

ORIGINAL RESEARCH

The Pharmacy Community Apgar Questionnaire: a modified Delphi technique to develop a rural pharmacist recruitment and retention tool

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ABSTRACT:

Introduction: An adequate healthcare workforce remains essential for the health of rural communities. Strategies to address rural health workforce challenges have often centred on the medical and nursing workforce; however, addressing the rural pharmacist workforce also remains critical as they are often the first point of contact for health advice. Initiatives have increased pharmacist supply; however, key issues such as poor attraction, recruitment, and retention to rural areas remain. The aim of this study was to support the recruitment and retention of pharmacists in rural areas of Australia through the development of the Pharmacy Community Apgar Questionnaire (PharmCAQ).

Methods: A modified Delphi technique was employed to develop the PharmCAQ. A panel of experts were purposively selected. Eight representatives were from organisations with rural experience relevant to the study including the Society of Hospital Pharmacists of Australia, the Pharmaceutical Society of Australia, the Pharmacy Guild of Australia, the Pharmacy Board of Australia, and a representative of a government health agency, who also leads a hospital pharmacy. Three additional participants included local and international academics with health policy and rural health workforce expertise. All participants participated in three separate focus groups of 45–60 minutes duration, where the review and refinement of factors that drive recruitment and retention of pharmacist were discussed. Face and content validity was achieved

Keywords:

Australia, Community Apgar, Delphi, pharmacist, recruitment, retention, rural community.

through the representatives, while internal consistency was achieved when the tool was piloted among 10 rural pharmacists in rural Victoria.

Results: Fifty key factors that impact the recruitment and retention of pharmacists were identified, developed and succinctly described. All factors were grouped into five classifications: (1) geographic, (2) economic and resources, (3) practice and scope of practice, (4) practice environment and (5) community practice support. After final consensus, the factors and their definitions formed the final questionnaire. Lastly, the reliability of PharmCAQ was determined, with a Cronbach's alpha coefficient of 0.852.

Conclusion: While the development and use of the Apgar questionnaire for the recruitment and retention of health professionals is not a novel idea, seeking to specifically focus on pharmacists is unique. However, 10 factors were similar to factors associated with rural recruitment and retention of both physicians and nurses; they encompassed geographic, community support, and economic and resource factors. Regardless of similarities or differences between health professions in terms of recruitment and retention, as a mechanism for addressing the worsening health professional shortage currently experienced in rural areas, the PharmCAQ was developed to support the recruitment and retention of the pharmacist workforce in rural areas.

FULL ARTICLE:

Introduction

Healthcare services are necessary to the functioning, vibrancy, and both individual and public health of rural communities. Providing these services requires healthcare professionals such as medical practitioners, nurses and allied health professionals (eg occupational therapists, physiotherapists and pharmacists). Maintaining an adequate and stable healthcare workforce in rural communities remains essential for the continuity

of care and improved health outcomes of these populations¹⁻⁵. Although fundamental, rural communities continue to struggle to have these essential professionals living and working in these areas despite increased training, funding and programs to support these goals^{1,6-9}.

Strategies implemented to address health workforce shortfalls in rural communities have often centred on addressing medical and nursing workforce deficits, thereby overlooking another critical

workforce, pharmacists¹⁰. Pharmacists are often the first point of contact in rural areas and play a critical role in providing primary care as well as triage and referral of community members to other health professionals within the healthcare system¹¹⁻¹³. In some cases, a pharmacist may be the only health professional that is easily accessible in a rural or remote community¹⁴.

Healthcare professional workforce initiatives over the past two decades have resulted in an increase in the number of pharmacists in Australia^{14,15}, while maldistribution has resulted in a persistent undersupply across rural communities. Although increasing the pharmacist supply partially mitigates these longstanding challenges, key issues remain with poor attraction, recruitment and retention of pharmacists to rural areas^{3,10,15,16}. To date, there has been limited research focused specifically on the recruitment and retention of pharmacists in rural communities^{3,14-16}.

Literature reviews have investigated the drivers and challenges of rural pharmacist recruitment, retention and related decision-making^{10,14,15}. The findings indicate that pharmacists seek job satisfaction, good working conditions, a desire for responsibility, training and an adequate but not overbearing workload¹⁵. Additionally, beyond the workplace-identified geographical and family related themes that influence the choice to practice rurality, there are other key drivers of rural employment. These include economic drivers of rural employment such as wages and incentives, an expanded scope of practice afforded to pharmacists in rural areas, and the rural practice environment. Characteristics of the community itself and its support for pharmacists who join and become part of the town or area are also important factors^{10,14,17-19}. Although there are many pull factors that may bring pharmacists to contemplate, consider and undertake rural practice, there currently remains a need to define how these factors may be uniquely and practically utilised among individual rural communities to recruit and retain their much-needed workforce^{10,18,19}.

