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Preference-Based Assessments

What Characteristics of Nursing Homes Are Most Valued by Consumers? A Discrete Choice Experiment with Residents and Family Members

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ABSTRACT

Objectives: To generate a scoring algorithm weighted on the preferences of consumers for assessing the quality of care in nursing homes (i.e., aged care homes or institutions) in six key domains. **Methods:** A discrete choice experiment was undertaken with residents of nursing homes (n = 126) or family member proxies (n = 416) in cases where severe cognitive impairment precluded resident participation. Analysis was undertaken using conditional and mixed logit regression models to determine preferences for potential attributes. **Results:** The findings indicate that all six attributes investigated were statistically significant factors for participants. Feeling at home in the resident's own room was the most important characteristic to both residents and family members. Care staff being able to spend enough time with residents, feeling at home in shared spaces, and staff being very flexible in care routines were also characteristics identified as important for both groups. The results of the Swait-Louviere test rejected the null hypothesis that the estimated parameters between residents and family members were the same, indicating that data from these two groups could not be pooled to generate a single weighted scoring algorithm for the Consumer Choice Index-Six Dimension instrument. Preferences were therefore encapsulated to generate scoring algorithms specific to residents and family members. **Conclusions:** This study provides important insights into the characteristics of nursing home care that are most valued by consumers. The Consumer Choice Index-Six Dimension instrument may be usefully applied in the evaluation, planning, and design of future services.

Keywords: aged care, discrete choice experiment, nursing homes, outcome measure, person-centered care, preferences, value.

Introduction

Long-term care costs remain a significant source of public expenditure, varying from 0.2% to 3% of the gross domestic product in member countries of the Organisation for Economic Co-operation and Development. Despite growth in home care services in most countries in the last decade, institutionally based care (such as nursing homes) accounts for the greatest proportion of aged care sector costs, typically representing 60% to 80% of total aged care expenditures [1,2]. Personal contributions through "out-of-pocket" expenses are a significant contribution to total care costs, accounting for more than 30% of total spending in many countries [1,3]. Long-term care refers to care undertaken with the aim of maintaining well-being and independence of people living with functional and cognitive impairments and can encompass care undertaken in a person's own home, in a group living setting, or in institutions [1]. Terms for facilities of this nature, however, differ across countries (e.g., residential aged care facility, skilled nursing facility, nursing home, and aged care home). Nevertheless, the term "nursing home" appears to be the most consistently used term across countries to refer to this type of care [4]. With the aging of the population in Australia and internationally, there is increasing demand for accommodation and care services. Rising consumer expectations coupled with changes to the financing and structure of the sector in many countries have created an urgent need to develop a systematic and transparent mechanism for evaluating the effectiveness in meeting expected outcomes from the consumer perspective in nursing homes.

One potential powerful mechanism for assessing the effectiveness of nursing home services is to measure and value the

