement for suitable staff to
256 meet the care needs of occupants:

257 *"What is the use of adapted buildings if you have not got the staff to look after dementia*
258 *residents? You must treat them and have a passion for the dementia"* (Participant F).

259 Participants stated that the choice of homes was based on both the building design and the
260 quality of staff available. A well-designed building was ineffective alone without appropriate
261 staffing. Participants reported that residents sometimes moved to more specialized homes as
262 their dementia symptoms increased and some homes catered for some or all stages of dementia.
263 In line with this, one participant changed the registration of their care home to meet dementia
264 needs. Other participants mentioned homes that employed dementia strategies for occupants to
265 choose from and many used diary sheets to keep track of a resident's needs. However, another

266 participant felt that there was little choice for couples who wished to live together in a care

267 home:

268 *"New homes are built to have just one person in a room. So what happens when you get*

269 *a married couple...You haven't even got a choice"* (Participant P).

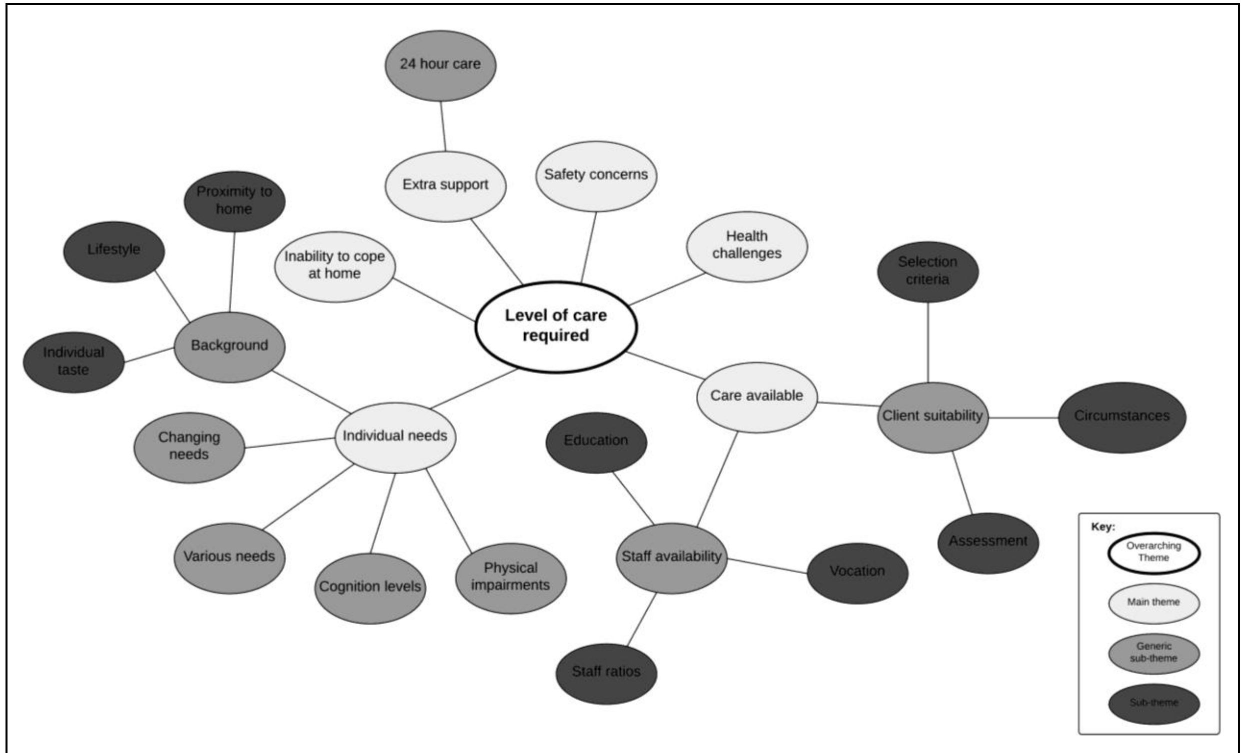
270 All of these factors impacted upon future residents' choice of care homes yet it appeared from

271 interview analysis that a variety of choice was available for future tenants, however in many

272 cases, their selection depended on the level of care they required and their individual preferences.