An approach to addressing these challenges among physicians and nurses has been use of the Community Apgar Questionnaire (CAQ) and the Nursing Community Apgar Questionnaire (NCAQ), respectively^{7,20,21}. These instruments, each consisting of 50 individual factors or key elements that influence practice location decision-making, have been used as objective measurement tools to assess the assets and challenges of individual rural communities to successfully recruit and retain doctors and nurses. Just as an Apgar test is designed to assess a newborn's health and indications for action, the CAQ and NCAQ were developed to quantitatively scale the important resources and capabilities of rural communities that impact recruitment and retention^{1,7,20}. The CAQ and NCAQ assist rural communities to be more effectively

equipped to recruit medical and nursing staff that are the 'best fit' with their unique service demands and community, while also identifying longer term strategies that services can undertake to improve recruitment and retention^{7,20}.

Research aim

The aim of this study was to develop the Pharmacy CAQ (PharmCAQ) and examine its reliability, while also understanding the similarities with the CAQ and NCAQ.

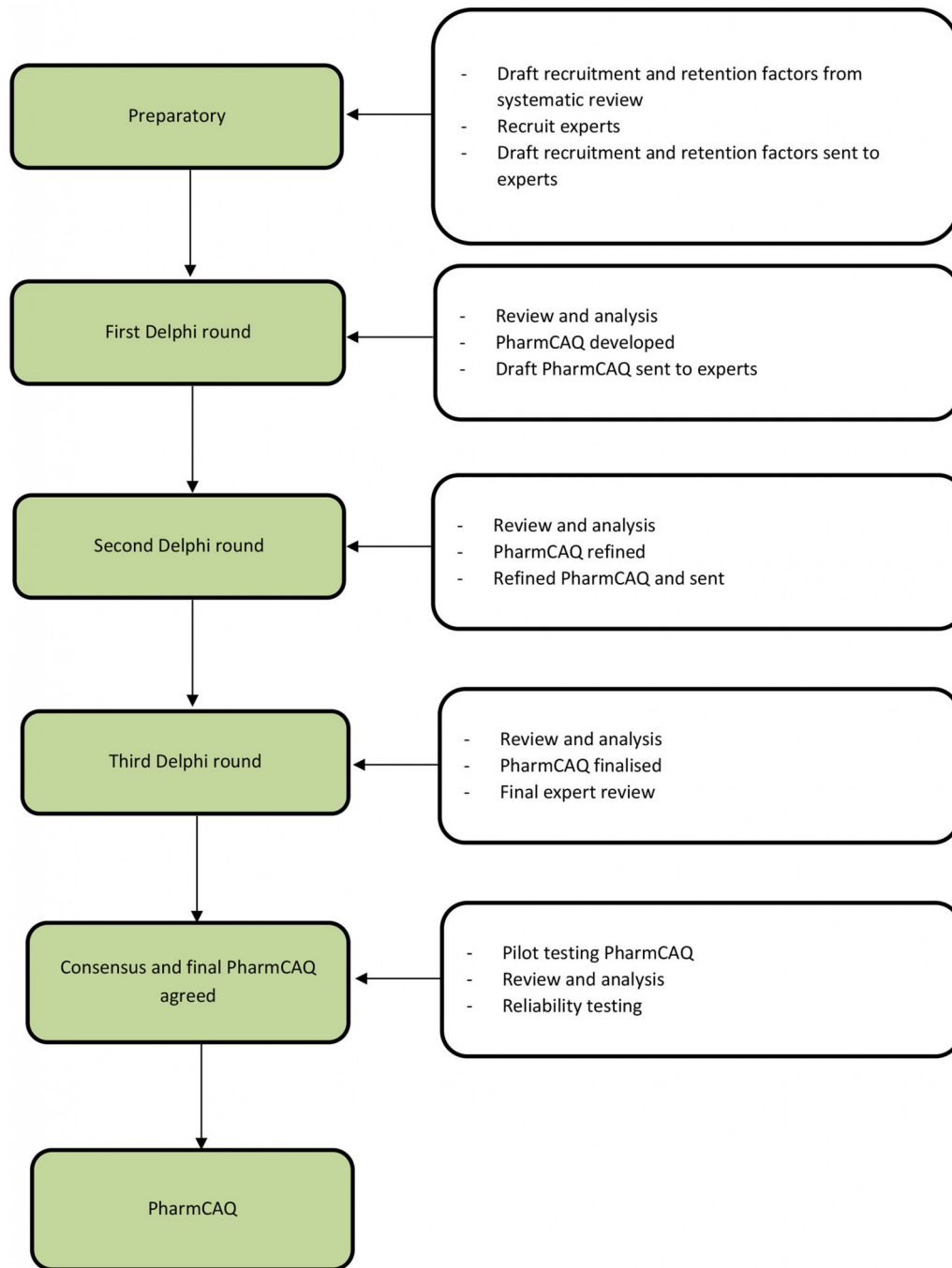
Methods

In this exploratory study, a modified Delphi technique was employed to formulate and develop the PharmCAQ, informed by the development process undertaken with the CAQ and NCAQ^{7,20}. The 'Delphi' is an established method employed to achieve clear consensus regarding healthcare policies and guidelines, can be applied qualitatively, and is regularly utilised to create solutions in the healthcare environment²²⁻²⁵.

