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Original Study

Associations between Complaints and Organizational Characteristics among Ohio Nursing Homes

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A B S T R A C T

Objectives: In recent years, Ohio nursing homes (NHs) have received an increasing number of complaints. The current study aims to gain a better understanding of the relationship between NH organizational characteristics and the number of complaints.
Design: Secondary data analysis was used.
Setting and Participants: Four data sources on Ohio NHs were merged. Ohio NH complaints data reported in 2018 and 2019 was linked with the 2017 Ohio Biennial Survey of Long-Term Care Facilities, 2017 Ohio Nursing Home Resident Satisfaction Survey, and 2018 Ohio Nursing Home Family Satisfaction Survey.
Methods: Descriptive analysis, bivariate tests (ie, analysis of variance and χ^2 test), and multinomial logistic regression analyses were conducted.
Results: Findings included that urban location, NH administrator (NHA) and director of nursing (DON) turnover in the previous 3 years, NH size, occupancy rate, certified nursing assistant (CNA) retention, and overall family satisfaction were significantly associated with total complaints. NHA and DON turnover, NH size, CNA retention, and overall family satisfaction were found to be significantly associated with substantiated complaints.
Conclusions and Implications: The importance of leadership (ie, NHA and DON) turnover, CNA retention, and family satisfaction indicates that specifically targeted efforts to improve in these areas can have a positive impact on NH quality.

Nursing homes (NHs) provide care and services for some of the most vulnerable members of our society.[1] Some individuals may be considered residents, as they expect to stay long-term, whereas others have a short stay for rehabilitation and return to their homes in the community. There is an expectation that high-quality care will be delivered by skilled and compassionate staff. When that does not happen, and expectations are not met, NH residents, families, staff, and other individuals have access to a variety of mechanisms for expressing concerns about care. One route is to make an official complaint to either the state agency in charge of NH licensing and certification or to the ombudsman. Nationwide, the average number of annual complaints per 100 residents rose nationally from 3.2 to 5.2 from 2005 through 2016.[2] Ohio, as has other states, has seen an increase in the average number of NH complaints received annually from 2.6 per 100 residents in 2005 to 2.9 in 2014, and 5.0 in 2016.[2,3] The number of complaints has continued to grow by 40% between 2016 and 2021.[4]

Consumer complaints serve as a real-time signal of care quality concerns.[5] In Ohio, the State Department of Health is responsible for receiving and investigating NH complaints.[6-9] Federal requirements from the Centers for Medicare & Medicaid Services stipulate the time frame for investigation of complaints including an in-person visit to the NH by a state surveyor based on the nature of the allegation.[7] This means that the large increase in complaints requires additional state resources and can also mean delays in the state completing the required 15-month survey as Ohio has prioritized complaint surveys over the annual survey.[4] Nationwide, top complaint types are related to quality of care[8,9] and services provided.[7,10] In Ohio, complaint categories include concerns related to resident rights, the quality of care, administration, resident care, and not against the NH (eg, complaints

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toward state Medicaid agency, or the certification or licensing system). Complaints can then be categorized as unsubstantiated or substantiated. Substantiated complaints find NH practices that do not comply with regulatory standards and can lead to deficiency citations.

A variety of NH organizational characteristics are significantly associated with complaints.[7,8] NHs owned by for-profit companies are likely to receive more complaints.[9] NHs with a lower certified nursing assistant (CNA) staffing level and a higher number of deficiencies were significantly associated with higher number of complaints.[8] Higher proportion of Medicare residents is significantly associated with higher number of substantiated complaints.[9] One recent study found that higher NH administrator (NHA) turnover is significantly associated with an increased number of both total and substantiated complaints.[11] However, although consumers' opinion is an important NH quality measure, consumers' (eg, resident and family) satisfaction has been neglected in the previous literature.[12] The current study can add knowledge by using a comprehensive data set to include some variables neglected in the prior studies such as director of nursing (DON) turnover, CNA retention, resident, and family satisfaction score.

