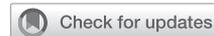


Original Article

The Effect of Residential Aged Care Size, Ownership Model, and Multichain Affiliation on Resident Comfort and Symptom Management at the End of Life



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Abstract

Context. In most resource-rich countries, a large and growing proportion of older adults with complex needs will die while in a residential aged care (RAC) facility.

Objectives. This study describes the impact of facility size (small/large), ownership model (profit/nonprofit) and provider (independent/chain) on resident comfort, and symptom management as reported by RAC staff.

Methods. This retrospective “after-death” study collected decedent resident data from a subsample of 51 hospital-level RAC facilities in New Zealand. Symptom Management at the End-of-Life in Dementia and Comfort Assessment in Dying at End of Life with Dementia (SM-EOLD and CAD-EOLD, respectively) scales were used by RAC staff who were closely associated with 217 deceased residents. Data collection occurred from January 2016 to February 2017.

Results. Results indicated that residents of large, nonprofit facilities experienced greater comfort at the end of life (CAD-EOLD) as indicated by a higher mean score of 37.21 (SD = 4.85, 95% CI = 34.4, 40.0) than residents of small for-profit facilities who recorded a lower mean score of 31.56 (SD = 6.20, 95% CI = 29.6, 33.4). There was also evidence of better symptom management for residents of chain facilities, with a higher mean score for symptom management (SM-EOLD total score) recorded for residents of chain facilities (mean = 28.07, SD = 7.64, 95% CI = 26.47, 29.66) than the mean score for independent facilities (mean = 23.93, SD = 8.72, 95% CI = 21.65, 26.20).

Conclusion. Findings suggest that there are differences in the quality of end-of-life care given in RAC based on size, ownership model, and chain affiliation. *J Pain Symptom Manage* 2019;57:545–555. © 2018 American Academy of Hospice and Palliative Medicine. Published by Elsevier Inc. All rights reserved.

Key Words

Residential aged care, end of life, ownership model, chain affiliation, palliative, aging, older people

Introduction

Over the past several decades in many resource-rich countries, there has been a shift from nonprofit, single-site, residential aged care (RAC) providers to large privately owned chain facilities, leading to concerns about whether inferior care then follows.¹ In line with this trend, a growing body of research has explored the impact of ownership model (for-profit/

not-for-profit) on economic performance^{2–5} or outcomes for aged RAC residents.^{1,6,7} Evidence suggests that residents in nonprofit facilities have better health outcomes than those in for-profit facilities, although financial performance tends to favor the for-profit sector.^{8,9} Furthermore, quality-of-care problems appear to be more pronounced in for-profit facilities owned by a corporate chain.^{10,11}

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Structural factors of interest reported in the international research literature include the size of facilities, the ownership model (for-profit, nonprofit), and whether the organization providing aged care services are affiliated with a chain.^{12–14} Research has indicated that larger facilities often have lower staff to resident ratios and more often focus on profit maximization rather than the quality of outcomes for residents.¹⁵ Ownership model may also impact on resident outcomes with a predominance of the evidence suggesting that residents in nonprofit facilities have better outcomes than those in for-profit facilities.^{1,16} Internationally, the emergence of chains within the RAC sector has been promoted as beneficial in terms of increased (cost) efficiency in service delivery based on economies of scale, a standardization of procedures, and the facilitation of knowledge transfer between facilities.^{17,18} However, chain affiliation has also been associated with an inability to introduce needed changes based on complex decision structures and routinized procedures.¹⁷ Research looking at these structural factors in combination indicates that large for-profit chains have lower staffing, increased regulatory violations, and more quality issues in comparison to non-profit facilities.^{10,19}

Within New Zealand, the setting for the study presented in this article, RAC is categorized based on level of care: 1) *rest homes* provide support with activities of daily living but not 24-hour nursing care, 2) *private hospitals* deliver 24-hour nursing/medical care, 3) *dementia care* provides secure rest home care while addressing safety issues, and 4) *psychogeriatric care* delivers private hospital level care for residents with dementia as well as those experiencing behavioral challenges, psychiatric illness, and/or physical frailty.²⁰ Currently, those entering an RAC facility either pay privately (negotiated with facility) or are subsidized by the Government through District Health Boards based on age (65+ years) (under 65 years based on health needs) and financial means. RAC differs from *retirement villages* that can be defined as privately owned independent living residences for older adults.²¹