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quality of care provided from the perspective of the consumer (residents and family members) [5]. Donabedian [6] proposed a theoretical framework for indicators of quality of care including structures (i.e., organizational characteristics associated with provision of care), processes (i.e., tasks undertaken with or for the resident), and outcomes (i.e., the desired states the care is aiming to achieve). Although many definitions of the quality of care exist, traditionally in this context they have usually incorporated quality indicators of medical/clinical care, levels of psychosocial support, and fulfillment of the resident's basic rights including dignity, autonomy, and privacy [5]. To date, the predominant concepts of quality of care in this context have been based on assessments provided by health professionals and/or aged care staff and have not strongly incorporated the views and preferences of consumers [5,7]. Concerns have been raised that such indicators produce a focus on paper compliance rather than promoting care processes and activities that enhance the resident's well-being and quality of life (QOL) [8]. As such, it has been found that structural and clinical care–focused measures are not generally well correlated with improvement in QOL for residents [8], further compounding the negative effect of institutional structures on residents. This study uses a different approach to the measurement of quality of care in nursing homes through a focus on measuring performance against criteria that have been identified a priori as important to consumers. Standardized methods exist for incorporating changes in QOL into evaluations of the clinical and economic impact of services, through the use of the quality-adjusted life-year, which adjusts life-years gained by a measurement of the quality of those years [9]. This is usually through the use of generic preference-based health-related QOL instruments, which combine measurement of the health status of the individual with an "off-the-shelf" weighted scoring algorithm that indicates the desirability of that particular health state to members of the general population [10]. This has been considered appropriate for evaluating the effectiveness of health care interventions in countries where there is significant subsidy and funding of health care by governments ultimately using tax revenue from citizens [11]. Nevertheless, several concerns exist regarding the application of such measures in evaluating social care interventions, such as nursing home care for older people [12]. First, generic QOL and health status measures (such as the EuroQol five-dimensional questionnaire and the six-dimensional health state short form), with their focus on mobility and function, are unlikely to be adequately sensitive to measure changes in people's health states that can realistically occur with improvements to social care and are of value to the recipient [12]. In addition, there are questions of the appropriateness of using opinions of the general population as the basis of scoring the "value" or "benefit" of changes from a social care intervention, because many may not have interacted with these services or have direct experience of the types of limitations and functional problems that necessitate this care [13]. The increasing trend for users to contribute directly to the cost of their care services, as governments struggle to balance the increasing demand for services with aging populations, calls into question the appropriateness of using general population judgments of the value of these services [1]. Therefore, there is a growing need to incorporate the preferences of people using nursing home services themselves into formal evaluations of service quality and effectiveness.

There are few empirical studies of the preferences of older adults for nursing home services that can be used to generate an understanding of the value of different characteristics to the consumer [14]. The studies that exist have been predominantly focused on preferences for service inclusions in insurance schemes, or community-based versus nursing home services [14–18], and have often been conducted with members of the general population, rather than with frail older adults who have direct experience of receiving these care services [15,16,19,20]. Without a suitable instrument for empirically evaluating the effectiveness of innovations in nursing home care from a consumer perspective, quality improvement initiatives in this sector are missing an important component. Such an instrument will also facilitate decision making by providing a quantitative mechanism for maximizing the effectiveness and cost-effectiveness of innovations in nursing home care from the perspective of consumers. The Consumer Choice Index-Six Dimension (CCI-6D) instrument was designed to fill this gap in measuring and valuing the quality of nursing home care from the perspective of consumers.

The CCI-6D comprises a descriptive system developed through a multistage process, including a comprehensive literature review, an in-depth qualitative study with people living with dementia and their family members (n = 41), and consultation with stakeholder groups, including a group of informal carers, clinicians, health service researchers, and representatives from aged care providers [21]. This multistage process has been recommended as best practice for sourcing attributes for inclusion in stated preference studies [22]. The final attributes and levels included reflected the level of time care staff spent with residents, homeliness of shared spaces, homeliness of room setup, access to outside and gardens, frequency of meaningful activities, and flexibility with care routines (see Ref. [23] for the instrument descriptive system). The aim of this study was to generate a weighted scoring algorithm for the CCI-6D for the measurement and valuation of the quality in nursing homes from the perspective of consumers.

Methods

Methodological Framework

To generate a weighted scoring algorithm, two key methodological questions arise: 1) Whose values should be used? and 2) Which technique should be used to elicit these values? For the first question, potential sources of values include clinical and/or aged care staff involved in the care of residents, members of the general population, or people using the service themselves [24]. For the reasons outlined previously, this study sought to incorporate consumers as the main source of values for the CCI-6D instrument, including residents and their family member carers. We have included family members as proxy participants when cognitive impairment precluded direct resident consent and participation. Family members often act as formal decision makers in cases where the decline in cognitive ability of the individual themselves necessitates support for decision making in health, care, and financial matters. Family members are often highly involved in choosing appropriate nursing homes and in supporting the ongoing care of residents [25,26].