Modified Delphi technique

A Delphi remains fluid and flexible in its application due to the absence of a concrete theoretical framework. To mitigate this lack of a framework, an adaptation of the Conducting and Reporting of Delphi studies (CREDES) guideline was utilised to inform this study²⁶. Overall, three key elements are essential, with at least 8-12 participants who (1) are experts within the field, (2) come from a variety of backgrounds and (3) are heterogeneous in terms of their specialities, insights and understandings regarding the subject matter^{24,25,27}.

Along with these three participation elements, the Delphi process is achieved through four distinct steps²⁸. Initially an exploration of the subject matter occurs, where each expert contributes information that they consider important. In the second step, the group collectively works together to gain an understanding of the issue and discuss disagreements. It is these differences that need to be embraced, commended and explored in greater detail. This informs the third step, where insights and the development of creative solutions or alternatives occur. The final step in the process encompasses the gathering and analysis of the data, which is fed back to the group for further clarification and understanding. This process is then repeated several times until an artifact is created or solution is developed and agreed upon. The process undertaken is summarised in Figure 1. Although anonymity within the Delphi process is ideal to reduce influence or social bias, in some circumstances this may not always be possible given experts may already know each other, or it may be essential for a group of experts to seek consensus on key matters²⁵.



CAQ, Community Apgar Questionnaire.

Figure 1: Flow chart of Delphi technique to develop the Pharmacy Community Apgar Questionnaire.

Participants

In this study, a panel of experts were purposively selected through known contacts of the various professional organisations both across the study area as well as nationally, and included eight stakeholders. These known contacts comprised representatives from professional organisations with comprehensive rural experience relevant to the study. They were in contact with many individuals and organisations across the country in their current and past roles, while some had or were also working clinically in rural contexts. In addition, they either represented or regularly met

with rural individuals and organisations, which included areas classified as Modified Monash MM4 to MM7. These representatives were from the Society of Hospital Pharmacists of Australia ($n=1$), the Pharmaceutical Society of Australia ($n=1$), the Pharmacy Guild of Australia ($n=1$), the Pharmacy Board of Australia ($n=1$) and a government health agency and public hospital ($n=1$). Other participants included local and international academics with decades of health policy and rural health workforce expertise ($n=3$). No demographic data are reported here, to maintain the confidentiality of all participants.

Procedure for questionnaire development and refinement

Open discussion, as with previous CAQ and NCAQ development processes^{1,20}, was used rather than survey-type questioning. This was essential to understand and define the key factors vital to rural pharmacist recruitment and the nuances regarding how each factor was defined^{24,25}. As such, the Delphi technique facilitated the capture of vital information regarding those factors considered essential and as defined within the literature¹⁰. The group leader, an independent researcher (DS) and other researchers (DT and EB) met collectively with all participants for three separate focus groups of 45–60 minutes duration.

Initially, a draft set of factors and their description, based on a systematic literature review by Terry et al¹⁰, was introduced to the group prior to the first meeting. Throughout each group discussion, individual responses were written and summarised in real time and later analysed, with recommended changes made directly to the draft of the PharmCAQ. The revised questionnaire was then redistributed for the next meeting round. This exploratory process was repeated until consensus was achieved regarding the key factors that were to be included in the PharmCAQ and how each was defined. As a part of the process, each meeting session was recorded to facilitate ease of recall regarding key suggestions and points made by each participant.

Three rounds of discussions were anticipated to be achieved^{22,23}, with the process being completed over a 5-week period. Additional review and refinement of each of the factors occurred via email in the subsequent weeks to ensure accuracy of description as well as the ordering of the factors, and to support the flow of conversation when the PharmCAQ was being implemented in practice. Overall, the process enabled an in-depth discussion of each factor associated with the PharmCAQ, its definitional development, and fine-tuning as it was prepared to be piloted in the field.

In addition to the ordering to support conversation flow, each factor was assigned values using a four-point scale according to a community's advantages or challenges (major advantage = 2, minor advantage = 1, minor challenge = -1, major challenge = -2) and then its level of importance based on a four-point scale (very important = 4, important = 3, unimportant = 2, very unimportant = 1). This was in line with the CAQ and NCAQ previously developed and allows each factor to be examined and provided a weighted Apgar score between +8 and -8 according to the following algorithm:

$$\text{advantage or challenge score} \times \text{importance score} = \text{Pharmacist Community Apgar Score}^{1,7,20}$$

Reliability testing

An essential element of the PharmCAQ development process was its initial face and content validity, which was achieved through the participation of representatives with rural experience from professional organisations. In addition, internal consistency was achieved when the tool was initially piloted among 10 rural

pharmacists in rural Victoria (MM4 to MM5), where numerical rankings for each factor within the tool were utilised to calculate a weighted Apgar score. Each rural pharmacist was recruited through known contacts, informed of the study, and invited to participate in the testing of the PharmCAQ. This also provided further face and content validation of the tool. The process highlighted the important unique features identified as advantages and challenges of a community that may be modifiable or require additional support to mitigate their potential for a negative impact.