273 Figure 2 below summarizes the subthemes associated with level of care required.

274 *Figure 2: Bubble Diagram depicting level of care required*



275

276 ***Atmosphere***

277 A common issue facing housing choice was the atmosphere perceived by residents in care
278 homes. THIS IS THE PULL-OUT QUOTE. This is the pull-out quote: PARTICIPANTS
279 STATED THAT OCCUPANTS WISHED TO LIVE IN HOMELY ENVIRONMENTS. IT
280 WAS IMPORTANT THAT DESIGNERS ENSURED THAT CARE HOMES ARE
281 PERSONALIZED TO HELP THEM TO 'FEEL AT HOME':

282 *"From a comfort point of view, it has to feel and be like a home where older people feel*
283 *familiar with"* (Participant A).

284 Participants encouraged family members and residents to bring familiar objects to the home such
285 as flowers, pictures and ornaments and some residents brought their own furniture to enhance the
286 bedroom. They decorated public areas and planted flowers outside to make residents feel
287 welcome. Participants noted that occupants had the choice between purpose built and pre-
288 existing homes. There was a feeling amongst some participants that newer homes had a more
289 clinical feeling than older buildings. When choosing a color scheme, warm colors were selected
290 and there was an attempt to use furniture and fittings that were found in a home environment.
291 There was a sense that the design of a home could have a positive effect on both staff and
292 residents:

293 *"The design does matter for carers and dementia residents. It raises staff morale,*
294 *because people enjoy coming to work because of the environment is friendly, homely and*
295 *comfortable. That happiness also affects the residents"* (Participant K).

296 Other participants stated that their care homes had a holiday atmosphere as the bedrooms were
297 decorated similarly to a hotel. Overall the care homes' staff aimed to avoid clinical decor to
298 maximize residents' comfort as the design of the built environment could reduce the stress

299 experienced by people residents with dementia. Participants aimed to provide relaxation and
300 happiness to residents. One participant believed that care homes should offer residents the
301 opportunity to choose their own bedroom. Bedrooms were nonetheless laid out to suit the
302 individual. Some occupants felt more comfortable in smaller bedrooms yet others preferred
303 larger bedrooms or did not spend much time there. Participants contended that residents chose
304 homes in areas that were familiar to them: *"staying in an area that they are familiar with so that*
305 *care assistants can help them when going to shops"* (Participant T). Participants felt that good
306 aesthetics encouraged future residents to choose particular homes as their first impression related
307 to homes decor which acted as a marketing tool. The decor in one home mirrored the culture of
308 the residents:

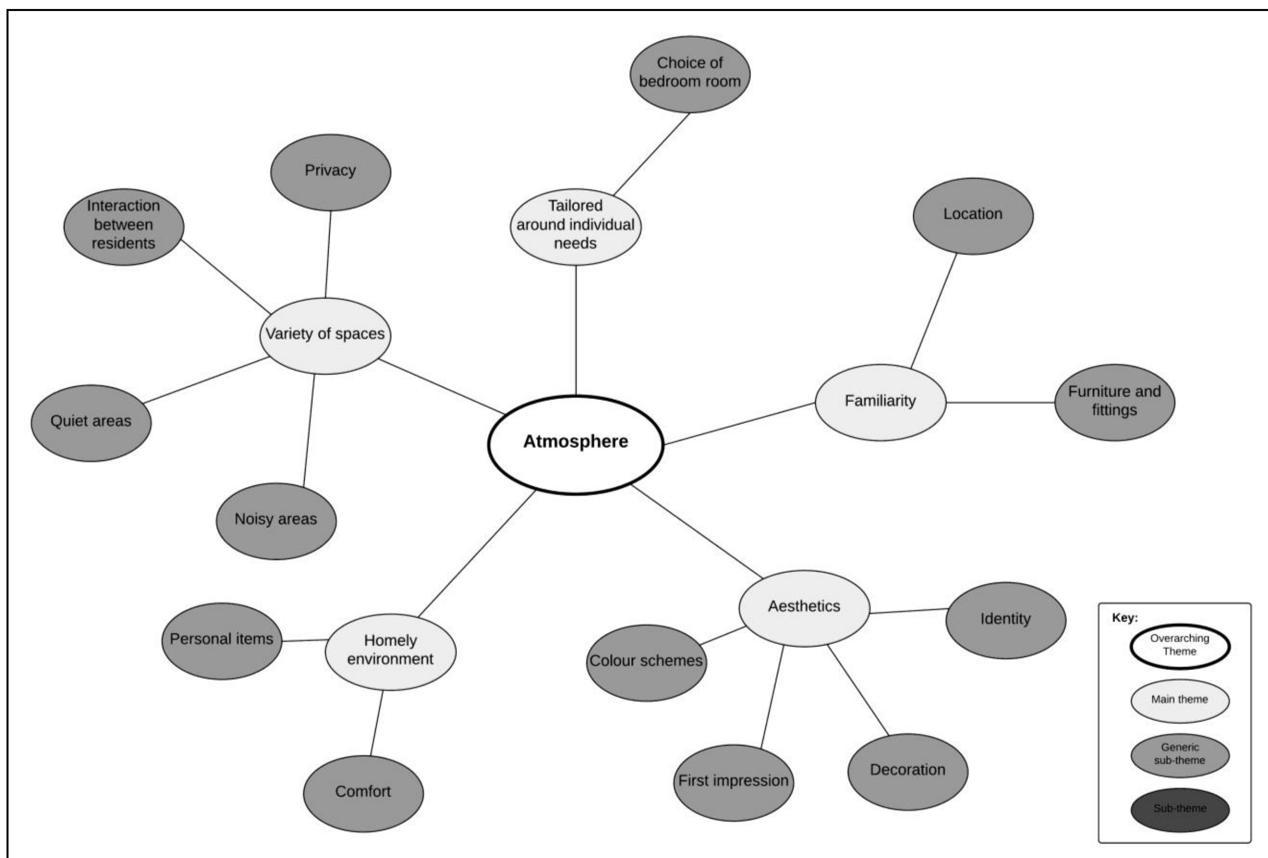
309 *"We have assorted appliances like African bathrooms, London bathrooms and French*
310 *bathrooms that bring home memories to residents"* (Participant K).

311 Participants revealed that different areas of the homes had different atmospheres. They facilitated
312 people who liked to withdraw to tranquil, relaxing spaces by providing them with relaxation
313 rooms and quiet sitting areas. They also provided private meeting rooms for families and sensory
314 rooms. This was not the case with all homes but they sought to include these spaces in their
315 layouts. The quiet rooms were in contrast to the lounge and dining areas that were included to
316 encourage interaction between residents. Participants expressed the issues relating to perceived
317 challenging behaviors which may present and the need to ensure this did not affect other
318 occupants. This usually involves them identifying the cause or root of why residents are
319 agitated/anxious/waking up in the middle of the night, and in response to this staff may facilitate
320 something they want to do (go a short walk-related to their past employment, e.g. security
321 guard). It was also noted that residents had the choice of staying in quiet areas or accessing

322 activities in more public areas. They tried to instil a sense of community by expanding the
323 numbers of lounge areas and organizing group activities such as tea parties, painting, music or
324 games which also helped to prevent loneliness or isolation. Figure 3 below highlights the themes
325 associated with the atmosphere of care homes.

326

327 *Figure 3: Bubble Diagram depicting atmosphere*



328

329

330 ***Design quality***

331 Aside from the emotional aspects in choosing available housing, participants also discussed
332 design issues associated with them. In terms of design quality key areas highlighted were

333 wayfinding strategies, maintaining control, space, purpose built homes, lighting, color, and
334 facilities. They also described negative housing choices available. They acknowledged that the
335 design of the built environment had an impact on the behavior of residents as it could either
336 trigger or remove anti-social behavior. Furthermore, it was important to prevent residents from
337 losing their way which was achieved through signage, pictures and the use of color:

338 *"Door signs, photographs, color blinds on the floor and walls to follow, our bathroom*
339 *doors have door frames painted in red to identify bathrooms, different seat colors,*
340 *flooring etc."* (Participant J).

