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M. P. Prengaman
Boise State University

J. L. Bigbee
UC Davis The Betty Irene Moore School of Nursing

E. Baker
Boise State University

D. F. Schmitz
Boise State University

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MP Prengaman[1], JL Bigbee[2], E Baker[1], DF Schmitz[1]

[1]*Center for Health Policy, Boise State University, Boise, Idaho, USA*

[2]*UC Davis The Betty Irene Moore School of Nursing, Sacramento, California, USA*

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Prengaman MP, Bigbee JL, Baker E, Schmitz DF

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ABSTRACT

Introduction: Health professional shortages are a significant issue throughout the USA, particularly in rural communities. Filling nurse vacancies is a costly concern for many critical access hospitals (CAH), which serve as the primary source of health care for rural communities. CAHs and rural communities have strengths and weaknesses that affect their recruitment and retention of rural nurses. The purpose of this study was to develop a tool that rural communities and CAHs can utilize to assess their strengths and weaknesses related to nurse recruitment and retention.

Methods: The Nursing Community Apgar Questionnaire (NCAQ) was developed based on an extensive literature review, visits to multiple rural sites, and consultations with rural nurses, rural nurse administrators and content experts.

Results: A quantitative interview tool consisting of 50 factors that affect rural nurse recruitment and retention was developed. The tool allows participants to rate each factor in terms of advantage and importance level. The tool also includes three open-ended questions for qualitative analysis.

Conclusions: The NCAQ was designed to identify rural communities' and CAHs' strengths and challenges related to rural nurse recruitment and retention. The NCAQ will be piloted and a database developed for CAHs to compare their results with those in the database. Furthermore, the NCAQ results may be utilized to prioritize resource allocation and tailor rural nurse recruitment and retention efforts to highlight a community's strengths. The NCAQ will function as a useful real-time tool for CAHs looking to assess and improve their rural nurse recruitment and retention practices and compare their results with those of their peers. Longitudinal

results will allow CAHs and their communities to evaluate their progress over time. As the database grows in size, state, regional, and national results can be compared, trends may be discovered and best practices identified.

Key words: instrument, nursing, recruitment, retention, workforce.

Introduction

According to the Health Resources and Service Administration (HRSA), the current US nursing shortage is anticipated to grow to 20% by 2015. This increase is due to several factors including an increase in demand from the aging population and an aging nursing workforce[1]. Furthermore, the HRSA report does not include the impact of the recently enacted *Patient Protection and Affordable Care Act*, which is expected to add 28 million more Americans to those with health insurance[2].

The nursing shortage is even more acute in rural settings, where nurse-to-population ratios are significantly lower, nursing vacancies are more common, nursing recruitment is a continual struggle, and critical access hospitals (CAHs) indicate that filling nurse vacancies is their number one concern[3]. Compounding the situation are the significant health disparities experienced by rural populations. Rural populations suffer higher rates of diabetes, obesity, hypertension, stroke, and suicide than their urban counterparts[4]. Rural residents are more likely than urban residents to describe their health status as fair or poor. In addition, rural adults seek preventative care such as mammographies, pap smears, and colonoscopies less often than do urban adults. Rural adults are also more apt to smoke and more commonly forgo regular exercise or the use of seatbelts. Rural youth have higher incidence of tobacco and alcohol use than do urban youth[4-6]. These factors all affect the health of rural populations and contribute to the demand for rural nursing services.

In addition to being a significant health issue, rural nurse recruitment and retention is an economic concern. Improving retention by even 1% has been noted to save employers a minimum of $250,000[7]. In Idaho, a predominantly rural state in the Pacific Northwest region of the USA with 90% of the state designated as a health professional shortage area, the nursing shortage looms large. Idaho's Nursing Workforce Center reports that the state's number of licensed nurses per 100 000 people ranks 48th in the USA, and Idaho's rural hospitals' nurse vacancy rates are up to 50% higher than that of their urban counterparts[8]. Nurse vacancies are anticipated to accelerate in the near future as more of the nursing workforce retires. According to a recent Idaho Department of Labor report, 60% of Idaho's registered nurses are 45 and older[9].

