# Factors which Influence Career Choices in the Contemporary Pharmacist Workforce in Australia

Jocelyn Bussing

A thesis submitted to fulfil the requirements of the degree of Master of Philosophy

Sydney Pharmacy School

Faculty of Medicine and Health

The University of Sydney

2025

## Statement of originality

This is to certify that the content of this thesis is my own work. I certify that the intellectual content of this thesis is the product of my own work, and that all assistance received in preparing this thesis and all sources have been acknowledged.

Jocelyn Bussing
Date: 29th August

## Statement of generative Artificial Intelligence use in the writing process

During the preparation of this thesis the author used Microsoft Co-pilot for the purposes of improving original text. The use of generative AI was to improve readability and condense content by paraphrasing, improving sentence structure and clarity. Generative AI suggestions for text modification were reviewed for possible errors, inaccuracies or bias and text edited manually by the author as needed. The author takes full responsibility for the submitted thesis and ensures the work is their own and has used generative AI within the parameters of use.

## Australian Government support

This research was supported by an Australian Government Research Training Program offset Scholarship.

# Author Attribution Statement

I, Jocelyn Bussing, have made significant contribution to the research manuscript presented in Chapter 3 of this thesis. The following authorship attribution statement will be described using the Contribution Roles Taxonomy (CRediT)

Chapter 3. Results published as:

"**Bussing, J.,** Smith, L.; Saini, B. (2025) Factors affecting career-related decisions within the contemporary pharmacy workforce in Australia. Exploratory Research in Clinical and Social Pharmacy," Volume 20, December 2025, 100648https://doi.org/10.1016/j.rcsop.2025.100648

I am the corresponding author for this publication and the CRediT roles I carried out were Conceptualisation, Methodology, Formal Analysis, Data curation, Project administration, Writing – original draft, Writing – review & editing.

Jocelyn Bussing

29th August, 2025

# Supervisor Attestation

As supervisor for the candidature upon which this thesis is based, I can confirm that the authorship attribution statement above is correct.

Professor Bandana Saini

29th August, 2025

Professor Lorraine Smith

29th August, 2025

# Acknowledgements

First and foremost, heartfelt thanks to my amazing supervisors, Professor Bandana Saini and Professor Lorraine Smith. Bandana, your kindness, motivation and depth of expertise in research and practice have been truly inspiring. Lorraine, your calm, creativity, and sharp insight kept this project on track and helped shape its direction. There is no greater gift than supervisors who are wonderful mentors and from whom you can learn continuously, be challenged and extended, share creativity and have precious moments to stop and laugh out loud. I am deeply grateful.

To my colleagues in the School of Pharmacy, especially team N411, Andrew Bartlett and Dr Stephen Hughes, thank you for your constant support, practical advice, and reminders to keep life balanced. I don't think there will be enough work years to repay your generosity, I am tremendously thankful. To Simmie Chung, Dr Jessica Pace, the 'Active Ingredients' and many others, your encouragement, humour and kind messages lifted me more than you know. Thank you for showing the best of our community.

For passing on the finer skills of editing, Dr Cherry Russell your expertise helped shape this thesis into something better, thank you.

This research would not have happened without the generosity of the pharmacists who provided their time to participate in this research, your contributions were invaluable. Thank you for giving back to the profession and making this research possible.

Most importantly, to my dear family, Mark, Bradley, Amelia, Sienna, and dear mum Judy, thank you for your unwavering support, patience and for sharing the load, especially during the thesis-writing marathon,  I am beyond grateful. Also, the most amazing circle of family and friends, thank you for the check-ins, the shoulders and the love.

My journey since enrolling in this MPhil has been a time of achieving new knowledge and skills, personal growth and resilience. Having undertaken a research degree will help me walk forward with confidence and appreciation for the next opportunity which is just around the corner.

# Table of Contents

# Abstract

**Background.** Pharmacists are increasingly recognised as essential contributors to healthcare delivery, particularly in primary care settings where they support medication management, chronic disease care, immunisation and prescribing. In Australia, they are primarily employed in community pharmacies and hospitals, but the available evidence indicates that demand outstrips supply. At the same time, the number of non-practising pharmacists is increasing. Analysis of macro-level data shows that a majority of the workforce are female and further reveals an uneven geographic distribution. However, the limited granularity of the data hinders understanding of local circumstances and challenges. Better understanding the complex interactions between retention, gender and geography is necessary to inform the development of policies and strategies that support workforce sustainability.

