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End-of-Life Care in Nursing Homes: The Importance of CNA Staff Communication

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Abstract

Objective—Staff communication has been shown to influence overall nursing home (NH) performance. However, no empirical studies have focused specifically on the impact of CNA communication on end-of-life (EOL) care processes. This study examines the relationship between CNA communication and nursing home performance in EOL care processes.

Design—Secondary data analysis of two NH surveys conducted in 2006-07.

Setting—107 nursing homes in New York State.

Participants—2,636 CNAs and 107 directors of nursing (DON).

Measurements—The measures of EOL care processes—EOL assessment and care delivery (5-point Likert scale scores) - were obtained from survey responses provided by 107 Directors of Nursing (DON). The measure of CNA communication was derived from survey responses obtained from 2,636 CNAs. Other independent variables included staff education, hospice use intensity, staffing ratio, staff-resident ethnic overlap index, facility religious affiliation and ownership.

Methods—The reliability and validity of the measures of EOL care processes and CNA communication were tested in the current study sample. Multivariate linear regression models with probability weights were employed. The analysis was conducted at the facility level.

Results—We found better CNA communication to be significantly associated with better EOL assessment ($p = 0.043$) and care delivery ($p = 0.098$). Two potentially modifiable factors—staff education and hospice use intensity—were associated with NHs' performance in EOL care processes. Facilities with greater ethnic overlap between staff and residents demonstrated better EOL assessment ($p = 0.051$) and care delivery scores ($P = 0.029$).

Conclusion—Better CNA communication was associated with better performance in EOL care processes. Our findings provide specific insights for NH leaders striving to improve EOL care processes and ultimately the quality of care for dying residents.

Keywords

staff communication; end-of-life care; quality of care in nursing homes; care process; certified nurse aides

Today, more than 20% of Americans die in nursing homes.¹⁻³ With the aging of the Baby Boomer generation this figure is projected to exceed 40% by 2020.⁴ Although the nursing home is an important setting for many Americans to receive care prior to death, the quality of end-of-life (EOL) care in nursing homes is reported to be inadequate. EOL residents often suffer from distressing symptoms such as pain, dyspnea and depression at the end of life.⁵⁻⁷ Many residents with pain and other symptoms remain undiagnosed and untreated.^{8, 9} Research suggests that insufficient staff knowledge and skills with regard to communication, assessment and treatment of EOL symptoms, and lack of collaboration among staff, maybe account for less than adequate care provided to residents at the EOL.¹⁰⁻¹³

Until recently, most empirical studies examining factors associated with nursing homes' EOL care performance have focused largely on facilities' structure and capacity. For example, residents living in larger, higher-occupancy, urban and for-profit nursing homes have been found to be at higher risk for depression and more likely to experience pain.¹⁴⁻¹⁶ Studies have also investigated care processes involving symptom management and have shown that facility characteristics (e.g. size, occupancy rate and staffing level), location, and hospice utilization were related to nursing homes' likelihood of treating residents when symptoms were documented.¹⁷⁻¹⁹

Nursing homes have been called “low-tech and high-touch” due to the highly labor intensive and personal nature of their care delivery.²⁰ Such settings can be viewed as complex adaptive systems in which relationships among co-workers influence organizational performance.²¹ To date, only a handful of studies have demonstrated that staff working relationships impact quality of care in nursing homes,²²⁻²⁴ but they have not specifically focused on EOL care. While researchers have acknowledged the importance of work relationships in influencing quality of EOL care,¹³ few empirical studies have addressed these issues.^{25, 26}

The purpose of this study is to add to this EOL care literature by addressing the following questions: 1) Do nursing homes with better communication between certified nurse aides (CNA) and co-workers perform better in assessing residents' symptoms and care needs at the EOL? 2) Do nursing homes with better communication between CNAs and co-workers perform better in treating residents' symptoms at the EOL?