The purpose of this study was to develop a tool with which rural communities and their CAH partners could evaluate the factors impacting their rural nurse recruitment and retention. The development of this tool will enable rural communities to better identify their strengths and weaknesses. With such knowledge rural nurse recruitment and retention efforts could be tailored to highlight the community's and hospital's strengths, maximize the effective use of scarce resources, and enhance their rural nurse recruitment and retention outcomes.

This project expanded on the previous work that assessed rural physician recruitment and retention challenges experienced by rural communities and hospitals[10]. Suggesting the concept of a 'community Apgar score' for rural Idaho medical staff environments, the authors hypothesized that identifiable parameters impact a rural community's ease of physician staffing. Schmitz et al's work resulted in the development and application of the Community Apgar Questionnaire (CAQ), which has been utilized to enhance rural communities' physician recruitment and retention

efforts[11]. The CAQ has been well received by rural communities throughout Idaho and beyond. Thus, development of a similar tool for rural nurse recruitment and retention was sought.

Conceptually, the project draws upon Bushy's model and its application of the core nursing concepts of person, environment, health, and nursing to the unique context of rural nursing[12]. Bushy's model includes aspects such as the generalist orientation of rural nursing, the orientation to the natural environment, and newcomer/old timer dynamics. Although the methodology parallels the previous work done on the physician CAQ, Bushy's model guided the factor identification process and aspects of the NCAQ development unique to nursing.

Literature review

An extensive literature review was performed in order to identify those factors that impact rural nurse recruitment and retention. The vast majority of literature focusing on nurse recruitment or retention concentrated on urban settings. Much of the research addressing rural nurse recruitment or retention was completed in Canada or Australia; very little literature specifically examining rural nurse recruitment and retention in the USA was identified.

The available research related to the recruitment and retention of rural nurses suggested that rural nurses are generally less educated, less apt to be employed in a hospital, and more likely to be employed full time than urban nurses. In addition, a more rural area of residence was found to correlate with a lower nurse's salary[13]. The literature further revealed that nursing students with a rural background were more apt to choose a rural work setting upon graduation[14]. Clinical exposure to rural practice settings and course work regarding rural nursing theory were also cited as potential contributing factors when graduating students choose to practice in a rural setting[12]. Organizational characteristics that reflect rural values, rural lifestyle, job diversity, and patient variety were noted in the rural nurse retention literature as possibly having an impact on nurses' decisions to remain in a rural practice setting[3]. Earlier research on rural nursing retention demonstrated that work environment and contentment with the community had significant impact on whether or not a nurse remained in her rural practice setting[15]. A literature search did not reveal a research instrument to assess and assist in the recruitment or retention of rural nurses, thus proceeding with the development of such a tool was deemed appropriate.

Methods

Content validation

One hundred and twenty-eight factors were originally identified from the literature as potentially affecting nursing recruitment and retention. Because the literature specific to rural nurse recruitment and retention is scarce, the majority of the factors were gleaned from the urban nurse recruitment and retention literature. The primary investigator performed informal one-on-one interviews with content experts to review the factors for content validity. Rural nurse executives, practicing rural nurses, students participating in a rural clinical placement elective, personnel from the Idaho Office of Rural Health and Primary Care, and the board of directors from Rural Connection, a group of statewide nursing leaders, were each provided with the list of factors and asked to indicate which of the factors they deemed most seminal. Seventy-five factors were deemed most seminal by the content experts. Many of the factors discarded by the content experts were ones more applicable to urban settings, such as preceptorships for student nurses, dedicated pool of relief staff, or percentage of travel nurses utilized. In order to be consistent with formatting of the physician's CAQ and the infant Apgar tool for which it is named, the research team narrowed the list of 75 factors down to 50. This was accomplished by combining factors, such as flexible scheduling, optimal shift availability, and 12-hour shifts into one factor. Thus, the 75 factors deemed most seminal by the content experts were all included in the final 50-factor tool.

Nursing Community Apgar Questionnaire format

The 50 factors were grouped into five classifications of 10 factors each, consistent with the format of the physician CAQ (Table 1). Schmitz and Baker provided consultation to enhance consistency with the physician factor classification process. The classifications utilized in the physician CAQ were geographic, economic, medical support, scope of practice, and hospital and community support. The classifications identified for the Nursing Community Apgar Questionnaire (NCAQ) varied slightly; they were *geographic*, *economic/resources*, *management/decision making*, *practice environment and scope*, and *community practice support*.