Thus, the purpose of this article is to investigate NH organizational characteristics associated with the number of both total and substantiated complaints. Specific hypotheses follow:

Hypothesis 1 (H1): NHs with leadership (NHA and DON) turnover in the last 3 years will receive more complaints.
Hypothesis 2 (H2): NHs with higher CNA retention rates will receive fewer complaints.
Hypothesis 3 (H3): NHs with higher resident and family satisfaction scores will receive fewer complaints.

Methods

Data Sources

Four data sources were used for this study (listed in Table 1). Complaint data were provided by the Ohio Department of Health (ODH). ODH is required by the Centers for Medicare and Medicaid Services to track complaints filed. This study included 9992 complaints against NHs that were filed with ODH in 2018 and 2019. The Ohio Biennial Survey of Long-Term Care Facilities is a survey of all NHs in the state that collects data on NH characteristics. The 2017 survey was used, which has a response rate of 91%.[13] Resident and family satisfaction data were drawn from Ohio Nursing Home Resident and Family Satisfaction Surveys, which were collected in 2017 and 2018, respectively.[14]

The choice to focus on Ohio is based on 3 factors. First, as a state with the fourth highest number of NH beds, the Ohio long-term care system is similar to the nation on such characteristics as ownership status and use of Medicare and Medicaid. Second, Ohio is one of 3 states in the nation that collects satisfaction data from residents and families.[15] Third, Ohio is one of the few states that does a comprehensive survey of every NH in the state and as such collects data not available in most states, such as NHA and DON turnover. Although a national study of complaints can paint a broader picture of the nature and frequency of complaints, the focus on one state with a richer data set can also provide an important contribution to the literature.

Measures

Dependent Variables for Regression

With the expectation that NHs serving more residents would have more complaints, data were standardized per 100 residents. Based on the previous literature,[3] 2 dependent variables were conceptualized. First, a dependent variable of total complaints was categorized into 3 groups of zero complaints, 1 to 5 complaints, and 6 or more complaints. Second, a dependent variable with only substantiated complaints was created by the same 3 groups of zero, 1 to 5, and 6 or more complaints.

Independent Variables

Independent variables include ownership status (for-profit vs not-for-profit/government-owned), geographic location (urban vs not urban), NHA and DON turnover ("had a turnover" vs "did not have a turnover" in the last 3 years), NH size (the number of certified beds), the proportion of resident days paid for by Medicaid, the occupancy rate, CNA retention rate, overall resident satisfaction, and overall family satisfaction. Proportion of resident days paid for by Medicaid represents an average proportion of residents days at NH covered under Medicaid. The occupancy rate represents the number of resident days divided by the number of available bed days. The CNA retention rate is calculated by the percentage of CNAs that remained employed by the NH between the first and last payroll periods in 2017. Overall resident and family satisfaction scores were measured using a 101-point scale from 0 to 100, with higher scores indicating greater satisfaction.[16]

Data Analysis

Descriptive statistics are presented for comparison of the number of total and substantiated complaints against NH organizational characteristics statewide. Bivariate tests were conducted to explore statistical differences among the 3 different complaint groups (ie, zero, 1 to 5, and 6 or more). Analysis of variance was conducted for continuous variables and χ^2 test was conducted for categorical variables. Two separate multinomial logistic models were conducted to compare the number of total complaints and the number of substantiated complaints by NH organizational characteristics. Multinomial logistic regression is appropriate for our analysis because our dependent variable (ie, the number of complaints) has more than 2 groups (ie, zero, 1 to 5, and 6 or more) and the distances between

Table 1
List of Variables

Type of Variables	Name of Variable	Source
Dependent variable	Type and number of complaints	2018-2019 Ohio Department of Health (ODH)
Independent variables	Ownership status	2017 The Ohio Biennial Survey of Long-Term Care Facilities
	Geographic location	
	NHA turnover	
	DON turnover	
	NH size	
	Proportion of resident days paid for by Medicaid	
	Occupancy rate	
	CNA retention	
	Overall resident satisfaction	2017 Ohio Nursing Home Resident Satisfaction Survey
	Overall family satisfaction	2018 Ohio Nursing Home Family Satisfaction Survey

each group are not equal. All data analyses were conducted via SAS, version 9.4.

