Review Article

Understanding the Factors Influencing the Rural Pharmacy Workforce: Enablers and Barriers for Employers and Employees – A Critical Literature Review (2002–2022)

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Abstract

The unequal distribution of pharmacists across regional and rural areas in Australia mirrors trends seen in other health professions. This narrative review sought to explore the factors that facilitate or hinder recruitment and retention of pharmacy staff, with a particular focus on the perspectives of potential employers. A systematic search was conducted for peer-reviewed, English-language studies published between 2002 and 2022. Search terms included 'rural', 'remote', 'pharmacy', 'pharmacist', 'employer', 'manager', 'workforce', and 'practice'. Databases searched included MEDLINE/EBSCOhost, PubMed, Scopus, ScienceDirect, and DOAJ, with pharmacy-specific filters applied. Identified themes were extracted, tabulated, and analyzed. Numerous themes emerged, with most studies emphasizing the perspectives of employees rather than those of employers. Among the 12 studies reviewed, the most frequently reported factors were 'rural background or origin/initial training', 'professional collaboration with other health professionals', and 'lifestyle considerations, including housing affordability and living costs'. Some previously strong predictors, such as 'rural origin', appeared less consistently. Evidence indicates that positive experiences during rural placements and early employment after graduation can have a meaningful impact on workforce retention. Both employees and employers consistently valued a few factors. Overall, the literature remains heavily weighted toward employee perspectives, with limited insight into employer experiences. Further primary research is warranted to focus on employer challenges and the incentives they use to attract pharmacists to rural and regional areas.

Keywords: Employee, Pharmacy, Workforce, Rural, Employer, Regional

Introduction

Recruiting and retaining pharmacists in regional and rural areas of Australia remains a persistent challenge, even in the context of an apparent surplus of newly graduated pharmacists [1-4]. Similar patterns of uneven distribution of pharmacists and other healthcare professionals have been reported in other English-speaking high-income countries, including the United Kingdom and the United States [5]. The factors influencing workforce distribution are complex and multifaceted [6, 7]. Most existing studies tend to emphasize the expectations and motivations of potential rural practitioners [8, 9], although a few have incorporated insights from employers [3, 10]. Collectively, these studies provide valuable insights into attitudes toward rural practice among students, interns, and early- to mid-career pharmacists [11], as well as findings from research tracking graduates in nursing and allied health professions, which occasionally include pharmacy [9, 12, 13]. This review aims to synthesize qualitative and quantitative evidence from peer-reviewed publications over the past 20 years, with a primary focus on identifying factors that facilitate or hinder recruitment and retention of pharmacists in rural and regional settings. A secondary objective is to examine the extent to which the literature captures the perspectives of prospective employers (e.g., pharmacy proprietors or managers), highlighting effective strategies, supports, and incentives that may help attract and retain pharmacy staff in these locations.

Materials and Methods

This narrative review was guided by the principles outlined in the PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews) framework [14]. An initial search of the Medical Subject Headings (MeSH) index using 'pharmacy'

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revealed no specific subheadings addressing workforce issues [15]. As a result, non-MeSH keywords were used to interrogate databases manually [16]. These included terms such as 'rural', 'remote', 'pharmacy', 'pharmacist', 'employer', 'manager', 'workforce', and 'practice', alone or in combination. Searches were conducted across MEDLINE/EBSCOhost, PubMed, Scopus, ScienceDirect, and the Directory of Open Access Journals (DOAJ). No restrictions were applied regarding study design, sample size, or sampling method. Studies were included if they met the following criteria:

- Original articles published between 2002 and 2022, including systematic reviews.
- Peer-reviewed publications.
- Demonstrated systematic efforts to explore workforce issues in regional, rural, or remote contexts, using objective frameworks such as the Pharmacy Access/Remoteness Index of Australia (PhARIA), the Modified Monash Model (MMM), or similar international frameworks. Australia's transition from PhARIA to MMM was ongoing at the time of the search (June 2022) [17].
- Focused on pharmacy practice or pharmacists.
- Published in English.

