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Assessing Nursing Homes' Capacity to Create and Sustain Improvement

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Nursing home leadership and staff in 32 nursing homes were surveyed using an adaptation of Shortell's Organization and Management Survey. An earlier psychometric assessment of Shortell's communication and leadership scales raised concerns about the reliability of these scales in the nursing home setting. Exploratory factor analysis was performed to determine if another scale structure should be considered. Using principal-axis extraction with a varimax rotation, a 5-factor solution that accounted for 47% of item variance was defined. **Key words:** *communication, leadership, nursing homes, organizational attributes, quality improvement*

THE nursing home setting is receiving heightened attention as state and federal regulatory approaches to improve performance do not bring about consistent quality of care for vulnerable and fragile elderly residents. Public performance reporting and the use of market incentives, exemplified by the Medicare Nursing Home Compare Report Card Web site (www.medicare.gov), continue to be assessed for their effectiveness. Despite these pressures to improve care, many nursing homes do not have adequate organizational capacity to create and sustain improvement. Many staff members note that ineffective communication and lack of strong clinical leadership are additional barriers to quality improvement in nursing homes.[1]

Key findings in a recent report to the Centers for Medicare & Medicaid Services (CMS) by the Rhode Island Quality Improvement Organization (RIQIO) suggested that nursing homes currently focus most of their efforts on addressing regulatory requirements, annual licensure surveys, and certification processes. Most nursing homes still function under the traditional quality assurance model. This model monitors specific aspects of care retrospectively and addresses problems on an individual basis rather than on a systems level. Unlike other healthcare settings, nursing homes usually do not have staff trained and experienced in monitoring their systems of care and work environments.

More specifically, nursing homes rely upon a compliance improvement model that minimizes input from direct staff. Although the RIQIO report strongly encouraged the use of established quality improvement strategies within the nursing home setting, it also clearly indicated that providing nursing homes with this directive without explicit implementation guidance would be ineffective. The

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report also suggested that successful change within the nursing home setting requires committed leadership and direct staff involvement for sustainable improvement to occur.[2]

For sustainable improvement to occur, nursing homes must be viewed through an organizational lens. A recent Institute of Medicine report addressing the healthcare system of the 21st century called for increased recognition of the complex, adaptive nature of healthcare settings.[3] Conceptualizing nursing homes as complex adaptive systems facilitates the understanding of the current state of such facilities and their potential for change in response to quality improvement interventions. A complex system is a collection of diverse stakeholders (eg, key clinicians, staff, leadership, residents, and families) whose actions are interconnected such that one person's action changes the context for another in the system. Although these stakeholders can behave in unpredictable ways, they usually act according to a set of stated and unstated simple rules.[4,5]

An organization's ability to continually improve can be enhanced by the quality of relationships or connections among diverse stakeholders, what we commonly refer to as the healthcare team. To create effective organizational interventions, critical attributes of the nursing home setting must be understood. These attributes include what have traditionally been considered separate entities of communication and leadership. Complexity theory suggests that organizational attributes need to be considered in concert, to be able to create the environment for clinical improvement through which resident-centered teams can thrive.

ORGANIZATIONAL CAPACITY TO IMPROVE

The *organizational capacity* for a nursing home to create and sustain improvement can be defined as its ability to modify existing practices, care processes, and organizational attributes. Organizational capacity is built through the interplay of communication and relationships and leadership and teamwork. Earlier studies exploring many of the critical attributes related to organizational capacity to create and sustain change focused on the individual organizational attributes, such as leadership, instead of the interplay of these critical attributes.[6,9-12]

Although Shortell and colleagues[6,7] isolated the concepts of communication and leadership in their initial ICU Organizational Survey, the research team still considered this survey the best instrument available for adaptation to assess the organizational attributes of interest in an exploration of nursing home working conditions. According to Shortell's conceptual framework, leadership/teamwork and communication/relationships are viewed as interrelated components or dimensions of caregiver or staff interaction.[6,7]

Both communication/relationships and leadership/teamwork are important concepts that continue to evolve in our understanding of organization capacity as the interplay is better understood. However, our current thinking still requires definitions that address these critical concepts independently. Communication and relationships are the connections among stakeholders that define the future state of systems.[5] The use of organizational relationships for exchanging information is necessary for the organization to effectively engage in ongoing improvement. Communication is complex and a constellation of many attributes.