In 2017, Ohio had 950 NHs in service. The analytic sample included 629 NHs, as NHs that did not respond to either the Biennial Survey or the Resident and Family Satisfaction Surveys were dropped. The sample of 629 NHs included in this study mirrored characteristics of the whole population of Ohio NHs except for the proportion of resident days paid for by Medicaid (73.9%), which was higher for the analytic sample than the entire population (64.8%).

Results

Sample Characteristics

Table 2 shows the characteristics of the analytic sample. The majority of NHs are for-profit (83.2%) and located in urban counties (76.2%). NHs reported a high level of turnover over a 3-year period for both the NHA (65.3%) and the DON (68.7%). NHs have an average of 97 licensed beds and are heavily reliant on Medicaid, with almost three-quarters (73.9%) of resident days paid for by Medicaid. NHs reported an average occupancy rate of 80.9% and an annual retention rate of 60.7% for CNAs. On average, Ohio NHs had an overall resident satisfaction score of 75.8 and an overall family satisfaction score of 75.0.

NH Characteristics by the Type and Number of Complaints

From the bivariate tests (Table 2), findings suggest that there is a statistically significant difference between NHs in the 6 or more complaints group and the 1 to 5 complaints group. For-profit NHs are more likely to be in the 6 or more complaints group compared to not-for-profit NHs ($P < .0001$). NHs with higher NHA and DON turnover are more likely to be in the 6 or more complaints group ($P < .0001$). NHs that have higher proportion of Medicaid residents, have a lower CNA retention rate, and have lower family and resident satisfaction scores are more likely to be in the 6 or more complaints group. Similarly, there is a statistically significant difference between NHs in the 6 or more substantiated complaints group and the 1 to 5 substantiated complaints group. For example, NHs with higher NHA and DON turnover are more likely to be in the 6 or more substantiated complaints group ($P < .0001$). NHs with lower CNA retention rate and with lower family and resident satisfaction scores are more likely to be in the 6 or more substantiated complaints group.

Regression Results

Total Complaints

Table 3 shows the results of a multinominal logistic regression to investigate number of total complaints by NH characteristics. Findings indicate that urban location, NHA and DON turnover, NH size, occupancy rate, CNA retention, and overall family satisfaction were significantly associated with number of total complaints. The odds that NHs located in urban counties are in the 6 or more complaints group, rather than being in the zero complaints group, are about 1.97 times the odds for those located in rural counties (OR = 1.97, $P < .05$). NHs with NHA turnover in the previous 3 years have 1.89 times the odds of being in the 6 or more complaints group rather than being in the 1 to 5 complaints group compared to those without NHA turnover (OR = 1.89, $P < .01$). NHs with DON turnover in the previous 3 years have 2.59 times the odds of being in the 6 or more complaints group rather than being in the zero complaints group compared to those without DON turnover (OR = 2.59, $P < .01$). Similarly, NHs with DON turnover have 2.02 times the odds of being in the 6 or more complaints group rather than being in the 1 to 5 complaints group compared to the odds for those without DON turnover (OR = 2.02, $P <$

Table 2
NH Organizational Characteristics by Total Complaints and Substantiated Complaints by Group