Data & Methods

Study Sample

This study is based on secondary analysis of data originally collected for two independent nursing home survey projects. The first survey involved New York State (NYS) nursing homes and was conducted between September 2006 and April 2007. That survey (hereafter referred to as “Staff Survey”) was directed to employees providing daily resident care and assessed their working relationships with supervisors and co-workers. Altogether, 7,418 daily care workers from 162 nursing homes returned the Staff Survey. The second project was conducted between June and November 2007 and examined EOL care processes in NYS nursing homes, focusing on Directors of Nursing (DON) as the respondents. This survey (hereafter referred to as “EOL Care Survey”) included questions about DONs' perception of their facilities' performance in EOL care processes. DONs from 313 nursing homes returned the EOL Care Survey. These two projects and the survey methods are described in details elsewhere.^{25, 27}

Only nursing homes that have participated in both Staff Survey and EOL Care Survey are included in the current study. Altogether, 107 nursing homes comprise the study sample. In these nursing homes, 2,636 CNAs have returned the Staff Survey.

Variable Construction

EOL Care Process Measures—The two dependent variables—EOL assessment and care delivery—are derived from EOL Care Survey. The domain of EOL assessment includes ten items, which measure staff's recognition and timely detection of EOL residents' distressing physical and emotional symptoms. The domain of EOL care delivery contains six items assessing the management of EOL residents' symptoms such as pain, dyspnea, and depression. All items are statements that are positively or negatively phrased and are assigned numeric scores ranging from 1 (strongly disagree) to 5 (strongly agree). Negatively phrased items have been reversely scored.

For any returned survey, if 2/3 or more of items in a domain were not rated, the domain score was considered missing and was excluded from the analysis. For each non-missing domain, an average score of the non-missing items within the domain was computed. A score of five represents the best performance in each domain and a score of one represents the poorest performance.

Prior work demonstrated that both EOL assessment and care delivery were theoretically meaningful and psychometrically reliable and valid domains.²⁵ Nevertheless, we re-tested the reliability and validity of these measures on our study sample.

Communication Measure—The domain of CNA communication is based on the Staff Survey data. It evaluates the degree to which communication between CNAs and their supervisors and co-workers is uninhibited, accurate, timely and effective, and focuses on the effectiveness of procedures for coordinating tasks and job responsibilities. This domain includes 15 items. The methodology of constructing this variable is similar to the one used for constructing the dependent variables, as described above.

Previous research demonstrated the reliability and validity of the communication measure on the sample of direct care workers (including nurses, CNAs and other care workers).²⁷ We re-tested its reliability and validity on the sample of CNAs included in the current study.

Control Variables—Several facility-level organizational (characteristics under the control of management) and structural (immutable characteristics) factors were included in the analysis. They are: staff education, hospice use intensity, nursing staff ratio, ethnic overlap index, religious affiliation and ownership status. These factors have been previously demonstrated as important in influencing quality of care in nursing homes.^{17, 28-34}

Three organizational factors were derived from the EOL Care Survey. 1) *Staff education* was calculated based on a scale of 13 yes/no questions about the presence of on-going in-service EOL education. The scale measures the comprehensiveness of EOL staff education in a nursing home. 2) *Hospice use intensity* was constructed as the average response (continuous variable) to two 5-point Likert scale items. Higher score reflects greater propensity to offer hospice to EOL residents. 3) *Nursing staff ratio* was computed as the sum of total nursing employees (registered nurses [RN], licensed practical nurses [LPN] and CNAs) divided by the number of residents (from the Online Survey Certification and Reporting [OSCAR] file).

Also included in the analysis were three structural factors. 1) *Ethnic overlap index (EOI)*, indicates ethnic similarity between nursing home staff and residents, with values ranging from 0.5 to 1.0. Higher EOI score reflects larger ethnic overlap between staff and residents. The

methodology for EOI variable construction has been described, in detail, elsewhere.^{32, 2)} *Religious affiliation* was derived from a yes/no question in the EOL Care Survey. 3) *Facility ownership* was dichotomized as for-profit or not-for-profit (based on OSCAR).