Exclusion criteria were:

- Studies not meeting all inclusion criteria.
- Duplicate records found across multiple databases, with only one instance retained for reference.

The selected journal articles were examined using inductive thematic analysis with semantic coding [18]. No pre-established codebook or framework was applied for identifying codes, themes, or phrases [19]. Instead, a matrix of coded themes was generated, tabulated, and incorporated into the employee–employer inductive analysis. This analysis aimed to pinpoint themes common to both groups and, where possible, explore the underlying reasons for their overlap. The review focused exclusively on peer-reviewed, published studies and only considered themes that had been replicated in other published research.

It is important to note that multiple classification systems exist for defining rurality, which may result in minor differences across studies. For this review, rurality was primarily determined using the now-retired PhARIA or the Modified Monash Model (MMM) in Australia, or comparable international frameworks [17]. These classifications are periodically reviewed and updated by the relevant authorities.

Results and Discussion

The database search initially identified 4,927 journal articles containing the relevant keywords. Some of these studies provided descriptive data on the rural and regional pharmacy workforce, including demographics (e.g., age, gender, years of qualification) and professional roles (e.g., students, clinical pharmacists, or proprietors). However, they did not offer new survey or interview data regarding the enablers or barriers to practicing in rural or regional areas [20, 21], and were therefore excluded. After screening and applying the inclusion criteria, 12 studies (n = 12) were deemed suitable for inclusion in this review **(Figure 1)**. Among these, seven employed qualitative methodologies, while two utilized mixed-method approaches [5, 22]. Collectively, the included studies captured data from a total of 1,639 pharmacists and pharmacy students at various stages of training. Some studies also incorporated allied health students and professionals, including graduate nurses [9], within mixed quantitative and qualitative designs [5, 22].

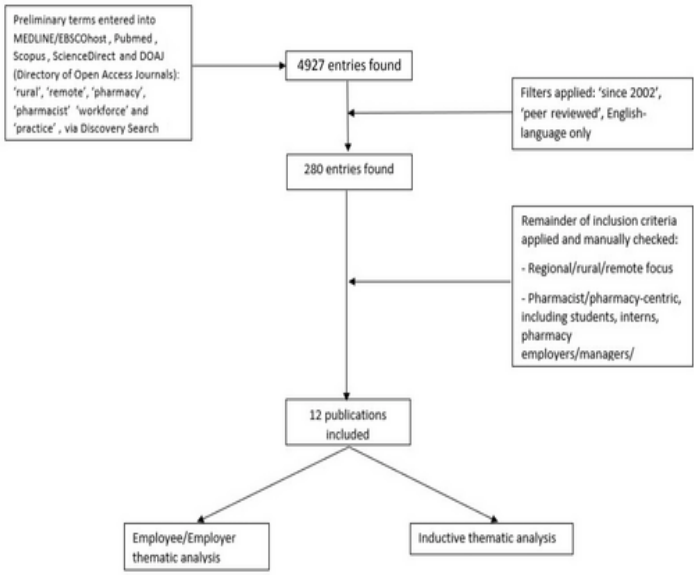

Figure 1. PRISMA-ScR diagram for literature search.

From the studies included in this review, a total of 21 themes were extracted **(Table 1)**. Among these, three themes were reported in at least six studies: rural background, professional relationships, and lifestyle factors, including cost of living. An additional five themes appeared in each of the five studies: having a partner from a rural area, valuing patient interactions, relationships with current employers or overall job satisfaction, availability of job opportunities, and financial incentives. Notably, one study specifically examined financial incentives, reporting that in 2019 a salary premium of USD $18,738—approximately 14.5% above the sector average—was necessary to encourage graduates to work in rural areas in certain U.S. states [23].

Table 1. Matrix of coding identification.

