The Nursing Community Apgar Questionnaire in rural Australia: An evidence based approach to recruiting and retaining nurses

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Abstract

Purpose: To date, the Nursing Community Apgar Questionnaire (NCAQ) has been effectively utilized to quantify resources and capabilities of a rural Idaho communities to recruit and retain nurses. As such, the NCAQ was used in a rural Australian context to examine its efficacy as an evidence-based tool to better inform nursing recruitment and retention.

Sample: The sample included nursing administrators, senior nurses and other nurses from six health facilities who were familiar with the community and knowledgeable with health facility recruitment and retention history. Participants were registered nurses and/or directly involved in nursing recruitment.

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Method: The 50 factor NCAQ was administered online. Data were cleaned, checked, and analyzed by assigning quantitative values to the four-point scale of community advantages or challenges for each factor and then weighted according to the participant's perceived importance to create a community asset and capability measure. Higher scores represented more developed community assets and capabilities relating to nursing recruitment and retention.

Findings: The findings demonstrate that lifestyle, emphasis on patient safety and high quality care, availability of necessary materials and equipment, perception of quality were among the highest scoring factors and considered to have the most impact on recruiting and retaining nurses. The lowest factors impacting recruitment and retention included spousal satisfaction, access to larger communities, and opportunities for social networking within communities.

Conclusions: The implementation of the NCAQ has the capacity to offer health facilities and managers to examine what is appealing about the health service and community, while highlighting key challenges impacting recruitment and retention. The NCAQ assists health services to develop strategic plans tailored specifically to enhance recruitment and retention of nursing staff. Its use has the capacity to provide health services with greater evidence as they seek to address site specific or regional recruitment and retention issues.

Keywords: Rural, nursing, Workforce, Recruitment, Retention, Community apgar

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Internationally, rural communities continue to experience significant challenges recruiting and retaining nurses due to many and varying factors (Aylward, Gaudine, & Bennett, 2011; Becker, Hyland, & Soosay, 2013; Manahan & Lavoie, 2008; Prengaman, Bigbee, Baker, & Schmitz, 2014). Rural and remote regions across the US, Canada, and Australia have a rapidly

aging workforce with populations experiencing the lowest levels of health access and the greatest health disadvantage (Adams, 2016; Aylward et al., 2011; Hanna, 2001; Prengaman et al., 2014). To meet these challenges policy responses have sought to sustain rural access to health services and have made gains (Blaauw et al., 2010; Buchan & Sochalski, 2004; Mbemba, Gagnon, Pare, & Cote, 2013); however, retention of rural health care workers remains problematic and continues to impact rural health outcomes (Adams, 2016; Aylward et al., 2011; Blaauw et al., 2010). In addition to policy, previous programs and research have focused on health workforce employment satisfaction, personal experience and individual personality traits that impact taking up of and the longevity of rural employment (Campbell, Eley, & McAllister, 2016; Molinari & Monserud, 2008). While, other studies have focused on 'interventions' that promote and enable retention of nurses in rural or remote areas, such as financial incentives, professional development, personal and professional support, and regulatory interventions (Bourke, Waite, & Wright, 2014; Mbemba et al., 2013).

An alternative approach that examined the attributes of a community and health facility was conceived to address physician recruitment and retention issues in rural Idaho (Schmitz, Baker, Nukui, & Epperly, 2011). Through this approach the Community Apgar Questionnaire (CAQ) was developed to play a key role in recruitment and retention across the US (Baker, Schmitz, Wasden, MacKenzie, & Epperly, 2012; Schmitz & Baker, 2012), and was later expanded to address similar nursing recruitment and retention challenges. This led to the development of the Nursing Community Apgar Questionnaire (NCAQ)(Prengaman et al., 2014). Traditionally, the Apgar is used to quantify resources and capabilities of newborns (Apgar, 1966), so too the NCAQ is used to quantify resources and capabilities of a rural community to recruit and retain nurses (Prengaman et al., 2014). The aim of the NCAQ is to provide an evidence base of key strengths,

challenges, and the community's overall capacity to recruit and retain nurses, while supporting health facilities to develop achievable long-term goals to meet the needs of a rural community (Prengaman et al., 2014; Schmitz et al., 2011).