Sixteen of the 50 factors in the NCAQ were also noted to be factors in the physician CAQ. In the geographic classification, access to a larger community, patient mix, social networking, recreational opportunities, spousal/partner satisfaction, schools, and climate were the factors common to both the CAQ and the NCAQ. In the economic classification, moving allowance and internet/technology access were the factors identified as seminal in both rural physician and nurse recruitment and retention. In the management/decision-making classification, hospital leadership/management and teaching/mentoring/administrative role opportunities were common to both the CAQ and NCAQ. Within the practice environment and scope classification, clinical variety and electronic medical record availability were the factors shared by both the CAQ and the NCAQ. There were three factors in the community practice support classification that the NCAQ had in common with the CAQ: perception of quality of care, emergency medical services availability, and a welcome and recruitment program.

Nursing Community Apgar Questionnaire administration

A glossary of terms was compiled to enhance a common understanding of the factors by all participants (Appendix I). Dr Dave Schmitz provided training on administering the NCAQ to ensure consistency with that of the physician CAQ. The physician CAQ was completed with the CEO and the practicing physician most involved in physician recruitment and retention at each participating CAH. The NCAQ will be completed with the nursing administrator and a practicing rural nurse. The rural nurse participant will be one identified by the administrator as familiar with the community and knowledgeable about the CAH's retention and recruitment practices and history. Following completion of informed consent, the NCAQ will be administered by the primary investigator in a private face-to-face interview with each participant.

Each factor within the five classifications will be reviewed with each participant. The participant will rate each factor in terms of whether it is an advantage or challenge, and on its level of importance. Each rating is on a four-point Likert scale and assigned a corresponding score. In the advantage or challenge ratings, 'major advantage' = 2, 'minor advantage' = 1, 'minor challenge' = –1, and 'major challenge' = –2. The importance ratings scores were 'very important' = 4, 'important' = 3, 'unimportant' = 2, and 'very unimportant' = 1.

In addition to rating the 50 factors, participants will be asked to respond to three open-ended questions regarding rural nurse recruitment and retention at their CAH. The questions will address participants' perception of the greatest barriers to recruitment and retention of nurses, potential solutions to these perceived barriers, and the reasons given by nurse candidates for not accepting employment in rural communities. These were:

- 'What are your greatest barriers to recruitment and retention of nurses (registered nurses and licenced practical nurses)?'
- 'What can be done to overcome these barriers?'
- 'What reasons has a successful nurse candidate given for not accepting a position in the hospital? What did that person ultimately do instead (if you know)?'

Ethics approval

This research was approved by the Boise State University Human Subjects Institutional Review Board; ethics approval number IRB # EX 187-MED10-018

Table 1: Factors and groupings in the Nursing Community Apgar Questionnaire

Class/factor[†]
Geographic
1. Access to larger community[¶]
2. Demographics/patient mix[¶]
3. Social networking[¶]
4. Recreational opportunities[¶]
5. Spousal/partner satisfaction (education, work, general)[¶]
6. Schools (K–12 and higher education)*
7. Climate[¶]
8. Lifestyle
9. Size of community
10. Nurses having trained/lived in rural areas
Economic/resources
11. Access to larger community[¶]
12. Demographics/patient mix[¶]
13. Social networking[¶]
14. Education support (CE, tuition)
15. Day care
16. Salary
17. Shift differential
18. Housing availability/affordability
19. Availability of necessary materials/equipment
20. Education support (CE, tuition)
Management/decision-making
21. Day care
22. Nurse empowerment/nurses involved in design of best practice environment/unit-based decision making/professional collaboration between management and staff nurses
23. Nurses involved in selecting/implementing new technology/ equipment
24. Professional development opportunities/career ladders
25. Thorough orientation/preceptorship for new nurses
26. Flexible scheduling/ optimal shift availability/12-hour shifts
27. Recognition/positive feedback
28. Effective partnership between medical and nursing staff
29. Teaching/mentoring opportunities[¶]/administrative role involvement[¶]/challenge of multiple roles (direct care, leadership, teaching, etc.)
30. Autonomy/respect
Practice environment/scope
31. Clinical variety and challenge/emergency care[¶]
32. Electronic medical records[¶]
33. Positive workplace culture/supportive working environment that fosters mentoring
34. Positive relationships/communication among different generations of nurses
35. Manageable workload/increased time with patients
36. Ethical climate
37. Emphasis on patient safety/high quality care
38. Evidence-based practice/opportunities for research
39. Job satisfaction/morale level
40. Stress levels

