Original Article

Organizational and market characteristics associated with nursing homes' affiliation with a continuing care retirement community

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Background: The rapid growth of the older adult population in the United States is a significant issue and continuum of care has become ever more important because it provides a range of options that are tailored to meet the needs of patients at various stages of their healthcare journey. Hence, continuing care retirement communities (CCRCs) have emerged as an integrated long-term care solution. However, CCRCs face limitations due to their location in affluent areas. This study examines differences in organizational and market factors, quality, and financial performance between nursing homes with and without CCRC affiliation.

Methods: Data sources included Nursing Home Compare, Healthcare Cost Report Information System (HCRIS), Payroll-Based Journal (PBJ), and the American Community Survey (ACS), spanning 2017 to 2021, were analyzed using random-effects logistic regression.

Results: Findings reveal that nursing homes with CCRC affiliation have higher quality star ratings but lower operating margins than those without the affiliation.

Conclusions: This study is significant because this is the first study to examine the association between the delivery of a continuum of care and an organization's performance, using a large national sample of nursing home facilities' data spanning 5 years. This study also provided a comprehensive examination of the CCRC affiliation by employing rigorous methodology. Future research will investigate the relationship between nursing homes with CCRC affiliation and different quality star rating domains, as well as the financial performance associated with quality star ratings for nursing homes with and without CCRC affiliation.

Keywords: Continuing care retirement community (CCRC); nursing home; long-term care solution; quality and financial performance

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Introduction

One of the most pressing concerns that the United States is currently faced with is the rapid growth of the older adult population. According to the U.S Census Bureau, by 2030, the older adult citizens, those who are 65 years or older, will outnumber the number of children that are going to be 18 years or younger [2019] (1). This rapid growth of the older adult population has major implications, such as a shortage of workers in certain industries, pressure on the Social Security system, and higher usage and demand for healthcare and long-term care services (2).

Long-term care can be viewed as a continuum of services for patients who require constant assistance with activities of daily living (ADLs) or for patients with chronic health conditions that require constant medical attention (3). Continuum of care has become ever more important because it provides a range of options that are tailored to meet the needs of patients at various stages of their healthcare journey. More specifically, the continuum of long-term care can be separated into two categories: location of care (nursing home, assisted living, home and community-based services) and type/intensity of care (24-hour nursing home care, hospice and palliative care) (3).

One of the models of care that attempts to integrate services across the continuum of long-term care is the continuing care retirement community (CCRC). The CCRC is a type of adult living community that provides a multitude of options and care levels within a single community. The main goal of a CCRC is to provide a continuum of care to its residents by reducing the need for transitions between residential settings and clinicians as they age (4). Traditionally, CCRCs have attracted older adult patients because they would allow them to receive both assisted living and nursing home-types of care model within a single community (5). Furthermore, CCRCs provide amenities such as cleaning and managing the rooms, congregate meals, and medication management through the help of nurses (6). However, there are certain negatives that follow the CCRC model as well. Due to the additional services and amenities, patients need to pay high entrance fee payments, along with monthly payments (4). As such, CCRCs tend to be located in more affluent areas and are more strategically constrained since they have to prioritize their CCRC residents over those in the community (7).

Nursing homes have crucial roles in the continuum of care provided by a CCRC because they provide care such as: round-the-clock medical care, rehabilitative services, and specialized care for patients with complex medical needs, which are considered to be the highest level of care provided within a CCRC (8). As patients' health needs change, individuals who need nursing home care can transition to the nursing home from various parts of the CCRC (8). The number of nursing homes affiliated with a CCRC has been increasing steadily, from 1861 to 1955 in the time span of 2010 to 2018 (7,9).

Residents in a CCRC can be transferred to a nursing home within their community when they require skilled nursing care or long-term care. As such, compared to free-standing nursing home residents, CCRC nursing home residents have the advantage of staying in their community and maintaining their social connections with other residents, while receiving consistent care from the providers and staff members whom they already know and trust (4).

However, relatively little is known about nursing homes affiliated with a CCRC and how they compare to non-affiliated or freestanding nursing homes in terms of quality and financial performance, as well as organizational and market factors. To date, there has been only one study by Bowblis & McHone that compared post-acute care quality of nursing homes affiliated with a CCRC versus those that were not (7). Using data from the Minimum Data Set for 2005 and after controlling for potential endogeneity, they found that CCRCs provided post-quality care that was similar or lower than nursing homes not affiliated with a CCRC.

This study contributes to the existing literature by utilizing national and longitudinal data spanning from 2017 to 2021 to explore differences in organizational and market factors, as well as quality and financial performance between nursing home with and without CCRC affiliation.