The broad aim of this study was to help fill this gap in the database by exploring these interactions at the micro level. Specifically, it examined the factors influencing career choices and career satisfaction among Australian pharmacists, with particular reference to gender, location and motivation.

**Methods.** A qualitative exploratory design, grounded in a constructivist epistemology, was used to investigate factors influencing career decisions and location choices of Australian pharmacists. The design was informed by a range of motivational and job satisfaction theories. The goal was to capture the complex interplay of personal, organisational and leadership factors that shape pharmacists' professional identity, satisfaction and career progression.

Data were collected using semi-structured interviews and analysed inductively. Purposive convenience sampling, followed by passive snowballing, was used to

recruit a sample that embraced diversity in relation to age, gender, experience, employment type, location and sector. Interviews were conducted between November 2022 and February 2024 via phone or online, recorded, transcribed and deidentified. Thematic data analysis was conducted using NVivo (Version 14). The study adhered to the consolidated Criteria for Reporting Qualitative research (COREQ) quality framework to ensure comprehensive and transparent reporting.

**Results.** Interviews with 22 pharmacists revealed diverse career trajectories shaped by personal, professional and contextual factors. Three key themes emerged from the data. *Career Initiation* captured the influence on career choice of factors such as family considerations, flexible work hours and shorter training compared to other health professions, particularly for female participants. The availability of pharmacy programs at preferred institutions, especially in rural or regional areas, influenced study choices, while internship experiences shaped long-term career paths.

*Career Satisfaction and Development* was influenced by mentoring, role diversity and supportive work environments. Participants valued contributing to patient outcomes and community health. Dissatisfaction stemmed from administrative burden, burnout and lack of recognition. While remuneration was not the primary motivator, it was crucial for recruitment, especially in rural areas.

*Gender, Geography and Life Issues.* This theme reflected the significant influence of gender and geography on career decisions, in relation to both initial career choice and subsequent work experience. Participants identified particular challenges for female pharmacists, such as balancing family responsibilities, limited childcare access and barriers to advancement. Rural pharmacists reported difficulties associated with accommodation, safety and community integration.

The results highlighted the complex interrelationships between gender and geography. Female pharmacists faced excessive workloads and structural barriers to leadership, entrepreneurship, and work-life balance, particularly in rural settings. Rural pharmacists reported challenges related to recruitment, relocation, housing, childcare and community integration.

**Conclusion.** Based on these findings, areas for reform in education and policy were identified in relation to workplace culture, remuneration, mentorship, university placement experience and training in leadership and resilience. The main limitations of the study relate to the sample, which was skewed towards those with more experience, contained more women than men, and excluded those who had left the profession or intended to do so.

Priorities for future research include further close analysis of career transitions, particularly the entry phase from university to early employment and the exit phase from the profession. Future studies should also address the perspectives of underrepresented groups. A mixed-methods approach, combining longitudinal surveys with qualitative interviews, is recommended to capture diverse experiences. Collaborations with regulatory bodies such as the Australian Health Practitioners Regulation Agency could enhance data collection and stakeholder engagement.

**Keywords**

Pharmacy, Pharmacist, Career satisfaction, Career choice, Career motivation, Pharmacy workforce, Rural health, Gender equity, Workforce planning

# Chapter 1. Introduction

## 1.0 Chapter Overview

Pharmacists are integral to current healthcare delivery, serving as accessible, highly trained professionals who contribute to medication management, chronic disease care, immunisation and, increasingly, prescribing. In Australia, pharmacists are often the first point of contact for patients, particularly in rural, underserved areas, where access to other healthcare providers may be limited. Despite their expanding scope and critical role in primary care, the Australian pharmacy workforce is under continued pressure. Challenges in recruitment, retention and job satisfaction, exacerbated by increasing healthcare demands and ongoing workforce shortages, drive the need for greater understanding of the factors that impact the pharmacist workforce in Australia.