The NCAQ contains 50 key recruitment factors relevant to recruitment and retention of nurses, which are first scored as being advantages or challenges to the community and then scored as to how important the factors are to rural nursing recruitment and retention. These factors are classified into five classes that include: (a) geographic factors, (b) economic and resource factors, (c) management and decision-making factors, (d) practice environment and scope of practice factors, and (e) community and practice support factors. In addition, three qualitative open-ended questions provide an opportunity to validate the 50 factors and identify less know factors that may be specific to individual communities (Prengaman et al., 2014; Schmitz et al., 2011).

Since its inception, the CAQ has been successful across Alaska, Idaho, Indiana, Iowa, Maine, Montana, North Dakota, Utah, Wisconsin, and Wyoming (Baker, Schmitz, Epperly, Nukui, & Miller, 2010; Baker et al., 2012; Schmitz, Baker, MacKenzie, Kinney, & Epperly, 2015; Schmitz et al., 2011), while the use and efficacy of the NCAQ has been demonstrated in Idaho to date. After consultation with a number of rural health facilities in Australia, it was noted that although Family Physican recruitment and retention was difficult, nursing recruitment and retention was likewise challenginge and also essential to maintaining the viablity of a health service. As such, the value and efficacy of NCAQ as an evidence-based tool that seeks to better inform nursing recruitment and retention activities in rural areas was examined in an international context. The aim of the study was to pilot the NCAQ across communities in the Hume region of rural Victoria and develop a greater understanding of the broad and unique community factors that impact rural recruitment and retention of nurses.

Methods

The Hume region of Victoria is just smaller than Switzerland in size with more than 300,000 people living across the 40,000 square kilometer area. It encompasses 12 local government areas and there are 27 health facilities consisting of three public and three private hospitals in major centres (25,000-60,000 people), and 19 District Health facilities and 2 bush nursing services that service their respective communities (1,000-10,000 people) (Regional Development Victoria, n.d.).

Ethical approval for the study was obtained by Albury Wodonga, Northeast Health Wangaratta, and the Goulburn Valley Health Human Research Ethics Committees. In the study, District Health facilities were specifically targeted, of which eight showed interest and six (32%) participating in this study. The target population were nursing administrators and senior nurses who were familiar with the community and knowledgeable about the health facility's recruitment and retention history and practices. Due to the diversity and complexity of each health facility, participants included two Chief Executive Officers (CEOs), two Directors of Clinical Services (DCS), two Directors of Nursing (DON), seven senior nurses, and three 'other' nurses. In most cases, participants were registered nurses or were directly involved in nursing recruitment.

The NCAQ was administered online after each participant provided informed consent. The administration of the NCAQ in the Hume region differed to the original Idaho NCAQ in that it was a self-administered online rather than face-to-face assessment experience. This approach was undertaken to aide in the sustainability of the tool while examining its value online.

Once collected, data were cleaned, checked, analyzed using SPSS version 22.0 (IBM, http://www.ibm.com) and scored by assigning quantitative values to the four-point scale of

community advantages or challenges for each factor (major advantage = 2, minor advantage = 1, minor challenge = –1, major challenge = –2) (Prengaman et al., 2014). Each factor was then weighted according to the participant's perceived importance on a four-point scale (very important = 4, important = 3, unimportant = 2, very unimportant = 1), as outlined in the following algorithm: Advantage/challenge score x Importance score = Community Apgar Score.

$$Adv\ x\ Imp = Apgar$$

For example, an individual participant may state the factor 'access to larger Community' is a minor challenge (-1) and very important (+4) for their community. Thus the calculation of the Apgar score for this individual is:

$$-1 \times 4 = -4$$

As such, the algorithm was applied to every participant's individual response for each factor to provide a community asset and capability measure (Apgar) for each factor across the Hume region that ranged from -8 to 8. Higher scores are representative of a more developed community asset and capability related to nursing recruitment and retention.