	NH Study Analytic Sample (N = 629)	Zero Complaints (n = 63)	1 to 5 Complaints (n = 250)	6 or More Complaints (n = 316)	*P*	Zero Substantiated Complaints (n = 274)	1 to 5 Substantiated Complaints (n = 293)	6 or More Substantiated Complaints (n = 62)	*p*
Ownership status, %					<.001				.12
For profit	83.2	65.1	21.2	90.2		81.0	83.3	91.9	
Not for profit/ government owned	16.9	34.9	78.8	9.8		19.0	16.7	8.1	
Geographic location, %					.004				.012
Urban	76.2	65.1	72.4	81.3		70.4	80.2	82.3	
Not urban	23.9	34.9	27.6	18.7		29.6	19.8	17.7	
NHA turnover, %					<.001				<.001
No turnover	34.7	49.2	47.2	21.8		44.9	31.1	6.5	
Had turnover	65.3	50.8	52.8	78.2		55.1	68.9	93.6	
DON turnover, %					<.001				<.001
No turnover	31.3	49.2	42.8	18.7		43.1	25.6	6.5	
Had turnover	68.7	50.8	87.2	81.3		56.9	74.4	93.6	
NH size, mean (SD)	97.3 (38.3)	75.3 (28.2)	101.6 (39.1)	98.4 (38.1)	<.001	89.8 (35.7)	106.6 (38.5)	87.0 (39.5)	<.001
Proportion of days Medicaid, mean (SD)	73.9 (14.8)	68.0 (17.2)	71.7 (14.0)	76.8 (14.4)	<.001	72.6 (14.9)	74.4 (14.2)	77.3 (17.0)	.05
Occupancy rate, mean (SD)	80.9 (12.4)	85.2 (11.7)	83.4 (11.3)	78.1 (12.7)	<.001	82.8 (11.9)	79.9 (12.8)	77.3 (11.7)	.001
CNA retention rate, mean (SD)	60.7 (18.6)	67.3 (15.5)	63.2 (17.0)	57.4 (19.7)	<.001	62.7 (16.8)	61.1 (18.7)	49.9 (21.8)	<.001
Overall resident satisfaction, mean (SD)	75.8 (5.7)	78.2 (5.3)	76.6 (5.4)	74.6 (5.7)	<.001	76.7 (5.7)	75.2 (5.4)	73.8 (6.1)	<.001
Overall family satisfaction, mean (SD)	75.0 (8.6)	80.2 (6.2)	77.7 (7.0)	71.8 (8.8)	<.001	77.7 (7.3)	73.7 (8.5)	69.0 (9.9)	<.001

Table 3
Multinomial Logistic Regressions for Number of Total Complaints and Nursing Home Organizational Characteristics

	1 to 5 Complaints vs Zero Complaints (Ref)		6 or More Complaints vs Zero Complaints (Ref)		6 or More Complaints vs 1 to 5 Complaints (Ref)	
	OR	95% CI	OR	95% CI	OR	95% CI
Ownership status (ref = not for profit/government owned)						
For profit	1.65	0.83-3.29	2.10	0.97-4.53	1.27	0.73-2.23
Geographic location (ref = not urban)						
Urban	1.32	0.70-2.50	1.97*	1.00-3.86	1.49	0.95-2.34
NHA turnover (ref = no turnover)						
Had turnover	0.96	0.52-1.79	1.82	0.95-3.49	1.89†	1.24-2.86
DON turnover (ref = no turnover)						
Had turnover	1.28	0.69-2.39	2.59†	1.33-5.02	2.02†	1.31-3.10
NH size	1.02‡	1.01-1.03	1.01†	1.00-1.02	0.99*	0.99-1.00
Proportion of resident days paid for by Medicaid	1.00	0.99-1.02	1.02	1.00-1.04	1.01	1.00-1.03
Occupancy rate	1.00	0.97-1.03	0.98	0.96-1.01	0.98*	0.97-1.00
CNA retention rate	0.99	0.97-1.00	0.97†	0.96-0.99	0.99*	0.98-1.00
Overall resident satisfaction	1.00	0.95-1.06	0.98	0.92-1.04	0.98	0.94-1.02
Overall family satisfaction	0.98	0.94-1.03	0.91‡	0.87-0.96	0.93‡	0.90-0.96

*$P < .05$.
†$P < .01$.
‡$P < .001$.

.01). Every additional certified bed in NHs increases the odds of being in the 1 to 5 complaints group rather than being in the zero complaints group by 2% (OR = 1.02, $P < .001$), and the odds of being in the 6 or more complaints group rather than being in the zero complaints group by 1% (OR = 1.01, $P < .01$). However, an increase in certified beds decreases the odds of being in the 6 or more complaints group rather than being in the 1 to 5 complaints group by 1% (OR = 0.99, $P < .05$). As the occupancy rate increases, the odds of being in the 6 or more complaints group decline by 2% compared to the 1 to 5 complaints group (OR = 0.98, $P < .05$). As the CNA retention rate increases, the odds of being in the 6 or more complaints group rather than being in the zero complaints group decrease by 3% (OR = 0.97, $P < .01$), and the odds of being in the 6 or more complaints group rather than being in the 1 to 5 complaints group decrease by 1% (OR = 0.99, $P < .05$). Lastly, higher family satisfaction score lowers the odds of being in the 6 or more complaints group rather than being in the zero complaints group by 9% (OR = 0.91, $P < .001$), and the odds of being in the 6 or more complaints group rather than being in the 1 to 5 complaints group by 7% (OR = 0.93, $P < .001$).

