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A Pilot Study of Staff Nurses' Perceptions of Factors That Influence Quality of Care in Critical Access Hospitals

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Abstract

Knowledge is limited about quality of care (QOC) in rural hospitals, including the smallest hospitals, critical access hospitals. Staff nurses from 7 critical access hospitals identified items important for QOC across 4 levels of care: patients, microsystems, organizations, and environments. Several items were unique to critical access hospitals. Most QOC items were at the microsystem level, yet few of these items are routinely measured. These findings offer beginning evidence about how to advance QOC evaluations in rural hospitals.

Keywords

critical access hospitals; microsystem; quality of care; rural health care; staff nurses

IMPROVING HEALTH CARE QUALITY is a global priority.^{1,2} Recommended strategies to realize improvements include examining quality across 4 levels comprising health systems: the patients, units or teams that provide care (microsystems), organizations that house the microsystems, and external environment (eg, financing and regulations).¹ Although quality is influenced by factors at all 4 levels, the microsystem is especially important because, according to Berwick, this “is where the ‘quality’ experienced by the patient is made or lost.”^{1(p84)} Factors important for quality of care (QOC) at the microsystem or nursing unit level have been studied previously. Nurse staffing, skill mix, and the practice environment have all demonstrated a positive relationship with QOC at the microsystem level.³⁻⁵ Most studies about QOC, however, were conducted in large urban hospitals. Findings, therefore, may not apply to rural hospitals.

There are approximately 2100 rural hospitals in the United States. Compared with urban hospitals, rural hospitals (*a*) are smaller, two-thirds have fewer than 100 beds; (*b*) have fewer technologies; (*c*) staff with fewer nurses per patient; and (*d*) employ nurses with less education.^{6,7} Rural hospitals are also different from their urban counterparts because, in rural communities, a single hospital may be the only source for health care in a large geographic area.⁶

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Because of the vital role played by small rural hospitals, Congress created the Medicare Rural Hospital Flexibility program (Flex program) in 1997, whereby small rural hospitals receive cost-based reimbursement if they are licensed as critical access hospitals (CAHs). To qualify as a CAH, hospitals had to be certified prior to January 1, 2006, or be located more than 15 to 35 miles from another hospital depending on terrain and road access. A CAH is required to have 24-hour emergency care services available, a maximum of 25 acute care and swing beds (a bed used for either acute or skilled nursing facility care), and maintain an annual average length of stay of 96 hours or less for acute care patients.⁸ There are about 1300 CAHs in the United States.⁸ Critical access hospitals are currently exempt from the 2010 Affordable Care Act, whereby hospitals must meet quality achievement and improvement standards to avoid reductions in Medicare reimbursement.⁹ Many CAHs, however, are voluntarily reporting quality measures.⁸

Based on existing measures, findings about QOC in CAHs are mixed. The CAHs participating in the public database Hospital Compare have consistently increased their quality scores.⁸ Compared with other rural and urban hospitals, however, CAHs report poorer quality scores on acute myocardial infarction and heart failure measures and higher mortality rates for congestive heart failure, stroke, acute myocardial infarction, pneumonia, and gastrointestinal bleeding.^{8,10,11} Scores on pneumonia and surgical infection care measures are mixed, but CAHs report fewer decubitus ulcers and postoperative pulmonary emboli or deep vein thrombosis than their rural or urban counterparts.^{8,10,11}

Few investigators have explored contextual factors important for rural hospitals' QOC. Moreover, findings suggest that contextual factors differ within rural hospitals.¹² The smaller rural hospitals (< 25 beds, including CAHs) are less likely to be accredited by The Joint Commission, are more likely to have registered nurses with less education, and have less staff engagement in quality and safety activities, yet they are more likely to have a shared vision such as working together for common patient-centered goals.¹² Given the limited knowledge about QOC in CAHs and factors that influence QOC, especially factors from the microsystem level, the purpose of this pilot study was to identify staff nurses' perceptions of factors important to QOC in CAHs. Staff nurses were chosen as the focus of this inquiry because they are the largest group of health care providers at the microsystem level.¹³