Statistical Analysis

Reliability and Validity of Survey Measures—Standardized Cronbach's alphas, representing internal consistency, were calculated to demonstrate reliability of the two dependent measures—EOL assessment and care delivery—and the CNA communication. Cronbach's alpha ranges from 0 to 1, with values greater than 0.7 indicating acceptable to high reliability.³⁵ Factor analysis was conducted to test construct validity. When all items within a given domain load on a single factor, with loading greater than 0.30, the measure is considered to be valid. Both Cronbach's alpha and factor analysis were preformed with SAS 9.1.3.

Aggregating Measures to Facility Level—In prior work, individual scores of communication were aggregated to the facility level, because this measure shows significantly less variability across staff within a facility than across facilities.²⁷ We evaluated this property in our CNA sample by calculating the F-statistic, which is the ratio of the variation between facilities to the variation within facilities. F-statistic approaches zero when the variability within facility exceeds the variability across facilities. If we were able to reject the hypothesis that F-statistic equals zero, the individual scores could be aggregated to the facility level. The F-statistic for our CNA sample is 2.67, with a p-value <0.0001 (data not shown). Therefore, the average communication score in each facility is representative of CNAs' communication pattern in that facility.

Model Estimation—We estimated two multivariate regression models for the two EOL care process measures defined above. We applied probability weights to adjust the model estimation, because our sample consists of disproportionately fewer for-profit nursing homes (30%) compared to all NYS facilities (49% of nursing homes in NYS are for-profit). The probability weights are computed as the reciprocals of the probabilities of sampling a for-profit home or a not-for-profit home. The models were estimated in STATA 9.2. In both models, we standardized the coefficients of continuous variables by dividing each original covariate value by its standard deviation. The coefficients of the dichotomous variables were not standardized.

We checked variance inflation factors of the independent variables for potential collinearity, but found no evidence of significant effects that may inflate the standard errors. The Breusch-Pagan and White tests showed no evidence of heteroscedasticity, and Ramsey RESET tests showed no evidence of model specification error.

Results

Characteristics of the 2,636 CNA respondents and the 107 nursing homes are summarized in Table 1. Our sample CNAs are predominately female, white and full-time employees consistent with the general CNA workforce profile in the US nursing homes. The sample facilities have mean scores of 0.69 (on a 0-1 scale) for staff education and 3.84 (on a 1-5 scale) on hospice use intensity, respectively, with substantial across facility variation. In general, our sample nursing homes demonstrate substantial ethnic similarity between staff and the residents (ethnic overlap index = 0.96).

The domain scores of EOL assessment and care delivery show good to high reliability in the sample nursing homes (Table 2). The Cronbach's alphas for assessment and care delivery are 0.86 and 0.71, respectively. The domain of CNA communication demonstrates high reliability (Cronbach's alpha= 0.84) in the CNA sample. Also presented in Table 2 are the results from factor analysis. Factor loadings for all items are greater than 0.30, ranging from 0.33 to 0.80,

indicating good construct validity of these measures. In an average nursing home, CNAs rate their communication with supervisors and co-workers to be 3.36 (standard deviation = 0.26) on a one to five scale, one being poorest and five being best communication (facility-level data not shown).

In Table 3, we report the results from the regression models. In the multivariate regression model with either EOL assessment or care delivery as the dependent variable, CNA communication is a significant independent variable. We find that in nursing homes with better communication between CNAs and co-workers, the DONs report better EOL assessment ($p=0.043$) and care delivery processes ($p=0.098$). One standard deviation increase in the facility-level CNA communication score (0.26) is associated with 0.138 increase in assessment score and 0.102 increase in care delivery score. We also identify several other factors related to better EOL care processes. One SD increase in staff education score (0.31) is associated to 0.248 increase in assessment score ($p=0.004$) and 0.118 increase in care delivery score ($p=0.074$). One SD increase in hospice use intensity score (1.17) is related to 0.146 increase in care delivery score ($p=0.016$). In addition, one SD increase in ethnic overlap index (0.07) is associated with 0.16 and 0.17 increase in the assessment score ($p=0.063$) and care delivery score ($p=0.027$), respectively.

