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Does Nursing Home Ownership Change Affect Family Ratings on Experience with Care?

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Abstract

Person-centeredness may suffer in NHs with recent ownership changes. This study identifies associations between ownership change and reported care experiences, important measures of person-centered care, for long-term residents in Maryland NHs. Care experience measures and ownership change data were collected from Maryland Health Care Commission reports, which reported data on 220 Maryland NHs from 2011–2012. Facility and market covariates were obtained from 2011 NH Compare and Area Health Resource Files. Linear regression was used to examine whether ownership change in 2011 was associated with lower care experience ratings reported during April–June 2012. Dependent variables were overall care rating (scale 1–10), percent of respondents answering that they would recommend the NH, and assessments of five care and resident life domains (scale 1–4). Care experiences reported in 2012 were high; however, after controlling for covariates, ownership change was associated with significant decreases in 6 out of 7 measures, including a 0.39-point decrease in overall care rating (*P*=0.001). NH managers and policymakers should consider strategies to improve patient-centeredness post-ownership change.

Keywords

nursing homes; ownership change; experience with care

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BACKGROUND

Poor quality of care in nursing homes (NHs) has long been a focus of the national healthcare agenda. Quality of care issues tend to be more pronounced in NHs with for-profit owners or those owned by large corporate chains (Harrington, Olney, Carrillo, & Kang, 2012; Harrington, Woolhandler, Mullan, Carrillo, & Himmelstein, 2001; Hillmer, Wodchis, Gill, Anderson, & Rochon, 2005). Ownership changes of NHs are common (Banaszak-Holl, Berta, Bowman, Baum, & Mitchell, 2002; N. G. Castle, 2005), mostly due to frequent transactions of NHs by chain organizations and private-investment firms in recent years (Cohen & Spector, 1996; Harrington, Hauser, Olney, & Rosenau, 2011; Harrington, Mullan, & Carrillo, 2004). Ownership changes may cause disruptions in NH operating procedures that influence care delivery, such as decreased investment in nurse staffing and reduced expenditures on resident care (Banaszak-Holl, Berta, Bowman, Baum, & Mitchell, 2000; Harrington et al., 2012).

Existing literature suggests that NH chains have lower staffing levels, worse resident outcomes, and a higher number of deficiency citations, compared to independent facilities (Banaszak-Holl et al., 2002; Cohen & Spector, 1996; Harrington et al., 2004). Chain organization has become more prominent over the last two decades, with 55% of NHs being chain-affiliated in 2011 (Kaiser Family Foundation, 2013), and approximately 14% of residents being cared for in NHs operated by the 10 largest chains in the US (Harrington et al., 2011). Chains may target high or low quality NHs, and NHs that are independent or already part of a chain, for purchase. Acquisition offers investors the opportunity to increase market share and efficiency (Banaszak-Holl et al., 2000; Banaszak-Holl et al., 2002).

Purchasing organizations usually impose their operating procedures on acquired NHs (Banaszak-Holl et al., 2002), which may lead to changes in managerial approach, mission, nurse staffing, costs, technology adoption and use, and market strategy (Hannan & Freeman, 1984; McKay, 1991; Zinn, Mor, Feng, & Intrator, 2009). These transitions may distract management and staff from patient care, influence care delivery, or limit ability to focus on patient-centered care, possibly reducing residents' quality of life. For example, following ownership change, NHs may reduce nurse staffing (Harrington et al., 2012), opting to replace more expensive labor, such as registered nurses (RNs), with less costly staff, including licensed practical nurses (LPNs) and certified nurse aides (CNAs). In addition, Banaszak-Holl et al found that quality (measured by deficiency number and pressure ulcer rate) in acquired NHs tended to assimilate towards that of the purchasing chain (Banaszak-Holl et al., 2000). Transitions may also impact resource utilization, potentially pulling resources away from resident care, for example, by reducing service provision (Holmes, 1996).

NH managers and policymakers thus need to consider that the purchasing organization's rationale for acquisition, as well as chain and NH quality pre-ownership change, will likely influence resident outcomes and consumer experiences with care post-ownership change. By identifying key areas of NH residents' care and quality of life that decline following

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ownership changes, NH decision-makers may be able to implement policies to proactively combat these potential challenges.