Codes identified	Reference											
	Smith *et al.* [24]	Soliman *et al.* [25]	Khalil *et al.* [26]	Hays *et al.* [3]	Taylor *et al.* [27]	Playford *et al.* [9]	Ulrich *et al.* [23]	Martin *et al.* [5]	Kirschbaum *et al.* [22]	Fleming and Spark [28]	Harding *et al.* [10]	Terry *et al.* [29]
Originating from or having a background in rural areas / initial professional training in a rural setting		•		•		•				•[a]	•	•
Collaboration and relationships with other healthcare professionals	•			•		•	•				•	•
Lifestyle considerations are influenced by housing costs and living expenses			•	•	•				•		•	•
Positive interactions and rapport with patients	•			•			•		•			•
Partner or spouse with rural roots or background	•			•						•	•	•
Job satisfaction related to current employer and/or expanded scope of practice	•			•					•		•	•
Financial benefits, salary, employment conditions, and business opportunities			•				•		•		•	•
Availability of employment opportunities			•	•					•		•	
Professional relationships with fellow pharmacists	•				•							•
Pharmacy education received at rural tertiary institutions		•			•					•		
Variety in tasks and a broader scope of professional responsibilities	•			•					•			
Positive experiences during rural placements			•		•[b]	•						
Challenges due to staffing shortages or workforce gaps				•				•				•
Limited opportunities for professional development	•										•	•
Social isolation or difficulties maintaining personal relationships				•					•			•
High administrative or paperwork workload	•											•
Insufficient access to locum support	•											•
Limited opportunities for interprofessional collaboration and interaction									•			•
Restricted access to drug information resources								•				
Limited ability for patient follow-up and counselling								•				
Logistical challenges related to distance and travel				•								

[a] Includes 'family in a rural area', 'rural childhood', and 'received a rural scholarship'.
[b] Only 'some significance'.

Over 20 years, research on the geographic (mal) distribution of the pharmacy workforce highlighted its substantial impact on equitable access to healthcare for Australians living in regional, rural, or remote locations [30, 31]. It is essential to recognize that during this period, technological advancements have been substantial. Challenges that were

prominent at the start of the 21st century, such as limited access to professional development opportunities [1], have become less pressing due to the widespread availability of online resources. Additionally, technological progress has enabled unprecedented connections between prospective employees and employers [32]. Despite these improvements, the overall maldistribution of pharmacists between rural/regional areas and metropolitan or peri-urban regions has not markedly changed [30, 31].

Among the key factors encouraging pharmacists to choose rural practice were rural origin or background/initial training (e.g., internships), positive patient relationships and rapport, rural tertiary pharmacy education, job satisfaction, financial incentives, and availability of employment opportunities. Notably, having a rural or regional background is a recognized predictor of future rural practice across various health professions. However, more recent studies suggest that its influence may be less pronounced than previously thought [9, 33, 34]. For example, Taylor *et al*. found that positive experiences during rural clinical placements [27] were a stronger predictor than rural origin. Similarly, Playford *et al*. reported that "initial rural practice" remained a significant predictor 15–17 years after graduation, whereas rural origin only approached statistical significance [9]. These findings indicate that the motivations for practicing in rural areas among newer graduates may differ from those of earlier cohorts.

Other factors (such as having a partner or spouse with a rural background) were identified mainly through qualitative studies [10] or studies where the exact number of respondents related to this theme was not specified, and data were analyzed using methods such as odds ratios or chi-squared tests [3, 24, 28]. These studies indicated that such factors were influential; Fleming and Spark, for instance, reported a fourfold effect on choosing non-metropolitan practice [28]. Interestingly, they also confirmed that completing a rural internship—often the first paid employment for pharmacy graduates—had the most significant impact, with a ninefold increase [28], which aligns with Playford *et al*.'s findings [9].

Key barriers to rural practice included staffing shortages and workforce limitations [3, 5, 24] and social isolation or difficulties in personal relationships. The latter was partially mitigated by individual circumstances, such as being in a committed relationship [3, 10, 24, 28]. Staffing issues, on the other hand, often created a negative feedback loop, discouraging applicants. For instance, Martin *et al*. [5] found that in rural Maine (USA), communities with limited primary care services and pharmacist shortages experienced low applicant numbers due to high workloads in large retail chain pharmacies. Importantly, identifying a factor as a barrier did not necessarily mean it alone deterred pharmacists from rural practice [5, 22]. Evidence suggests that it is usually the combination of multiple challenges and barriers that influences the decision not to practice in rural or regional areas [3, 5, 22].