New Zealand has the highest number of reported deaths among older people in RAC internationally, with 38% of people aged >65 years dying in this setting and a further 18% estimated to have RAC as a place of residence at the time of death.²² RACs are thus increasingly the place of death for older people and have been argued to be acting as “de facto hospices.”²³ Evidence, in New Zealand, indicates that a shift from not-for-profit, single-site, RAC providers in the 1980s to the current situation of large-chain privately owned facilities (facilities with 70 or more beds)^{24–27} has contributed to work conditions characterized by low wages, a delegation of increasingly complex tasks to unqualified caregivers, increasing

workload, and decreased organizational commitment.^{28–31} Over the last 20 years in New Zealand, both the average age and dependency levels of residents have increased.³² The increasingly complex needs of RAC residents, and the fact that a large number of older adults will die while in RAC, make quality of end-of-life care essential, yet Frey et al.³³ identified deficiencies in core clinical skills related to symptom management for residents and difficulties for staff in identifying when end-of-life care should begin. The shift to private ownership and the associated economic demands of the market³⁴ foster a task orientation.^{35–37}

Little research has examined the impact of a combination of three organizational factors (size, ownership model, and chain affiliation) on resident end-of-life symptom management and comfort. Drawing on Donabedian’s^{38,39} original systems model, relationships between organizational structures (e.g., ownership model, chain affiliation, and size) influence organizational outcomes such as indicators of resident quality of care. What impact then does size, ownership model (for-profit/nonprofit), and chain affiliation (chain/independent) have on symptom management and comfort of residents during the last month of life?

Aim and Method

This retrospective “after-death” study describes the impact of facility size, ownership model, and chain affiliation on resident comfort and symptom management as reported by RAC nursing staff.

Setting

This study uses data from a retrospective study that explored the quality of death of residents from the perspective of RAC staff and families. Facilities for the larger study were a random cluster sampling of 61 representative facilities (approximately 3709 representative RAC beds) across New Zealand.

Sample

The sample for the present study consisted of after-death questionnaire data from 217 resident deaths in 51 hospital-level facilities (the highest level of need). Stand-alone “rest homes” were not included in the analysis to ensure level of care homogeneity of the sample.

Data Collection Procedure

Facilities selected for the larger study were stratified by region, size (up to 70 beds/over 70 beds), and by the model (for-profit/not-for-profit). When a refusal occurred, a replacement facility was selected randomly from the same strata. The sample for the present study

consisted of data on decedents in hospital-level facilities ($n = 51$). Continuing care (hospital-level) accounted for 66.4% percent of the level of care in the more extensive study sample and was selected to control for the effect of level of care on resident outcomes. Data from all resident deaths (whether they occurred in the facility or elsewhere) during staggered three-month periods (January 2016 to February 2017) were recorded in 51 of the 61 facilities across New Zealand by facility administration. After-death staff questionnaires surveyed physicians and nurses and health care assistants (nursing assistants) directly involved in the resident's care at least 14 days before death. Data from the questionnaires completed with registered nurses (RNs) who cared for a resident were used. Ethical approval was obtained from the University Human Participants Ethics Committee (Phase One ref. 015461 and Phase Two ref. 015650).

Before proceeding further, the following definitions were adopted for the purpose of this study:

End-of-life care: Care provided within the last week of the resident's life.

Ownership model: Nonprofit facilities do not make profits that are distributed to shareholders/owners. Conversely, for-profit facilities distribute profits to stakeholders/owners.

Chain: An organization with more than five facilities that share the same business name and/or owner (3).

Independent facilities: Organizations with less than five facilities.

Continuing care (hospital level): Care that incorporates 24-hour RN management and supervision, personal care, clinical support, and accommodation for residents with the highest level of disability and needs.⁴⁰

Facility size: The definition of a small facility as 70 beds or under, and large facility as over 70 beds, was based on a categorization used in previous research.^{41–43}

Questionnaires

After-death questionnaires are an important tool in evaluating the quality of end-of-life care and/or in investigating the experiences of people at the end of life.⁴⁴ These can be completed by either family or health professionals. Pertinent to the present study, although patients themselves provide the most accurate ratings,⁴⁵ there is evidence that health professionals are better at rating a resident's functional status and physical symptoms than family members.⁴⁶ Furthermore, the agreement between patients and family is the lowest for the presence and severity of pain, anxiety, and depression, with family members tending to rate symptoms more severely than patients. Therefore, we decided to use nurse-reported ratings of symptom management and comfort for this study. Questionnaire data collected in relation to the 217

resident deaths included sociodemographic characteristics, date of admission, health status, clinical complications, recorded advanced care planning, and quality of dying, as well as the following measures

Symptom Management at the End of Life in Dementia

The nine items of the Symptom Management at the End of Life in Dementia (SM-EOLD)⁴⁷ assessed the management of resident symptoms during the last 90 days of their lives. Scale responses range from 0 to 45 with higher scores indicating better symptom management. There are two subscales: 1) physical (pain, shortness of breath, skin breakdown) and 2) psychological (calm, depression, fear, anxiety, agitation, and restiveness to care) symptoms.

