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Title: Valuing end-of-life care for older people with advanced cancer: Is dying at home important?

Running title: Valuing end-of-life care

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ABSTRACT

Background

Most health care systems are facing the challenge of providing health services to support the increasing numbers of older people with chronic life limiting conditions at the end of life. Many policies focus primarily on increasing the proportion of deaths at home.

Objectives

This study aims to investigate preferences for care throughout the latter stages of a life limiting illness, particularly the importance of location of care, location of death and the use of life sustaining measures. It focuses on preferences for the care of an older person with advanced cancer in the last three weeks of life.

Methods

A survey using discrete choice experiment (DCE) methods was completed online by a general population sample of 1,548 Australians aged 45 and over. The experiment included 12 attributes and each respondent completed 11 choice sets. Analysis was by a mixed logit model and latent class analysis (LCA).

Results

The most important attributes influencing care preferences were cost, patient anxiety, pain control and carer stress (relative importance scores 0.21, 0.19, 0.14 and 0.14 respectively) with less importance given to place of care and place of death (relative importance scores 0.03 and

0.01). The model predicted that 42% would consider receiving most care in hospital better than at home (58%) holding the levels of other attributes constant across the alternatives, while 42% would consider death in hospital better than at home (58%). Three population segments with different preferences were identified by the LCA, the largest (46.5%) prioritised how the patient and carer felt as well as the pain control achieved, the next largest (28.1%) prioritised cost and the smallest segment (25.4%) prioritised a single room when an inpatient.

Conclusions

This study shows that investment in services to support people at the end of life would be better targeted toward programs that improve patient and carer wellbeing irrespective of the location of care and death.

Key points for decision makers

- Dying at home is less important than patient comfort and informal carer coping for middle aged and older Australians, in the context of an older person with cancer
- The provision of specific contextual information is essential for ascertaining population preferences for care at the end of life

1 INTRODUCTION

Population demographic change means that more people are living to older ages and dying from progressive, life limiting conditions. Consequently, health systems which have historically been configured around providing acute episodic health care services must have the capacity to provide continuous services to support larger numbers, in circumstances where death is inevitable. The costs of health care generally increase toward the end of life, particularly for hospital care[1-7], and show differences between cancer and other terminal illnesses[8, 7]. Many have questioned both the setting and type of care provided at the end of life and the extent to which it is consistent with patient or community preferences [9-11].

The evidence around the setting of care finds that the general population shows a preference for both care and death at home but substantial heterogeneity in preferences has been found in studies of patients and informal carers[12]. A preference for home death was found less frequently among informal carers than among patients[13] and a cancer diagnosis predicted preference for home death among palliative care patients[14]. Many studies have focused on place of death without separately considering preferences for the setting for most care before death, while studies among the general population asked about preference for place of death should they have a terminal illness, in the absence of the contextual information (such as the patient's condition and care needs or how well the informal carer is coping) that patients and carers may have from personal experience[12]. The proportion of home deaths is often considered an appropriate measure of success for palliative care services. However, while specialist palliative care programs endeavour to support patients and their carers to achieve their preferred type and place of death, it may not always be possible to achieve the best symptom management at home[15]. Therefore, preferences for the place where someone receives most of

their end-of-life care may not necessarily be the same as their preferred place of death, and it may depend on other aspects of end-of-life care.

There is limited research about the preferences regarding types of care, particularly medical interventions, at the end of life. The available information suggests the importance of choice and shared decision making in relation to the appropriateness of treatment [16, 17] while investigations of specific medical interventions suggest that there are contexts in which many people would not support medical interventions or treatments to prolong life[18, 19]. Discrete choice experiments (DCE) have been used in end-of-life studies focussed on preferences for life extension over a relatively limited number of other aspects of end-of-life care. There was considerable heterogeneity among cancer patients regarding preferences for supportive care or life extending therapies in advanced cancer[20]. Waller et al[21] found that cancer patients and their carers place greater importance on the level of pain over consciousness or life extension. Finkelstein et al[22] also found pain to be the most important attribute for cancer patients and community dwelling older people, while the cancer patients had higher willingness to pay for most aspects of care at the end of life. The study included place of death but did not separately consider place of care or the use of medical interventions.

One of the challenges for research into preferences for the type of care or place of care at the end of life is that actual preferences are specific to the context. While many people say they would prefer to die at home if they had a terminal illness, the importance of the location of death may change, depending on the needs of the patient and informal carer at different times of the illness trajectory and the availability of the supportive care required to meet their needs at home. There is evidence that patient preferences for place of death may change as disease progresses [13, 23], suggesting that other factors become more important as the individual context changes. This

makes single point-in-time patient preferences a less useful basis for health care policy (although essential for individual decision making at that time).