Four of the ten interviews were conducted face-to-face, while the remaining occurred by video-conferencing technology. Each interview was 45–90 minutes in duration and was audio- or video-recorded. After interviews were conducted, data were cleaned, checked and analysed using Microsoft Excel and the Statistical Package for the Social Sciences v25.0 (IBM; <http://www.spss.com>). As outlined through the procedure in Schmitz et al²⁰, data were scored accordingly, and the internal consistency of the PharmCAQ was assessed by determining the Cronbach's alpha coefficient, a standard measurement of reliability, where alpha scores greater than 0.7 are considered acceptable²⁹.

Ethics approval

Ethics approval was provided by the Federation University Australia Human Research Ethics Committee (#A21-023) and the University of Tasmania Human Research Ethics Committee (#26068), with all elements of human research being conducted in line with the National Statement on Ethical Conduct in Human Research 2007 (updated 2018)³⁰.

Results

All eight experts participated in rounds 1 and 2 using video-conference software. A third round was conducted through a series of email exchanges that occurred between the lead researcher (DT) and each participant. The bulk of the tool's development was achieved by the second-round discussion, with the third round aimed at refining minor elements of the PharmCAQ. The outcome of the process is detailed below, including all three rounds of development leading to the final development of PharmCAQ.

Round 1: discussing and defining factors

Prior to the first meeting with the various content experts, a draft list of 90 factors, based on the systematic literature review conducted by Terry et al¹⁰, was sent to each participant. Each factor was grouped according to five classifications, consistent with the format of the CAQ and NCAQ^{7,20}. All participants were then invited to read and review all identified factors considered most important to recruitment and retention of rural pharmacists for discussion at the initial meeting.

The outcome of the first meeting highlighted that, out of the initial 90 factors, many were similar and should be combined and then further clarified among participants. All factors were then rated by level of importance for recruitment and retention. This led to the

initial list of factors being reduced to 35 considered very important, with an additional 25 being considered important. All other factors were excluded as they were considered less important or unimportant: they pertained to attributes of the pharmacist rather than the community, which is what the tool seeks to measure. For example, starting a business with friends and being married with children are unimportant when assessing a community.

In addition to discussing, defining and ranking key factors drawn from the literature, the expert group also identified several factors that were missing or not well defined within the literature yet were also known to have an impact on recruitment and retention of pharmacists in rural areas. These included opportunities to participate in research, the obligation or ability to provide discounted or value-added pharmacy services, and the health and wellbeing of the pharmacist themselves.

After the list of factors was identified, the nuances regarding each factor were discussed with the experts, providing greater context or details that may have been missing from the literature. For example, the factor associated with the availability of support staff was considered very important, however, it was indicated that 'availability' was only one facet of the factor itself. Specifically, it was suggested that 'competency' of both technical and other support staff, such as front of house or retail assistants, was also essential. In this way, definitional details were provided by each expert regarding each factor identified.

Round 2: further discussion and refining

Two days prior to the second meeting, an updated set of factors was sent to all experts. At the second meeting, there was a greater and increased level of discussion regarding key factors and their relevance, while seeking better ways to differentiate the various factors. In so doing, the factors were reduced from 60 to 50 through further clarification and combining of similar factors. This process also ensured the meaning of factors was clarified and more succinctly described. For example, multiculturalism identified from the literature did not accurately outline what this meant for recruitment and retention of pharmacists to a rural area. As such, the team of experts was able to more carefully define this as acceptance of cultural diversity within a community, specifically pertaining to a pharmacist who may be from a diverse cultural background.

Beyond carefully defining what each factor meant and how it could be assessed when examining a rural community, each factor was again scrutinised to ensure it was grouped according to the most appropriate classification and that the classifications were adequately described. As such, minor adjustments were made and each factor was grouped into one of the following five classifications: (1) geographic, (2) economic and resources, (3) practice and scope of practice, (4) practice environment and (5) community practice support factors.

Round 3: final revision and approval

As with previous rounds, each expert suggested nuances and further adjustments, which resulted in minor wording changes for several factors. This discussion and feedback were used to develop the final definitions along with key tag lines, used to briefly describe each of the factors that were to be present in the final questionnaire. The final group of factors, tag lines and definitions were sent to all experts prior to the next meeting. However, given the smaller number of participants at the final meeting, such an endeavour provided a limited number of suggestions. To overcome this, any additional information or modifications that were provided from the various experts via email or conversation were further incorporated into the final list of factors. In most cases, any modifications suggested were minor in nature, and focused on wording changes and clarifying statements where ambiguity may have remained. After final consensus, the factors, tag lines and definitions were used to develop the final questionnaire along with a glossary of terms. Additionally, three open-ended questions used to identify specific factors for an individual community, identical to those on the CAQ and NCAQ^{7,20}, were included (see Appendix I and Appendix II).