The second key methodological question is which technique to use to elicit values for the CCI-6D instrument. Discrete choice experiments (DCEs) potentially have an advantage over other stated preference approaches for the elicitation of values in this context, including standard gamble and time trade-off, because they are framed in a less abstract way [27]. Participants are asked to make choices between alternative scenarios (in this case, reflecting characteristics of alternative nursing homes) and asked to indicate which scenario they would prefer. This type of choice situation is more reflective of how the selection of a nursing home is likely to be made in the real world [28,29]. DCEs are particularly applicable to valuing characteristics of a social service [30]. We therefore opted to use a DCE approach to measure quality in this context from the perspective of the consumer.

Questionnaire Design

The DCE to be used to generate preference weights was developed for completion by people living in nursing homes and their family members, assisted by a trained interviewer. The questionnaire comprised three main sections. Section A comprised a series of attitudinal statements relating to service provision and characteristics of a nursing home. Participants were asked to indicate how much they agreed or disagreed with each statement on a five-point Likert scale. Section B of the questionnaire contained the DCE, comprising a series of six questions involving a choice between two hypothetical nursing homes. The scenarios presented for consideration were based on the six salient attributes that form the basis of the CCI-6D instrument descriptive system.

Three levels for each of the six attributes resulted in 729 possible scenarios (= 3^6) and a total of 265,356 possible pairwise choices ([729 × 728]/2). A D-efficient design with no prior parameter information (D_z-error, i.e., 0 priors assumed for all variables) was used to reduce the number of choice scenarios into a manageable number of 18 choice sets for presentation using the Ngene version 1.1.2 DCE design software package (ChoiceMetrics, Sydney, Australia) [31]. The resulting 18 scenarios were blocked into three versions of the DCE questionnaire each with six binary choice sets presented in each version. Participants were asked to indicate their preferred choice between a pair of hypothetical scenarios reflecting the characteristics of two alternative nursing homes in close proximity to each other within a geographical locality. Given that the main aim of the study was to determine preferred characteristics for nursing homes, a "forced choice" experiment was considered appropriate and no opt-out option was provided. Section C comprised a series of sociodemographic questions. The resident questionnaire is presented in the Appendix in Supplemental Materials (found at http://dx.doi.org/10.1016/j.jval.2017.11.004).

Participants

Participants were recruited from 17 nursing homes across Australia, including both metropolitan and rurally located facilities. Recruitment occurred over a 13-month time period, between January 2015 and February 2016. The study was approved by the Flinders University Social and Behavioural Research Ethics Committee (project number 6706). Before completing the questionnaire, residents were administered the Psychogeriatric Assessment Scales-Cognitive Impairment Scale (PAS-Cog) by a trained research nurse [32]. The PAS-Cog is a standardized instrument that assesses memory and other cognitive functions, with excellent reliability and validity [32]. It is scored on a scale between 0 and 21, where a higher score indicates greater cognitive impairment. Residents with no to mild cognitive impairment (indicated by a PAS-Cog score between 0 and 9) were then asked to complete the questionnaire themselves because a previous work we had undertaken had supported the validity of undertaking DCE with this population [33]. When residents had a more severe level of cognitive impairment, a family member proxy was approached to complete the questionnaire on behalf of the resident. Eligibility criteria included that the residents had been living in a nursing home for at least 12 months, and that they were not currently receiving palliative care. For those residents who required a proxy to answer on their behalf, a suitable person needed to be available to act as a proxy, which was defined as a person who had a close relationship with the individual and who visited the person regularly and assisted with making decisions on their behalf—usually a spouse, sibling, or offspring of the individual. After informed consent, the participants took part in a face-to-face interview with trained data collectors. The interviews were generally undertaken in the resident's room, a sitting room, or other private area. If a proxy participant was unable to attend a face-to-face interview because of remoteness of location, or other logistical issues, arrangements were made for them to participate in the study via postal survey supplemented by telephone interview.