Highlight box

Key findings

- Continuing care retirement community (CCRC) affiliated nursing homes are associated with a higher quality star rating, but lower financial performance, than nursing homes that are not CCRC affiliated.

What is known and what is new?

- Due to the rapidly growing elderly population in the US, continuum of care has become ever more important because it provides a range of options that are tailored to meet the needs of patients at various stages of their healthcare journey.
- This study contributes to the existing literature by utilizing national and longitudinal data spanning from 2017 to 2021 to explore differences in organizational and market factors, as well as quality and financial performance between nursing home with and without CCRC affiliation.

What is the implication, and what should change now?

- There is a need to further explore the association between nursing homes with CCRC affiliation and the different domains of the quality star rating matrix as well as the financial performance relationship with quality star rating amongst nursing homes with and without CCRC affiliation.

Table 1 Secondary data utilized

Variables	2017	2018	2019	2020	Unique	Final	Data sources
CCRC	15,630	15,527	15,351	15,293	15,895		Nursing Home Compare
Quality star rating	15,431	15,285	15,135	15,045	15,451		Nursing Home Compare
Financial performance	13,557	13,656	13,557	13,483	14,099		Healthcare Cost Report Information System
Number of beds	15,630	15,527	15,351	15,293	15,905		Nursing Home Compare
Occupancy rate	14,440	15,056	14,923	14,969	14,553		Healthcare Cost Report Information System
RN hours per resident day	15,212	15,310	15,169	15,104	15,747		Payroll-Based Journal
LPN hours per resident day	15,212	15,310	15,169	15,104	15,747		Payroll-Based Journal
CNA hours per resident day	15,212	15,310	15,169	15,104	15,747		Payroll-Based Journal
Ownership	15,630	15,527	15,351	15,293	15,905		Nursing Home Compare
Chain affiliation	14,514	14,516	14,457	14,390	14,863		Healthcare Cost Report Information System
Payer mix	14,305	14,301	14,265	14,236	14,618	13,911	Healthcare Cost Report Information System
Average HCC risk score	15,011	14,937	14,820	14,620	16,168		Post-Acute Care and Hospice Provider Utilization and Payment Public Use Files
Racial/ethnic minority share	14,576	14,495	14,354	14,180	15,688		Post-Acute Care and Hospice Provider Utilization and Payment Public Use Files
HHI	14,215	14,321	14,222	14,188	14,555		Healthcare Cost Report Information System
Location	33,120	33,120	33,120	33,120	33,120		American Community Survey
Median household income	33,120	33,120	33,120	33,120	33,120		American Community Survey
Poverty rate	33,120	33,120	33,120	33,120	33,120		American Community Survey
Education level	33,120	33,120	33,120	33,120	33,120		American Community Survey
People over 65	33,120	33,120	33,120	33,120	33,120		American Community Survey
Medicare advantage penetration	33,120	33,120	33,120	33,120	33,120		American Community Survey

CCRC, continuing care retirement community; RN, registered nurse; LPN, licensed practical nurse; CNA, certified nurse assistant; HCC, hierarchical condition category; HHI, Herfindahl-Hirschman index.

Methods

Data

Table 1 shows the secondary data that was used from Nursing Home Compare, Healthcare Cost Report Information System (HCRIS), payroll-based journal (PBJ), and the American Community Survey (ACS) for the period 2017–2021. Nursing Home Compare provides nursing home general information, quality measures, deficiencies, and penalties (10). The HCRIS provides annual data on nursing home cost, charges, and utilization (11). The PBJ has nursing homes' daily staffing information (12). The ACS is a United States Census Bureau survey that collects population demographic, social, economic, and housing information (13). After merging these data files, the final analytic sample had 13,911 unique observations (52,400 nursing home-year observations). Eleven percent of nursing homes had the CCRC affiliation in 2017 and it stayed the

same until 2021.

Variables

The dependent variable was the nursing homes' affiliation to a CCRC (yes *vs.* no). Nursing homes with the CCRC affiliation are the ones that provide multiple levels of care, i.e., offer nursing home care, independent living, assisted living, memory care and/or rehabilitation in one campus.