We used a discrete choice experiment to capture some of the contextual complexity, in order to provide more informed population preferences for care at the end of life. The DCE approach allows for measurement of the trade-offs people make between the different features described in end-of-life care scenarios. The approach used asks respondents to evaluate completed trajectories instead of the situation for patients where their preferences must be based on what they know at the time, with the next stage being relatively unknown. This study focuses on preferences for the care of an older person with advanced cancer in the last three weeks of life. It aims to identify the factors most important in the treatment of older Australians in this context. We assess the strength of preferences for location of care, location of death and the use of life sustaining measures at the terminal phase of the illness trajectory. We also consider the trade-offs people are willing to make to achieve what they consider to be a ‘good’ last three weeks.

2 METHODS

A community survey using discrete choice experiment (DCE) methods was completed online, over a 3 week period in November-December 2019. Each choice set asked which of two completed end-of-life trajectories was better. The survey focused on the last 3 weeks of life for a person with advanced cancer. Participants provided consent by completing the online survey, after reading the participant information statement.

2.1 Sample

A general population sample of 1,548 Australians aged 45 and over was recruited through an online survey panel provider, Toluna Australia. This age group was selected as it will include

those most likely to be facing chronic life limiting illness and those most likely to become informal carers[24] and potentially substitute decision makers. Age-gender quotas were used to ensure the proportions in each gender and 10-year age group matched to the Australian population aged 45 years or more.

2.2 Survey

2.2.1 Background information

The survey introductory information included an explanation of the purpose of the study as well as a section explaining different types and locations of end-of-life care. It also included a section explaining the DCE questions and how to answer these. This included a sample choice set and how to access additional explanatory information about each attribute using the pop-up which was available by placing the cursor over that attribute.

2.2.2 Screening demographic and experience questions

The first questions asked about age group and gender to allow for screening out potential respondents aged less than 45, as well as for ensuring population quotas were filled to align with the Australian population. This section also included questions about prior experience of the death of someone close, to allow for investigation of whether preferences differed by prior experience. Further demographic questions were included at the end of the survey to provide a detailed description of the sample. Additional closed format questions about how the respondent found the DCE section of the survey were also included at the end of the survey, along with a free text question for comments.

2.2.3 DCE section

The DCE section began with a vignette describing a patient's condition over the last three weeks of life in terms of cognition and consciousness, symptoms, mobility, nutrition, bathing and continence. Respondents were asked to think about a patient in this condition when they answered the questions that followed. Each respondent was shown 11 choice sets with each choice set including two completed care trajectories for the hypothetical patient described in the choice vignette. For each choice set, the respondent was asked "Which care option do you think is better?".

The attributes and levels covered the location of care throughout the last 3 weeks of life, the location of death, the use of life extending therapies and types of supportive care available, as well as the impact on informal carers and the cost to the patient and family. They were developed from previous research [13, 25, 17, 26] and a workshop conducted with the research team. The workshop participants included 2 researchers with clinical backgrounds (1 palliative care physician and 1 palliative care nurse) and 2 consumer representatives with experience in supporting a close family member at the end of life. After refinement of the wording and levels of the 12 attributes identified at the workshop, the full online questionnaire was completed by 3 consumer representatives in a meeting with 2 researchers, leading to further refinement. The survey was pilot tested with 200 respondents recruited through the online panel resulting in changes to the levels of one attribute and some rewording and enhancement of explanatory material. The supplementary material provides more detail of this process. The final list of attributes and levels is given in Table 1.

2.3 The DCE design

As there was a large number of attributes, the design was constructed to ensure that only 6 or 7 attributes varied between the alternatives in each choice set, and this was indicated with coloured

highlighting in the choice set presentation.[27-29] In addition to reducing the cognitive burden, this avoids attribute dominance as there will always be some choice sets where an attribute is the same across alternatives, forcing respondents to base their choice on other attributes. Figure 1 shows a sample choice set.

The DCE was a generator-developed design; see[30] for more information on these. The initial (starting) design was an orthogonal main effects plan with 32 options, with “place of care” and “place of death” combined into one location attribute. To get the actual choice sets 11 different generators were added, in turn, to the initial design. To ensure that only some attributes were different between the options in the choice sets, 5 of the entries in each generator were 0. Each attribute had a non-zero entry in 6 of the generators, and a zero entry in 5 of the generators. Thus the design had 352 (=11 x 32) choice sets and was divided into 32 versions of 11 choice sets, with one choice set from each generator in each version. Participants were randomly assigned to versions and the order in which each participant saw the choice sets within each version was also randomised.

2.4 Analysis

The analysis used the mixed logit model (MIXL)[31] and latent class analysis (LCA)[32]. The MIXL model assumes preference heterogeneity to have a continuous distribution while any heterogeneity identified in the MIXL model can be further explored in the LCA which assumes discrete segments with different preferences. The model equations are given in the supplementary material.

Model selection was based on Akaike’s Information Criterion (AIC) and Bayesian Information Criterion (BIC). The presence of correlation among random parameters was also assessed using

the likelihood ratio test (LRT) to compare the nested models (uncorrelated and correlated MIXL). Consistent AIC (CAIC) was also considered for selecting the number of classes in the latent class analysis. MIXL models were estimated by maximum simulated likelihood in R[33] with the *gmm* package[34] using 2,000 Halton draws and dropping the first 500 sequence elements. Predicted probabilities were then calculated from the mean coefficients using Equation 3 (supplementary material). The LCA was conducted in Stata using the *lclogitml2* command [35]. Individuals were assigned to a class based on their highest class membership probability in the LCA and a multinomial logit (MNL) model estimated to identify individual characteristics predicting class membership. Level 1 (Table 1) was used as the reference level for each attribute in all models.