Reliability testing – final revisions and acceptability

As the PharmCAQ was piloted among the 10 pharmacists, numerical rankings for each factor within the tool were utilised to calculate a weighted Apgar score. In this case, the process further informed the internal consistency of the tool in that it measured accurately what it intended to measure, while feedback on the PharmCAQ was sought from each pharmacist in relation to how well the questions were measuring each classification and associated factor. In addition, the reliability of the PharmCAQ was assessed using Cronbach's alpha coefficient, resulting in an overall Cronbach's alpha of 0.852, which is above the minimum threshold of acceptability (0.7), and further increasing the reliability was not achieved if any of the individual items were removed (Appendix III).

Discussion

The outcome of the modified Delphi technique was the development of a PharmCAQ that has been suitably refined, assessed for reliability and validated for use across rural communities in Australia, to facilitate the identification of key factors considered most vital to the recruitment and retention of pharmacists. While the development and use of the Apgar questionnaire for the recruitment and retention of health professionals is not a novel idea^{7,18,20}, seeking to specifically focus on pharmacists is unique^{10,14}. The discussion, deliberation and collaboration between organisations with varied perspectives provided an opportunity for nuanced insights regarding the many recruitment and retention factors during the questionnaire development. In addition, the dialogue that occurred as part of the Delphi process allowed the sharing of challenges and methods used to address these mutual concerns, all of which provided a deeper level of engagement. All participants in the study identified a need for a sharper focus upon the pharmacist as a health professional who also encounters related but unique challenges

compared to their medicine and nursing counterparts in coming to and working in a rural community^{1,6-9}.

This finding was particularly evident in the development of the PharmCAQ. For example, it is noted that, among the 50 factors identified and developed, 10 factors were similar to those found in both the CAQ and NCAQ. These included five geographic factors: communication infrastructure, social and cultural opportunities, recreation and adventure opportunities, spouse or partner opportunities, and availability or accessibility of schools^{7,20} (Fig2).

Three factors similar to the CAQ and NCAQ were economic and resource factors: financial income, contract flexibility and support for continued professional development. The remaining two factors that were similar were associated with workplace diversity (the demographic mix among clients or patients) and community recognition (appreciation for and community support of a new pharmacist)^{7,20}.

Although 10 factors were shared between all health professions, pharmacist and physicians shared eight factors that were not shared with nurses, including moving allowance, support staff, teaching and having a sense of purpose in the community²⁰. Further, pharmacists and nurses shared six additional factors not found among physicians in their respective questionnaires, including day care, housing and community size⁷. Although these

similarities and differences did not always have identical wording, the consistency demonstrates some factors remain important for considering a rural career for any health profession^{7,20}.

Despite the similarities and differences, various factors are considered specifically important to pharmacists. These include, but are not limited to, pharmacy ownership, mutual support and collaboration with other health professions, the presence of a multipurpose service or local health hub, and the obligation or ability to provide discounted or value-added pharmacy services. Other unique factors include the availability and competency of technical and ancillary staff, and separate credentialing that enables the pharmacist to deliver diabetes education, immunisations, and alcohol and other drug services¹⁰.

Regardless of similarities or differences between health professions in terms of recruitment and retention, improving access to primary health care is an essential yet complex conundrum for rural communities in Australia and internationally³¹. People in rural communities, globally, typically experience higher levels of complex and chronic disease, have lower levels of health literacy and reduced access to health services^{31,32}. The combination of these factors further emphasises how vital rural pharmacists are in providing health care, the need for an expanding or a more rural generalist scope of practice, while ensuring improved recruitment and retention strategies are in place^{33,34}.