341 Participants used landmarks and images on the walls to help occupants to find their rooms and
342 images used were often personal to the residents. All participants reported the importance of
343 monitoring residents and the layout of a building's design needed to respond to this. While many
344 participants used locks on doors to control the movement of occupants, it was more appropriate
345 to design layouts where staff were able to monitor residents from their work stations:

346 *"If you have a work station on the ground floor, you will see all the rooms, this would*
347 *help to reduce the risk to the patients"* (Participant F).

348 One participant stated that there were areas in their home that were difficult to observe: *"There*
349 *are three areas where they can come down without anybody seeing them"* (Participant L). Yet
350 other designs enabled staff to observe residents with ease and Participant M stated that their
351 design incorporated a wander path.

352 Participants determined that space was an important design issue in the choice of care homes and
353 it was necessary to design rooms that accommodated equipment for handling purposes. One
354 participant commented that, although rooms were built to meet the requirements of legislation,

355 many were too small to accommodate equipment. Large spaces were required to allow residents
356 freedom of movement, yet they would be less likely to get lost in smaller spaces. In some homes
357 bedrooms were extended to incorporate wet rooms and participants were satisfied with the
358 results. However Participant P believed that en-suites were awkward as some residents were
359 confused and thought that the toilet contained drinking water. Many participants wished to
360 improve the corridor spaces in their care homes as they felt that they were often too long, and
361 narrow and residents experienced difficulty when maneuvering in them. Whilst Participant K
362 was satisfied that their home was spacious, they acknowledged that large spaces were confusing
363 at times for dementia residents:

364 *"It is a big building and could be confusing....But I think I am quite happy with the*
365 *design, its lounge is quite spacious, there is room for people to walk in the large garden,*
366 *go outside, floor level anytime"* (Participant K).

367 Whilst many of the participants preferred to work in purpose built properties, many of the care
368 homes were converted or adapted to meet residents' needs. They compared the merits of purpose
369 built properties to older homes:

370 *"It is very difficult for things already built but in new modern buildings everything should*
371 *be taken into consideration...Purpose built buildings will enable the architect to be more*
372 *mindful of design requirements"* (Participant G).

373 In the case of existing buildings, some participants were dissatisfied with the original designs
374 and built extensions to improve the homes. There was a sense that purpose built homes were
375 more likely to locate all the accommodation at ground floor level to prevent falls. Nonetheless
376 older homes had a greater variety of room sizes and may have felt more homely.

377 The use of lighting and color in the home was highlighted and some participants were aware of
378 past studies carried out in these areas. Participants updated existing homes by installing bright
379 lights and using indicative color schemes. For instance, some homes used color palettes where
380 doors were assigned colors according to the function of the room and this helped the residents to
381 identify rooms. Some participants felt that the color of the flooring in their homes should change
382 from patterned carpets to a plain and less confusing surface and others maintained that the choice
383 of colors had an impact upon the behavior of occupants.

384 THIS IS THE PULL-OUT QUOTE. This is the pull-out quote: IN TERMS OF FACILITIES
385 PARTICIPANTS DISCUSSED THE USE OF SENSORY ROOMS AS THERAPY FOR
386 ANXIOUS OR AGITATED RESIDENTS. THEY ALSO FAVORED THE INCORPORATION
387 OF GARDEN SPACES IN CARE HOME DESIGNS AND VIEWED THEM AS ENCLOSED
388 SAFE AREAS WHERE RESIDENTS COULD RELAX. In particular participants endorsed the
389 design of sensory gardens in care homes:

390 *"Sensory gardens are incredible....and provide the residents with access to walk around*
391 *for about 5 to 10 minutes with something to look at. It's calming and entertaining"*
392 (Participant H).