This chapter presents a review of relevant Australian and international literature that informed the development of the present study, which aimed to examine the factors influencing the career choices and trajectories of Australian pharmacists. It provides background information on the composition and distribution of the pharmacy workforce in Australia and comparable other countries, with particular focus on the existing and predicted shortfall in the numbers of practising pharmacists. It considers the implications of this shortfall in the context of the expanding role of the pharmacist in the Australian healthcare system, highlighting the paucity of detailed information about the factors affecting workforce retention. Finally, it examines the theoretical literature on workforce motivation and satisfaction, which provided the framework for the study's design.

## 1.1 Introduction

The World Health Organisation (WHO) estimates the shortfall of health workers globally to reach 11 million by 2030, with countries at all levels of development experiencing “difficulty with education, employment, retention and performance of their workforce”. (1) This situation is attributed to a range of factors that vary in significance across international jurisdictions, including ageing populations, underinvestment in training, lack of socioeconomic development and inadequate future employment planning strategies. For example, studies of capacity in the pharmacy workforce have identified a correlation between the economic status of a country, health expenditure and pharmacist density. (2)

As elaborated later in this chapter, pharmacists play a vital role in the healthcare system, given their importance in relation to optimising the safe, responsible and effective use of medicines and the delivery of public health services and primary health care. (3) Yet, in its 2023/2024 Annual Report, the Australian Health Practitioner Regulation Agency (AHPRA) documented a continuing shortage of pharmacists in Australia despite overall growth in health workforce. (4) Similarly, a recent study undertaken to identify factors associated with retention and attrition across nine registered health professions in Australia found that, whilst the overall numbers of health professionals have increased, a fluctuating retention rate among pharmacists signals potential issues of workforce sustainability. (5)

WHO has proposed a number of global strategies that aim to accelerate progress toward their goal of universal health coverage. These have thrown a spotlight on the importance of human resources for health and the need for investment to build a

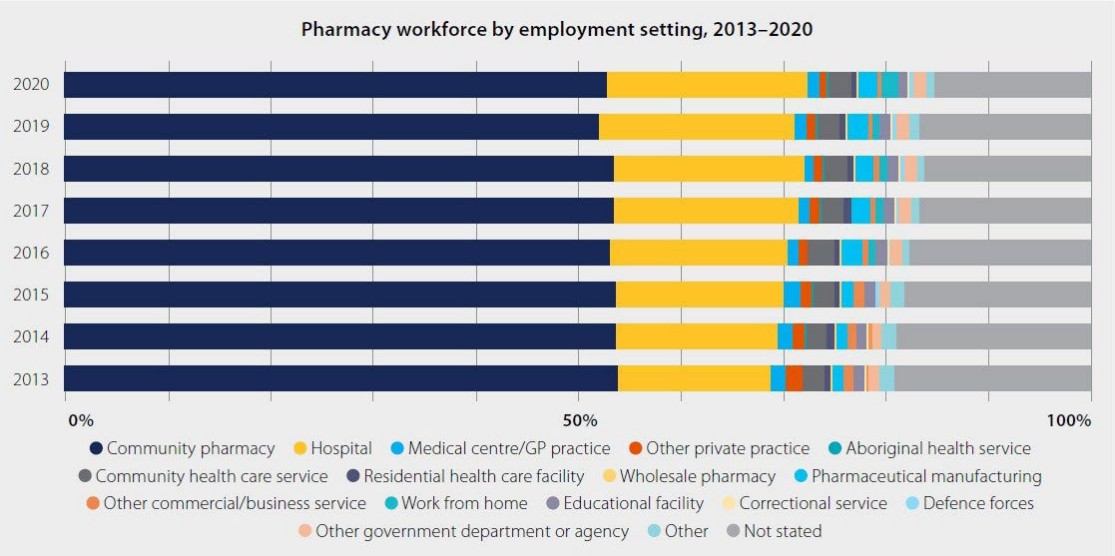
knowledgeable, skilled, robust and sustainable health workforce to achieve improved accessibility, coverage and quality of health care. (1)

In the context of the Australian pharmacy workforce, there is an urgent need to address the decline in retention rate. In order to develop appropriate strategies to build capacity and prevent further attrition, it is vital to identify the key factors affecting the motivation of local pharmacists to remain in the workforce.