Leadership refers to the ability of individuals to influence others toward achievement of relevant organizational goals and objectives. Leadership that sets high standards, clarifies expectations, encourages initiative and input, and provides necessary support and information should be associated with higher organizational performance in the nursing home setting. Leadership in clinical settings must be able to facilitate the behaviors necessary for the high degree of interdependence required for providing care to vulnerable populations.

Hence, measuring these key organizational attributes is essential for understanding the nursing home's working conditions and

establishing an understanding of the current organizational capacity to create and sustain clinical improvement. Since little has been done to systematically measure these constructs in the nursing home setting, the first step for our research team was to conduct further testing of the usability and adaptability of Shortell's Organization and Management Survey[6,7] within this setting.

METHODS

This descriptive study investigated selected working conditions in a sample of 32 Colorado nursing homes. These homes were selected to provide maximum variability in performance, as well as variation in geographic location, size, and ownership. Each nursing home identified a site coordinator to facilitate surveying of staff. All nursing home staff members, regardless of role, were invited to participate. The study was approved by the Colorado Multiple Institution Review Board and funded by the Agency for Healthcare Research and Quality (AHRQ).

Measuring organizational attributes in the nursing home setting

Shortell's Organization and Management Survey[6,7] was adapted in an earlier study with his permission to reflect the language of the nursing home care setting.[1] The adapted version was successfully used in 2 large-scale studies in nursing homes that explored the perceptions of more than 2400 nursing home staff.[1]

Shortell's survey assesses the extent to which respondents agree with each statement by selecting answers on a 5-point Likert-type scale (1 = *strongly disagree* to 5 = *strongly agree*). The scale scores are additive, rather than factor, scores. Scoring is straightforward in that responses for the nonmissing items in each scale are summed and divided by the number of nonmissing items to determine a value for the scale. For a score to be computed, respondents must have valid responses for at least 50% of the items. In the traditional configuration of the scales, there are 5 subscales related to communication and leadership and are presented below.

Shortell and colleagues proposed that communication be measured along a number of dimensions including (1) openness, (2) accuracy, (3) timeliness, (4) understanding, and (5) satisfaction. *Openness* involves the extent to which the staff members are able to say what they mean when speaking to each other without fear of repercussions or misunderstanding. *Accuracy* is the degree to which staff members believe in the accuracy of information conveyed to them by another party. *Timeliness* is the degree to which patient care information is related promptly to the people who need to be informed. *Understanding* involves the extent to which the staff members believe communication in the nursing home is comprehensive and effective. *Satisfaction* with communication is defined as the degree of satisfaction with staff intercommunication and communication with residents and with their families.[6,7]

Nursing leadership has been measured by examining the extent to which the leaders emphasized standards of excellence to the staff, communicated clear goals and expectations, responded to changing needs and situations, and were in touch with unit members. Teamwork or cohesiveness involves the degree to which the staff members identify with the nursing home.[6,7]

Shortell and colleagues[6,7] demonstrated construct validity of the organizational survey with hypothesized relationships between scales either converging or diverging as expected. In their 1991 study, Shortell and colleagues[7] reported that internal consistency for the overall scale was .89. Scott and colleagues, using the Shortell survey adapted for the nursing home setting, noted issues related to internal consistency reliability within some groups of nursing home staff.[1] The internal consistency of responses among CNAs, particularly within the leadership subscales, proved troublesome. The overall leadership scale had a Cronbach α of .88, with Cronbach α for each job category ranging from .60 to .87. Cronbach αs for the leadership subscales ranged

from .34 (Support, CNAs) to .89 (High Standards, Other clinical roles).

RESULTS

The sample consisted of 32 Colorado nursing homes: 54% were in rural settings; 24% were small (having fewer than 60 beds), 45% were medium (having between 60 and 100 beds), and 35% were large (having more than 100 beds); and 64% were for profit. The mean survey response rate across the sample was 51%, with response rates ranging from 20% to 96%.