Substantiated Complaints

Table 4 presents the relationship between the number of the substantiated complaints and NH characteristics. Findings for substantiated complaints changed slightly from total complaints, suggesting that NHA and DON turnover, NH size, CNA retention, and overall family satisfaction were significantly associated with the number of substantiated complaints. Compared to NHs that had no NHA change, NHs with NHA turnover have 4.86 times odds of being in the 6 or more substantiated complaints group rather than being in the zero substantiated complaints group (OR = 4.86, $P < .01$), and have 3.64 times the odds of being in the 6 or more substantiated complaints group rather than being in the 1 to 5 substantiated complaints group (OR = 3.64, $P < .05$). Compared to NHs that had no DON change, NHs with DON turnover had 1.89 times the odds of being in the 1 to 5 substantiated complaints group rather than being in the zero substantiated complaints group (OR = 1.89, $P < .01$), and have 4.42 times the odds of being in the 6 or more substantiated complaints group rather than being in the zero substantiated complaints group (OR = 4.42, $P < .01$). Every additional certified bed in NHs increases the odds

Table 4
Multinomial Logistic Regressions for Number of Substantiated Complaints and Nursing Home Organizational Characteristics

	1 to 5 Substantiated Complaints vs Zero Substantiated Complaints (Ref)		6 or More Substantiated Complaints vs Zero Substantiated Complaints (Ref)		6 or More Substantiated Complaints vs 1 to 5 Substantiated Complaints (Ref)	
	OR	95% CI	OR	95% CI	OR	95% CI
Ownership status (ref = not for profit/government owned)						
For profit	0.82	0.49-1.35	1.10	0.37-3.33	1.35	0.46-4.01
Geographic location (ref = not urban)						
Urban	1.26	0.83-1.92	1.34	0.60-2.96	1.06	0.48-2.34
NHA turnover (ref = no turnover)						
Had turnover	1.34	0.90-1.97	4.86†	1.63-14.48	3.64*	1.22-10.81
DON turnover (Ref = No turnover)						
Had turnover	1.89†	1.27-2.83	4.42†	1.47-13.29	2.34	0.78-7.01
NH size	1.01‡	1.01-1.02	0.99	0.98-1.00	0.98†	0.97-0.99
Proportion of resident days paid for by Medicaid	1.00	0.98-1.01	1.00	0.98-1.03	1.01	0.98-1.03
Occupancy rate	1.00	0.98-1.01	0.99	0.96-1.01	0.99	0.97-1.02
CNA retention rate	1.00	0.99-1.01	0.98†	0.96-0.99	0.98†	0.96-1.00
Overall resident satisfaction	0.99	0.96-1.03	0.97	0.91-1.03	0.97	0.92-1.03
Overall family satisfaction	0.95‡	0.93-0.98	0.93‡	0.89-0.96	0.97	0.94-1.00

*$P < .05$.
†$P < .01$.
‡$P < .001$.

of being in the 1 to 5 substantiated complaints group rather than being in the zero substantiated complaints group by 1% (OR = 1.01, $P < .001$). However, an increase in certified beds decreases the odds of being in the 6 or more substantiated complaints group rather than being in the 1 to 5 substantiated complaints group by 2% (OR = 0.98, $P < .01$). Higher CNA retention rate decreases the odds of being in the 6 or more substantiated complaints group rather than being in the zero substantiated complaints group by 2% (OR = 0.98, $P < .01$), and the odds of being in the 6 or more substantiated complaints group rather than being in the 1 to 5 substantiated complaints group by 2% (OR = 0.98, $P < .05$). As family satisfaction score increases, the odds of being in the 1 to 5 substantiated complaints group rather than being in the zero substantiated complaints group decrease by 5% (OR = 0.95, $P < .001$), and the odds of being in the 6 or more substantiated complaints group rather than being in the zero substantiated complaints group decrease by 7% (OR = 0.93, $P < .001$).