Previous analyses of ownership change have not considered consumer perspectives on quality, failing to account for consumer experiences or resident and family engagement with care (Frentzel et al., 2012; Rantz & Flesner, 2004). Recent literature has demonstrated that consumer ratings of experience with care are an appropriate measure of person-centered care, and higher quality of care may be associated with improved well-being among residents, contributing to higher experience with care ratings (Li et al., 2013). In contrast, quality reductions associated with ownership change may lead to lower experience with care. However, little is known regarding the association between NH ownership change and consumer reported care experiences. This study fills in the gap by examining potential impact of ownership changes on families' and other responsible parties' report on experiences with care for long-term residents in Maryland NHs.

METHODS

Conceptual Framework & Hypotheses

An individual NH can be considered to be a system, with behaviors of both staff and management being driven by organizational goals and organizational structural characteristics (Meadows, 2008), such as profit status, staff intensity or mix, and chain ownership. As described above, purchasing organizations usually impose their operating procedures on acquired NHs (Banaszak-Holl et al., 2002), suggesting that a change in NH ownership can lead to changes in these organizational and structural characteristics. In the short term, these changes may cause some chaos at the organizational level, possibly hindering progress in maintaining or developing institutional goals, and may cause turmoil for staff and residents. These changes, as well as staff and management responses to these changes, may lead to less optimal staffing patterns and lower quality of care (Harrington et al., 2012; Harrington, Zimmerman, Karon, Robinson, & Beutel, 2000). In addition, ownership change may lead to organizational changes that compromise non-healthcare related activities or performance, such as reduced quality of food and meals, fewer activities and entertainment options provided to residents, and reduced NH décor and general upkeep, likely reducing residents' quality of life. Therefore, this study focuses on the largely unstudied area of research and is designed to determine the association of NH ownership change with consumer reported care experiences. We hypothesize that, among Maryland NHs, NH ownership change in 2011 was associated with lower care experience ratings reported during April–June 2012.

Data

Since 2007, the Maryland Health Care Commission (MHCC) has annually surveyed designated responsible parties (mostly family members) of long-term care residents with length of stay >=90 days to measure experiences with NH care. The 2012 survey, administered during April–June 2012, had a total of 19 items and contained 2 overall measures of care experience: rating of overall care received (scale 1–10, higher scores are better), and whether respondents would recommend the NH to someone they know who

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needs NH care. The other 17 items (scale 1–4, higher scores are better) assessed experiences with 5 care and resident life domains: staff and administration of the NH, care provided to residents, food and meals, autonomy and residents' rights, and physical aspects of the NH (Maryland Health Care Commission, 2012). Average facility response rate for the 2012 survey was 56.32%. With the goal of achieving a minimum response rate of 50% in each facility, the Maryland Health Care Commission contacted individual family members, for example, via follow-up telephone calls and reminder postcards (Maryland Health Care Commission, 2012).

A majority of the survey items were adapted from the nursing home Consumer Assessment of Healthcare Providers and System surveys, which were developed and tested by the Centers for Medicare and Medicaid Services and the Agency for Healthcare Research and Quality (Frentzel et al., 2012). Research on these measures indicates that the composite scores and individual items used on the Maryland Health Care Commission survey have high internal consistency and validity. Furthermore, a recent study by Li et al found high correlations between the composite scores in the survey domains and the two overall ratings, suggesting high concurrent validity (Li, Ye, Glance, & Temkin-Greener, 2014). For more details on MHCC survey items and publicly reported data, please see Li et al 2014 (Li, Ye, et al., 2014).

The MHCC publicly reported on their website 7 facility-level rating scores derived from survey items. Published scores included rating of overall care, reported as an average with a range of 1–10; percent of respondents who would "definitely" or "probably" recommend the NH; and composite ratings for each of the 5 domains, derived from the 17 items and reported as an average with a range of 1 to 4.

The 2012 survey reports were linked to 2011 NH Compare data and 2011 Area Health Resource Files, from which facility and market controls were obtained. NH Compare is widely used in NH research as a comprehensive source of facility-level covariates and is available from the Centers for Medicare and Medicaid Services. Area Health Resource Files are assembled annually from multiple sources and are often used as a resource for county-level characteristics.

Sample

There were 231 NHs in Maryland that could have been included in analyses. Hospital-based NHs were excluded because they serve only short-term residents, and are likely different from other NHs serving both short- and long-term residents. After excluding hospital-based NHs, information on ownership change in 2011 was available for 213/220 (96.8%) NHs.