Discussion

In nursing homes, work environment that promotes or hinders communication among staff is thought to be important in influencing organizational performance.^{26, 36, 37} Empirical evidence has demonstrated the impact of communication—as reported by managers,²⁵ and separately by nurses²² and CNAs²³—on quality of nursing home care. Only one of these studies has focused on EOL care.²⁵ The current study adds to the EOL literature by empirically demonstrating the presence of a positive association between the CNAs' perceptions of good communication and the self-reported nursing homes' performance in EOL care processes.

CNAs are the backbone of the nursing home workforce.³⁸ The duration of time spent by CNAs caring for residents is two times greater than RNs and LPNs combined.³⁹ Communication between CNAs and co-workers might play an important role in providing good EOL care in two ways. First, the CNAs usually are first among care providers to observe residents' symptoms and changes in health, functional or mental status.⁴⁰ Such information is important for initiating timely responses and for revising the residents' care plans. Second, better communication with co-workers might help CNAs to better understand the residents' current conditions and special care needs in order to provide more personalized care.

The “culture change” advocates have recognized the important role of the CNAs and have developed new models for nursing home care, which empower CNAs as essential care team members.⁴¹⁻⁴³ However, aside from these promising but rare models, the CNAs' role in decision making and in resident care planning has not been prominent. The CNAs are usually at the bottom of the command chain in their facilities, often do not receive enough respect from their nurse colleagues and sometimes do not receive information in a timely fashion^{36,44-46}. The poor communication between CNAs and other nursing staff might be a barrier for nursing homes to provide good quality care, including EOL care.

In addition to CNA communication, our study identified two potentially modifiable factors—staff education and hospice use intensity—that may contribute to nursing homes' performance in EOL care processes. Nursing home workers typically receive no or very limited training in palliative care.^{12, 47} Investment in staff EOL education could potentially significantly improve nursing home care processes. Our findings suggest that a one SD increase in staff education score (0.31) increases the EOL assessment score by 0.25 (a 6.56% increase).

The association between greater hospice utilization and better EOL care processes revealed by the current study echoes the findings from previous studies.^{19, 48, 49} Hospice improves the quality of care for hospice enrollees (direct benefit).⁴⁸ It is also related to better care for the non-hospice residents in the facilities with high hospice use (diffusion effect).⁴⁹ The facility-level relationship between hospice use intensity and better performance in EOL care processes is probably the result of both the direct and the diffusion effects.

Our study also suggests that facilities with greater racial/ethnic overlap between staff and residents perform better in EOL care processes. Staff's insensitivity to cultural differences with regard to EOL attitudes has been demonstrated as a barrier to optimal EOL care for minority patients.⁵⁰ Greater racial/ethnic congruence between staff and residents may result in more efficient communication vis a vis residents' EOL treatment preferences and subsequently better EOL quality of care.

A few limitations should be noted. First, our sample includes nursing homes from NYS only, so the results may not be directly generalizable to other states. Second, a facility's performance in EOL care processes is assessed by a single respondent—the DON. However, it has been shown that nursing home managers (including DONs) are able to provide a valid assessment of the quality of care in their nursing homes.⁵¹ Furthermore, DONs are probably best positioned to provide the most accurate appraisal of EOL care in their facilities.²⁵ Nonetheless, future research may seek to include more than one respondent per facility to measure nursing homes' performance in EOL care processes. Third, the EOL care processes and CNA communication are measured at a single point of time, and thus may not capture changes in quality of EOL care and communication patterns that occur in nursing homes over time.

Conclusion

In conclusion, our findings indicate that facilities in which CNAs communicate better with co-workers perform better in EOL care processes. These results may inform nursing home managers about the importance of facilitating good communication between CNAs and other nursing staff. The two identified modifiable factors associated with facilities' performance in EOL care processes—staff education and hospice use intensity—also provide evidence-based guidance for nursing home managers who want to improve the quality of EOL care in their facilities.

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Appendix 1: EOL Care Process and Communication in Nursing Homes: Domain Definition and Sample Survey Items

[5 point Likert Scales: 1=strongly disagree; 5=strongly agree]

EOL assessment (10 items): Recognition and timely detection of distressing physical and emotional EOL symptoms.

When residents complain of pain, nursing staff typically respond within 30 minutes with a thorough pain assessment.

Nursing staff always assess for the emotional needs of residents at the end-of-life.