METHODS

Design

In this study, we used Web surveys from a convenience sample of staff nurses (N = 49) in 7 CAHs from 2 states. Data were collected from May 2009 to March 2010. The Web surveys were administered using the Delphi technique, an iterative process of rounds designed to derive group consensus among individuals from diverse geographic areas.¹⁴ Participants rated their level of agreement to establish the importance of specific items to achieve QOC. At the end of each round, items were retained only if consensus was achieved on the basis of predetermined criteria.

Sample

After institutional review board approval, the investigators approached key staff from 2 CAH networks. The networks were chosen because they were actively involved with QOC efforts. The network in Washington had 7 hospitals, and the network in Illinois had 51 hospitals. Six hospitals in Illinois and one in Washington agreed to participate. The hospitals each employed between 21 and 68 staff nurses, either part- or full-time, for a total possible sample of 264 nurses. Staff nurses were licensed nurses, either licensed practical nurses or

registered nurses, who provided direct patient care. Both types of licensed nurses were included in the study because of the similarities in their patient care roles in rural settings.

Developing the Delphi surveys

Round 1 survey was developed by the researchers with consultation from experts in survey methods, a Web designer, and a rural nurse. Two of 18 open-ended questions asked nurses to identify factors that supported and inhibited QOC. These were followed by 15 questions, arrayed in 5 groups, reflecting the following: (a) nursing practice, (b) staffing and workload, (c) colleagues' influence (eg, nurse-physician collaboration), (d) support at work, and (e) formal and informal hospital policies. Nurses were asked to list features that support or hinder QOC and give examples within each group. The final question offered nurses an opportunity to add anything they wanted to convey about QOC in CAHs. The survey also included demographic questions. The survey's face validity was established using a convenience sample of 22 graduate nursing students who suggested only minor edits. For round 2 and 3 surveys, participants were asked to rate items generated in round 1, using a Likert-type scale ranging from 1 (no importance for QOC) to 5 (extremely important for QOC). Participants could also add new items in round 2.

Study procedure

In each CAH, the chief nursing officer received bulk mailings with invitation letters for the staff nurses. Once the nurses logged onto the Web site, they read a consent form and, if willing to participate, proceeded to the questions in round 1. It took about 45 minutes to complete round 1. Nurses who completed round 1 and wished to participate in rounds 2 and 3 provided their e-mail addresses and were contacted individually by e-mail with a direct web link to rounds 2 and 3, each of which took 10 to 20 minutes to complete. Nurses who completed all rounds received \$40. Participating hospitals received \$200 toward a staff event of their choice.

Data analysis

Round 1 narrative responses were first reviewed for their intent, relevance, and uniqueness to retain all possible ideas related to QOC¹⁵ and then ideas or items were listed under each of the 5 groups indicated earlier. For rounds 2 and 3, quantitative importance ratings of all items identified in round 1 were analyzed. An item achieved consensus if 3 predetermined criteria were met: (a) all participants rated the item, (b) responses ranged from 3 to 5, and (c) the item was rated 4 or 5 by 85% of participants.

RESULTS

Of the 264 possible nurses, 49 participants (19%) completed part or all of round 1. All 7 hospitals were represented (range, 2-14 staff nurses). For the demographic variables, one-fourth of the data were missing. Nurses who participated in the study had an average age of 46.4 years; most were female (n = 36; 73.5%) and white (n = 37; 75.5%). More registered nurses (n = 32; 65.3%) participated than licensed practical nurses (n = 7; 14.3%). The majority of the nurses had associate degrees (n = 18; 36.7%) followed by those who held bachelor's degrees in nursing (n = 8; 16.3%). On average, the nurses had practiced for 16.7 years, with an average of 12.1 years at their institution and 10.5 years on their unit. At the completion of round 1, just under half of the participating nurses (n = 27; 10% of all possible nurses) agreed to participate in rounds 2 and 3.