A similar process was then applied to provide further insight into the overall scores for each factor in terms of the relative advantages/challenges, the importance of each factor and overall Apgar scores experienced within the Hume region, as outlined in the following algorithm: Cumulative Advantage ÷ participant number x Cumulative Importance ÷ participant number:

$$\frac{\sum^{n} Adv}{n} \times \frac{\sum^{n} Imp}{n} = Average\ Apgar$$

Thus, the calculation of the Apgar score for 'access to larger Community' across the Hume region was calculated:

(-1-2-1-2+2-2-2-1-2+1-2-1-1-2-1-1 ÷ 16) x (+3+4+4+4+4+4+3+4+4+3+4+4+4+3+3 ÷ 16) = -1.13 x 3.69 = -4.17

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Once all data were collected and calculated, site specific data and comparison data for the region were confidentially fed back to CEOs which provided an opportunity to further discuss the strengths of their health facility or how the identified challenges may be overcome.

Findings

Among the 21 identified district health and bush nursing services, six (32%) sites chose to participate with a final sample of 16 participants. Each provided responses to the 50 factors within the NCAQ and the three open-ended questions. The reliability of the CAQ was assessed using Cronbach's Alpha coefficients, a standard measurement of reliability. The overall Cronbach's alpha = 0.914, which was above 0.7 and considered acceptable. Mean Nursing Apgar scores were then calculated from the 50 factors. The average scores for factors within and across each class were ranked with the top and bottom 10 Nursing Apgar scores across all 50 factors being identified for the Hume region.

Advantages and Challenges

Community and Practice Support was identified as the highest community advantage class across the Hume region, followed by Management and Decision-Making. The top 10 individual advantages were 1) Lifestyle, 2) Hospital leadership/management, 3) Emphasis on patient safety/high quality care, 4) Sense of reciprocity between nurses and community, 5) Availability of necessary materials/ equipment, 6) Perception of quality, 7) Nurses involved in selecting/implementing new technology/ equipment, 8) Recognition/positive feedback, 9) Autonomy/respect, and 10) Ethical climate. The top 10 challenges were 1) Spousal satisfaction, 2) Access to larger Community, 3) Social networking, 4) Moving allowance, 5) Recreational opportunities, 6) Electronic medical records, 7) Flexible scheduling and optimal shift availability including 12-hour shifts, 8) Demographics/patient mix, 9) Benefits, and 10) Day care being equal

tenth position with Shift differential, Professional development opportunities/career ladders, and Nursing workforce adequacy and stability.

Importance.

Again, Community and Practice Support was identified as the highest importance class across the communities, and this was followed by Practice Environment and Scope, and Management and Decision-Making class. The highest important factors across all 50 factors were 1) Access to larger Community, 2) Nursing workforce adequacy and stability, 3) Manageable workload/increased time with patients, 4) Emergency medical services, 5) Emphasis on patient safety/high quality care, 6) Job satisfaction/morale level, 7) Effective partnership between medical and nursing staff, 8) Positive workplace culture/supportive working environment that fosters mentoring, 9) Acceptance of nurses new to area, and 10) Nurse empowerment being equal tenth position with Recognition/positive feedback and Ethical climate.

Overall Community Apgar.

The Nursing Community Apgar algorithm, derived from the community advantage/challenge score, weighted by its relative importance, was calculated. The Management and Decision-Making class was identified as the highest community asset and capability and far outweighed the other four classes, which included Community and Practice Support, Practice Environment and Scope, Economic and Resources, and Geographic classes.

In addition to the Management and Decision-Making class, the top 10 Community Apgar factors were 1) Lifestyle, 2) Emphasis on patient safety and high quality care, 3) Hospital leadership and management, 4) Sense of reciprocity between nurses and community, 5) Availability of necessary materials and equipment, 6) Perception of quality, 7) Recognition and

positive feedback and Ethical climate, 8) Nurses being involved in selecting or implementing new technology and equipment, 9) Autonomy and respect, and 10) Nurse empowerment.