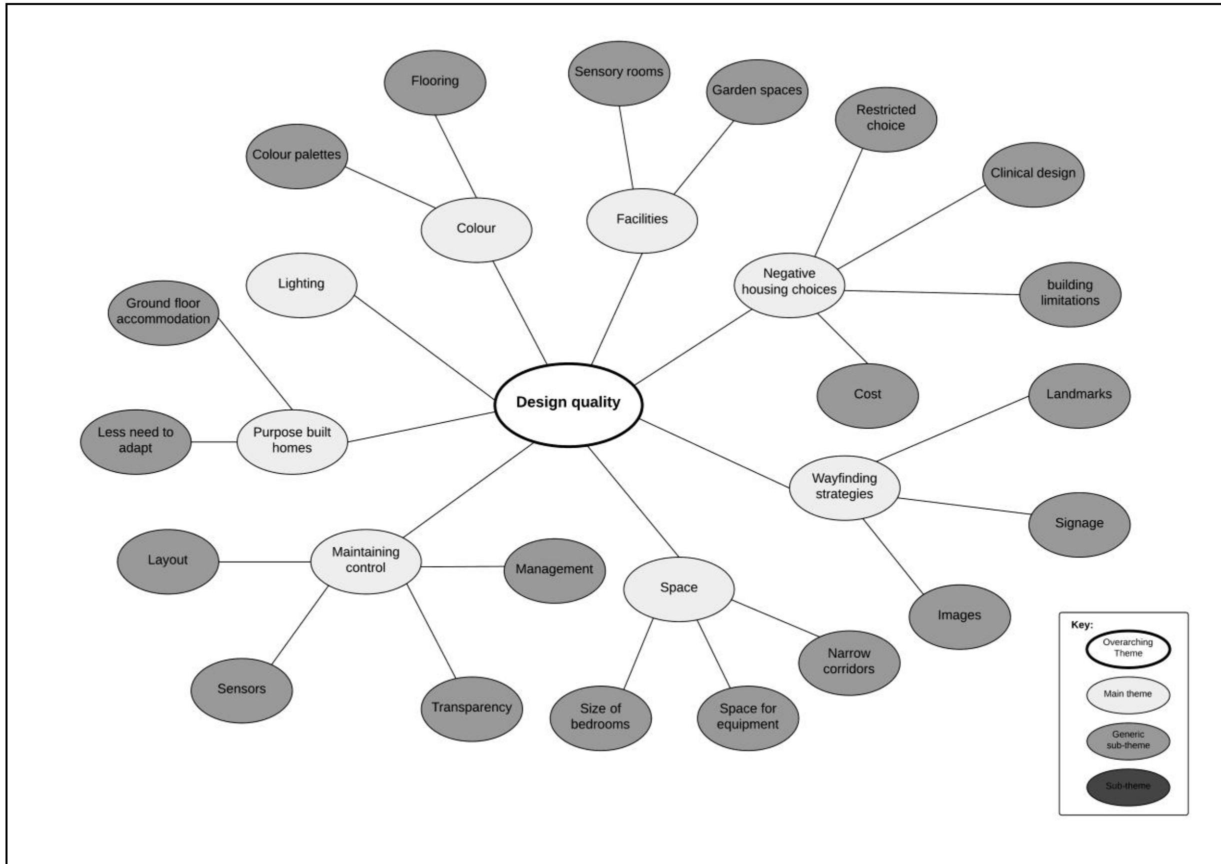
393 Some homes were designed around bright, colorful and safe gardens and Participant U noted that
394 their home included hair dressing, pub and cafe facilities to help residents to feel comfortable.
395 The use of technology was important for another participant in ensuring that residents were safe
396 and they installed sensors to monitor residents who are prone to getting up at night. It was
397 important to ensure that facilities were fully accessible and some participants working in existing
398 homes highlighted the stairs in their facility as a potential hazard. Some participants did not cater
399 for occupants who used large four wheel chairs whereas other participants asserted that the

400 shower facilities and en-suites were fully accessible in their homes. Furthermore, in some
401 homes, people with dementia were accommodated on the ground floor and lifts were installed.