Data Analysis

The data from the DCE were analyzed within a random utility theory framework. The utility function can be specified as follows:

$$U_{ijt} = x'_{ijt}\beta_i + \varepsilon_{ijt},$$

where U_{ijt} is the utility individual i derives from choosing alternative j in choice scenario t, x is a vector of observed attributes (i.e., the CCI-6D dimensions and corresponding levels), β is a vector of coefficients reflecting the desirability of the attributes, and e_{ijt} is an error term. Two econometric approaches were used to estimate this utility function, including the classical conditional logit model and a mixed logit model that could be used to capture potential preference heterogeneity [34]. In the mixed logit model, the desirability of attributes constitutes a vector of average preferences of the population for each attribute (β) and the individual's specific preference components (η) (i.e., $\beta_i = \beta + \eta_i$), whereas in the conditional logit model, only average preferences are estimated (i.e., $\beta_i = \beta$). The estimated coefficients and their statistical significance (or otherwise) indicate the relative importance of the different attributes on individual preferences. A positive sign on a coefficient indicates that as the level of that attribute increases, so does the utility derived, and the converse applies for a negative sign on a coefficient. Using established methods, the estimated coefficients were then rescaled onto a 0 to 1 scale (where a score of 0 equates to the least preferred care home, and 1 the most preferred care home) to provide a scoring algorithm for the CCI-6D instrument [35].

The Swait-Louviere test was applied to test whether the responses from residents and family members could be pooled together [36]. Conditional and mixed logit regression models were compared using the Bayesian information criterion (BIC), which is commonly used for model selection in random utility framework [37,38]. The extent to which participants exhibited dominant preferences was also investigated. A dominant preference pattern implies that the scenario with the best level of one particular attribute is always chosen, irrespective of the levels of the remaining attributes presented [39].

Results

Descriptive Statistics

A total of 1323 people living in 17 nursing homes in four Australian states were assessed for eligibility. Nine hundred and one (68%) resident and or family member proxies were identified as eligible to participate, and of these 545 (60%) consented. Three resident participants failed to complete the DCE (section B) and were therefore excluded from the data analysis. A total of 126 (23%) residents completed the DCE questionnaire themselves. The remaining 416 participants were proxies, usually a close family member who was asked to complete the questionnaire on behalf of the resident where the resident had a level of cognitive impairment that precluded their own participation. Characteristics of the study participants are presented in Table 1. Most of the study participants (75.6%) had been living in the care home for more than 2 years. The reported PAS-Cog score indicates the level of cognitive impairment among residents in the sample and includes both residents who self-participated and those for whom a proxy participated. Mean (SD)

Table 1 – Demographic characteristics of the sample.

Characteristic	n (%)*
Age (y), mean ± SD	68 ± 14
Sex	
Male	162 (30)
Female	380 (70)
Participant	
Family member	416 (77)
Resident	126 (23)
How long have you (or your family member) been in nursing home?	
≤24 mo	132 (24)
>24 mo	410 (76)
Highest educational qualification attained†	
No qualifications	104 (19)
Completed high school	157 (29)
Undergraduate degree or professional qualification	173 (32)
Postgraduate qualification	74 (14)
Others	32 (6)
Born in Australia†	
Yes	429 (79)
No	111 (20)
PAS-Cog score of admitted resident	
0–4 (no cognitive impairment)	95 (18)
5–9 (mild cognitive impairment)	100 (19)
10–15 (moderate cognitive impairment)	85 (16)
16–21 (severe cognitive impairment)	262 (48)
How difficult did you find this questionnaire to complete?‡	
Very difficult	40 (7)
Moderately difficult	136 (25)
Slightly difficult	170 (31)
Not difficult	191 (35)

PAS-Cog, Psychogeriatric Assessment Scales-Cognitive Impairment Scale.
* Results are presented as n (%) unless otherwise specified.
† Missing responses n = 2.
‡ Missing responses n = 5.

PAS-Cog score was 13 [8], indicating a moderate level of cognitive impairment for the study sample.