The bottom 10 Community Apgar factors were 1) Spousal satisfaction, 2) Access to larger Community, 3) Social networking, 4) Recreational opportunities, 5) Nursing workforce adequacy and stability, 6) Moving allowance, 7) Flexible scheduling and optimal shift availability including 12-hour shifts, 8) Electronic medical records, 9) Professional development opportunities/career ladders, and 10) Day care, as outlined in Table 1.

Table 1

Overall Advantages/Challenges, Importance and overall Community Apgar Scores

	Overall Score Mean Scores		
(N=16)	**Advantage or challenge**	**Importance**	**Nursing Apgar**
Geographic Class			
Access to larger Community	-1.13	3.69	-4.17
Demographics/patient mix	-0.75	2.94	-2.21
Social networking	-1.06	3.25	-3.45
Recreational opportunities	-0.88	3.38	-2.97
Spousal satisfaction (education, work, general)	-1.19	3.31	-3.94
Schools	-0.38	3.31	-1.26
Climate	-0.06	3.06	-0.18
Lifestyle	1.13	3.00	3.39
Size of community	-0.63	3.19	-2.01
Nurses having trained /lived in rural areas	0.50	3.13	1.57
Economic and resource class			
Cost of living	0.25	3.00	0.75
Benefits	-0.75	2.63	-1.97
Moving allowance	-1.06	2.38	-2.52
Education support (CE, tuition)	0.25	3.25	0.81
Day care	-0.69	3.31	-2.28
Salary	-0.13	3.31	-0.43
Shift differential	-0.69	2.75	-1.90
Housing availability /affordability	-0.13	3.31	-0.43
Availability of necessary materials/ equipment	0.69	3.44	2.37
Internet/technology access	-0.25	3.13	-0.78
Management and decision making class			
Hospital leadership/management	0.94	3.38	3.18
Nurse empowerment/ nurses involved in design of best practice environment/ unit-based decision making/ professional collaboration between management and staff nurses	0.44	3.50	1.54

(N=16)	Overall Score Mean Scores		
	Advantage or challenge	Importance	Nursing Apgar
Nurses involved in selecting/implementing new technology/ equipment	0.56	3.44	1.93
Professional development opportunities/career ladders	-0.69	3.38	-2.33
Thorough orientation/preceptorship for new nurses	0.19	3.25	0.62
Flexible scheduling/ optimal shift availability/12-hour shifts	-0.81	3.06	-2.48
Recognition/positive feedback	0.56	3.50	1.96
Effective partnership between medical and nursing staff	0.00	3.56	0.00
Teaching/mentoring opportunities/administrative role involvement/ challenge of multiple roles (Direct care, leadership, teaching, etc.)	-0.19	3.44	-0.65
Autonomy/respect	0.56	3.25	1.82
Practice environment and scope class			
Clinical variety and challenge/emergency care	-0.38	3.38	-1.28
Electronic medical records	-0.88	2.75	-2.42
Positive workplace culture/supportive working environment that fosters mentoring	-0.25	3.50	-0.88
Positive relationships/communication among different generations of nurses	0.31	3.44	1.07
Manageable workload/increased time with patients	-0.25	3.63	-0.91
Ethical climate	0.56	3.50	1.96
Emphasis on patient safety/high quality care	0.88	3.63	3.19
Evidence-based practice/opportunities for research	0.13	3.06	0.40
Job satisfaction/morale level	-0.06	3.56	-0.21
Stress levels	-0.44	3.31	-1.46
Community and practice support class			
Perception of quality	0.69	3.31	2.28
Emergency medical services	0.13	3.63	0.47
Welcome and recruitment program	0.25	3.44	0.86
Acceptance of nurses new to area	0.38	3.50	1.33
Sense of reciprocity between nurses and community	0.81	3.44	2.79
Image of rural health care and nursing/ positive image of job environment	0.31	3.25	1.01
Distance education access	-0.63	3.44	-2.17
Community health/ nursing services	-0.19	3.00	-0.57
Family-friendly environment	0.06	3.38	0.20
Nursing workforce adequacy and stability	-0.69	3.69	-2.55

The cumulative Nursing Apgar scores for each of the participating health facilities were derived by adding all Nursing Apgar scores of each 50 factors among participants. The cumulative

Nursing Apgar scores ranged from a high of 57 to a low of -80. Higher scores indicated greater community assets and capabilities for a particular health facility as they relate to nursing recruitment and retention, outlined in Table 2.