Variables

Dependent variables obtained from MHCC were 2 overall measures of care experience and composite measures for 5 domains described above, for a total of 7 dependent variables. The measure of overall experience with care was a continuous variable defined as the within-facility average based on survey responses, with a possible range of 1–10. The percent of respondents who would recommend the NH was also defined as a continuous variable, with a possible range of 0–100%. Finally, the composite measures of care experiences in different

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domains were also within-facility averages based on survey responses, were defined as continuous variables, and each had a possible range of 1–4. The key independent variable was whether the NH changed ownership in 2011, obtained from the MHCC report. NH covariates were categorized as organizational characteristics, including profit status (labeled as 1 if for-profit and 0 otherwise, determined before ownership change, if one occurred), chain affiliation (labeled as 1 if part of a chain and 0 if independent, determined prior to ownership change, if one occurred), occupancy rate, and certified number of beds; factors measuring NH environment artifacts including number of detached toilets, number of private and attached toilets, and number of shared and attached toilets (Miller et al., 2014); and characteristics more directly relevant to quality of life and quality of care for residents, including total number of deficiencies, and nurse staffing hours per resident/day for certified nurse assistants, licensed practical nurses, and registered nurses. County controls included market competition, rural/urban location, percent of people in the county aged >=65 years, and median household income. Market competition is derived using the Herfindahl-Hirschmann Index (HHI), defined as the sum of squared shares of beds of all NHs in each county; market competition was then calculated as 1-HHI, ranging from 0 (monopoly) to 1 (perfect competition). There are 24 counties in Maryland, including Baltimore City ("Local Government Counties," 2014), which provided appropriate sample size for county-level covariates.

Analyses

Descriptive statistics were conducted for the entire sample and by whether ownership change occurred (yes/no). Bivariate linear regression was used to determine the association between ownership change and each of 7 dependent variables measuring family/responsible party report on experience with care. Multivariate linear regression was then used to estimate the relationship between ownership change and each of 7 care experience measures, sequentially controlling for organizational characteristics of NHs, NH environment and quality characteristics, and county covariates in 3 sets of models.

Analyses were conducted using Stata 12 (StataCorp, College Station, TX). This study was approved by the University of Rochester School of Medicine Research Subjects Review Board (RSRB00045332), and the University of Rochester School of Medicine Research Subjects Review Board waived informed consent for survey respondents.

RESULTS

Descriptive Characteristics

Sample characteristics for 2011 are provided in Table 1. The majority of NHs are for-profit (63.47%) and chain-affiliated (57.73%). Average number of beds is 128 and average number of Medicare and Medicaid beds is 106, with an average occupancy rate of 86.59%. Roughly 92% of NHs are in urban areas. Highest staffing intensity occurs in CNAs. Average number of deficiency citations is 12.25. Market competition is 0.88, closer to perfect competition than monopoly. Average percent elderly in county is 13.28%, and median household income is $66,038.

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Association between NH Ownership Change and Care Experience Ratings

Overall, 22/220 (10.00%) NHs changed ownership in 2011. In general, family/responsible party experiences with resident care reported in 2012 were high: average overall care rating was 8.37/10 (SD=0.70), and almost 90% of respondents would recommend the NH. Across the 5 care and resident life domains, ratings ranged from 3.44/4.00 to 3.68/4.00, with variation occurring across facilities (SD=0.15–0.25). In bivariate analyses, ownership change was associated with significant decreases in experience with care ratings across all 5 domains. Ratings among NHs undergoing change were 0.15–0.20 points lower than ratings among NHs that did not ($P<0.001$). Ownership change was also associated with a 0.71-point ($P<0.001$) decrease in overall care rating, and an 8.6% ($P<0.001$) decrease in percent of respondents who would recommend the NH.

Multivariate regression results for key variables are in Table 2. (Complete results of all three models are provided in the Appendix). In the full model, controlling for all facility and market covariates, ownership change was associated with significant decreases in experience with care ratings by 0.08 points ($P=0.011$) for staff and administration, 0.11 points ($P=0.001$) for care provided to residents, 0.12 points ($P=0.007$) for autonomy and rights, and 0.10 points ($P=0.008$) for physical aspects. Ownership change was also associated with a 0.39-point ($P=0.001$) decrease in overall care rating, and a 5.4% ($P=0.004$) decrease in proportion of respondents who would recommend the NH. In order to interpret the effects of ownership changes in a more practically meaningful way (less affected by different scales of the measures), we divided the significant beta coefficient (in each full model) by the actual range of response values for each composite and overall score. Results are as follows: ownership change was associated with a 9.06% decrease in the staff and administration score, a 9.79% decrease in the care provided to residents score, an 8.86% decrease in the autonomy and rights score, a 7.77% decrease in the physical aspects score, a 9.71% decrease in the overall care rating, and a 10.61% decrease in proportion of respondents who would recommend the NH. Furthermore, results of the three sets of models suggest that NH organizational and quality characteristics and market covariates only explained a small portion of associations between ownership change and reported care experience.