Although some attention was given to prospective employers and yielded valuable insights, the evidence predominantly reflects the perspectives of students and graduate pharmacists **(Table 2)**. Specific themes were relevant to both employers and employees. Still, the focus differed: employers were primarily concerned with logistics, financial considerations, and staffing shortages, whereas employees addressed a wider range of personal and professional factors. It is essential to recognize that, for themes shared by both groups, the underlying reasons for concern may differ. For instance, regarding 'financial incentive/salary and conditions/business opportunities,' prospective employees sought higher pay relative to urban positions, while employers were more focused on financial risk [29, 33]. Only one additional study captured responses from managers or proprietors, but it did not identify specific strategies [3]. A thorough systematic review by Terry *et al*. [29] also highlighted many of these themes, while adding some focus on employers' perspectives. Although there is some evidence regarding predictors that influence prospective employees to practice in rural or regional areas, there remains a notable lack of insight into concrete strategies or incentives implemented by employers to attract pharmacists to specific locations. Consequently, research that examines explicitly workforce issues from the employer or manager viewpoint could clarify potential mismatches in expectations between employers and prospective employees.

Table 2. Coded themes were identified and sorted by employees and employers.

Coded themes	Employees	Employers
Originating from or having a background in rural areas / initial professional training in a rural setting	•	
Collaboration and relationships with other healthcare professionals	•	
Lifestyle considerations are influenced by housing costs and living expenses	•	
Positive interactions and rapport with patients	•	
Partner or spouse with rural roots or background	•	
Job satisfaction related to current employer and/or expanded scope of practice	•	
Financial benefits, salary, employment conditions, and business opportunities	•	•
Availability of employment opportunities	•	

Professional relationships with fellow pharmacists	•	
Pharmacy education received at rural tertiary institutions	•	
Variety in tasks and a broader scope of professional responsibilities	•	
Positive experiences during rural placements	•	
Challenges due to staffing shortages or workforce gaps	•	•
Limited opportunities for professional development	•	
Social isolation or difficulties maintaining personal relationships	•	
High administrative or paperwork workload	•	•
Insufficient access to locum support	•	•
Limited opportunities for interprofessional collaboration and interaction	•	
Restricted access to drug information resources	•	
Limited ability for patient follow-up and counselling	•	
Logistical challenges related to distance and travel	•	•

This literature review has several notable limitations. As highlighted by Braun and Clarke [34], the reviewers' own experience, expertise, and biases can influence the interpretation of codes and themes, potentially leading to subjective conclusions. A practical limitation in this review was that not every code or theme from the included publications was reproduced in full. The review was not intended to provide a comprehensive summary of all the literature. The synthesis of "sufficiently similar" themes required interpretation; for example, terms such as "driver," "incentive," or "enabler" (related to rural practice) were sometimes considered interchangeable, while less obvious groupings included "limited follow-up" with "limited medical reconciliation" after consultation [5], and "workforce shortage" with "staffing issues" [3]. Additionally, because there was no dedicated methodology or validation team, the search strategy and inclusion criteria were not peer-reviewed by independent experts, which may have introduced subjective or confirmation bias.

Conclusion

The primary factors that facilitate the recruitment of pharmacists to rural and regional areas include having a rural or regional background or origin (either of the pharmacist or their partner), professional relationships with other health professionals, lifestyle considerations, patient rapport, job satisfaction, financial incentives, and employment opportunities. Recruitment and retention appear to be influenced more by the combination of these factors than by any single factor alone. Although some studies explored barriers and motivators from an employer perspective, the limited literature suggests that employers primarily focus on logistical challenges, immediate staffing shortages, and financial considerations in both recruitment and retention. Other concerns of prospective employees, such as social isolation and personal relationships, received comparatively less attention, although they were highlighted in a few studies. Given the critical nature of workforce challenges in rural and regional pharmacy practice [1–4], further research is needed to examine the specific incentives and strategies employed by employers that could support recruitment and retention of pharmacists in these settings, either individually or collectively.

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