Table 2

Community Apgar Scores by Cumulative Score

Location ID	Geographic	Economic and resource	Management and decision making	Practice environment and scope	Community and practice support	Apgar Score
1	-22	-3	63	-8	27	57
2	-5	28	70	3	-41	55
3	-11	-19	42	4	6	22
4	-61	-26	34	-4	22	-35
5	-61	-66	53	29	-25	-70
6	-54	-52	85	-73	14	-80

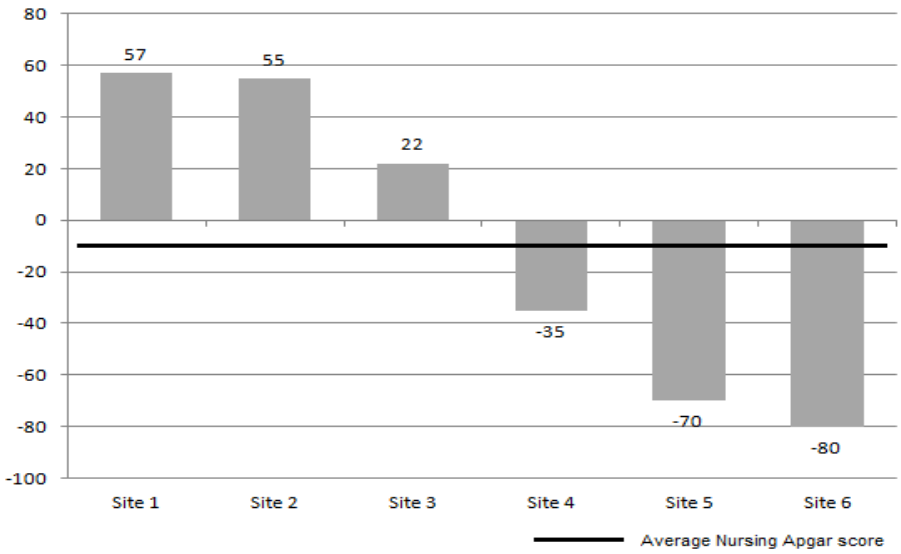
It must be noted that geographical isolation of a health facility or community did not always determine an overall Nursing Apgar score, as some more remote health facilities scored higher Apgars than less geographical isolated health facilities. In addition, the overall Apgar score distribution indicated that the tool was sensitive enough to differentiate between communities that were high and low performers in terms of nursing recruitment, as previously indicated in rural Idaho (Prengaman et al., 2014) and shown in Figure 1.

Additional barriers highlighted.

Additional open-ended responses from participants considered health services provided in rural communities as sub-acute, residential aged care and community health focused. It was felt being less acute may impact the competency of nurses when encountering emergency situations, even after adequate training has been provided. It was stated there was a fear of de-skilling in rural areas due to lack of complex inpatient services or specialty areas. Often nurses are looking

for higher acuity engagement or health specialties which challenge nurses professionally, which may have both workforce and educational implications for health care planners.

Figure 1: Apgar score distribution across sites



Additional barriers to recruitment and particularly retention were highlighted to be competition with other health services and the perceived isolation of some communities. It was indicated that distance and travel time is prohibitive, which suggests that nearly all health facilities had some nurses that would live in larger population centres and travel to their place of employment for work. It was indicated that employment closer to home, child minding and after school care was why some nurses left positions at the various health facilities.

In contrast to the key barriers outlined by participants, another participant stated

> *The nature of rural nursing is actually appealing once you understand it. It offers a very broad area of practice, a great opportunity for autonomous practice, greater interaction between community and nurses, and a more personal and co-operative relationship with all health professionals.* (Nurse, Site 1)

This suggests that although there may be barriers to living and working as a nurse in rural communities there are key positives that may not be experienced within larger health facilities and communities. However, nurses need to first understand and be cognizant of the opportunities that may not be available elsewhere.