Reliability: Cronbach's alpha reliability for the scale was 0.67. A significant correlation was recorded between mean scale scores reported by the 34 nurses and those reported by 34 health care assistants (nursing assistants) ($r^2 = 0.35$) in the larger study.

Comfort Assessment in Dying with Dementia

The 14 scale items of the Comfort Assessment in Dying with Dementia (CAD-EOLD)⁴⁷ indicate the condition of the resident during the dying process. Scale scores range from 14 to 42 with a higher score indicating a better comfort level. CAD-EOLD has four subscales: 1) physical distress (discomfort, pain, shortness of breath and restlessness), 2) emotional distress (anxiety, fear, moaning, and crying), 3) well-being (serenity, peace, and calm), and 4) dying symptoms (e.g., choking, gurgling, difficulty swallowing, and shortness of breath).

Reliability: Cronbach's alpha reliability was 0.71. A significant correlation was recorded between mean scale scores reported by the 34 nurses and those reported by 34 health care assistants ($r^2 = 0.55$).

Both measures have been used to evaluate end-of-life care in patient groups with diagnoses other than dementia.^{47,48}

Data Analyses

Data were coded into SPSS, version 23. Both descriptive (frequencies, mean, mode, standard deviation) and inferential statistics appropriate to the level of measurement were used in the analyses. The level of statistical significance was set at $P < 0.05$. Data were weighted according to the sex/age/ethnicity structure of the New Zealand residential aged care population using data from the 2013 census.⁴⁸

Analyses included analysis of covariance (ANCOVA) and multivariate analysis of covariance (MANCOVA) (for subscale analyses) controlling for age. ANCOVA and MANCOVA models are special cases of multivariable linear regression in which one or more predictors are nominal or ordinal.^{49,50} Sample size also

influenced the selection of MANCOVA rather than multivariable regression.⁵¹ In each analysis, the data were checked to ensure the variables met the multivariate assumptions for the MANCOVA procedure.

Small sample size necessitated separate analyses to examine main effects and interaction effects based on 1) size (small/large) × ownership model (profit/nonprofit), 2) ownership model (profit/nonprofit) × chain affiliation (chain/independent), and 3) size (small/large) × chain affiliation (chain/independent).

Results

Demographic Characteristics of Facilities, Nurses, and Decedent Residents

Over half of the facilities were “for-profit” (55.8%) and had 70 beds or less (60.8%). RNs ($n = 34$) were most often female (88.2%), between the ages of 30 and 39 (38.2%) and, in terms of ethnicity, were most often Filipino (44.1%) or New Zealand European (23.5%). Only 23.5% reported English as a first language. Most RN participants reported Christianity as their religion (85.3%) (Table 1).

Deceased residents in hospital-level care ($n = 217$) were most often female (53.5%) and between the ages of 81 and 91 years (42.9%). Thirty-three percent were aged 92 or over. Most of the deceased residents

were NZ European (82%). Almost half of the residents were diagnosed by a general practitioner or nurse practitioner as having dementia (48.8%). The most frequently reported cause of dementia was vascular dementia (26.3%). Deceased residents most often had recorded a “no cardiopulmonary resuscitations” status (88.9%). Most decedents had an enduring power of attorney in place (86.1%), although fewer had a formally activated enduring power of attorney (57.4%). Most of the decedents did not have advance care planning documentation (79.3%). Family members were involved in the care of the majority of the deceased residents (88.0%). This family member was most often an adult child of the resident (70.0%) (Table 2).

Level of Comfort

Size and Ownership Model. A factorial ANCOVA was conducted to compare the influence of size and ownership model, on the CAD-EOLD total score. There was a significant interaction between size and ownership model [$F(1, 177) = 5.54, P = .020, \text{Eta squared} = 3.1\%$]. The nature of this interaction suggested that residents of large, nonprofit facilities experienced more comfort as indicated by a higher mean score of 37.21 (SD = 4.85, 95% CI 34.4, 40.0) than residents of small for-profit facilities (mean = 31.56, SD = 6.20, 95% CI 29.6, 33.4) (Fig. 1). There was no significant main effect of ownership model on CAD-EOLD total score ($P > .05$) (Table 3).