Round 1

The analysis of the responses to the open-ended questions yielded 1421 unique ideas. One researcher did the initial coding; the rest of the research team then confirmed or disputed the findings until agreement was reached. Next, similar ideas were combined and named as items. Then, to generate a more parsimonious list, items mentioned 3 or fewer times were eliminated (range, 1-70); this left 159 items. Finally, items with common attributes were clustered into 16 categories that reflected the 5 areas described in the open-ended responses.

Round 2

Twenty of the 27 people who agreed to participate in round 2 completed the survey. One hospital had no participants, and the remaining hospitals had 1 to 8 staff nurses responding. Participants were asked to rate the importance of the 159 items. The 108 items that reached consensus had mean ratings from 4.25 to 5.00 (SD = 0-0.80). The 51 items that did not reach consensus, and 3 newly suggested items, comprised the survey in round 3.

Round 3

Sixteen nurses completed round 3, representing the same 6 hospitals as in round 2 (range, 1-7 staff nurses). Using the same criteria as in round 2, consensus was reached for 42 of the 54 items. The ratings ranged from 3.44 to 5.00 (SD = 0-1.13). Combining results from rounds 2 and 3, the final list contained 150 items, with items in all 16 categories. The list of items and categories was arrayed using the 4 levels of the health system (Table). The mean ratings for all items ranged from 4.06 to 5.00. The Supplemental Digital Content Table (available at: <http://links.lww.com/JNCQ/A26>) provides all items, mean ratings, and standard deviations.

Nurses who completed rounds 2 and 3 wrote comments reflecting that the items described well what they regarded as important for QOC, especially those items about nursing care. They also commented that the breadth of the list was a surprise to them; this breadth helped them appreciate how many areas relate to QOC. The final list of 150 items was presented to 20 CAH administrators at a national conference who said the list was comprehensive; they had no new topics to add.

DISCUSSION

Despite the low level of participation among nurses at the 7 CAHs involved in this pilot study, the findings represent the view of quality from the perspectives of the rural staff nurse participants. The findings reflect ideas that have been previously identified as important for QOC and ideas unique to QOC in rural hospitals. Moreover, the list was deemed comprehensive by CAH administrators. Finally, nurses identified items corresponding to each of the 4 levels of the health system, creating an organizing framework that might be useful in future studies. We acknowledge that our low response rate (16 nurses finished all 3 rounds) affects all statements that may be made with these data. The discussion is couched in consideration of this factor.

Patient level

One category (8 items) comprised the patient level (Table). As patient care needs increase and become more complex, it is harder to maintain QOC. Although complexity issues are similar in both rural and urban hospitals, prior research suggests that rural residents are less likely to have health insurance, more likely to be elderly, have higher rates of chronic conditions caused by unhealthy lifestyles (eg smoking, lack of exercise, obesity), have depression and substance abuse problems, and have serious permanent impairments due to farm injuries.¹⁶ The complexity of care, therefore, must be considered in relation to the

unique attributes of rural residents. Moreover, rural residents may seek care later or not at all because self-reliance and hardiness are valued among people who reside in rural communities.¹⁷

The differences in patient populations in rural and urban areas suggest that rural nurses may need to use different approaches than urban nurses to maintain QOC at the patient level. For example, rural patients may live far from an emergency department, allowing exacerbations of chronic or acute illnesses to become fatal. It is important, therefore, for rural nurses to include “what-if” scenario discussions with their patients in relation to their preferences for care that might be altered by distance, time, and weather. Alternately, when planning discharges, rural nurses need to consider that patients may be discharged earlier because of strong community support.¹⁷