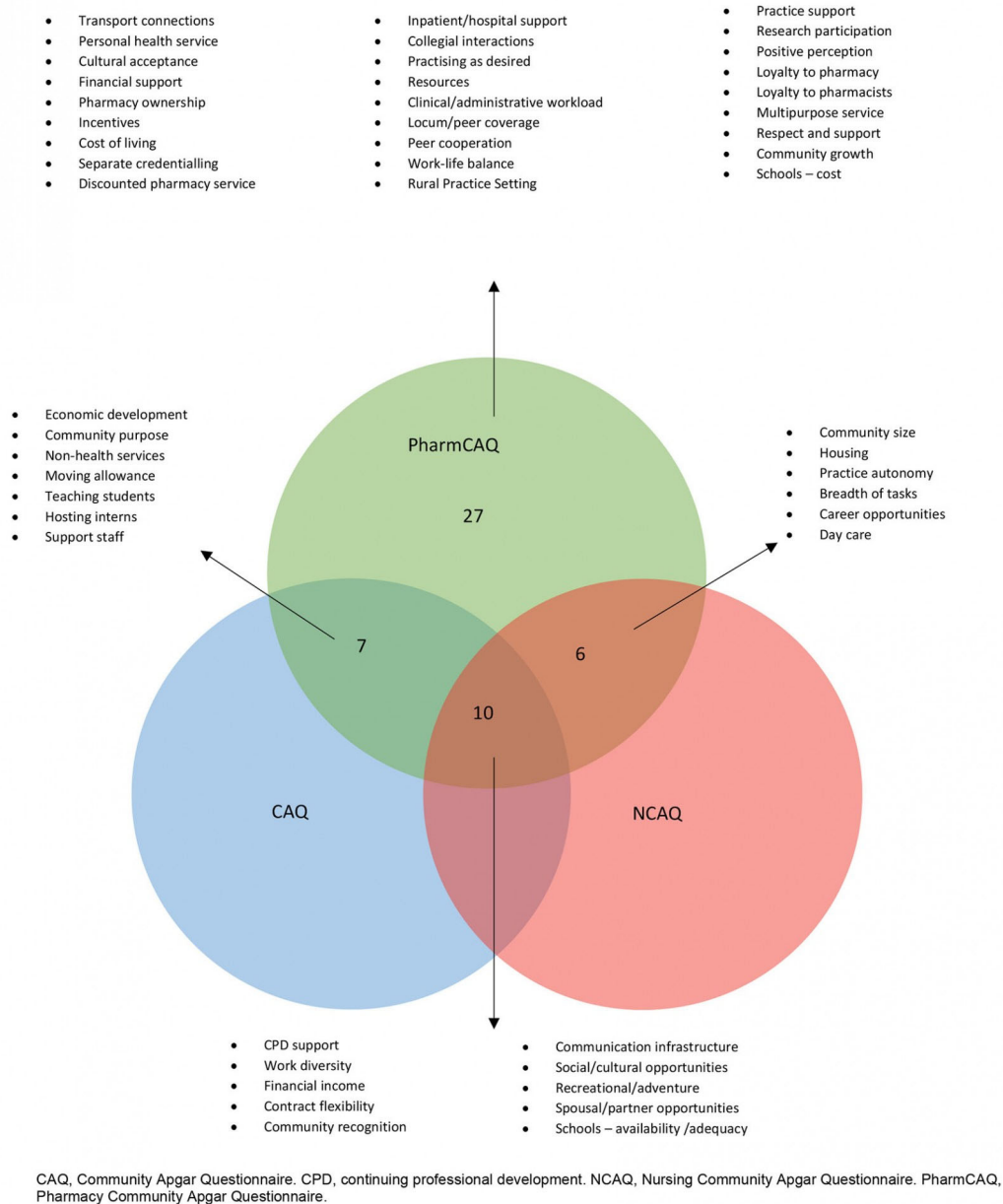


Figure 2: Similarities and differences between medicine, nursing and pharmacy Community Apgar Questionnaire responses.

Limitations

The Delphi technique was insightful and used several heterogeneous experts from key organisations across Australia and partners in the USA. However, the findings of the Delphi and the developed PharmCAQ may not be representative of the nuanced differences found in other countries that experience challenges in recruiting and remaining pharmacists in rural areas. Due to this recognition, the PharmCAQ may require slight wording changes and further adaptations to meet local needs. Further, pre-testing to verify the 50 factors may be vital to ensure they are also relevant to country-specific issues and challenges. Additional testing may also be essential in more rural communities (MM7), where key drivers of what makes a rural or remote community differ to less remote communities. However, the open-ended questions within the tool are designed to capture key nuances of specific communities, including those who may be considered

remote.

Despite these limitations, the study has resulted in the development of a tool that can assist in understanding the fundamental factors associated with pharmacist recruitment and retention within the Australian context, and how these may be addressed within rural community settings. Lastly, the authors have shown that the factors that influence the pharmacy workforce in a rural area are proposed here as being unique to the discipline of pharmacy. However, a close discrimination of those factors more important to the differing settings of pharmacy practice, such as hospital pharmacy compared to community pharmacy, have not been provided. While there are clear differences between the roles of the pharmacist in these diverse settings^{33,35}, development of additional tools that are more setting specific could be a benefit in those particular circumstances.

Conclusion

Pharmacists represent a cornerstone of the healthcare system and provide a first port of call into this system for many of those residing in rural areas of Australia. As a mechanism for addressing the worsening health professional shortage currently experienced in rural areas, the opportunities for the pharmacist to play an expanded role are compelling. Despite the pivotal role of pharmacists, recruitment and retention have proven troublesome for rural communities, despite an increased number of graduates from pharmacy education programs. Using a Delphi technique, the

PharmCAQ was developed, refined, assessed for reliability and validated as a tool for supporting the recruitment and retention of the pharmacist workforce in rural areas. The authors believe the key factors contained within the PharmCAQ may offer – for the first time – an opportunity to better support communities to identify and address the key factors considered most vital to the recruitment and retention of a pharmacy workforce. More research is required to further test and demonstrate the overall impact of the tool across various rural communities in their capacity to recruit and retain pharmacists to further support the healthcare needs of the community.

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Table 1: Pharmacy Community Apgar Questionnaire.

Instructions: The interviewer will ask the subject to assess how each of the following factors, organised into five classes, impacts recruitment and retention of pharmacists in their community. Each factor will be rated on two dimensions: relative advantage or challenge for their community and relative importance to recruiting pharmacists to the community.