There was, however, a significant main effect of size on CAD-EOLD total score [$F(1, 177) = 8.44, P = .004, \text{Eta squared} = 4.7\%$], indicating that residents of large facilities had a higher CAD-EOLD mean score of 34.96 (SD = 5.32, 95% CI 33.6, 36.3) (indicative of greater comfort) than residents of small facilities (mean = 32.53, SD = 5.57, 95% CI 31.5, 33.5).

MANCOVA results also indicated a significant interaction effect between size and ownership model for the four CAD-EOLD subscales [$F(4, 114) = 3.40, P = .011, \text{Eta squared} = 10.7\%$]. Between-subject tests indicated that the significant difference in the CAD-EOLD Dying subscale [$F(4, 117) = 12.05, P = .001, \text{Eta squared} = 9.3\%$]. Residents of large nonprofit facilities had a higher mean CAD-EOLD Dying subscale score of 11.50 (SD = .65, 95% CI 11.1, 11.8) than the mean score for residents of small for-profit facilities (mean = 10.49, SD = 1.44, 95% CI 10.1, 10.8).

Ownership Model and Chain Affiliation. Although there was no significant main effect of ownership model (profit/nonprofit) or chain affiliation (chain/independent) on CAD-EOLD total score ($P > .05$), MANCOVA results indicated a significant interaction effect between chain affiliation and ownership model for the four CAD-EOLD subscales [$F(4, 114) = 2.95,$

Table 1

Registered Nurse Staff Demographic Characteristics: Frequency and Percentage ($n = 34$)

Variable	RN Staff	
	Frequency	Percentage
Gender		
Male	4	11.8
Female	30	88.2
Age, years		
20–29	9	26.5
30–39	13	38.2
40–49	6	17.6
50–59	2	5.9
60–69	3	8.8
70–79	1	3.0
Ethnicity		
NZ European	8	23.5
Pacific	1	3.0
Filipino	15	44.1
Indian	6	17.6
Asian	1	3.0
Other	3	8.8
Home language		
English	8	23.5
Maori	2	5.9
Tagalog (Philippines)	14	41.2
Chinese (Mandarin, Cantonese)	2	5.9
Other	8	23.5
Religion		
Christian	29	85.3
Other	1	2.9
No religion	4	11.8

Table 2
Facility and Decedent Resident Profile: Frequency and Percentage (n = 217)

Variable	Frequency	Percent ^a
Facilities		
Ownership model		
Profit	152	70.0
Nonprofit	65	30.0
Chain affiliation		
Independent	80	36.9
Chain	137	63.1
Facility size		
Lowest to 70 beds	140	64.5
>70 beds	77	35.5
Decedent Characteristics		
Gender		
Female	116	53.5
Male	82	37.8
Age, years		
Lowest to 80	51	23.5
81–91	93	42.9
92 and above	71	32.7
Ethnicity		
NZ European	178	82.0
Maori	4	1.8
Pacific	1	.5
Asian	8	3.7
Other	15	6.9
Primary diagnosis		
Dementia	106	48.8
Cancer	45	20.7
Chronic condition	63	29.0
Dementia cause		
Alzheimer's	20	9.2
Vascular dementia	57	26.3
Mixed	10	4.6
Frontotemporal lobe	2	.9
Lewy body	2	.9
Other	6	2.8
CPR status		
No CPR	193	88.9
CPR	5	11.1
Enduring power of attorney		
Yes	172	79.3
No	31	14.3
Enduring power of attorney activated		
Yes	90	41.5
No	101	46.5
Advance care planning documents		
Yes	60	27.6
No	150	69.1
End-of-life care pathway used		
Yes	45	20.7
No	162	74.7
Hospice involvement in last days of life		
Yes	30	13.8
No	180	82.9
Family involvement during last months of life		
Yes	191	88.0
No	24	11.1
Family member involved (multiple response)		
Spouse	56	25.8
Children	152	70.0
Other relative	52	24.0
Grandchild	31	14.3
Friend	39	18.0
Other	22	10.1

CPR = cardiopulmonary resuscitation.

^aActual percent—excludes missing cases and may not total 100%.