Microsystem level

The large number of items within the microsystem level is not surprising because this level is well known to nurses; it is at the point of care where most nurses practice. These participants indicated that holistic nursing care and how care is delivered are important to achieve QOC. This finding illustrates a good fit between nurses’ view of QOC and Berwick’s¹ view of how the microsystem affects patients’ experience of quality. Current measures of QOC, however, do not routinely reflect most of the categories or items at the microsystem level. One exception is the measures in the National Database of Nursing Quality Indicators, where items reflect quality at the unit or microsystem level.¹⁸ More than 1500 hospitals participate in the National Database of Nursing Quality Indicators. They receive quarterly benchmark reports on QOC, nurse outcomes, and factors that influence QOC such as nurse staffing and ratings of the work environment.¹⁸ For rural hospitals interested in improving QOC at the microsystem level, joining the National Database of Nursing Quality Indicators can assist them when planning and evaluating quality improvement projects.

Other tools to assess and improve QOC include using publicly available surveys that have items at the microsystem or unit level, for example, the Agency for Healthcare Research and Quality Hospital Survey on Patient Safety Culture.¹⁹ This survey allows respondents to rate established items and respond to open-ended questions. Others have demonstrated that when used with an instrument, narrative data can illustrate specific and unique areas of QOC not captured in the quantitative data.^{19,20} Analysis of narrative data, however, can be time consuming¹⁹ and also requires a well-developed set of skills.

In our study, the work environment was the dominant feature at the microsystem level, reflecting 77 items comprising 9 different categories. Our participants corroborate the already established importance of the work environment as a contributor to QOC in hospitals. For instance, leadership styles in which nurse leaders embrace and engage others, skilled communication, and the ability of nurses to make decisions about their own practice and participate in decisions related to policies are essential for QOC.^{21,22} The participants, however, identified several areas in the work environment that are unique to CAHs. For example, although nurse-physician collaboration has been linked to QOC in all hospitals,²² CAH nurse participants expanded collaboration to include all staff members in CAHs. Similarly, teamwork among all hospital staff members was rated as an important work environment attribute for QOC. Critical access hospitals are small and as such may be better positioned to develop meaningful horizontal and vertical collaboration and teamwork than the larger and more complex institutions.

Another area in the work environment that is different in CAHs is staffing. Similar to the work environment in all hospitals, our participants rated staffing that ensures a match

between patient needs and the number of nurses as important for QOC.²¹ Critical access hospitals, however, do not have the same unit structures as urban or larger rural hospitals. They are required to have an emergency department and inpatient unit(s); most CAHs also have outpatient clinics, with staff nurses assigned to these areas as needed to ensure adequate staffing.²³ On any given day, staff nurses may float between the emergency department, inpatient units, and outpatient clinics. Hence, standard staffing templates are not useful in CAHs because of fluctuations in the number and acuity of patients and the number of nurses.²³

A final area in the work environment unique to CAHs is staff knowledge or competencies needed to maintain QOC. This finding in our study is consistent with results from other studies in which rural nurses cite the importance of being an “expert generalist.”^{24(p247)} They need to rely on a broad base of continuing education (CE) to sustain competence.²⁴⁻²⁶ Rural nurses need knowledge in many areas of nursing practice. Although they may not perform a task or procedure more than once a year, they need to maintain proficiency in task performance. Rural nursing practice requires personal and professional adaptation and development, often fulfilled through CE and journal reading.²⁴ Yet, obtaining CE can be difficult for rural nurses because of the distance to educational offerings and lack of technology to access online learning opportunities.^{6,25} For nurse staffing and CE in CAHs, further studies and interventions are warranted.