DISCUSSION

The Maryland Health Care Commission (MHCC) publicly reported experience-with-care survey results on their website, reducing information asymmetry and, possibly, encouraging NHs to improve quality and patient-centered care. Overall, families and responsible parties were satisfied with NH care and would recommend the NH; however, findings demonstrate that NH ownership changes are associated with significant decreases in experience with care ratings overall and across care and resident life domains. These associations persist after controlling for NH and market covariates.

Study results are consistent with prior literature examining associations between ownership change and reduced NH quality (Banaszak-Holl et al., 2002; Cadigan, Stevenson, Caudry, & Grabowski, 2014; Harrington et al., 2012; Stevenson & Grabowski, 2008) and add to the nascent body of literature on consumer-reported experience with care in the NH setting (Frentzel et al., 2012; Li et al., 2013; Li, Li, & Tang, 2014). The NH quality metrics

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examined in prior studies of ownership changes, such as nurse staffing and clinical outcomes (e.g., pressure ulcer rate), may not allow for comprehensive assessment of resident welfare and person-centered care. Long-term NH care has broad objectives of maintaining functional status of residents and improving quality of life. Clinically-oriented measures are important in determining the technical aspects of care quality, but residents and family members may view less clinical factors, such as physical environment, communication with care staff, and engagement with care, as better indicators of NH experience. Experience with care ratings can measure these factors, which are likely not accounted for in existing clinical measures (Li, Li, et al., 2014), and may give prospective consumers a more practical understanding of resident experience.

Chain performance and rationale for acquiring NHs may affect consumer experiences with care post-ownership change. Existing literature suggests that purchasers may attempt to increase market share, expand service provision, improve efficiency, or increase profits (Banaszak-Holl et al., 2002; Harrington et al., 2001; Harrington et al., 2000) and, thus, NH care may be influenced by the purchasing organization's goals. Furthermore, literature on why purchasers acquire NHs and which types of NHs (high or low quality) they acquire is inconclusive (Banaszak-Holl et al., 2000; Banaszak-Holl, Zinn, & Mor, 1996; Wells & Banaszak-Holl, 2000), and suggests an area for future research.

Regardless, our findings demonstrate that ownership change is associated with lower consumer ratings of NH resident care experiences, and such associations are not attenuated by controlling for NH organizational and quality characteristics and market covariates. These findings are particularly concerning as they indicate that residents' quality of life may be influenced negatively by ownership change and accompanying structural changes, possibly including changed managerial approach, mission, staffing, expenditures, technology adoption and use, and market strategy.

Policy Implications

Findings of this study have important policy implications. In particular, our study suggests that, although overall care rating is high, it is crucial for NH managers and policymakers to be aware that ownership change of NHs can negatively influence resident care experiences. By recognizing that these transitions were common in the past decade (Stevenson, Grabowski, & Bramson, 2009) and will likely continue to occur frequently in the future, policymakers should consider implementing policies to protect against the negative effects associated with ownership change. Findings of this study enhance the abilities of policymakers and NH managers to take action, as the associations between ownership change and key domains important to resident quality of life are addressed.

From the regulatory point of view, whereas it would be too difficult for state regulators and policymakers to divide larger NH organizations into smaller facilities, or to force chain organizations to disband, barring monopoly, state regulators should pay closer attention to NHs with recent ownership changes. For example, additional on-site inspections on these facilities shortly after transactions, in addition to annual inspections as currently mandated, may be needed to help ensure adequate nurse staffing intensity and/or mix, and prevent resident health and quality of life from worsening, during the post-transaction period. In

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addition, in order to protect against reduced levels of patient-centered care in newly-transacted facilities, policymakers could require new owners of the facilities to make adequate funding available for the promotion of residents' quality of life, such as through hiring of dedicated activities staff, providing engaging entertainment and programming, and improving food and meal choices.