Nursing staff is good at recognizing when a resident is actively dying.

EOL delivery (6 items): Management of EOL residents' symptoms such as pain, dyspnea, and depression.

Nursing staff are often reluctant to administer opioid medications to treat pain.

When residents are depressed at the end-of-life, counseling and/or medications are promptly initiated.

For residents in pain at the end-of-life, medications are routinely provided around the clock.

Communication (15 items): The degree to which: communication between CNAs and their supervisors and co-workers is uninhibited, accurate, timely and effective, and focuses on the effectiveness of procedures for coordinating tasks and job responsibilities.

There is good communication between workers across shifts.

I have received incorrect information from others in this nursing home more than once.

Co-workers are available to assist each other with patient care.

When a resident's condition changes, I get the right information quickly.

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Table 1

Descriptive Statistics: Personal and Facility Characteristics

Variables	Category/Level	Mean (SD)	Range
Personal characteristics¹	sample size = 2,636		
Gender	Female	92.90%	-
Race/Ethnicity	White-not Hispanic	54.05%	-
	Other	45.95%	-
Employment status	Full-time	79.46%	-
	Part-time	16.20%	-
	Per diem	4.34%	-
Professional experience	Years in profession	9.79 (8.10)	1 - 49
Facility experience	Years at current facility	7.41 (7.16)	1 - 42
Facility characteristics	sample size = 107		
Staff education ²	Range 0-1: 1 = most comprehensive education on EOL care	0.69 (0.31)	0 - 1
Hospice use intensity ²	Range 1 - 5: 1 = least intense; 5 = most intense	3.84 (1.17)	1 - 5
Nursing staff ratio ^{2,3}	Ratio of RNs, LPNs and CNAs to residents	0.52 (0.14)	0.05 - 0.92
Ethnic overlap index: staff-to-residents ¹	Index range 0.5-1; 1 = perfect overlap	0.96 (0.07)	0.64 - 1
Religious affiliation ²	Religious affiliated	25.47%	-
Facility ownership ³	Not-for-profit	70.09%	-

Data source:

¹ Teamwork and Quality of Care Survey (authors' primary data)² End-of-Life Practice Pattern Survey (authors' primary data)³ Online Survey Certification and Reporting System (OSCAR)

Table 2

Survey Measures: Psychometric Reliability and Validity

Domain	No. of Items	N ^a	Mean Response ^b (SD)	Cronbach's Alpha		Factor Analysis	
				Standardized Alpha ^c	Correlation with Total (Range)	Eigen-value	Factor 1 Loading (Range)
Assessment	10	106	3.78 (0.64)	0.86	0.42-0.75	3.92	0.47-0.80
Care delivery	6	106	3.90 (0.65)	0.71	0.36-0.54	1.78	0.43-0.64
CNA communication	15	2635	3.36 (0.71)	0.84	0.30-0.60	4.18	0.33-0.68

^aThe unit of analysis for the two EOL care process measures is a facility, while the unit of analysis for communication is an individual CNA.

^b1 = most negative; 5 = most positive.

^cCronbach's Alpha greater than 0.7 indicates acceptable to high reliability.

Table 3Multivariate Regression With Probability Weights^a

Independent Variable	EOL Care Processes			
	Assessment		Care Delivery	
	Standardized Coefficients ^b	P-value	Standardized Coefficients ^b	P-value
N = 97 ^c	Adjusted R ² = 0.2166		Adjusted R ² = 0.1136	
CNA communication	0.1378	0.043	0.1018	0.098
Staff education	0.2482	0.004	0.1177	0.074
Hospice use intensity	0.0601	0.369	0.1458	0.016
Nursing staff ratio	-0.0960	0.126	-0.0229	0.755
Ethnic overlap index	0.1544	0.051	0.1690	0.029
Religious affiliated facility	0.0421	0.786	0.0742	0.642
For-profit facility	0.2305	0.423	0.1382	0.396

^aProbability weights correct for sampling response bias.^bThe coefficients of continuous independent variable are standardized by multiplying the standard deviation of each.^cTen out of 107 facilities are not included in the final models due to missing data.