3 RESULTS

The sample included 1,548 respondents aged 45 years or over from the general Australian population. Of 3,310 eligible survey respondents who started the survey, 494 were excluded because the quota for their age-sex category was complete. Of the remaining 2,816 eligible respondents, 1,548 (55%) completed all choice questions and were included in the analysis. Participants were similar to the Australian population aged 45 years or more in terms of age and gender. One exception was for those aged 85 years or more who were underrepresented (1% of the sample instead of 5%), see Table 2. The majority (72%) had some experience of a person close to them dying from a terminal illness and more than half were satisfied with the care that person received at the end of life. Almost a third of respondents (31%) had helped with the care of someone close to them at the end of life. Most (64%) were married or living with a partner and less than half (42%) were still in the paid workforce.

3.1 Mixed logit model

The correlated MIXL was the preferred model by AIC and LRT (see model selection in the supplementary material) and is presented in Table 3. The relative importance scores (Figure 2) show the most important attributes to be cost, how the patient felt, pain and how the carer felt. The worst levels of these attributes (cost to the patient \$4,000, patient felt anxious all of the time, had moderate pain all of the time with interrupted sleep and informal carer felt stressed all of the time) all had substantial negative mean coefficients and significant standard deviations (Table 3) indicating heterogeneity. The mean coefficient for care provided at home most of the time with some time in palliative care unit (placecare2) was not significantly different from the reference level (home most of the time with some time in hospital) while the mean coefficients on hospital most of the time (placecare3) and palliative care unit most of the time (placecare4) were significant and negative suggesting that on average home was the preferred place of care in the last 3 weeks of life. There was also significant heterogeneity for both ‘placecare3’ and ‘placecare4’. There was a significant negative mean coefficient for died in hospital (placedied2) but died in a palliative care unit (placedied3) was not significantly different from the reference level of home. There was substantial heterogeneity around both levels for place of death. The mean coefficients for both levels of medical intervention were not significantly different from zero but both showed significant heterogeneity (Table 3).

3.2 Predicted probabilities

The model predicted that on average 42% would consider receiving most care in the last 3 weeks of life in hospital (placecare3) better than at home (58%) holding the levels of other attributes constant across alternatives, while 41% would consider receiving most care in a palliative care unit (placecare4) better than at home (59%) (Table 4). The prediction for place of death was similar for hospital where on average 42% would consider death in hospital (placedied2) better

than at home (58%) when holding other attributes constant across alternatives. This was not the case for death in a palliative care unit where the mean coefficient (placedied3) was not significantly different from zero and the predicted probability was close to 50% (47% considered death in a palliative care unit better than at home). The trade-off between location and other aspects of care can be considered by varying other attribute levels between alternatives. For example, the predicted probability of considering death in hospital better than home would increase considerably if the pain management in hospital was better than at home. On average, 80% would consider death in hospital with the reference pain level (completely pain free all of the time) better than death at home combined with moderate pain all of the time with interrupted sleep (pain3). A similar result was found for place of care (see Table 4). Changing the levels of how the carer felt produced a similar result where the probability of considering death in hospital better than home increased to 79% if the carer was always in control for the hospital alternative and always stressed for home (see Table 4).

3.3 Understanding heterogeneity

We used LCA to understand this heterogeneity and identified 3 classes with different preferences based on BIC and CAIC (see supplementary material Table 1). The coefficients and 95% confidence intervals for the 3 class model are presented in Figure 3. Class 1 was the largest class (share 46.5%) and, although there were many coefficients that were significantly different from zero, the most important attribute levels for this class were patient felt anxious all of the time (patient3), had moderate pain all of the time with interrupted sleep (pain3) and the carer felt stressed all of the time (carer3). Class 2 was the smallest class (share 25.4%) and had very different preferences, with all coefficients close to zero and a shared room when in hospital (room2) having the largest (negative) impact on preference. Class 3 (share 28.1%) also had many

coefficients significantly different from zero, but for this class cost was the most important attribute.

Relative to Class 1, Class 2 members were less likely to be aged between 55 and 75 years and more likely to be in the reference age group of 45-55 years (Figure 4). Class 2 members were also less likely to be female, to live in a rural or regional area or to have a university degree relative to Class 1 and were more likely to have completed the survey quickly (5 minutes or less). This suggests this segment included many inattentive participants (2% of the sample always chose the same (generic) alternative). However, removing those completing the survey in 5 minutes or less had minimal impact on the latent class analysis result. The Class 3 members who were very concerned about cost, were more likely to be aged 75 years or more and to be in the lowest income group relative to Class 1 and were less likely to be female and to have experience of someone close dying or of being a carer for someone who had died from a terminal illness (Figure 4).