Attitudinal Questions

The responses of the participants to the attitudinal questions are presented in Table 2. A large proportion of residents indicated that they either "strongly agreed" or "agreed" to statements "C: I am (my family member is) able to make my room here 'my (their) own'" (98%); "D: It is important to me that I have (my family member has) access to therapists to provide physical exercise and keep me (them) walking" (94%); and "F: It is important to me that I can have access to specialist services from this facility" (95%). For other statements participant responses were more divided, for example, in relation to whether it would be better if aged care homes provided care for only people with dementia or people without dementia separately, or whether they would be willing to pay an additional bond upon entry into a nursing home facility for dementia-specific care.

DCE Estimates

The number of participants exhibiting a dominant response pattern for each attribute was relatively low (<10%) for most of the attributes (for more details, see Appendix Table 1 in Supplemental Materials found at http://dx.doi.org/10.1016/j.jval.2017.11.004). Among the six attributes presented, the amount of time care staff were able to spend with residents had the highest number of dominant responses.

The Swait-Louviere pooling test rejected the null hypothesis that the estimated parameters between residents and family members were the same while allowing scale factors to vary between the two sources of data [34]. The BIC values further suggested that the conditional logit estimates were preferable to the mixed logit estimates for both resident and family member samples. As such, residents and family members were analyzed separately and only the preferred conditional logit estimates are reported here. The mixed logit estimates are presented in Appendix Table 2 in Supplemental Materials found at http://dx.doi.org/10.1016/j.jval.2017.11.004.

The conditional logit estimates for both residents and family members and their respective rescaled scoring algorithms are presented in Table 3. As can be seen, except for one level ("sometimes") in each of the five attributes ("care staff time," "feeling at home in shared spares," "feeling at home in own room," "access to outside and gardens," and "meaningful activities"), all other attributes and levels were statistically significant, indicating that the attributes are all important in determining preferences for nursing homes. For residents, the higher levels of each attribute were associated with higher coefficients, indicating greater positive preferences for that attribute. For responses from family members, all attributes and levels were statistically significant, except the "sometimes" level for attributes "feeling at home in shared spares" and "feeling at home in own room" and the "whenever they want" level for the "access to outside and gardens" attribute. Family members also exhibited inconsistent preferences for one attribute ("access to outside and gardens") with the coefficient for "access whenever" greater than the coefficient for "access sometimes" for residents, whereas the reverse is true for the family member proxy participants. The coefficients were rescaled on a 0 to 1 scale to provide the preference-weighted scoring algorithm for the CCI-6D on the basis of the 1) resident and 2) family member responses, which are also presented in Table 3.

Discussion

This is the first study of the preferences of people living in nursing homes and their family members for characteristics of quality of care. Although the results of this study provide insight into the value consumers attribute to different characteristics of care, the main aim of this study was to generate preference weights for a weighted scoring algorithm to measure quality of nursing home care, the CCI-6D. We found that all the items of the CCI-6D were important determinants of preferences for nursing homes. This supports the findings of our previous qualitative work with people living with dementia and their family members in a larger population and with an empirical focus [21]. It indicates that these characteristics are relevant to consumers of these services, and supports their inclusion in an instrument to evaluate improvements and innovations in nursing home care.

Previous studies have indicated the preferences of the general population and community-dwelling older people to avoid institutionalization and remain in their own home for as long as possible [16,17]. Nevertheless, there is evidence that institutionally based care becomes increasingly acceptable as a care option when people consider increasing frailty, cognitive impairment, and palliative care needs, because of perceived improved access to skilled care and strategies for symptom relief, and reduced burden on family members [20,40–43]. These studies have,

Table 2 – Responses to attitudinal questions.