A total of 1763 staff members were included in the sample. The distribution of respondents was similar to the population of the nursing home workforce.[12] The sample included 540 CNAs, 215 RNs, 218 LPNs, 153 department heads and other professionals, 449 other workers, and 188 were those who did not declare a job title. A substantial proportion (68%) of the sample had worked with elderly individuals for more than 3 years. Many (54%) had been in the same job, and 41% worked in the same facility, for more than 3 years. The majority of the sample was female (82%). Most of the respondents were of white, non-Hispanic (68%) ethnicity. Although there was racial and ethnic representation present in all job categories, CNAs were the most diverse. Fifty-eight percent of the sample worked the day shift, 15% worked evenings, and 17% worked nights or a combination of day and night, suggesting adequate representation from all shifts and roles in the workforce.

On the basis of earlier study findings,[1] the team decided to use factor analysis to explore a new factor structure for this setting. Exploratory factor analysis with principal-axis factor extraction and varimax rotation was used to determine a subscale structure from 69 out of 89 usable items on the revised instrument. Items originally measuring who is most influential and coordination mechanisms were omitted since they did not provide relevant information to answer the study questions.

The data set was first evaluated for missing data. Data were determined to be missing when respondents had not completed at least 50% of the items on the scale. Missing values ranged from 0.2% in the staff relationships and communication section of the survey to 5.6% in the perceived effectiveness section. These values are mostly within heuristic standards (5%) for concern about adverse effects from missing data.[13] We next examined internal consistency reliabilities for the total scale score and the subscales proposed by Shortell and colleagues (Table 1, column 1). As with a previous study,[1] internal consistency

Table 1. Measures of internal consistency for current and reconstituted Shortell scales

Current scales		Reconstituted scales	
Communication overall	.92	Perceived effectiveness	.94
Openness	.80	Organizational harmony	.89
Accuracy	.78	Connectedness	.90
Timeliness	.71	Clinical leadership	.83
Understanding	.83	Timeliness and understanding	.88
Satisfaction	.77		
Leadership overall	.86		
High standards	.83		
Expectations	.67		
Initiative	.56		
Support	.60		

reliability of the Leadership scale and subscales was somewhat different.

Factor analysis yielded a 5-factor solution, which accounted for 47% of the variance in the total sample. One factor (subscale), labeled Perceived Effectiveness, included the 16 effectiveness items from the original instrument. The factor analysis results consolidated the 5 original communication subscales into 2 new subscales, labeled "Connectedness" and "Timeliness and Understanding." The 4 original Leadership subscales were combined into 1 new subscale labeled Clinical Leadership. Additional selected communication and leadership items loaded onto a new subscale labeled Organizational Harmony. The 5 new subscales (Table 1, column 2) had Cronbach αs ranging from .83 (clinical leadership) to .94 (perceived effectiveness). Cronbach α for the overall instrument was .89.

With regard to consistency by role, Cronbach α for the 5 dimensions ranged from .81 (clinical leadership, CNAs, Department Heads) to .96 (Perceived Effectiveness, role not specified). In contrast, Cronbach α for Shortell's theoretical scales ranged from a low of .49 (Initiative, CNAs) to a high of .88 (Understanding, role not specified). Table 2 provides examples of questions that represent the proposed subscales. Some questions in the proposed subscale for Organizational Harmony represent symptoms of organizational discord. These questions were reversed during the scoring so they represented the more positive orientation.

Evidence of validity

We explored several types of validity. We considered the content validity of the modified Shortell survey for the nursing home setting by working with nursing home staff and experts to assure we had revised the items appropriately for the long-term care setting with its specific organizational issues. For criterion-related validity, we compared what we observed and heard through interviews (qualitatively) with the scores for each nursing home on the modified Shortell survey. Finally, construct validity was assessed by exploring the relationship between subscales from another tested tool, the Competing Values Framework Organizational Culture Assessment,[14] and selected scales from the modified survey, as well as examining differences in performance on the Shortell survey across job titles.