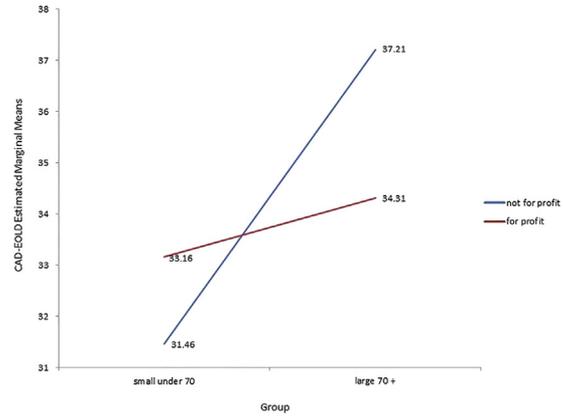


Fig. 1. Comfort Assessment in Dying With Dementia (CAD-EOLD) mean score by size (small under 70 beds/large 70 beds or more) and ownership model (stand-alone/chain) (n = 179).

$P = .023$, Eta squared = 9.4%]. Between-subject tests indicated a significant difference in the CAD-EOLD Dying subscale [$F(1, 117) = 6.38, P = .013$, Eta squared = 5.2%]. Residents of chain nonprofit facilities had a higher mean CAD-EOLD Dying subscale score (mean = 10.91, SD = 1.41, 95% CI 10.4, 11.4) than the mean score reported for residents of stand-alone for-profit facilities (mean = 10.29, SD = 1.26, 95% CI 9.9, 10.5) and the mean score reported for nonprofit facilities (mean = 9.62, SD = 1.66, 95% CI 8.9, 10.3) (Fig. 2).

Size and Chain Affiliation. A factorial ANCOVA controlling for the effects of age revealed no significant main effect of size and chain affiliation on CAD-EOLD total score ($P > .05$). MANCOVA results indicated no significant interaction effect between size (small/large) and chain affiliation (chain/independent) for the four CAD-EOLD subscales.

Symptom Management

Size and Ownership Model. MANCOVA analysis using Wilk's lambda criterion indicated that there were differences in SM-EOLD subscale scores based on size (small/large) and ownership model (profit/not-for-profit) [$F(2, 179) = 3.10, P = .047$, Eta squared = 3.3%]. Univariate follow-up tests indicated that there were significant differences in SME-EOLD psychological subscale mean scores based on size. Residents of large facilities had a higher mean score of 19.89 (SD = 6.14, 95% CI 18.2, 21.5) indicating better psychological symptom controls than residents of small facilities who registered a mean score of 17.70 (SD = 6.15, 95% CI 16.6, 18.7). ANCOVA analysis revealed that there was no significant main effect on the size of the facility (small/large) or ownership model (profit/nonprofit) $P > .05$ (Table 4).

Table 3
Means, Standard Deviations, and Confidence Intervals of Comfort Assessment in Dying With Dementia (CAD-EOLD) Scale and Subscales: Ratings by Facility Size, Model, and Provider