Question	Response, n (%)				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
A: I receive enough information from care staff regarding my care and health	232 (43)	220 (41)	30 (6)	46 (9)	14 (3)
B: I receive enough information from doctors regarding my care and health (n = 541)	152 (28)	177 (33)	70 (13)	99 (18)	43 (8)
C: I am able to make my room here "my own" (i.e., bring in own furniture, pictures, etc.)	323 (60)	205 (38)	7 (1)	5 (1)	2 (0.4)
D: It is important to me that I have access to therapists to provide physical exercise and keep me walking	325 (60)	183 (34)	21 (4)	9 (2)	4 (1)
E: I would want to be able to walk by myself, even if there was a risk I could fall and injure myself (n = 540)	110 (20)	165 (30)	52 (10)	119 (22)	94 (17)
F: It is important to me that I can have access to specialist services from this facility (e.g., dental, speech pathology, and geriatrician)	330 (61)	186 (34)	15 (3)	7 (1)	2 (0.4)
G: Changes to my medication or health care should be explained to me (n = 541)	346 (64)	172 (32)	17 (3)	4 (1)	2 (0.4)
H: It is more important that care home staff have a caring attitude than a high level of training (n = 541)	207 (38)	185 (34)	92 (17)	45 (8)	12 (2)
I: It would be better if aged care homes provided care only for people with dementia or cognitive impairment, rather than for people with and without cognitive impairment together (n = 539)	91 (17)	64 (12)	62 (11)	202 (37)	120 (22)
J: It is important to me that I am able to access morning or afternoon tea for myself or my family whenever I want (n = 541)	178 (33)	233 (43)	78 (14)	39 (7)	13 (2)
K: I would be willing to pay an additional $100,000 bond upon entry into nursing home care to receive dementia-specific care (n = 539)	50 (9)	83 (15)	102 (19)	147 (27)	155 (29)

however, focused on evaluation of preferences for long-term care strategies more generally rather than nursing home care specifically.

The Swait-Louviere test rejected the null hypothesis of equal parameters between resident and family member respondents, and therefore the preferences of these groups were presented separately. In addition, the conditional logit estimates presented as the BIC values indicate these to be preferable to the mixed logit estimates in both groups. Although preferences were not the same, several synergies were evident for resident and proxy family member participants. The preferences for both groups followed a logical progression, with improved levels for each attribute associated with higher coefficients, indicating greater positive preferences. The only exception to this general finding was in relation to the attribute "access to outside and gardens," for which family member proxies indicated that a moderate level of freedom in access was preferred. In contrast, a high level of access to outside and gardens was one of the attributes most valued by residents themselves. The reasons for this discrepancy are not completely clear but may be explained by a concern among family members about safety and risk injury when residents are given unfettered access to outside space. Nursing homes may therefore need to use innovative strategies to balance access to outside and gardens against concerns that family members may have about exposure to risk, to a level that is acceptable to all.

We developed preference-weighted scoring algorithms for the CCI-6D instrument, which can be used to measure the extent to which a nursing home provides quality of care in key aspects of daily life within nursing homes from the perspective of residents and their family members. Although both scoring algorithms provide interesting perspectives, we recommend that the resident-specific scoring algorithm should be used as the preferred algorithm for the CCI-6D instrument on the basis that residents have live experience of the service under consideration and may therefore be considered the "primary" service users. In addition, the mixed logit estimates (see Appendix Table 2 in Supplemental Materials) indicated that preferences among the resident sample were generally homogeneous, indicating similarity in preferences among residents. For the family member respondents, however, the statistical significance of the SDs indicated greater heterogeneity in the estimated preferences (i.e., evidence of greater differences in stated preferences between members of the sample). Resident preferences also exhibited greater consistency across all attributes (as compared with the proxy respondents who showed inconsistency in preferences for the "access to outside and gardens" attribute).

Although the resident-specific scoring algorithm is preferred for the aforementioned reasons, we encourage potential users to select the algorithm that they consider best meets the aims of the strategy or intervention they propose to evaluate. For example, in some situations the perspective of family members of residents with more severe cognitive impairment may be considered as particularly important, and thus the algorithm based on the family member preferences may be used.

There are some limitations to this study that should be acknowledged. We chose to adopt a consumer-driven approach for the design of the CCI-6D instrument descriptive system, and thus content of the instrument was derived from items identified to be of importance to people with dementia and their family members.