Discussion

The findings demonstrated that among the five classes of factors, Management and Decision-Making class outweighed the other four classes, and suggests that nursing candidates may be acutely interested in and consider the management and decision-making practices within certain health facilities. Having trust and confidence in an effective executive and nurse managers may not be at the forefront of a candidate's mind; however, this may vary by work experience level of the candidate such as new graduate versus an experience nurse. The level of trust and confidence in management can demonstrate to a candidate very quickly the environment where they are considering employment (Bovbjerg, Ormond, & Pindus, 2009; Chenoweth, Merlyn, Jeon, Tait, & Duffield, 2014; Jeon, Chenoweth, & Merlyn, 2010). Other aspects of employment that candidates may consider include their capacity to be involved in and empowered to participate in the decision-making and development of their environment (Amstrong & Laschinger, 2006; Belden, Leafman, Nehrenz, & Miller, 2012; Hegney, Eley, Plank, Buikstra, & Parker, 2006; Laschinger, 2008; Laschinger, Einegan, Sbamian, & Casier, 2000; Manojlovich & DeCicco, 2007; Purdy, Laschinger, Finegan, Kerr, & Olivera, 2010; Shields & Ward, 2001). Further, candidates may also examine if there is the encouragement of and the capacity for specific rural training, further career development and professional advancement (Amstrong & Laschinger, 2006; Belden et al., 2012; Breau & Rheaume, 2014; Chenoweth et al., 2014; Hegney et al., 2006; Laschinger, 2008; Laschinger et al., 2000; Manojlovich & DeCicco, 2007; Purdy et al., 2010; Shields & Ward, 2001).

Beyond management and decision-making, it was indicated that lifestyle, emphasis on patient safety and high quality care, hospital leadership and management, and sense of reciprocity between nurses and community were among the highest scoring Community Apgar factors and were considered to have the most impact on recruiting and retaining nurses. In the Hume region, the various communities have what many may consider a 'typical' rural lifestyle and nurses with an interest in serenity, communities with strong social networks, where a close proximity to families and friends are valued, may view rural lifestyles as an advantage (Dotson, Dave, & Cazier, 2012; Hegney, McCarthy, Rogers-Clark, & Gorman, 2002). In addition, training nurses in rural environment has been shown to be an important step in workforce generation through integrating and reciprocity with the community and gaining an appreciation for rural health practice, which correlates with training physicians in rural areas (Dunbabin & Levitt, 2003; Playford, Larson, & Wheatland, 2006). Further, health facilities in the region emphasize and promote patient safety and quality care as a top priority, and among nursing staff there is confidence in hospital leadership and management that facilitates staff feeling valued and empowered.

At times, nurses who may not be from the area or who have trained in urban areas may have the perception that rural facilities lack vital materials and equipment. Working in a health facility that has current and adequate materials, while having access to up-to-date equipment and technology assists nurses in their practice and decision-making (Dawson, Stasa, Roche, Homer, & Duffield, 2014; Goh, Gao, & Agarwal, 2016). Having a well-kept health facility and access to current medical technology equipment ensures that current and potential nurses see the health facility as relevant, and thus may be advantageous and further assist with the perception of quality of health services and a community (Dawson et al., 2014).

The lowest individual factors Nursing Apgar identified included spousal satisfaction and access to larger community. Although the region may be considered a typical rural lifestyle, social networking was also one of the lowest factors identified. Solutions for the lowest scoring factors that have the greatest impact on recruitment and retention may include treating the recruitment of the spouse or partner as importantly as recruitment of the candidate. Provide information for the spouse or partner as a part of recruitment packages, and encourage them to accompany the candidate as a part of the selection process (Becker, Hyland, & Soosay, 2013). This may encompass finding ways to get the spouse or partner engaged in the community through volunteering or socialising (Becker et al., 2013). Consider applying a community network approach to finding work for dual-career couples to facilitate their relocation to the region (Becker et al., 2013). Alternatively, the process may be about organizing employment matching initiatives, professional development programs or to examine tele-commute options for a spouse or partner (Manahan & Lavoie, 2008).