3.4 Respondents' perceptions of the choice tasks

Responses to the closed format questions about the DCE section of the survey indicated that most respondents understood the task. 91% agreed or strongly agreed with the statement "The questions were clear" and 88% agreed or strongly agreed with the statement "I could easily identify the differences between care options"; only 2% disagreed with either of these statements. Only 9% disagreed with the statement "I could easily choose between the care options". Respondents were also asked if they had any comments about the survey and 518 (33%) provided a comment. Most comments were about the importance of the topic (45%) or indicated that the survey was good or easy to complete (29%), while some described the attributes that were important to them (7.5%). A small number of comments were about

difficulties with the survey (5.6%), either because they found it confusing, thought there were too many factors to consider or disagreed with the type of survey. A further 6.8% of comments were about finding the topic area challenging or finding it difficult to choose between some of the alternatives.

4 DISCUSSION

Overall this study demonstrates that, for an older person with advanced cancer, a small majority of middle aged and older people from the general population favoured provision of most care in the last 3 weeks of life at home and death at home or in a palliative care unit (when other aspects of care are the same). However, the other aspects of care were considerably more important than location, particularly cost, patient anxiety, pain control and carer stress. There was also substantial heterogeneity in these preferences suggesting that almost as many people preferred a death in hospital as at home, regardless of whether the inpatient setting was an acute care or a specialist palliative care environment.

There were particular sample segments expressing very different preferences. The largest of these segments (class 1) prioritised how the patient and carer felt as well as the pain control achieved. This segment represented just under half of the sample. Although the next largest segment (Class 3) also considered these attributes important, this segment placed a much higher priority on cost. Not surprisingly this group had the highest likelihood of belonging to the lowest income group. The smallest segment (Class 2, approximately a quarter of the sample) did not show a clear preference for any attributes except to not share a room when receiving inpatient care. A plausible interpretation is that a single room was interpreted as according a greater deal of dignity for the patient, and privacy for the family.

Reports and reviews of end-of-life care in Australia have pointed to the mismatch between where most Australians with life limiting illness die and reported population preferences for place of death [9, 36, 10], while acknowledging the limitations of the available information. Deaths at home have been estimated at between 4% and 14% [9] while population preferences for death at home have been estimated to be as high as 70% [37, 12], based on survey research using a single question about preferred place of death in the case of a life limiting illness. Our study has used a more nuanced approach to ascertain population preferences and identified a range of contextual factors influencing preferences. Although participants were more likely to prefer death at home to death in hospital when other aspects of care were the same, the effect was small and there were other contextual factors which had a greater impact on preferences. This finding is consistent with previously identified changing preferences for place of death among patient and carer populations[13, 23], reflecting changing individual circumstances and their experience with different locations.

As well as people dying in their preferred location, the reports mentioned above were also concerned with the extent to which people dying in hospitals received futile medical interventions which increased the cost of end-of-life care, potentially impacted negatively on quality of life and may not have accorded with patient preferences. This study considered the use of two medical interventions to prolong life in the last three weeks for a person with advanced cancer; antibiotics to treat infection and a drip to give fluids. Neither had a major impact on preferences for care at the end of life, although there was individual variation and it is possible that some respondents interpreted these interventions as improving quality of life (in addition to the stated purpose of prolonging life). We chose not to include the use of chemotherapy in this survey because it was considered to be less frequently used in patients so close to death but will

be included in a future survey considering a longer time frame. As this DCE was presented in the context of a person with a cancer diagnosis, it is not clear whether the same preferences would be demonstrated for patients with other conditions; this will also be explored in future work.

The study has some limitations and strengths. Although end-of-life care is a challenging topic and our DCE included a large number of attributes, most respondents understood the questions and valued the opportunity to participate. Consumer representatives had an important role in the development of the attributes and levels for the DCE; their real life experiences as end-of-life informal carers contributed greatly to ensuring the choice sets were both appropriate and understandable. The sample was drawn from an online panel and therefore under-represented the oldest age group who are less likely to access the internet. However, respondents were similar to the Australian population aged 45 and over on most measured characteristics. The study asked respondents to review completed episodes of care and to choose which they thought was better, given the condition of the patient described in the vignette. This differs from the usual approach of asking a respondent which choice they would make for themselves in those circumstances. By asking which trajectory an individual thought was better, the study provides information about the utility associated with the attributes of end-of-life care while avoiding evaluation of probabilistic information required for prospective choices. However, this would not necessarily align with what individuals would choose in real life under conditions of uncertainty. As respondents were considering specific circumstances varied according to an experiment, the study improves on previous research asking a simple question about preferred location of care or death where, for general population samples this lacked any specific context and for patient and carer populations left only their own unmeasured individual situations. The study is therefore able to contribute information about highly valued aspects of care at the end of life and the

circumstances under which most middle aged and older Australians would prefer to receive care in different locations.