## 1.2 The Australian Pharmacy Workforce: Overview

The Australian pharmacy workforce is primarily located in community pharmacies, hospitals, academia and pharmaceutical manufacturing. Smaller numbers are employed in Aboriginal or community health services, medical centres, general practice, defence forces, correctional services and other government departments or agencies.

Community pharmacy remains the largest employment sector for registered pharmacists in Australia, which aligns with global trends. (2) In its 2023/24 Annual Summary, the Pharmacy Board of Australia reported data collected by the Australian Health Practitioner Regulation Agency (AHPRA) showing that 64.4% of pharmacists were employed in community pharmacy, while 21.4% worked in hospital pharmacy settings. (6) Although the proportion of hospital pharmacists increased between 2013 and 2020, this does not appear to have significantly reduced the proportion working in the community pharmacy setting, (7) as can be seen in Figure 1.1.




*Source: Department of Health (2020), National Health Workforce Dataset*

Figure 1.1 Pharmacy Workforce by employment setting, 2013-2020

*Pharmacy Guild of Australia* 2023. *Workforce Capability Project. Available online at: https://www.guild.org.au/__data/assets/pdf_file/0019/127423/Workforce-Capability-Report-2023.pdf accessed on 8th June 2025*.

Australians visit a community pharmacy 18 times per year on average, making community pharmacies one of the most accessible health destinations. (8) According to the Pharmacy Guild of Australia (PGA), there were 5,935 community pharmacies operating across Australia in 2024, 65% of which were located in metropolitan areas and only 11% in areas classified as remote. (8, 9)

In Australia, the geographical distribution of health service and workforce needs is classified using the Modified Monash Model (MMM), (10) which builds on the Australian Statistical Geography Standard – Remoteness Areas (ASGS-RA) framework. The MMM is a seven-category system that incorporates both population size and geographic remoteness to identify disparities in healthcare access and workforce distribution, particularly in non-metropolitan regions. Based on this classification, 1.9% of the Australian population resided in remote or very remote areas of Australia as at June 2022. (11) These locations present unique challenges in

relation to access to affordable health services, which the WHO identifies as one of the key social determinants of health. (12) For example, in 2022 there were 66.2 GPs per 100,000 people in rural and remote areas, compared to 122.7 per 100,000 in major cities. (13) Such disparities place additional pressure on the pharmacists working in these areas, who comprise only 1.1% of the pharmacy workforce compared with 87.6% located in metropolitan or regional cities, as shown in Figure 1.2. (14)