In addition to more intensive oversights and mandates on NHs with recent ownership changes, it is also possible that state policymakers and NH managers design and implement non-punitive quality improvement initiatives in these facilities so as to promote patient-centered care and to mitigate the negative effects of ownership change on resident quality of life and patient-centeredness. Based on study findings, examples of strategies that NH managers or policymakers could implement to emphasize patient-centered care throughout ownership change are: (1) providing staff education on resident autonomy; (2) retaining dedicated activities staff to enhance programming options while maintaining a safe environment; (3) increasing dining options and meal times; (4) and improving NH décor and addressing NH maintenance in a timely manner. Moreover, innovative care models, such as the Eden Alternative (Thomas, 1996), the Wellspring Program (Stone et al., 2002), and the Green House Project (Kane, Lum, Cutler, Degenholtz, & Yu, 2007) have been developed and tested to foster homelike environments in NHs, residents' quality of life, and engagement of residents and families. NH managers and new facility owners could take advantage of the substantial organizational changes associated with ownership change and implement these care models. More research and cost-effectiveness analyses, however, are needed to determine the feasibility of remodeling care delivery, and the appropriate care model that provides the greatest benefit to residents' quality of life, for NHs experiencing ownership changes.

Limitations

Study sample and analyses are based on data from NHs in one state, limiting generalizability. Although characteristics of Maryland NHs do not differ substantially from national averages, the Maryland NH market might be different in potentially important ways. Therefore, conducting similar state- or national-level analyses is warranted. However, findings of this study address a knowledge gap by examining the impact of ownership changes on families' and other responsible parties' report on experiences with care for long-term residents, and identify a major issue in NH residents' quality of life. Future research and policy initiatives could develop approaches to target facilities that change owners for quality improvement.

Another potential limitation is that only 22 NHs in Maryland changed ownership in 2011. Although this number is small, the percent of NHs that changed ownership is similar to that found in other states (Stevenson et al., 2009), and significant decreases in experience with care ratings were found in 4 out of 5 domains and 2 overall measures.

Also, the average facility response rate for the 2012 survey was 56.32%, causing potential concerns about nonresponse bias. However, the Maryland Health Care Commission did intensively contact individual family members, issuing follow-up telephone calls and reminder postcards, to ensure a minimum response rate of 50% for each facility (Maryland

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Health Care Commission, 2012). Furthermore, this response rate is relatively high, in comparison to the majority of other surveys in nursing homes.

In addition, other facility characteristics or market conditions that cannot be measured may also be associated with care experience ratings; thus, confounding bias may not be completely obviated for the associations between ownership change and care experience ratings.

Another limitation of this work is the cross-sectional study design. Causation cannot be established, and findings may be part of a larger, ongoing trend in quality of life for NH residents. If the latter is true, more research is needed to determine the cause of this trend. Although causation cannot be established, our results are similar to those obtained in longitudinal studies. For example, Banaszak-Holl et al determined that NH quality (measured by pressure ulcer rates and deficiency number) decreased in the year following ownership change, but improved significantly in subsequent years (Banaszak-Holl et al., 2000). Therefore, ownership change may cause some disruptions which have a negative effect on quality, but these disruptions may be overcome over time. As both short- and long-term changes in NH care may be influenced by purchasing rationale or chain and NH quality pre-ownership change, longitudinal analyses testing long-term effects of ownership change or multiple ownership changes may be warranted in future research. Nevertheless, our results suggested that NH decision-makers may need to invest in strategies to prevent post-change disruption from reducing quality and person-centered care in the short-term in order to protect the vulnerable NH resident population, and that future policy initiatives may need to target NHs undergoing ownership change for quality improvement.

Furthermore, data used were family/responsible party ratings of resident experiences with care; residents' perspectives were not directly analyzed. Family members usually report higher care experience ratings than residents do, although family and resident reports tend to be highly correlated (N. Castle, 2005; Castle, 2006); this suggests that NH care could be less patient-centered than family members report, and that residents' quality of life may be lower than family members realize. Future research should, perhaps, attempt to gain a better understanding of residents' experiences with care especially in NHs undergoing recent ownership changes.

CONCLUSIONS

Results show that NH ownership change is associated with lower reported experience with care ratings overall and across several domains, suggesting that patient-centeredness suffers during these transitions. Efforts to guarantee a continuum of high quality, patient-centered care throughout ownership changes are warranted in order to prevent reductions in NH residents' quality of life. As discussed in detail before, policymakers and NH managers may need to invest in quality assurance and quality improvement initiatives targeting NHs that are changing ownership in order to protect the vulnerable NH resident population.