5 CONCLUSIONS

Providing the right mix of health services to support the large numbers of older people at the end of life is a challenge faced by most health care systems. This study shows that investment in services to support people at the end of life would be better targeted toward programs that improve patient and carer wellbeing irrespective of the location of care and death. Indeed a concentration on the place of death exclusively (including rates of home death) may miss opportunities to provide better inpatient care with the potential to reduce the burden on carers while improving the quality of life for patients.

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Figure 1: Example of a choice set

In the last 3 weeks of life		
	Care option A	Care option B
<u>Care was provided</u>	in hospital most of the time with some time at home	at home most of the time with some time in hospital
<u>Medical intervention was being given to prolong life</u>	a drip to give fluids	No intervention
<u>With pain control measures, the patient</u>	was completely pain free all of the time	was completely pain free all of the time
<u>During the day the patient was</u>	awake and able to interact	conscious but sleepy
<u>The accommodation when admitted was</u>	a single room	a shared room
<u>Nurses were confident in helping patient and family prepare for death</u>	No	No
<u>When at home, nurses visited for a total of</u>	10 hours per week	10 hours per week
<u>When admitted, nurses were available all of the time and care was provided by</u>	the same nurses who got to know the patient and family	the same nurses who got to know the patient and family
<u>The cost to the patient was</u>	\$0	\$4,000
<u>The patient felt</u>	calm some of the time felt anxious at other times	calm all of the time
<u>The informal carer felt</u>	in control all of the time	in control all of the time
<u>The patient died</u>	at home	at home
Which care option do you think is better?	<input checked="" type="radio"/> Care option A	<input type="radio"/> Care option B