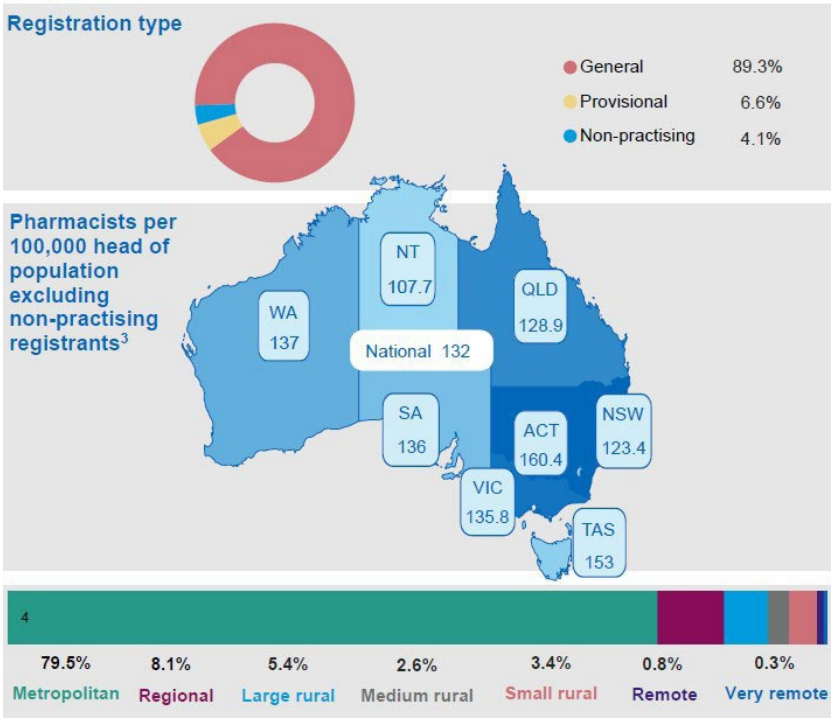



Figure 1.2 Pharmacist workforce distribution – population and remoteness

Source: excerpt from Pharmacy Workforce snapshot as at 30 June 2023 https://www.ahpra.gov.au/documents/default.aspx?record=WD24/33611&dbid=AP&chksum=KJ%2fkm3HpJwmPAzZTLQOxLQ%3d%3d accessed: 22 Feb 2025 (14)

The MMM has been used to guide funding and incentive structures for pharmacists and other health professionals practising in rural and remote areas. Examples of these from the past and current 8th Community Pharmacy Agreements include targeted support for intern placements, continuing education and rural practice. These agreements generally span five years and support the central pillars of the National

Medicine Policy (2022), encompass the supply of medicines under the Pharmaceutical Benefits Scheme and medication management programs and services. (15)

### 1.3 The Changing Role of Pharmacists in Healthcare

The scope of practice for Australian pharmacists has changed in the past decade and continues to change. This is likely the source of one of the work-related pressures currently being experienced in the pharmacist workforce in Australia. As health systems globally look for solutions to improve the delivery of healthcare to their populations, a number of countries, including Australia, have focussed on collaboration across sectors and diversification of traditional health care delivery, particularly in primary care settings. For pharmacists in the two largest healthcare settings in Australia (community and hospital pharmacy), this has increased the scope of practice into new types of pharmacy service delivery and settings. This change has important implications across the workforce, from pre-registration training, to continuing development, role configuration and emerging career paths.

One of the most significant emerging areas of practice for pharmacists is the provision of health services. Pharmacy services are characterised by the application of "specialised health knowledge ... to optimise the process of care, with the aim to improve health outcomes and the value of healthcare". (15) In a recently published systematic review, the authors suggested that pharmacy services could be generally classified into medicines supply services and professional pharmacy services. (16) Whilst the former relates mainly to dispensing activities, professional pharmacy services encompass a broad range, including new and emerging responsibilities including prescribing, harm minimisation and health risk assessment services.

### *1.3.1 Medicines supply services*

The supply of medicines has long been a foundational role of pharmacists in Australia. In the future, this role will continue to expand in response to several key drivers: the growing needs of an ageing population with increasingly complex health conditions, disparities in service availability due to geographic variation and national objectives aimed at improving healthcare equity for all Australians.

Beyond the traditional supply of medicines, pharmacists are and will continue to deliver a broad range of supply services. These include community-focused initiatives such as the provision of diabetes-related equipment under the National Diabetes Services Scheme, supply of equipment such as continuous positive airways pressure services and supply of devices to support oxygen treatment.

The extension of medicine supply services includes monitoring and supporting medication adherence and supplying dose administration aids to promote independent living among vulnerable populations. In hospital settings, pharmacists can and will continue to enhance their contribution to clinical decision-making and medication safety.

Additionally, pharmacists play a critical role in patient education, medication review, medication reconciliation and de-prescribing. These roles are already in place in hospitals and will likely be further entrenched in those settings, as well as being extended into multiple other healthcare settings in the future, thereby reinforcing the pharmacist's role in ensuring safe, effective and person-centred medication management.

### *1.3.2 Professional pharmacy services*

Established pharmacy services in Australia include contributions to public health, such as public health screening, mental health services support and substance dependence support (harm minimisation); the latter includes smoking and vaping cessation and drug and alcohol services such as opioid replacement therapy, naloxone supply and needle exchange programs. These are seen across practice settings and are broadly accepted as falling within pharmacists' professional scope.