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Table 1

Facility Characteristics of Nursing Homes in Maryland (2011)+

	Overall N=220	Ownership Change N=22	No Change N=191
	Mean (SD)/Percent	Mean (SD)/Percent	Mean (SD)/Percent
Staff & administration	3.68 (0.16)	3.55 (0.18)	3.70 (0.15)
Care provided	3.50 (0.19)	3.34 (0.20)	3.53 (0.17)
Food and meals	3.51 (0.21)	3.35 (0.23)	3.53 (0.21)
Autonomy and rights	3.54 (0.24)	3.35 (0.25)	3.56 (0.23)
Physical aspects	3.44 (0.22)	3.26 (0.21)	3.46 (0.21)
Overall care	8.37 (0.70)	7.76 (0.65)	8.47 (0.65)
Would recommend	89.91%	82.39%	90.98%
For profit	63.47%	77.27%	63.87%
Chain affiliation	57.73%	86.36%	54.45%
Number of beds	127.72 (65.37)	145.64 (53.16)	127.34 (66.76)
N of Medicaid and Medicare beds	106.23 (58.11)	130.68 (54.30)	103.41 (58.01)
Occupancy rate	86.59% (12.82%)	84.41% (13.48%)	87.56% (10.25%)
N of detached toilets	6.62 (23.89)	1.82 (7.68)	7.17 (25.05)
N of private and attached toilets	48.63 (64.19)	57.5 (64.52)	47.61 (64.24)
N of shared and attached toilets	66.41 (62.01)	69.95 (63.73)	66.00 (61.97)
Urban	91.82%	100%	90.58%
CNA hours/resident day*	2.37 (0.55)	2.21 (0.56)	2.40 (0.54)
LPN/LVN hours/resident day*	0.89 (0.31)	1.04 (0.31)	0.87 (0.30)
RN hours/resident day*	0.78 (0.32)	0.76 (0.42)	0.76 (0.30)
Total number of deficiency citations	12.25 (7.91)	13.96 (9.92)	12.18 (7.74)
Market competition	0.88 (0.14)	0.94 (0.059)	0.87 (0.15)
Proportion of people in the county >=65 years	13.28% (2.77%)	12.75% (1.86%)	13.37% (2.89%)
Median household income ($, 2011)	66,038 (19,335)	68,562 (21,973)	65,939 (18,897)

+Number of facilities in the overall sample varies from 200 to 220 due to missing values for some variables. Number of facilities in the “ownership change” group varies from 20 to 22 due to missing values for some variables. Number of facilities in the “no change” group varies from 177 to 191 due to missing values for some variables.

*CNA: Certified nurse aid

*LPN: Licensed practical nurse

*RN: Registered nurse

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Table 2

Association between Ownership Change and Care Experience Ratings+

	Model 1		Model 2		Model 3	
	Est.	95% CI	Est.	95% CI	Est.	95% CI
Staff & administration	−0.11	(−0.17, −0.05)***	−0.09	(−0.15, −0.03)**	−0.08	(−0.14, −0.02)*
Care provided	−0.14	(−0.21, −0.07)***	−0.12	(−0.18, −0.05)***	−0.11	(−0.17, −0.04)***
Food and meals	−0.12	(−0.22, −0.03)**	−0.10	(−0.19, −0.006)*	−0.09	(−0.18, 0.005)
Autonomy and rights	−0.15	(−0.25, −0.05)**	−0.13	(−0.22, −0.04)**	−0.12	(−0.21, −0.03)**
Physical aspects	−0.14	(−0.21, −0.06)***	−0.11	(−0.19, −0.04)**	−0.10	(−0.18, −0.03)**
Overall care rating	−0.51	(−0.77, −0.25)***	−0.43	(−0.67, −0.18)***	−0.39	(−0.63, −0.15)***
Would recommend	−6.54%	(−10.65%, −2.44%)**	−5.98%	(−9.76%, −2.20%)**	−5.41%	(−9.10%, −1.72%)**

+Model 1 controls for NH organizational characteristics, including profit status, chain ownership, occupancy rate, and number of Medicare and Medicaid beds. Model 2 further controls for other NH characteristics indicating NH environment and quality, including number of detached toilets, number of private and attached toilets, number of shared and attached toilets, total number of deficiencies, and nurse staffing (CNA, LPN, and RN) hours per resident/day. Model 3 further controls for market conditions, including market competition, rural/urban location, percent of people in the county aged >=65 years, and median household income.

*P<=0.05

**P<=0.01

***P<=0.001