Variable	Sample (n)	CAD-EOLD Total			CAD-EOLD Physical			CAD-EOLD Emotional			CAD-EOLD Well-being			CAD-EOLD Dying			
		Mean	Standard Deviation	95% Confidence Interval	Mean	Standard Deviation	95% Confidence Interval	Mean	Standard Deviation	95% Confidence Interval	Mean	Standard Deviation	95% Confidence Interval	Mean	Standard Deviation	95% Confidence Interval	
Size																	
Small	117	32.53	5.57	31.5, 33.5	8.93	1.76	8.6, 9.2	10.50	1.47	10.2, 10.7	7.20	1.87	6.8, 7.5	10.15	1.56	9.8, 10.4	
Large	62	34.96	5.32	33.6, 36.3	9.71	1.63	9.2, 10.1	10.54	1.52	10.1, 10.9	7.32	2.00	6.8, 7.8	10.47	1.38	10.1, 10.8	
For profit																	
Small	74	33.16	5.08	31.9, 34.3	9.00	1.90	8.5, 9.4	10.27	1.46	9.9, 10.6	7.16	1.60	6.7, 7.5	10.49	1.44	10.1, 10.8	
Large	48	34.31	5.32	32.7, 35.8	9.51	1.67	9.0, 9.9	10.40	1.54	9.9, 10.8	7.44	1.87	6.8, 7.9	10.15	1.39	9.7, 10.5	
Nonprofit																	
Small	43	31.46	6.24	29.5, 33.3	8.84	1.59	8.3, 9.3	10.84	1.46	10.3, 11.2	7.26	1.87	6.6, 7.8	9.80	1.69	9.2, 10.3	
Large	14	37.21	4.85	34.4, 40.0	10.35	1.33	9.5, 11.1	11.00	1.41	10.1, 11.8	7.32	2.00	6.1, 8.4	11.50	.65	11.1, 11.8	
Chain affiliation																	
Independent	76	32.59	5.59	31.3, 33.8	9.04	1.68	8.6, 9.4	10.36	1.60	9.9, 10.7	7.12	1.74	6.7, 7.5	10.08	1.42	9.7, 10.4	
Chain	103	33.96	5.54	32.7, 35.1	9.50	1.76	9.1, 9.8	10.63	1.41	10.3, 10.9	7.36	2.05	6.9, 7.7	10.47	1.51	10.1, 10.7	
Chain																	
Nonprofit	33	33.93	6.24	31.7, 36.1	9.45	1.66	8.8, 10.0	10.83	1.27	10.3, 11.2	7.08	2.43	6.2, 7.9	10.91	1.41	10.4, 11.4	
For profit	70	33.97	5.23	32.7, 35.2	9.52	1.82	9.0, 9.9	10.54	1.48	10.1, 10.8	7.50	1.85	7.0, 7.9	10.25	1.52	9.8, 10.6	
Independent																	
Nonprofit	24	31.41	6.43	28.6, 34.1	9.25	1.69	8.5, 9.9	11.00	1.67	10.2, 11.7	7.25	2.08	6.4, 8.2	9.62	1.66	8.9, 10.3	
For profit	52	33.13	5.13	31.7, 34.5	8.94	1.70	8.4, 9.4	10.05	1.49	9.6, 10.4	7.05	1.59	6.6, 7.6	10.29	1.26	9.9, 10.6	

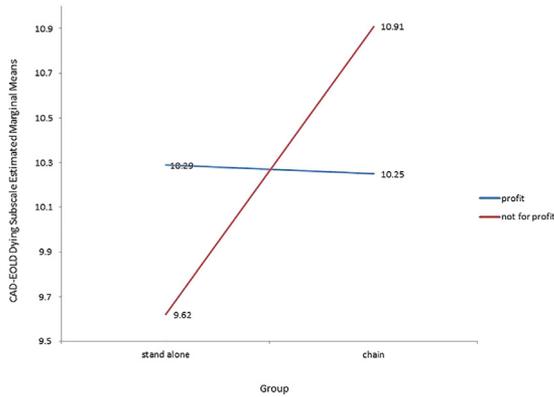


Fig. 2. Comfort Assessment in Dying With Dementia (CAD-EOLD) Dying subscale mean score by ownership model (profit/nonprofit) and chain affiliation (stand-alone/chain) ($n = 173$).

Ownership Model and Chain Affiliation. ANCOVA analysis revealed a significant difference in SME-EOLD mean score based on chain affiliation (chain/independent) [$F(1, 145) = 5.03, P = .026, \text{Eta squared} = 3.4\%$]. Chain facilities recorded a higher mean SME-EOLD total score of 28.07 (SD = 7.64, 95% CI 26.47, 29.66) than the mean score for independent facilities (mean = 23.93, SD = 8.72, 95% CI 21.65, 26.20). MANCOVA results using Wilk's lambda criterion indicated no significant differences in SME-EOLD subscale scores ($P > .05$).

Size and Chain Affiliation. ANCOVA analysis revealed that there was a significant difference in SME-EOLD mean score based on chain affiliation (chain/independent) [$F(1, 184) = 6.28, P = .013, \text{Eta squared} = 3.4\%$]. There were no other significant main effects or interaction effects ($P > .05$). Chain facility decedent residents had a higher mean SME-EOLD score of 28.07 (SD = 7.64, 95% CI 26.4, 29.6) than that recorded for the decedents of stand-alone facilities, (mean = 23.93, SD = 8.72, 95% CI 21.6, 26.2). *F* statistics for all analyses can be found in [Supplemental Appendix Table 1](#).