In addition to considering the spouse, accessing a larger community often means access to specialized dining, entertainment, shopping, cultural and religious opportunities (Aylward et al., 2011; Hanna, 2001). Potential solutions may include offering candidates long weekends off so they can take an extended trip to a larger community. Alternatively, sponsor or promote online access to specialized services (Becker et al., 2013; Terry, Baker, & Schmitz, 2016), or have cultural night events where specialty cuisine and culture is sampled and new staff and their families are invited along (Becker et al., 2013; Durey, Malcolm, Critchley, & Crowden, 2008). This further extends into social networking and connecting nursing candidates with social contacts during their onsite visit. If recruiting a candidate who may have trouble integrating into a community, try to recruit two or more candidates who have similar interests or come from similar areas, or include

community leaders in the hiring process to address local opportunities for social relationships (Baernholdt & Mark, 2009; D. Molinari, Jaiswal, & Hollinger-Forrest, 2011).

When comparing the rural Victorian data with rural Idaho, there were some contrasting findings. The top ten factors in rural Idaho included family friendly environment, recreation, and emergency medical services being scored as the highest community factors. This may be due to the contrasting aspects of the community and health care contexts between each country. For example, emergency medical services scored much lower in the Hume region than in Idaho and may be due to the diversity of practices and services within the various Hume health care facilities. Health services had either no emergency medical service, urgent care clinics (treating walk-in patients with non-life threatening injuries or illnesses) or more complex urgent care centres with limited x-ray and laboratory services. These various services similarly have diverse approaches to staffing which includes full time salaried family physicians, private family physicians providing on-call and/or Rural and Isolated Practice Endorsed Registered Nurses (RIPERN) who were being used to cover urgent care centres. While some services used telehealth to interact with regional trauma services in larger regional centres to alleviate physician on-call responsibilities (Victoria State Government n.d.).

Despite these difference between Idaho and Victoria, it is noted that professional factors such as autonomy, respect or the ability for nurses to direct their own practice was scored very similarly between the two countries, and globally remains a key factor contributing to job satisfaction and retention (Lu, Barriball, Zhang, & While, 2012; Prengaman & Bigbee, 2012). In addition, there were five factors that were common among the lowest scoring factors and included spousal satisfaction, social networking, moving allowance, electronic medical records, and day care. Many of these same factors have been highlighted as similar issues among other health professions in

rural areas and may be why they remain similar between countries (Fleming, McRae, & Tegen, 2001; Hancock, Steinbach, Nesbitt, Adler, & Auerswald, 2009; McGrail, Humphreys, Scott, Joyce, & Kalb, 2010; Russell, Humphreys, McGrail, Cameron, & Williams, 2013; Stanley & Bennett, 2005).

Limitations.

A limitation of this study is that participating communities and respondents may not represent all communities and health facilities in the specified region or across the state. This may limit the ability to generalize the findings. In addition, differences between Australian and US based Community Apgar research were observed, such as how data were collected, the structure and distance of communities from major centres, and how health facilities are structured and function.

Conclusion

The Hume region of rural Victoria was the first area outside the US to implement the NCAQ, and its reliability as a tool was indicated to be relatively high with a Cronbach's alpha = 0.914. The NCAQ has provided an analysis of the comparative strengths and challenges that each health service encountered, and has established the distinctiveness of each community it services. Key factors that each community had to offer nurses were identified, while indicating the types of nurses that may be best matched with each community. As a process, the NCAQ is useful as it helps health services understand how they are performing, while highlighting or reaffirming key areas to improve the recruitment and retention of nurses.

The implementation of the NCAQ has the capacity to offer health managers and facilities an opportunity to examine what it is about their community and health service that is appealing, while providing the opportunities to address a number of the key challenges identified. The NCAQ

assists health services develop strategic plans that can be tailored specifically to enhance recruitment and retention of nursing staff. As a tool, the NCAQ has identified trends and overarching factors that directly impact rural communities. Its use in Australia will provide a greater evidence base for health services to work collaboratively as they network in and across rural regions as they seek to address issues of recruitment and retention, and impact health care policy.

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