The independent variables were categorized into organizational-level and community-level factors. The former included quality star rating (a 1 to 5 scale based on resident-level 11 performance measures where a higher scale indicates better quality), financial performance [operating margin calculated as $\left(\frac{\text{operating revenue} - \text{operating expense}}{\text{operating revenue}}\right)$], organization size (operationalized as the total number of beds), occupancy rate, staffing hours [hours per resident day for registered nurse (RN), licensed practical nurse (LPN), and certified nurse assistant (CNA)], ownership status (for profit *vs.* not-for-profit *vs.* government), chain affiliation (yes *vs.* no), and payer mix (percentages of inpatient days with private pay, Medicare, or Medicaid as the main payer). Racial/ethnic minority share (percentage of non-White patients), and hierarchical condition category (HCC) risk score. The risk score is based on HCC coding risk-adjusted model that uses International Classification of Diseases, Clinical Modification (ICD-10-CM) coding to assign risk scores to patients based on patients' age, gender, medical conditions, condition acuity, and patients' overall health status. The community level factors were competition [Herfindahl-Hirschman index (HHI), calculated by squaring the market share of each nursing home in the county and summing the resulting numbers], location (metropolitan *vs.* micropolitan *vs.* small town *vs.* rural area), median household income, poverty rate (percentage of people that live in poverty), education level (percentage of people over 25 with high school degree), people over 65 (percentage of people 65 and over), and Medicare Advantage penetration rate (percentage of Medicare eligible people that enrolled in alternative private plans).

Statistics analysis

We provided the means (and standard deviation) of continuous variables and frequencies (and percentages) of categorical variables (*Table 1*). Independent samples *t*-test and chi-square test of independence were used to examine the differences between the nursing homes with and without the CCRC affiliation. To study the factors associated with the CCRC affiliation, we used random-effects logistic regression where the CCRC affiliation was regressed on nursing homes' organizational and community-level factors. We used state and year fixed effects to account for state-level variations and temporal effects. Stata 17 was used for data management and analysis. A P value lower than 0.05 was used to detect statistical significance.

Results

Descriptive statistics for baseline 2017 are shown on *Table 2*. On average, higher percentage of CCRC nursing homes had a 5-star rating (59.10%) compared to the ones without the CCRC affiliation (48.10%), whereas the latter group had a higher percentage of 1–3-star ratings. Freestanding nursing homes were, on average, larger (116.32 *vs.* 92.09 beds), chain affiliated (58.83% *vs.* 47.76%), and for-profit (80.21% *vs.* 33.49%). They also had higher operating margins (0.17 *vs.* 0.04). However, CCRC nursing homes had higher staffing hours (e.g., 0.55 *vs.* 0.38 for RN), occupancy rates (83.75% *vs.* 81.15%), higher private pay (47.65% *vs.* 28.71%) and Medicare (18.50% *vs.* 14.05%) patients, operated in more competitive environments (0.14 *vs.* 0.21), and served communities with higher household income ($61,630 *vs.* $58,544).

Table 3 shows the results of a random-effects logistic regression with odds ratio. Quality star rating was positively associated with the CCRC affiliation. For example, nursing homes with a 5-star rating, in comparison with those with a one-star rating, had 2.1 times higher odds of being CCRC affiliated (OR =2.090, P<0.001). Higher staffing hours also were positively correlated with the CCRC affiliation. For instance, 1 hour increase in RN hours per resident day was associated with 38% increase in the likelihood of the CCRC affiliation (OR =1.83, P<0.01). Furthermore, not-for-profit nursing homes, compared with for-profit ones, had a higher likelihood of the CCRC affiliation (OR =79.624, P<0.001).

On the other hand, financial performance, organization size, percent Medicaid share, HCC risk scores, racial/ethnic minority share, and location (non-metro location) were associated with a lower likelihood of being CCRC affiliated. For example, 1 percent increase in operating margin was associated with 3% lower odds of being CCRC affiliated (OR =0.972, P<0.001). Likewise, one additional bed was associated with 2% lower odds of being CCRC affiliated (OR =0.984, P<0.001). Among payer mix variables, 1

Table 2 Descriptive statistics in 2017 (N=12,297)