Despite much initial hesitancy by other stakeholders, Australian pharmacists have become increasingly pivotal in the delivery of the National Immunisation Program, which initially expanded through the seasonal administration of influenza vaccines and gained national prominence during the widespread rollout of COVID-19 vaccinations. During this critical period, community pharmacies, hospitals and dedicated vaccination hubs collectively undertook the responsibility for vaccine administration, with pharmacists comprising a substantial proportion of the trained workforce. This helped to solidify pharmacists' role in primary health care delivery. Indeed, post COVID-19, increased acceptance of pharmacists in vaccine administration has been observed worldwide. (17)

The expansion of vaccination delivery not only established pharmacists as an accessible collaborator for improved health care delivery but paved the way for the current changes in the scope of professional practice, such as pharmacist prescribing. The ongoing commitment from the pharmacy profession, alongside substantial investment from the Australian Government, (18) has been accompanied by numerous pilot programs and the implementation of what has been described as 'next-steps' in

scope of practice, (19) with community pharmacists now engaged in evidence-based prescribing for common primary health presentations.

Other professional service areas for pharmacists focus on chronic disease management in community settings, including respiratory monitoring and testing, (20), diabetes management, (21) cardiovascular health, (22) mental health support, (23) obesity management, (24) respiratory health services (25) and wound care. (26)

Pharmacists employed in more than 1,300 public and private hospitals in Australia have also seen their scope and extent of service provision expanded to include extended hours of access (seven days per week and, in some cases, 24 hours a day), (27) participation in the hospital-based Covid 19 mass vaccination hub workforce, (28) medication reconciliation, (29) emergency medicine (30) and advanced specialty roles. (31)

### *1.3.3 Emerging practice settings*

Pharmacists employed in general practices and medical centres work as a member of a primary health care team with a focus on medication management and safety, in particular medication reviews, chronic disease support, collaborative care, preventative health and quality use of medicines. (32) In these settings, access to a pharmacist's expertise reduces errors in medication and recording and contributes to better patient outcomes, particularly for patients with complex medication regimens. (33)

Pharmacists working within Aboriginal Community Controlled Health Services (ACCHSs) are embedded in multidisciplinary teams and provide culturally responsive medication management, support chronic disease care and contribute to improved health literacy and adherence. The Integrating Pharmacists within Aboriginal

Community Controlled Health Services (IPAC) project, conducted by the Pharmaceutical Society of Australia, the National Aboriginal Community Controlled Health Organisation (NACCHO) and James Cook University, demonstrated that the addition of a non-dispensing pharmacist led to significant improvements in management of chronic diseases and played a vital role in addressing health inequities experienced by Aboriginal and Torres Strait Islander peoples. (34)

The Aged Care On-Site Pharmacists (ACOPs) initiative was introduced in 2024 in response to the Australian Government Royal Commission into Aged Care Quality and Safety. (35) This measure was intended to address the urgent need to improve medication management and safety in residential aged care homes. (36) Its functions include: ensuring safe and appropriate use of high-risk medications; providing continuity in medication management; facilitating collaboration and access to pharmacists' expertise for residents, staff and the multidisciplinary care team working with general practitioners, nurses and community supply pharmacies; and increasing understanding of the, often complex, needs of vulnerable residents.

The diversification of pharmacists' scope of practice reflects a significant paradigm shift, from roles traditionally centred on dispensing to more advanced responsibilities in professional service provision across all sectors. This evolution not only alleviates pressure on overstretched primary healthcare systems but also creates opportunities for pharmacists to experience greater professional satisfaction and fulfilment. However, it simultaneously introduces challenges, including increased demands for advanced skill development, recruitment difficulties and mounting workforce pressures. These challenges are particularly evident in the context of reported pharmacist shortages across multiple sectors. (7)

## 1.4 Trends and Patterns in Australia's Pharmacy Workforce

This section assesses trends and patterns in the pharmacy workforce in light of the forecasts of likely shortages. The analysis draws on statistical pharmacy registrant data from 2021, that is, data that would have been collected prior to the full impact of the pandemic. These data provide a baseline for comparison with current data.

### *1.4.1 Trends in registration*

The data show that total registrations have increased in recent years. For example, 35,182 pharmacists were registered as at 31 March 2021 (Table 1.1) compared to 40,516 reported on 31 March 2025 (Table 1.2). The number of provisional registrants, students in their internships, has increased from 1,790 in 2021 to 4,264 in 2025 and shows accelerated growth in the past 2 years (37).