402 Participants described negative aspects of housing choices available and some participants were
403 forced to use locks to restrict the movement of residents. Designing homes which consider
404 monitoring would reduce this problem: *"But at the moment people are locked in and you tell*
405 *them that they can't leave, it affects their behavior"* (Participant G). Some participants felt that
406 there was limited availability of dementia accommodation for people under 65 and a need for a
407 greater number of dementia care homes in the [location hidden for peer review] area. Many of
408 the care homes were limited in terms of space with narrow corridors and one participant said that
409 they would like to make their garden more dementia friendly. Participants maintained that many
410 homes were decorated in a clinical or institutional way. Not all homes had rooms with a variety
411 of shapes and sizes. Variety was important to cater for a range of needs. It was challenging for
412 homes to keep up to date with new trends or legislation and to adapt their homes accordingly.
413 When construction work was taking place, it had the effect of confusing or upsetting some of the
414 residents. Cost was a concern as smaller care homes sometimes struggled to fund building
415 projects and also had to compete with consortium homes. It appeared also that smaller homes
416 were more focused on customer care than profit. Figure 4 below highlights the themes associated
417 with the design quality of care-homes.

418

419 *Figure 4: Bubble Diagram depicting design quality*



420

421 ## 4. Discussion and Conclusion

422 One of the biggest challenges facing older people's wish to age in place is the capability of their
423 domestic environment to offer independence, accessibility and social connectivity. This is even
424 more challenging for people with dementia who continue to live at home given the risks of self-
425 harm and getting lost. Hence more imaginative and inclusive forms of collective housing are
426 needed. If this is not achieved in the short term then a substantial number of older people with
427 dementia will be forced to move to nursing homes. For people with dementia a move to a new
428 environment is often a stressful experience that causes shock, withdrawal and anger.

429 Hence the design of the physical environment is important and can enhance behavioral, cognitive
430 and comfort issues of people with dementia. Adapting home environments is therefore important
431 to support the development of evidence based design solutions. There is no doubt nowadays that
432 the design of the home environment has the potential to contribute to the wellbeing and
433 functionality of people with dementia.

434 These issues were explored through semi-structured interviews with 22 managers of care homes
435 in [location hidden for peer review] in order to explore design and housing choices issues for
436 people with dementia. Findings suggest that there are three interconnected themes emerging
437 from participants experience of managing a care home where some residents have dementia.
438 These themes are concerned with the level of care required by the resident, the atmosphere of a
439 home and the design quality of the care home. The level of care required was the main reason
440 behind the move to a care home, this includes the need for extra support, health and safety
441 concerns, and inability to cope alone at home. Ultimately the move to a care home is out of
442 necessity and it is not viewed as a positive lifestyle choice. Care homes offer safe and caring

443 environments where residents can be safe and mobile. Personalized care plans also contribute to
444 a better fit between the person with dementia and the service and environment provided by the
445 care home. Training of carers emerged as an important aspect necessary to meet the care needs
446 of residents.

447 The atmosphere provided by the care home was another important theme. Residents' perception
448 of this has to some extent guided the design, refurbishment and use of spaces in care homes. For
449 example the domestic character of the home, the display of familiar objects, accessible gardens,
450 quiet areas, and the use of warm colors.

451 Design quality of the care home is also an important factor likely to improve the general
452 wellbeing of residents. Wayfinding cues, efficient lighting and color schemes for example are
453 key aspects that can improve the way people with dementia use the physical environment. This
454 can effectively reduce the risk of anti-social behavior and getting lost. Participants acknowledge
455 that space design is an important factor in the choice of a care home. Facilities such as sensory
456 rooms and sensory gardens are key elements of a dementia friendly home or an enabling
457 environment. Some homes needed to be more inclusive in terms of mobility for wheelchair users
458 while others had dangerous stairs. Locating residents with dementia on the ground floor seems a
459 sensible measure to avoid accidents. Additionally, some homes installed sensors to monitor
460 residents movements at night.

461

462 ***Implications for Practice***:

463 It emerged thus from this study that a combination of :

464 • an appropriate level of care,

465 • a good atmosphere, and

466 • design quality within the care home,

467 are elements that lead to a more enabling environment.

468 Design on its own will not lead to successful caring environment unless appropriate care is
469 available and a positive therapeutic and domestic looking environment is also available and
470 accessible to people with dementia.