Discussion

The aim of this study was to assess the association between NH organizational characteristics and the number of complaints. Three hypotheses were tested in this study. H1 and H2 were supported. H3 was partially supported. Overall, this study found that complaints are associated with leadership turnover, CNA retention, and family satisfaction. NHA and DON turnover is significantly associated with an increase in both total complaints and substantiated complaints. Higher CNA retention rate and family satisfaction scores are significantly associated with a decrease in both total complaints and substantiated complaints. However, the results found that there is no statistically significant relationship between resident satisfaction and complaints.

H1 was supported in that this study found that leadership turnover (both NHA and DON) was significantly associated with more total and substantiated complaints. The importance of stable leadership was evident in the results of this study and consistent with prior literature.[9,17] NHA leadership instability has been found to be significantly associated with high turnover of direct care workers, which influences the overall quality of care.[13] Similarly, NHA stability is associated with a higher CNA retention rate as well as a fewer number of deficiencies.[18] Although the current concerns around NH quality will require an array of solutions, the influence of management stability is certainly critical in decreasing the number of complaints.

H2 was also supported. This study found that the higher CNA retention rate was significantly associated with fewer total and substantiated complaints. There has been considerable attention paid to the retention of CNAs and how a lower retention rate can impact quality.[13] Previous findings found that an increase in nursing staff turnover results in an increase in deficiencies that NHs received.[19] Similarly, CNAs who were more empowered and had received higher wages had a higher rate of retention, resulting in higher quality outcomes and those results are consistent with the findings from this study.[20] Given the current staffing challenges that have been exacerbated during the COVID-19 pandemic, factors that contribute to CNA retention including worker pay and benefits, staffing ratios, job tasks, and working conditions must be improved.

H3 was partially supported. This study found that a higher family satisfaction score was associated with fewer total and substantiated complaints and this finding aligns with previous work documenting the link between family satisfaction and quality of care.[16,21] NH care matters not only for residents themselves but their loved ones.[15] In many cases, family members are more critical of NH quality and are less likely to be satisfied with the quality.[21] In addition, family members may be reporting complaints on behalf of a loved one with cognitive impairment or other conditions who may be unable to report. To improve care quality and decrease complaints, NHs' investment in addressing family members' opinions and better sharing of care-related information with family members is critical. However, this study found that resident satisfaction was not associated with complaints. *One possible reason is that residents are already accustomed to the NH environment surrounding them and feel less need to complain.* To better understand NH quality from diverse perspectives, future research should examine what drives the differences between residents and families.

Limitations

Although the study includes 66% of state NHs, the differences between the responding and nonresponding NHs could have an impact on results. In addition, this study was geographically limited to one state. Because the long-term care environment varies by state,[3] it is worth conducting future research in different areas of the country.

Conclusions and Implications

This study has implications in the context of long-term care policy, practice, and research. State policy makers need to recognize the large effects that administrative and direct care staffing have on overall quality and specifically how these factors are associated with number of complaints. Currently, a number of states are exploring direct care wage subsidies funded through American Rescue Plan Act dollars (ARPA) as one vehicle for addressing this challenge.[22] Although the ARPA funds provide a limited solution to the funding challenges, until the federal government and states come to grips with the overall NH financing questions these problems will remain. On a related note, state and federal officials are exploring staffing requirements for NHs to address the shortage of workers. However, if the reimbursement rates are not addressed, mandated staffing patterns are simply unachievable as states and NHs will not have the funds to support such initiatives.

Complaints serve as an indicator of NH problems. Even when complaints are unsubstantiated, they serve as the canary in the coal mine to suggest that something is not right in the system. As efforts to reform the NH industry in America continue, a better understanding of the reason for the growth of complaints will be instructive. No industry will ever eliminate complaints, and, in fact, many argue that receiving complaints is not necessarily a bad thing as it provides evidence that consumers can exercise their voices. However, receiving an increasing number of complaints every year indicates a more fundamental problem that needs to be addressed.

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