Discussion

Our findings suggest that there are differences in the quality of end-of-life care given in RAC based on size, model, and provider. These results are consistent with earlier findings by Lemke and Moos⁵² in the United States who found that larger nonprofit facilities recorded higher scores on eight indices of quality of care. A more recent meta-analysis by Comondore et al.⁷ concluded that on average, not-for-profit RAC facilities deliver higher quality care than do for-profit RAC facilities. Results support previous findings of

Table 4
Means, Standard Deviations, and Confidence Intervals of Symptom Management End of Life in Dementia (SM-EOLD) Scale and Subscales: Ratings by Facility Size, Model, and Provider

Variable	Sample (n)	SM-EOLD Total			SM-EOLD Physical			SM-EOLD Psychological			
		Mean	Standard Deviation	95% Confidence Interval	Mean	Standard Deviation	95% Confidence Interval	Mean	Standard Deviation	95% Confidence Interval	
Size											
Small	129	25.58	8.24	24.1, 27.0	7.95	3.29	7.3, 8.5	17.70	6.15	16.6, 18.7	
Large	58	27.81	8.24	25.6, 29.9	7.91	3.28	7.0, 8.7	19.89	6.14	18.2, 21.5	
For profit											
Small	79	25.90	8.45	24.0, 27.7	8.11	3.38	7.3, 8.8	18.03	6.28	16.6, 19.4	
Large	45	26.88	8.43	24.3, 29.4	7.73	3.53	6.6, 8.7	19.15	6.16	17.2, 21.0	
Nonprofit											
Small	50	25.21	8.14	22.8, 27.5	7.69	3.18	6.7, 8.5	17.18	5.97	15.4, 18.8	
Large	13	31.00	6.94	26.8, 35.1	8.53	2.18	7.2, 9.8	22.46	5.53	19.1, 25.8	
Chain affiliation											
Independent	59	23.93	8.72	21.6, 26.2	7.56	3.81	6.5, 8.5	16.68	6.19	15.0, 18.2	
Chain	91	28.07	7.64	26.4, 29.6	8.20	2.85	7.6, 8.7	19.56	5.98	18.3, 20.8	
Chain											
Nonprofit	32	28.00	7.73	25.2, 30.7	8.13	2.46	7.2, 9.0	19.66	5.95	17.5, 21.8	
For profit	59	28.11	7.66	26.1, 30.1	8.22	3.04	7.4, 9.0	19.51	6.09	17.9, 21.0	
Independent											
Nonprofit	23	24.60	8.59	20.8, 28.3	7.50	3.81	5.8, 9.1	16.38	6.20	13.6, 19.0	
For profit	36	23.50	8.90	20.4, 26.5	7.59	3.94	6.2, 8.9	16.83	6.25	14.7, 18.9	

better experiences of care for residents in large nonprofit facilities^{10,17,53,54} at least in relation to comfort during the last seven days of life. Previous research has highlighted concerns that for-profit facilities may privilege economic interests over the needs of residents with the goal of maximizing economic returns.⁵⁴

Size and ownership model did not significantly influence overall resident symptom management scores. It is possible that other organizational factors such as high turnover rates, low staffing levels, low stability levels, and high use of agency staff play a more important role in explaining differences in resident symptom management.⁵⁵ To some degree, quality of care would seem to be influenced by all these staffing characteristics. However, in results of a review by Fleming and Purandare,⁵⁶ residents of large facilities recorded better psychological symptom management in comparison to small facilities. It has been proposed that the potential impersonality of a larger institution might limit attention to the psychological needs of residents; however, a larger institution might be capable of providing increased specialized staffing support facilitating psychological symptom management.⁵⁶

The present study provides more insight into the effects of chain membership by demonstrating that chain membership in and of itself is not in and of itself indicative of poor quality care.^{11,57} Most prior studies that combine all chain-owned facilities into a single group may have underestimated the effect of the ownership model (profit/not-for-profit) in relation to chain membership. In this study, chain not-for-profit facilities recorded higher scores for the dying subscale of the CAD-EOLD. Economics of scale afforded by chain membership may have facilitated greater access to resources allowing for greater comfort during the dying process.⁵⁸ Study results for small facilities, however, point to the potential impact of resource constraints on resident quality of care. Leroi et al.⁵⁹ indicated that the greater availability of resources (e.g., personal care hours, private rooms, opportunities for staff education) in larger facilities may positively impact on resident outcomes. Thus, small facilities may be disadvantaged relative to larger and most, especially newer, purpose-built RAC facilities in part due to economic considerations. Research by Ullmann⁵ found lower average costs in facilities with 100–199 beds than facilities with 0–49 and 50–99 beds. In light of evidence that links quality outcomes to size, future economic evaluation studies are warranted.