Class/Factor	Major Advantage	Minor Advantage	Minor Challenge	Major Challenge	Very Important	Important	Unimportant	Very Unimportant
Geographic								
Community size†								
Transport connections								
Communication infrastructure*†								
Social/cultural opportunities *†								
Recreational/adventure*†								
Spousal/partner opportunities *†								
Schools*†								
Personal health service								
Non-health services *								
Cultural acceptance								
Economic/Resources								
Personal								
Financial income*†								
Financial support								
Pharmacy ownership								
Contract flexibility*†								
Incentives								
Moving allowance*								
CPD support*†								
Housing†								
Cost of living								
Schools								
Practice/Scope of Practice								
Practice autonomy†								
Breadth of tasks †								
Separate credentialing								
Discounted pharmacy service								
Inpatient/hospital support								
Work diversity *†								
Career opportunities†								
Collegial interactions								
Teaching students*								
Hosting interns*								
Practice Environment								
Practicing as desired								
Clinical/administrative workload								
Support staff*								
Resources								
Locum/peer coverage								
Peer cooperation								
Work-life balance								
Rural Practice Setting								
Practice support								
Research participation								
Community practice support								
Positive perception								
Loyalty to pharmacy								
Loyalty to pharmacists								
Community recognition*†								
Multipurpose service								
Respect and support								
Economic development*								
Community growth								
Community purpose*								
Day care								

*Included in the physician Community Apgar Questionnaire. †Included in the Nursing Community Apgar Questionnaire

Each factor is given: 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).

Open-ended questions

1. What are your greatest barriers to recruitment and retention of pharmacists?

2. What can be done to overcome these barriers?

3. What reasons has a successful pharmacist candidate given for not accepting a position in the community? What did that person ultimately do instead (if you know)?

Pharmacy Community Apgar Questionnaire glossary of terms.

Geographic factors

Community size

Population of community

Transport connections

The ability and ease to travel to, from, and within a community, which may include road, plane, rail, and other public transport links

Communication infrastructure

Availability and access to local and/or national public media, communication, and internet services

Social/cultural opportunities

Opportunities or ease of socialising for the pharmacist and/or family including local access to social, religious, and/or cultural participation.

Recreational/adventure

Opportunities for local, enjoyable non-work time activities

Spousal/partner opportunities

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

Schools

Availability and quality of schools for the pharmacist's children

Personal health service

The availability, accessibility, or opportunity to seek personal support services to meet the needs of the pharmacist's own health and wellbeing

Non-health services

Availability of and opportunity to access local dining out, coffee shops, shopping, other services

Cultural acceptance

Adequacy of socio-cultural aspect of the community and feeling cultural safe

Economic/Resources factors

Financial income

Level and stability of monetary compensation provided to pharmacist as an employee, competitiveness of earnings, and/or financial stability of the income

Financial support

Availability and eligibility of financial supports, including the viability of the pharmacy business

Pharmacy ownership

Whether or not owning a pharmacy is an option for the pharmacist

Contract flexibility

Whether or not a pharmacist can expect flexibility with regard to a full or part time work, or flexibility regarding the length in term of agreement or contract

Incentives

Availability or adequacy of incentives such as provision of car, extra leave, or other incentive within the contract

Moving allowance

Whether or not a moving allowance for relocation is available for new pharmacists

CPD support

The existence of incentives to support Continuing Professional Development participation and/or attending programs

Housing

Availability and affordability of housing in the community, whether involving home purchase or rental

Cost of living

Expenses related to maintaining a household

Schools

The relative cost associated with of school options for the pharmacist's children

Personal Practice/Scope of Practice factors

Practice autonomy

Ability for pharmacists to be independent, have autonomy, and direct their own practice

Breadth of tasks

Whether a broad scope of practice is an option or not. Examples include but are not limited to oral health, mental health, health checks, residential aged care support, etc.

Separate credentialing

Whether or not separate credentialing is an option, not an option, or mandatory. Examples include but are not limited to diabetes educator, immunisation, home medication reviews, Alcohol and other drugs, chemotherapy, medication charting etc.

Discounted pharmacy service

Whether or not there is an ability and/or obligation to provide discounted pharmacy service in the area.

Inpatient/hospital support

Whether or not providing inpatient and/or hospital support is an option, not an option, or mandatory

Work diversity

The diversity of clientele demographics in the community, including age, race, gender, or other factors

Career opportunities

The degree to which opportunities exist for career advancement for the pharmacist

Collegial interactions

Whether or not there are adequate opportunities for interactions with other pharmacists and/or health professionals

Teaching students

Whether or not teaching students is an option, not an option, or mandatory for pharmacists. Examples include high school, certificate III and IV, undergraduate, interprofessional, and/or postgraduate students.

Hosting interns

Whether or not hosting interns is an option, not an option, or mandatory.

Practice Environment factors

Practicing as desired

Capacity of the practice environment to allow the pharmacist-directed change and innovation, while encouraging continuous quality improvement

Clinical/administrative workload

Whether or not the balance of clinical and administrative workload is commensurate for the role

Support staff

The availability and competency of technical and ancillary staff. Examples include the quantity and quality of staff such as pharmacy technicians, pharmacy assistants, and retail staff

Resources

Whether or not the practice environment has adequate resources such as stock control, access to services, logistics, etc.