Variables	Continuing care retirement community		P value
	No (n=11,001)	Yes (n=1,296)	
Organizational-level factors			
Quality star rating, n (%)			
*	453 (4.12)	15 (1.16)	
**	1,102 (10.02)	76 (5.86)	
***	1,705 (15.50)	161 (12.42)	<0.001
****	2,450 (22.27)	278 (21.45)	
*****	5,291 (48.10)	766 (59.10)	
Operating margin, mean (SD)	0.17 (0.18)	0.04 (0.27)	<0.001
Number of beds, mean (SD)	116.32 (58.02)	92.09 (49.40)	<0.001
Occupancy rate, mean (SD)	81.15 (16.94)	83.75 (16.67)	<0.001
Staffing, mean (SD)			
RN hours per resident day	0.38 (0.27)	0.55 (0.38)	<0.001
LPN hours per resident day	0.79 (0.28)	0.86 (0.35)	<0.001
CNA hours per resident day	2.12 (0.47)	2.46 (0.57)	<0.001
Ownership, n (%)			
For-profit	8,824 (80.21)	434 (33.49)	
Not-for-profit	1,631 (14.83)	838 (64.66)	<0.001
Government	546 (4.96)	24 (1.85)	
Chain affiliation, n (%)			
No	4,529 (41.17)	677 (52.24)	<0.001
Yes	6,572 (58.83)	619 (47.76)	
Payer mix, mean (SD)			
Private pay	28.71 (21.86)	47.65 (22.56)	<0.001
Medicare	14.05 (11.63)	18.50 (15.95)	<0.001
Medicaid	57.20 (24.69)	33.85 (26.20)	<0.001
Average HCC risk score, mean (SD)	2.88 (0.69)	2.39 (0.47)	<0.001
Racial/ethnic minority share, mean (SD)	20.14 (20.99)	9.26 (12.09)	<0.001
Community-level factors			
Herfindahl-Hirschman index, mean (SD)	0.21 (0.25)	0.14 (0.16)	<0.001
Location, n (%)			
Metro	7,690 (69.90)	1,018 (78.55)	
Micro	1,569 (14.26)	169 (13.04)	<0.001
Small town	1,140 (10.36)	80 (6.17)	
Rural area	602 (5.47)	29 (2.24)	
Median household income, mean (SD)	58,544 (15,944)	61,630 (15,737)	<0.001
Poverty rate, mean (SD)	13.94 (5.08)	12.57 (4.42)	<0.001
Education level, mean (SD)	12.00 (5.11)	10.38 (4.29)	<0.001
People over 65, mean (SD)	16.74 (4.01)	16.57 (3.78)	0.155
Medicare advantage penetration, mean (SD)	31.72 (14.19)	33.18 (14.16)	<0.001

SD, standard deviation; RN, registered nurse; LPN, licensed practical nurse; CNA, certified nurse assistant; HCC, hierarchical condition category.

Table 3 Random-effects logistic regression [N=13,911 unique observations during 2017–2020 (52,400 observation-year)]

Variables	Odds ratio	95% confidence intervals
Organizational-level factors		
Quality star rating		
*	Reference	
**	1.611	0.959, 2.704
***	1.717#	1.029, 2.867
****	1.817#	1.088, 3.034
*****	2.090###	1.244, 3.511
Financial performance	0.972###	0.966, 0.978
Number of beds	0.984###	0.981, 0.988
Occupancy rate	1.006#	1.001, 1.011
Staffing		
RN hours per resident day	1.830##	1.169, 2.866
LPN hours per resident day	2.265###	1.440, 3.563
CNA hours per resident day	3.363###	2.559, 4.420
Ownership		
For-profit	Reference	
Not-for-profit	79.624###	54.878, 115.529
Government	0.691	0.348, 1.371
Chain affiliation		
No	Reference	
Yes	0.859	0.654, 1.129
Payer mix		
Medicare	0.989	0.978, 1.000
Medicaid	0.954###	0.948, 0.959
Average HCC risk score	0.360###	0.283, 0.457
Racial/ethnic minority share	0.943###	0.931, 0.956
Community-level factors		
Herfindahl-Hirschman index	0.018###	0.006, 0.057
Location		
Metro	Reference	
Micro	0.613	0.374, 1.003
Small town	0.304###	0.158, 0.587
Rural area	0.048###	0.020, 0.115
Median household income	1.000	1.000, 1.000
Poverty rate	0.958	0.899, 1.022
Education level	1.031	0.980, 1.084
People over 65	0.953	0.901, 1.008
Medicare advantage penetration	1.011	0.995, 1.026

#, P<0.05; ##, P<0.01; ###, P<0.001. RN, registered nurse; LPN, licensed practical nurse; CNA, certified nurse assistant; HCC, hierarchical condition category.

percent increase in Medicaid was associated with 5% lower likelihood of the CCRC affiliation (OR =0.954, P<0.001). Furthermore, a one unit increase in the HCC risk score was associated with 64% lower odds of being CCRC affiliated (OR =0.360, P<0.001), while a 1 percent increase in racial/ethnic minorities was associated with 6% lower odds of being CCRC affiliated (OR =0.943, P<0.001). Also, nursing homes in non-metro areas had lower likelihood of the CCRC affiliation. For example, nursing homes in rural areas, compared to the ones in urban metro areas, had lower odds of having the CCRC affiliation (OR =0.048, P<0.001).