Each nursing home was presented to the research team as a single case study. Data from multiple methods of observation and

Table 2. Sample questions from the proposed new scales

Proposed subscales	Sample questions
Connectedness	I take pride in this facility
	I identify with the facility goals
	I am part of the team
Organizational harmony	Nurses are certain where they stand
	Nursing leadership is in touch with staff concerns
	Decisions are made with staff input
Clinical leadership	Staff meetings are used to resolve issues
	Staff interests are represented at higher levels of the facility
	Standards of excellence are emphasized
Timeliness and understanding	We get information when we need it
	Physicians are available when they are needed
	We get information about changes in resident status
Perceived effectiveness	Our facility meets patient care goals.
	Our residents experience very good outcomes.
	Our facility does a good job of meeting family needs.

assessment were compared with the performance of a single nursing home on the modified Shortell survey. The team looked for patterns of organizational attributes and performance to determine whether to rank the nursing home as high or low on working conditions. The team then reviewed where the particular nursing home fell relative to the means on the revised Shortell subscales. In the majority of cases there was congruence between the multiple assessment methods; nursing homes perceived to be "high" in working conditions had better Shortell scores and vice versa (81% agreement).

The relationships among Shortell scores and Competing Values Framework (CVF) scores were assessed to establish construct validity. The expectation was that when CVF scores reflected group and teamwork values, there would be a positive relationship with related Shortell scores. The team expected that when CVF scores reflected a lower group-oriented score there would be an inverse relationship Shortell scores. There was strong positive relationship between the CVF score that reflects a group orientation and the Shortell subscales of organizational harmony and connectedness ($P = .001$), and there was a strong inverse relationship between the CVF score that reflects a hierarchical dominance and these same subscales ($P = .01$ and .02, respectively).

Finally, we compared perceptions of staff in the current study with a prior study, using the modified Shortell survey in the nursing home.[1] Although the scale configuration has been changed, conceptually the tools still seek to understand perceptions of staff about their working conditions. It should be noted that in both studies, LPNs were the group that consistently had perceptions that were significantly more negative than other job titles.

DISCUSSION

The proposed subscales were found to have high reliability across roles in the sample of nursing home staff and leadership. A Cronbach α of .80 is the typically acceptable level of internal consistency reliability for established instruments.[15] The results suggest that the responses on the items represent 5 underlying core dimensions that reflect the interplay of communication and leadership. The multiple dimensions found in this study coincide with the understanding of organizations as complex adaptive systems. In particular, the reconstitution of select communication and leadership items into the new subscale labeled Organizational Harmony was found to be consistent with the more integrated view of staff and their expectations of their leadership and related communication structures and strategies. Validity is concerned with whether survey instruments measure what they are proposed to measure. Although validity cannot truly be proven, support can be presented to build a case for a valid instrument. Content validity has been established over time for the organizational instrument developed by Shortell and colleagues.[1,6,7] The establishment of valid and reliable measures is important for nurses who are seeking to better understand the organizations they are trying to help move toward a quality improvement-oriented environment.

The field of quality assessment and improvement is moving to systems level analysis. However, there is a dearth of instruments relevant to nursing home structures and processes. The Shortell tool and its proposed subscales offer a promising approach to measuring the organizational context in which quality improvement initiatives are taking place. In addition to the scientific evidence that the Shortell survey can provide meaningful insight into the nursing home setting, nursing home leadership reported that feedback from the survey process provided meaningful information about the challenges faced in improving the organizational capacity to create and sustain change. This study provides recommendations for restructuring the scales for improved measurement of these aspects of performance.

Although the study of organizational assessment measures may appear "too scientific" to the nurse trying to manage within the nursing home setting, it is key stakeholders such as nurse leaders, administrators, and regulators who need the most assurance that they can be provided with valid and meaningful feedback about their organizations. Nurse leaders know the challenges in trying to quantify perceptions of diverse staff groups in meaningful ways. As we improve the measurement of these key organizational attributes, we can improve our ability to assess the work environment and capture the interplay between communication and leadership. Capturing this interplay will assure that we can more effectively intervene at the organizational level to build organizational capacity to sustain improvement efforts.

CONCLUSIONS

An organization survey tool with longevity in health systems research was adapted for the nursing home setting. Building upon the early reports of issues of internal consistency among CNAs, additional review has been completed. The additional analyses have resulted in an updated 5-dimensional factor structure. The 5-dimensional factor structure has theoretical rationale and provides a coherent logic to how nursing home staff and leadership perceive the complex adaptive system in which they work. Using the updated tool for organizational assessment and feedback to the nursing homes can provide valuable insight for nursing home leadership as they strive to build organizational capacity to create and sustain change.

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