Figure 2: Relative attribute importance scores

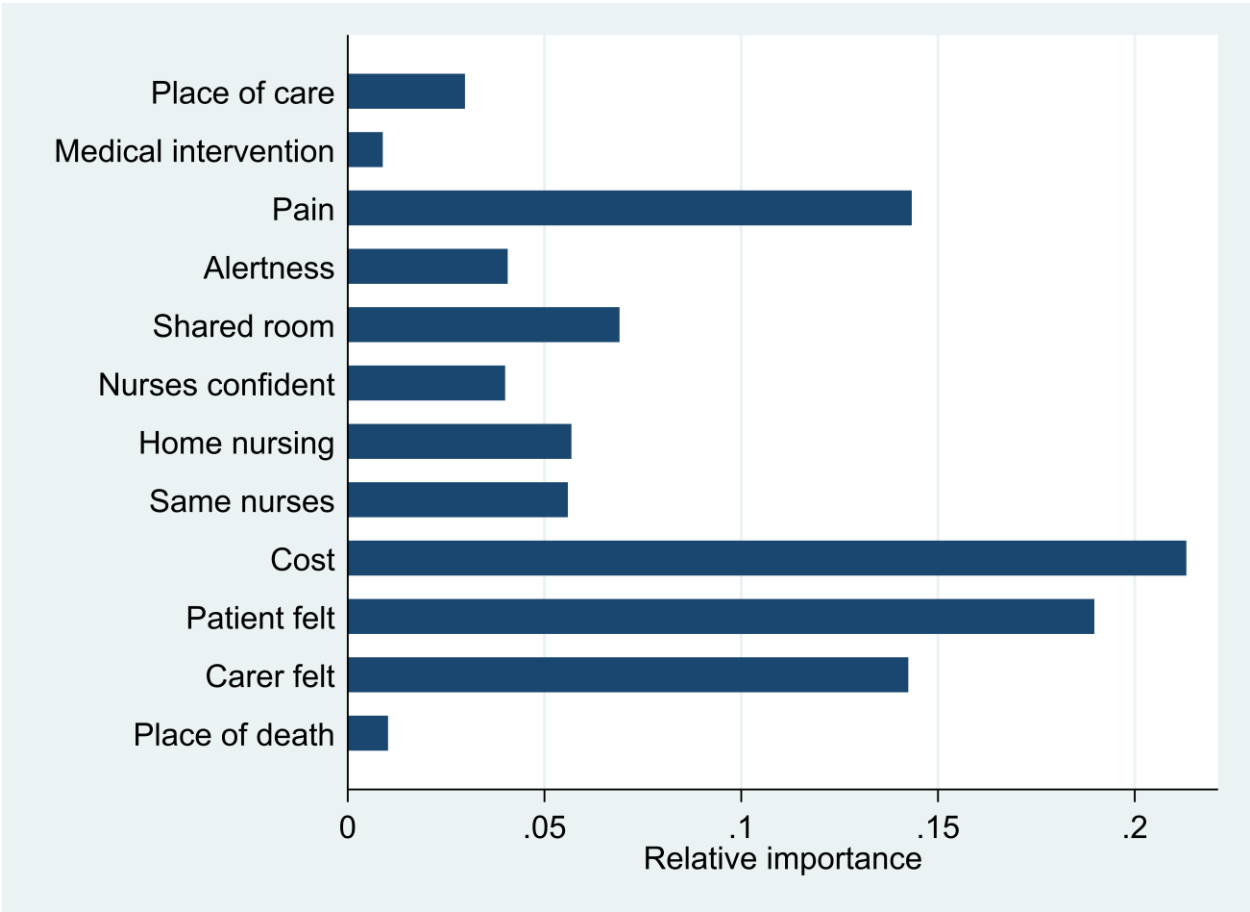


Figure 3: Latent Class model: Coefficients and 95% confidence intervals by class

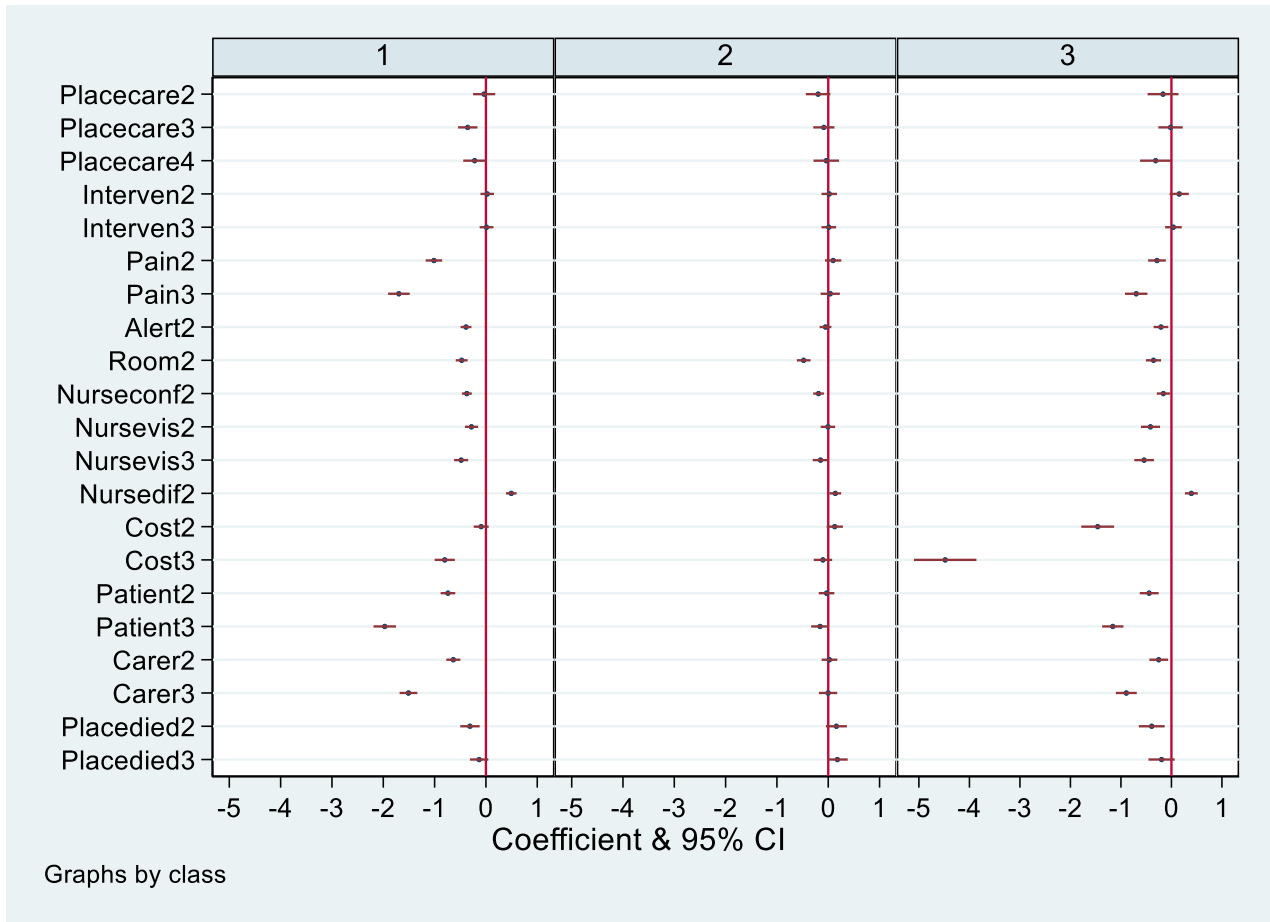


Figure 4: Demographic characteristics and class membership: relative risk ratios with Class 1 as reference