Table 3 – Conditional logit estimates and rescaled coefficients on residents and family members.

Level	Conditional logit estimates				Rescaled coefficient on 0–1 scale	
	Resident		Family		Resident	Family
	Coefficient	SE	Coefficient	SE		
How much time are care staff able to spend with my family member?						
Rarely	−0.362	0.071*	−0.819	0.047*	0.002	−0.081
Sometimes	0.088	0.070	0.171	0.043*	0.106	0.121
Always	0.274	0.072*	0.648	0.051*	0.149	0.219
Does your family member feel "at home" in the shared spaces in this place?						
Rarely	−0.262	0.075*	−0.351	0.044*	0.025	0.015
Sometimes	−0.002	0.077	−0.040	0.044	0.085	0.078
Always	0.264	0.073*	0.391	0.044*	0.146	0.166
Is your own room here set up to make you feel "at home"?						
Rarely	−0.580	0.079*	−0.633	0.044*	−0.048	−0.043
Sometimes	−0.036	0.067	0.010	0.036	0.077	0.089
Always	0.616	0.091*	0.623	0.051*	0.228	0.214
Is there access to outside and gardens in this aged care home?						
Cannot	−0.557	0.076*	−0.262	0.048*	−0.043	0.033
Sometimes	0.122	0.075	0.225	0.047*	0.114	0.132
Whenever they want	0.435	0.077*	0.037	0.049	0.186	0.094
How often does the aged care home offer my family member things to do that make them feel valued?						
Rarely	−0.222	0.081*	−0.244	0.045*	0.034	0.037
Sometimes	0.074	0.082	0.097	0.049†	0.103	0.106
Often	0.148	0.080‡	0.147	0.041*	0.120	0.116
How flexible are staff with the care routines?						
Not much	−0.247	0.078*	−0.236	0.040*	0.029	0.038
A little	−0.127	0.075‡	−0.088	0.037†	0.056	0.069
Very	0.374	0.080*	0.324	0.043*	0.172	0.153
Log likelihood	−393.768		−1266.676			
BIC	874.788		2635.359			
Observations	1438		4918			

Note. All attributes were effects-coded.
BIC, Bayesian information criterion; SE, standard error.
* $P < 0.01$.
† $P < 0.05$.
‡ $P < 0.1$.

Nevertheless, the concepts of importance they identified were somewhat difficult to operationalize because of their qualitative and psychosocial nature. Thus, the items of the descriptive system and their levels (e.g., "rarely" or "sometimes") could be considered open to interpretation of the individual. The CCI-6D instrument was, however, found to discriminate between types of care environments and items of QOL in residents in our validation study [23]. In addition, it should be noted that DCE studies can be subject to bias; notable for this study is the concept of "status quo bias," where participants choose a scenario that is familiar to their current situation, rather than one they truly prefer, which has been identified as occurring in a number of previous preference studies [44]. If this were in play in this study, the true preferences for the attributes in the CCI-6D instrument may still be hidden. Nevertheless, attempts were made to reduce this bias through the study design by using the interviewer administration, where participants were coached on the hypothetical nature of the task and to choose what they preferred, and in case any of the participants referred to choosing what they received currently after coaching, the interview was ceased. Further investigation of the presence of status quo bias when undertaking DCE in this sample, as well as other useful insights regarding their decision-making process during DCE, could be elicited using qualitative methods such as a "think-aloud study" [45]. In addition, the present study was conducted in an Australian setting and thus preferences may be similar or different across cultures and different countries—given the lack of information available on preferences of consumers for long-term care, we consider this an important space for future research.

Conclusions

This study has provided important insights into the characteristics of nursing homes that are most valued by consumers. Although the preferences of residents and proxy family members were not the same, several synergies in preferences were evident. The CCI-6D instrument may be usefully applied for assessing the quality of nursing home care from the consumer perspective. The instrument may also be incorporated into an economic evaluation framework to inform the planning and design of future aged care services.

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Supplemental Materials

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