Locum/peer coverage

Whether or not there is adequate coverage for personal leave, public holidays, and annual leave

Peer cooperation

Availability and adequacy of interprofessional relationships between pharmacists and pharmacies with other health professionals and health services to support healthcare delivery

Work-life balance

Whether or not the practice environment provides adequate work-life balance, such as workdays, working hours, etc.

Rural Practice Setting

The setting of the rural pharmacy practice is within the rural community and/or at the hospital

Practice support

Whether or not the pharmacy provides support for the pharmacist to undertake Continuing Professional Development such as reimbursement of costs or time

Research participation

Whether or not the practice environment provides opportunities to participate or engage in research

Community practice support factors

Positive perception

The overall reputation of the pharmacy within the community, for example, as a quality service provider and as an employer

Loyalty to pharmacy

The overall loyalty of the community to the pharmacy or service

Loyalty to pharmacists

The overall loyalty of the community to the pharmacist/s within the pharmacy/service

Community recognition

The perceived sense of appreciation for and/or community support of a new pharmacist

Multipurpose service

The availability and/or adequacy of the pharmacy to serve the community as a multipurpose service, local health hub, or health centre

Respect and support

The adequacy of intra- and inter-professional respect and support that extend beyond the healthcare environment between pharmacists and other health professionals

Economic development

The adequacy of local investment, economic development, and future growth of healthcare within the community from local, state, or federal governments

Community growth

The availability and/or adequacy of community plans for investment, development, and future growth of the community beyond healthcare.

Community purpose

The existence and adequacy of local opportunities for pharmacist to develop a sense of purpose, such as health or non-health related volunteerism. Examples may include local Rotary, Apex, or Country Fire Associations

Day care

The adequacy, availability, and accessibility of day care for children in the community

Table 1: Reliability analysis results for each factor

Item number	Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	Community size	140.8	3402.844	0.385	0.771
2	Transport connections	139.6	3276.267	0.443	0.767
3	Communication infrastructure	139.3	3445.567	0.260	0.776
4	Social/cultural opportunities	141.9	3458.767	0.198	0.779
5	Recreational/adventure	138.7	3273.789	0.709	0.761
6	Spousal/partner opportunities	142.7	3373.567	0.374	0.771
7	Schools	139.8	3173.067	0.603	0.759
8	Personal health service	140.3	3307.567	0.487	0.766
9	Non-health services	139.7	3225.567	0.686	0.759
10	Cultural acceptance	138.9	3902.989	-0.460	0.806
11	Financial income	137.6	3403.600	0.517	0.769
12	Financial support	139.9	3660.100	-0.148	0.786
13	Pharmacy ownership	139.2	3567.956	0.106	0.780
14	Contract flexibility	137.7	3210.678	0.736	0.757
15	Incentives	135.9	3353.656	0.832	0.764
16	Moving allowance	135.3	3505.789	0.374	0.775
17	CPD support	139.6	3491.156	0.212	0.778
18	Housing	141.7	3414.011	0.240	0.777
19	Cost of living	138.2	3659.289	-0.119	0.788
20	Schools	139.0	3424.444	0.361	0.773
21	Practice autonomy	135.4	3403.156	0.838	0.767
22	Breadth of tasks	136.5	3438.722	0.423	0.772
23	Separate credentialling	136.5	3466.278	0.361	0.774
24	Discounted pharmacy service	138.9	3672.100	-0.187	0.787
25	Inpatient/hospital support	139.0	3522.889	0.163	0.779
26	Work diversity	137.5	3515.167	0.453	0.775
27	Career opportunities	139.1	3617.656	-0.034	0.786
28	Collegial interactions	138.6	3453.822	0.284	0.775
29	Teaching students	139.3	3453.789	0.326	0.774
30	Hosting interns	140.1	3471.433	0.279	0.775
31	Practicing as desired	136.0	3538.000	0.264	0.777
32	Clinical/administrative workload	139.5	3459.167	0.251	0.776
33	Support staff	139.4	3300.933	0.469	0.767
34	Resources	139.5	3352.056	0.368	0.771
35	Locum/peer coverage	143.6	3794.044	-0.356	0.797
36	Peer cooperation	139.1	3909.211	-0.449	0.808
37	Work-life balance	139.0	3434.667	0.232	0.777
38	Rural Practice Setting	137.5	3581.167	0.151	0.779
39	Practice support	137.6	3521.822	0.401	0.775
40	Research participation	139.0	3434.444	0.422	0.772
41	Positive perception	135.4	3562.933	0.197	0.779
42	Loyalty to pharmacy	136.1	3550.989	0.280	0.777
43	Loyalty to pharmacists	138.4	3713.600	-0.215	0.792
44	Community recognition	138.2	3751.511	-0.351	0.793
45	Multipurpose service	140.2	3573.289	0.059	0.783
46	Respect and support	138.3	3441.344	0.351	0.773
47	Economic development	137.4	3566.489	0.105	0.781
48	Community growth	139.2	3524.622	0.242	0.777
49	Community purpose	137.9	3642.767	-0.134	0.783
50	Day care	140.4	3317.600	0.443	0.768

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