Organization level

At the organization level, the staff nurses again identified areas important for QOC in all hospitals and areas specific to CAHs. Attributes that apply to all types of hospitals include administrators who use open communication, support their nurses, foster trust, and who recognize nursing excellence.²¹ Specific to CAHs, the participants noted that the physical environment and availability of hospital services were features especially important for QOC in CAHs. Because rural patients may bypass their small rural hospital in favor of urban hospitals,²⁷ it is important to determine what services are needed by the community and strive to make them available. Rural hospitals may improve access to services by partnering with urban hospitals and using telehealth technologies for diagnosing and managing patients.²⁸

Environment level

The 8 items in the category at the environment level reflect the reciprocity between the rural community and the hospital. According to the 16 nurses, the CAHs in this study fulfilled the Flex program’s expectations that CAHs engage with their communities and collaborate to address unmet community health needs.²⁹ For example, several hospitals supported a community health center. In return, community members supported the CAHs by volunteering within the hospitals. The community ties also create a bond between staff and repeat patients; this bond was rated as important for QOC in CAHs. Other investigators have noted the importance of capturing the connectedness between rural hospitals and the people they serve when evaluating QOC.^{25,29} Such relationships between the community and the hospital are rare in urban settings.

Limitations

The most serious limitation of this work was the low response rate. First, of the 58 CAHs in the 2 networks, only 7 agreed to participate. Stimulating greater interest in research in CAHs is an important goal for future studies and a limitation we did not anticipate to be as extreme as it was. Second, there was also a lower-than-expected response rate among the 264 possible staff nurse participants, with 49 agreeing to participate in round 1 and, of those,

only 16 continuing through all of the Delphi survey's 3 rounds. A low response rate is one of the greatest limitations of using a Delphi technique.³⁰

The low nurse response rate may be attributed to several factors. First, the response burden was high for round 1; it took up to 45 minutes to complete. Second, Web surveys have lower response rates than other survey modes,³¹ indicating that, in future research, investigators would be wise to try other data collection methods. Third, Web surveys may be especially challenging in rural areas with lower levels of high-speed Internet connection and lower levels of Internet use.^{6,32} A fourth factor is that with the lower level of education in rural areas, including in this sample, nurses may not understand or appreciate the importance of nursing research for generating evidence-based practice.³³

Finally, the study had no identified staff nurse champions on site. Although the study had support from the chief nursing officer in each hospital, we had no way of verifying how study information was passed along, and we were not able to visit each site to engage staff nurses and identify local champions. Future research in CAHs would benefit from upfront meetings with all staff members, recruitment of local champions to sustain the interest of unit staff, and perhaps more immediate and appropriate remuneration such as offering CE activities, a wished for but often lacking feature in rural settings.^{6,25} Of note, the breadth of factors identified as important for QOC suggests that sampling more nurses may not have yielded additional items, although the average ratings may have differed.

CONCLUSION

Although caution is warranted because of our low response rate, our results provide an initial step in understanding factors that are important to QOC for rural hospitals in general and CAHs in particular. These data are not captured routinely in current QOC measures and therefore may not be included in quality improvement projects, research studies, or policy planning. Our findings can inform both administrators and researchers. Administrators can add to their existing measurement of QOC by including narrative data obtained from open-ended questions in the areas not currently included in QOC evaluations. Ultimately, narrative data might contribute to developing instruments to better measure unique features of QOC in the rural setting. Overall, focusing on the microsystem level may yield the greatest return on investment in improving quality in CAHs and other small rural hospitals. Along with the microsystem creating quality as it is experienced by the patient,¹ it also appears that the microsystem is the level that has the most relevance to staff nurses who deliver the care to patients.

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Table**Factors Important for Quality of Care in Critical Access Hospitals**

Framework Level	Category
Patient	1. Patients' characteristics and needs (8 items)
Microsystem	2. How nursing care is provided (17 items) 3. Caring for patients' social and emotional needs (17 items) 4. The work environment (14 items) 5. Nurse manager or direct supervisor (11 items) 6. Nurses' knowledge and education (11 items) 7. Unit staffing (10 items) 8. Supplies, equipment, and work design (9 items) 9. Continuing education (9 items) 10. Physician-nurse collaboration (8 items) 11. Staff nurses' decision making and practice (7 items) 12. Teamwork (6 items)
Organization	13. Hospital administration (8 items) 14. Hospital services (4 items) 15. The hospital's physical environment (3 items)
Environment	16. Ties between the community and hospital (8 items)