Table 1: cont'd

Class/factor[†]
Community/practice support
1. Perception of quality[¶]
2. Emergency medical services[¶]
3. Welcome and recruitment program[¶]
4. Acceptance of nurses new to area
5. Sense of reciprocity between nurses and community
6. Image of rural health care and nursing/positive image of job environment
7. Distance education access
8. Community health/nursing services
9. Family-friendly environment
10. Nursing workforce adequacy and stability

Each factor given an advantage or challenge rating ('major advantage' = 2, 'minor advantage' = 1, 'minor challenge' = –1, and 'major challenge' = –2) and an importance rating ('very important' = 4, 'important' = 3, 'unimportant' = 2, and 'very unimportant' = 1).
[¶] Included in the physician Community Apgar Questionnaire.

Results

The numerical rankings for the NCAQ will be utilized to calculate a weighted 'Apgar' score. The rating for each factor regarding advantage/challenge will be multiplied with the rating for importance to calculate the weighted Apgar score. Thus, the Apgar scores for each factor can range from 8 to –8.

Statistical analysis of these scores will demonstrate strengths and weaknesses for each participating CAH and community, at both the factor and class levels, as well as the factors deemed most important by participants. These scores will also be analyzed for any differences between administrators' and staff nurses' responses. In addition, examination of NCAQ scores from a variety of CAHs may demonstrate if rural nurses have unique reactions or share common responses to the various factors that affect rural nurse recruitment and retention.

The qualitative data will be analyzed to determine support of those factors deemed most salient. The data will also be used to identify any factors overlooked in the development of the NCAQ.

Next steps

The NCAQ will be administered at 12 CAH sites, six 'alphas', which have historically done well with nurse recruitment and retention, and six 'betas', which have struggled with nurse recruitment and retention. The results of the 'alpha' CAHs will be compared with those of the 'beta' CAHs. The aggregate results will serve as a database with which subsequent participating CAHs can compare their results. Pilot administration of the NCAQ will also allow for reliability and validity testing of the tool.

Conclusion

After the NCAQ has been piloted and a database of results compiled, CAHs will be able to see how their facility and community compare with those in the database. The NCAQ is designed to function as a dynamic, real-time tool for guidance on the most helpful timely interventions. The NCAQ will allow CAHs to assess and improve their rural nurse recruitment and retention practices. Longitudinal NCAQ results can be used to track CAHs and their community's progress over time, similar to the clinical use of Apgar scores in newborns, as well as compare their results with those of their peers. Utilizing the CAQ and the NCAQ together will enable rural CAHs and their communities to address their unique workforce needs.

As the database grows in size, state, regional, and national results can be compared, trends may be discovered, and best practices identified.

Acknowledgements

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Appendix I: Nursing Community Apgar Questionnaire glossary of terms

Geographic class factors

Access to larger community – The ability to access or ease of access to a larger community†

Demographics/patient mix – The demographics of patients in the community including age, race, gender or other†

Social networking – Opportunities or ease of socializing for the nurse¶

Recreational opportunities – Opportunities for local, enjoyable non-work time activities†

Spousal/partner satisfaction (education, work, general) – Overall satisfaction of the spouse/partner in regard to local community living such as education, work, and in general¶

Schools (K–12 and higher education) – Adequacy of schools for the nurse's children, self and partner¶

Climate – Weather†

Lifestyle – Pace of small town, no traffic jams or hussle-bussle, everyone knows everyone

Size of community – Population of community

Nurses having trained/lived in rural areas – Nurses who grew up in a rural setting similar to that of the CAH or nurses who received part of their clinical training in a similar area

Economic/resources class factors

Cost of living – Expenses related to maintaining a household as relative to other parts of the state or country

Benefits – Compensation provided to nurse employees beyond salary

Moving allowance – Whether or not a moving allowance is available for new nurse¶

Education support (CE, tuition) – Whether or not the CAH provides nurses with reimbursement for continuing education

Day care – Is day care available at the CAH or is it readily available in the community?