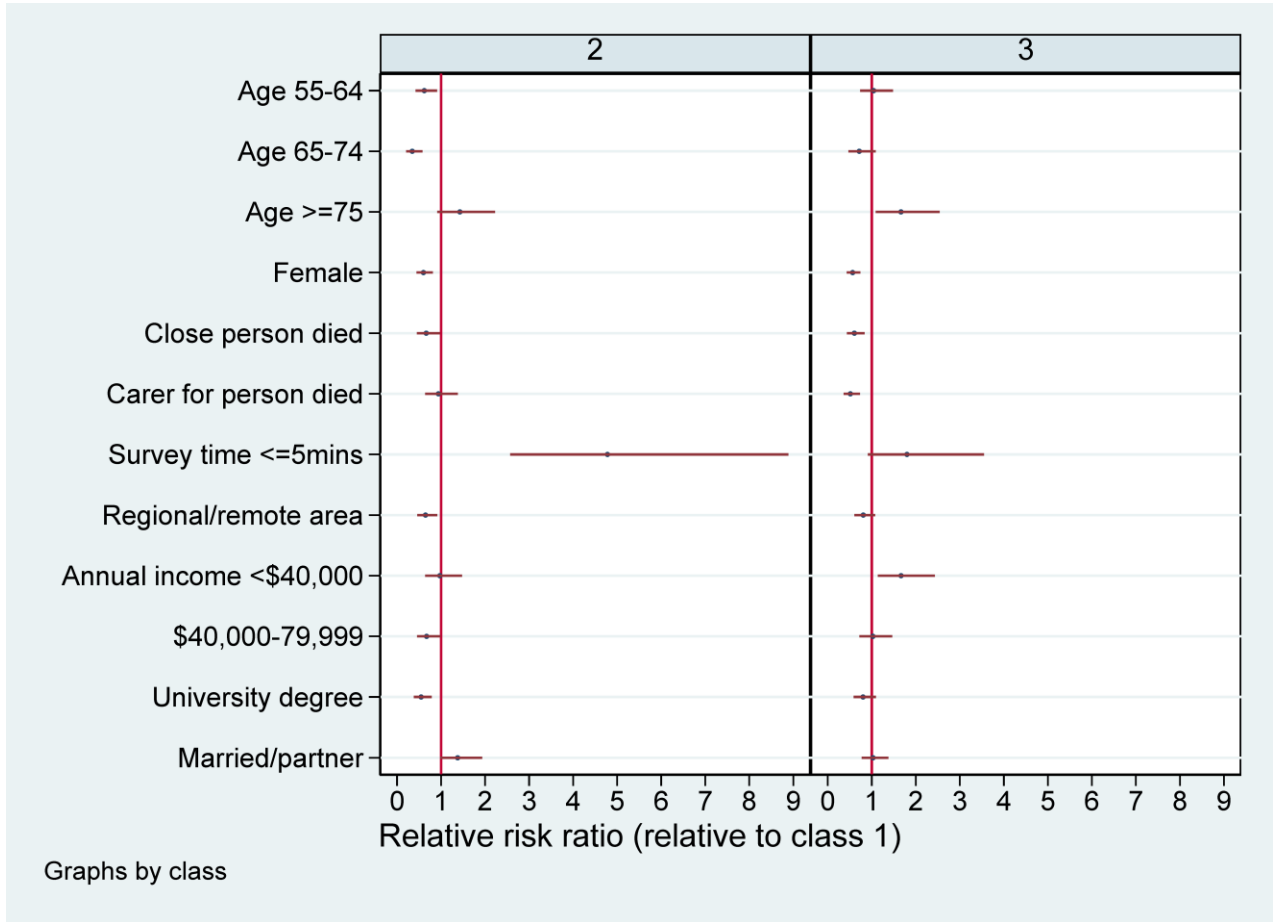


Table 1: Attributes and levels

Attribute		Levels	Label
Care was provided	0	At home most of the time with some time in hospital	Placecare1
	1	At home most of the time with some time in a palliative care unit	Placecare2
	2	In hospital most of the time with some time at home	Placecare3
	3	In the palliative care unit most of the time with some time at home	Placecare4
Medical intervention was being given to prolong life	0	No intervention	Interven1
	1	Antibiotics to treat infection	Interven2
	2	A drip to give fluids	Interven3
With pain control measures, the patient	0	Was completely pain free all of the time	Pain1
	1	Had moderate pain during the day but able to sleep uninterrupted	Pain2
	2	Had moderate pain all of the time with interrupted sleep	Pain3
During the day the patient was	0	Awake and able to interact	Alert1
	1	Conscious but sleepy	Alert2
The accommodation when admitted was	0	A single room	Room1
	1	A shared room	Room2
Nurses were confident in helping patient and family prepare for death	0	Yes	Nurseconf1
	1	No	Nurseconf2
When at home, nurses visited	0	20 hours per week (including some overnight respite)	Nursevis1
	1	10 hours per week	Nursevis2
	2	4 hours per week	Nursevis3
When admitted, nurses were available all of the time and care was provided by	0	Many different nurses	Nursedif1
	1	The same nurses who got to know the patient and family	Nursedif2
The cost to the patient was	0	\$0	Cost1
	1	\$500	Cost2
	2	\$4,000	Cost3
The patient felt	0	Calm all of the time	Patient1
	1	Calm some of the time but anxious at other times	Patient2
	2	Anxious all of the time	Patient3
The informal carer felt	0	In control all of the time	Carer1
	1	In control some of the time but felt stressed at other times	Carer2
	2	Stressed all of the time	Carer3
The patient died	0	At home	Placedied1
	1	In hospital	Placedied2
	2	In a palliative care unit	Placedied3