Strengths and Limitations

To our knowledge, this is the first study of its kind to examine the impact of a combination of three organizational factors (size, model, and provider) on

resident end-of-life symptom management and comfort. That being said, the measures of resident symptom management and comfort rely on RAC nurse self-reported data. However, questionnaires were completed by the RN most directly involved in the residents care 14 days before death and results correlated significantly with those reported by the health care assistants most closely involved in the decedents care. SM-EOLD and CAD-EOLD were developed to assess persons with dementia. Although they can be used to assess care and outcomes for people without dementia,^{60,61} evidence from other research⁶² suggests that additional items may also be needed to measure the quality of end-of-life care and quality of dying among RAC residents with diagnoses other than dementia. The small number of decedents from nonprofit large facilities included in the interaction effect models may impact on the generalizability of the results. Future research with a larger number of decedents from this size and type of facility is required. Finally, definitions of “chain” vary across studies ranging from two or more facilities,¹⁰ three or more facilities,⁶³ five or more facilities,³ whereas a third study did not specify the number.⁵ Such variation in definition prevents comparisons across results.

Recommendations and Policy Implications

The differences among RAC facilities presented above do not provide any simple solutions for the improvement of RAC resident quality of care. Nevertheless, the results lend themselves to a number of recommendations:

First, the complexity of the relationship between end-of-life resident outcomes and facility size, ownership model, and chain affiliation noted here and by other researchers^{10,60} warrants further exploration due to its potential implications for optimal RAC facility organization and alternative approaches for achieving efficiencies while maintaining the quality of care at the end of life. Second, as the residents of RAC facilities become more ethnically diverse,^{64,65} the relationship between ethnicity and symptom management should be further explored to gain insight into why differences exist as well as ways to address these differences. Finally, research that incorporates consideration of additional facility and environmental characteristics are shown to impact on resident outcomes is also recommended.

While acknowledging that both long-term care structure and government regulation vary widely between countries if the quality of care is influenced by practices, policies, and systems inherent to ownership and provider,^{10,18,54} a facility-specific approach might be ineffective and fail to identify root causes of differences in care outcomes. Switching to a broader regulatory approach may not be feasible for the individual

quality assurance systems (e.g., audit and certification systems) currently in place in some developed countries (e.g., New Zealand, Australia, United Kingdom, and United States)^{66,67} but could be a key feature in a comprehensive approach to identifying areas for improvement. Crucially, a reformed strategy could extend responsibility for resident care beyond the individual RAC facility to the organizational level.⁶⁸ A greater focus on “culture change” initiatives⁶⁹ to improve quality by changing organizational norms and values is also recommended.^{70,71}

Conclusion

RAC policy decisions should be both based on the best available evidence and should facilitate the provision of quality care.¹ Results reported here indicate better resident end-of-life comfort and symptom management in nonprofit facilities. Furthermore, the resources provided by nonprofit chain organizations may provide greater comfort for residents at the end of life. Policy responses to the evidence presented clearly depend on the jurisdictional and facility context. In light of the growing popularity of large RAC corporate chains in countries such as New Zealand, Australia, United Kingdom, and the United States,^{66,72} governments should develop policy in line with the evolving needs of ownership. Such policy would include requirements for clear financial accountability, quality reporting, oversight, and enforcement to deal with the challenges posed by privatization and marketization of RAC services.⁷³ Moving forward, the results of this and other studies point to the need to unpack which features of RAC ownership and corporate structuring have the most significant impact on resident care.⁷⁴ The knowledge gained will allow for the development of both an evidence-based and effective model of knowledge translation to ensure high quality of care for residents, especially at the end of life.

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Appendix

Supplemental Appendix Table 1

Summary of F statistics for Ownership Model, Size, Chain Affiliation, Ownership Model x Size, Ownership Model x Chain Affiliation, and Size x Chain Affiliation: Comfort Assessment in Dying With Dementia (CAD-EOLD) and Symptom Management End of Life in Dementia (SM-EOLD) ANCOVA Results

Effect	Degrees of Freedom	CAD-EOLD	Effect Size	Degrees of Freedom	SM-EOLD	Effect Size
Ownership model (profit/not for profit)	1163	.75	.005	1164	1.00	.006
Size (small/large)		2.65	.016		.15	.001
Ownership model × size		4.15	.025 ^a		2.61	.016
Chain affiliation (chain/independent)	1177	4.68	.028 ^a	1183	3.13	.019
Chain affiliation × Ownership model		.30	.002		.00	.000
Size × chain affiliation	1174	2.49	.014	1180	1.49	.008

^a $P < 0.05$.