Salary – Monetary compensation provided to nurse employees

Shift differential – Does the CAH provide additional monetary compensation to nurse employees who work shifts other than daylight?

Housing availability/affordability – Is housing readily available in the community? If so, what are the costs associated with purchase or rent of a home as relative to other parts of the state or country?

Availability of necessary materials/equipment – The adequacy of materials and equipment on the nursing units in the hospital

Internet/technology access – The existence and adequacy of internet access and technological equipment in the hospital¶

Management/decision-making class factors

Hospital leadership/management – The competency and adequacy of hospital leadership including the CEO, CFO, CNO, and nurse managers¶

Nurse empowerment/nurses involved in design of best practice environment/unit-based decision making/professional collaboration between management and nursing staff – The ability of nurses to participate in the decision-making process that impacts the day-to-day practice of nurses

Nurses involved in selecting/implementing new technology/equipment – The ability of nurses to participate in decision-making related to choosing, procuring and implementing technology/equipment

Professional development opportunities/career ladders – Opportunity for advancement for nurses

Thorough orientation/preceptorship for new nurses – Adequacy of training provided to new nurses

Flexible scheduling/optimal shift availability/12-hour shifts – Opportunity for nurses to choose shift; variety of shifts available

Recognition/positive feedback – Management practices regarding acknowledgement of nurses' accomplishments, service

Effective partnership between medical and nursing staff – Collegiality among medical and nursing staff rather than paternalistic or hierarchical relationship

Teaching/mentoring opportunities/administrative role involvement/challenge of multiple roles (direct care, leadership, teaching, etc.) – The impact of whether or not teaching/precepting/managing is an option, not an option, or mandatory¶

Autonomy/respect – Ability of nurses to direct their own practice; perception of hospital management and medical staff toward nurses

Practice environment/scope class factors

Clinical variety and challenge/emergency care – The impact of whether or not specialty coverage, including ER, is an option, not an option, or mandatory¶

Electronic medical record – The existence and adequacy of electronic medical records in the hospital†

Positive workplace culture/supportive working environment that fosters mentoring – Impact of veteran nurses' response to and support of new nurses

Positive relationships/communication among different generations of nurses – Impact of interaction between younger and older nurses

Manageable workload/increased time with patients – Impact of nurses' perception of workload and ability to perform quality nursing care

Ethical climate – Nurses' perception of support of/or ability to practice within ethical beliefs/values

Emphasis on patient safety/high quality care – Impact of hospital's support of patient safety and high quality care as primary objectives

Evidence-based practice/opportunities for research – Hospital's role in ensuring up-to-date best practice knowledge is applied to nursing practice; support of nursing research

Job satisfaction/morale level – Nurses' overall contentment related to practicing at the hospital

Stress levels – Impact of nurses' pressures related to practicing at the hospital

Community/practice support class factors

Perception of quality – The overall reputation for quality of nursing care for this community as seen by someone not from this community[¶]

Emergency medical services – The adequacy of pre-hospital emergency medical service for both quantity and quality[†]

Welcome and recruitment program – The existence and adequacy of any recruitment plan and/or welcome for an interviewing or newly recruited nurse[¶]

Acceptance of nurses new to area – Ease with which a new nurse reports feeling a part of the nursing community

Sense of reciprocity between nurses and community – Impact of relationship between community members and nursing staff

Image of rural health care and nursing/positive image of job environment – Impact of perception of rural health care and current nurses' perception of job environment on potential recruits

Distance education access – Opportunity for continuing education without relocation or frequent travel

Community health/nursing services – Availability of school nurses, hospice, home health, public health nursing services

Family-friendly environment – Opportunity for family activities throughout community

Nursing workforce adequacy and stability – Impact of understaffing and turnover among nursing staff

[†] Factor in common with physician Community Apgar Questionnaire with same explanation

[¶] Factor in common with physician Community Apgar Questionnaire but with different explanation applicable to nursing

CAH, critical access hospital.