Conclusions

As the United States continues to experience rapid growth in the older adult population, rising costs of providing older adult care, as well as healthcare-related workforce shortages, the need to examine health care services for the older adult has become increasingly important. Nursing homes serve a crucial role in the delivery of health care spectrum of health care delivery as they provide non-acute level of care to those who have needs greater than what can be cared for at home. CCRC affiliated nursing homes broaden the spectrum of health care by providing "desirable housing, amenities, social activities, and health-related services that facilitate the ability of residents to 'age in place'" (14). The primary objective of this research was to identify differences in organizational and market factors, quality and financial performance between nursing homes with and without CCRC affiliation.

Regarding nursing home quality performance, our results indicated that the CCRC affiliation is associated with a higher quality star rating. In addition, words, CCRC affiliated nursing homes had higher nurse staffing ratios than free standing nursing homes. However, even after controlling for nurse staffing and acuity level, CCRC affiliated nursing homes were associated with higher quality star ratings. This may be explained by the fact that the CCRC affiliated nursing homes have access to the infrastructure of CCRC, which may facilitate better staff training and hiring of higher quality staffing (15). Also, CCRC affiliated nursing homes may be able to provide more consistent staff assignments and the staff is more likely to know the residents personally, which may facilitate better processes and outcomes of care (15).

Second, CCRC affiliated nursing homes were found to be associated with lower financial performance; this despite CCRC affiliated nursing homes having a lower Medicaid payer mix. There could be several possibilities as to why this may be the case. This may be a result of the greater operational expense that may be required to provide the more extensive services found at CCRC affiliated nursing homes compared to those without the affiliation. This in combination of higher staffing ratios and potential higher salaries of CCRC affiliated nursing homes, may explain the lower financial performance. While CCRC nursing homes may have lower financial performance than freestanding nursing homes, they may benefit from the CCRCs' ability for cross subsidization. Revenue generated from other components of the CCRC, such as independent living and assisted living, may assist in covering the costs associated with nursing home care. Other important findings are that CCRC affiliated nursing homes are less likely to serve rural communities and racial/ethnic minorities. One reason for their predominance in urban areas may be their need for scale, which urban areas are able to provide. Racial/ethnic minorities may face socioeconomic barriers to CCRCs due to their high entrance fees.

Despite CCRC nursing homes being associated with better quality, they are not accessible to everyone, given the out-of-pocket costs associated with it. This is particularly the case for rural and racial/ethnic minority populations. However, there are alternative models that may reap some of the benefits of the CCRC nursing homes, without the extensive out-of-pocket expenses. For example, Accountable Care Organization (ACO) models have shown similar benefits to those offered by CCRC affiliated nursing homes. The coordinated approach provided by ACOs fosters seamless transitions across the continuum of care, addressing both acute and long-term care needs. For example, Evercare, an ACO program offered by United Healthcare provides comprehensive care coordination for individuals who require both acute and long-term care (16). Another example is CMS's Program of All-Inclusive Care for the Elderly (PACE). Like Evercare, PACE provides comprehensive medical and social services to certain older and frail patients still residing in the community (17).

This study is significant because this is the first study to examine the association between the delivery of a continuum of care and an organization's performance, using a large national sample of nursing home facilities' data spanning five years. This study also provided a comprehensive examination of the CCRC affiliation by employing rigorous methodology. That being said, there are two limitations that need to be noted. While we control for a range of organizational and market variables, CCRC

affiliated nursing homes may be different than free-standing nursing homes on unobserved characteristics. The second limitation of this study is that the definition of CCRC affiliation that is provided covers a wide variety of levels of care (e.g., assisted living versus memory care). Thus, we are not able to speak to differences between affiliations with assisted living versus independent care, which can provide a meaningfully different levels of care.

In conclusion, nursing homes with CCRC affiliation are more likely to be associated with higher quality star ratings than those without the affiliation. From an organizational financial perspective, nursing homes with CCRC affiliation are less likely to have as much operating margins as those without the affiliation. There is a need to further explore the association between nursing homes with CCRC affiliation and the different domains of the quality star rating matrix as well as the financial performance relationship with quality star rating amongst nursing homes with and without CCRC affiliation.

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Footnote

Data Sharing Statement: Available at https://jhmhp.amegroups.com/article/view/10.21037/jhmhp-23-85/dss

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Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at https://jhmhp.amegroups.com/article/view/10.21037/jhmhp-23-85/coif). R.W.M. serves as an unpaid editorial board member of *Journal of Hospital Management and Health Policy* from March 2023 to February 2025. The other authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. The study utilized secondary datasets and no IRB was required to conduct this study.

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