Table 2: Characteristics of participants

Characteristic	Sample (n=1548)	Australians* (aged 45 and over)
Female	52%	52%
Age: 45-54	32%	32%
55-64	29%	29%
65-74	22%	22%
75-84	16%	12%
85 or more	1%	5%
Self-assessed health fair/poor	24%	21%
Experience of terminal illness:		
Someone close died	72%	
Helped with care	31%	
Satisfied with person's end of life care	54%	
Born in Australia	76%	65%
Aboriginal or Torres Strait Islander	1%	1.6%
Language at home English	96%	
Married or defacto	64%	
Working full or part time	42%	49%
Education - degree	27%	
Residential area:		
Major city	69%	
Inner regional	23%	
Outer regional	7%	
Remote/very remote	1%	
Annual household income:		
Less than \$20,000	7.7%	
\$20,000-\$39,999	26.8%	
\$40,000-\$59,999	20.4%	
\$60,000-\$79,999	12.6%	
\$80,000-\$99,999	10.2%	
\$100,000-\$149,999	12.4%	
\$150,000-\$199,999	6.0%	
\$200,000 or more	3.9%	

*Australian Bureau of Statistics (June 2019) 3101.0 - Australian Demographic Statistics December 2018

Table 3: Mixed logit model: coefficient (standard error)

Label	Attribute level	Mixed logit correlated	
		Mean	SD
Placecare2	At home most of the time with some time in a palliative care unit	-0.193 (0.103)	0.124 (0.259)
Placecare3	In hospital most of the time with some time at home	-0.317*** (0.087)	0.529** (0.165)
Placecare4	In the palliative care unit most of the time with some time at home	-0.352** (0.107)	0.985*** (0.182)
Interven2	Antibiotics to treat infection	0.105 (0.065)	0.684*** (0.154)
Interven3	A drip to give fluids	0.023 (0.063)	0.849*** (0.147)
Pain2	Had moderate pain during the day but able to sleep uninterrupted	-0.889*** (0.083)	1.337*** (0.126)
Pain3	Had moderate pain all of the time with interrupted sleep	-1.694*** (0.120)	1.871*** (0.153)
Alert2	Conscious but sleepy	-0.480*** (0.057)	0.747*** (0.097)
Room2	A shared room	-0.816*** (0.071)	1.376*** (0.104)
Nurseconf2	No	-0.473*** (0.050)	0.436*** (0.110)
Nursevis2	10 hours per week	-0.405*** (0.066)	0.560*** (0.115)
Nursevis3	4 hours per week	-0.672*** (0.075)	0.978*** (0.139)
Nursedif2	The same nurses who got to know the patient and family	0.661*** (0.058)	0.859*** (0.093)
Cost2	\$500	-0.575*** (0.079)	1.111*** (0.137)
Cost3	\$4,000	-2.519*** (0.162)	2.658*** (0.183)
Patient2	Calm some of the time but anxious at other times	-0.847*** (0.078)	0.910*** (0.121)
Patient3	Anxious all of the time	-2.243*** (0.137)	1.884*** (0.152)
Carer2	In control some of the time but felt stressed at other times	-0.634*** (0.073)	0.892*** (0.139)
Carer3	Stressed all of the time	-1.684*** (0.116)	1.596*** (0.147)
Placedied2	In hospital	-0.334*** (0.095)	1.719*** (0.183)
Placedied3	In a palliative care unit	-0.121 (0.093)	1.661*** (0.173)

Log likelihood		-9298	
AIC		19,099	
BIC		21,050	
N respondents		1,548	
N observations		17,028	

*p<0.05 **p<0.01 ***p<0.001. Abbreviations: AIC Akaike's Information Criterion; BIC Bayesian Information Criterion; SD standard deviation.

Table 4: Predicted probabilities for preferring hospital or home for most care and death when another important attribute is better in the hospital alternative

Attribute	Other attributes	Home	Hospital	
Preferred place of care	Home=hospital	0.579	0.421	
	<u>Pain</u>			
	Home: moderate pain all of time Hospital: completely pain free	0.361	0.639	
	Home: moderate pain all of time Hospital: completely pain free	0.202	0.798	
	<u>Patient</u>			
	Home: Calm some of the time Hospital: Calm all of the time	0.371	0.629	
	Home: Anxious all of the time Hospital: Calm all of the time	0.127	0.873	
	<u>Informal Carer</u>			
	Home: in control some of the time Hospital: in control all of the time	0.422	0.578	
	Home: stressed all of the time Hospital: in control all of the time	0.203	0.797	
	Preferred place of death	Home=hospital	0.583	0.417
		<u>Pain</u>		
		Home: moderate pain all of time Hospital: completely pain free	0.311	0.689
Home: moderate pain all of time Hospital: completely pain free		0.204	0.796	
<u>Patient</u>				
Home: Calm some of the time Hospital: Calm all of the time		0.311	0.689	
Home: Anxious all of the time Hospital: Calm all of the time		0.129	0.871	
<u>Informal Carer</u>				
Home: in control some of the time Hospital: in control all of the time		0.311	0.689	
Home: stressed all of the time Hospital: in control all of the time		0.206	0.794	