Table 1.1 Registration type and subtype by principal place of practice, 2021

| Registration types | Registration subtypes | ACT | NSW | NT | QLD | SA | TAS | VIC | WA | No PPP | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| General | | 654 | 9,694 | 261 | 6,559 | 2,306 | 818 | 8,314 | 3,506 | 200 | **32,312** |
| Provisional | | 45 | 547 | 18 | 323 | 124 | 70 | 454 | 203 | 6 | **1,790** |
| Limited | Postgraduate training or supervised practice | | 4 | | 3 | | | 2 | 1 | | **10** |
| Non-practising | | 9 | 253 | 2 | 128 | 35 | 9 | 248 | 45 | 341 | **1,070** |
| **Total** | | **708** | **10,498** | **281** | **7,013** | **2,465** | **897** | **9,018** | **3,755** | **547** | **35,182*** |

Source: Pharmacy Board of Australia Registrant Data: Reporting period: 01 Jan 2021-31st Mar 2021 (37) https://www.ahpra.gov.au/documents/default.aspx?record=WD21%2f30876&dbid=AP&chksum=84s1b0rTQr8Fusln6P3Prw%3d%3d&_gl=1*1yuus8l*_ga*MTgyNzYzMjcyMi4xNzQ4NzM0MDgy*_ga_F1G6LRCHZB*czE3NTA0MDQyNzMkbzExJGcxJHQxNzUwNDA0MzA2JGoyNyRsMCRoMA. Accessed 13 Apr 2022.(38)

Table 1.2 Registration type and subtype by principal place of practice, 2025

| Registration types | Registration subtypes | ACT | NSW | NT | QLD | SA | TAS | VIC | WA | No PPP | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| General | | 741 | 10,014 | 243 | 6,997 | 2,453 | 821 | 9,379 | 3,951 | 163 | **34,762** |
| Provisional | | 60 | 1,012 | 35 | 687 | 194 | 89 | 919 | 337 | 931 | **4,264** |
| Limited | Postgraduate training or supervised practice | | 11 | 1 | 4 | 2 | | 10 | 2 | 11 | **41** |
| Non-practising | | 15 | 365 | 5 | 203 | 68 | 15 | 340 | 90 | 348 | **1,449** |
| **Total** | | **816** | **11,402** | **284** | **7,891** | **2,717** | **925** | **10,648** | **4,380** | **1,453** | **40,516** |

Source: Pharmacy Board of Australia Registrant Data: Reporting period: 01 Jan 2025-31st Mar 2025 (37) https://www.ahpra.gov.au/documents/default.aspx?record=WD25%2f34792&dbid=AP&chksum=br3FzohzDfwrv1hOYw0ZJQ%3d%3d&_gl=1*ent8a4*_ga*MTgyNzYzMjcyMi4xNzQ4NzM0MDgy*_ga_F1G6LRCHZB*czE3NTA0MDQyNzMkbzExJGcxJHQxNzUwNDA0MzA2JGoyNyRsMCRoMA. Accessed 7 June 2025 (37)

A second notable trend evident in the registration data is the marked increase in the number of pharmacists holding non-practising registration, rising from 1,070 in 2021 to 1,449 in 2025. This upward trajectory suggests an accelerating shift away from active clinical practice and is consistent with broader concerns regarding health workforce retention, as highlighted by the AHPRA annual report 2023/2024 referred to earlier (AHPRA, 2024). However, it is important to note that these data do not fully capture the extent of workforce attrition, as they exclude pharmacists who have exited the register entirely and are therefore no longer accounted for in official statistics.

It is clear from these data and from comparable international evidence that pharmacist workforce retention presents a workforce challenge, both globally (2) and nationally. (5) The findings from recent reports by key Australian pharmacy stakeholders highlight retention as a significant area of concern (40-45). A summary of relevant key findings can be seen in Table 1.3 below and more fully in Appendix A.

Table 1.3 Recent Sector Reports - Key Findings Summary

| Organisation/Report Name | Report Date | Key Findings |
|---|---|---|
| **Pharmacy Guild of Australia** *The Workforce Capability Project - Pharmacy Workforce Supply and Demand Edition 2(40)* | April 2024 | o Demand for pharmacists continues to exceed growth and attributed in part to trends of decreasing hours worked per week and distribution of workforce concentrated in metropolitan areas.<br>o Growth in prescription volume not matched with growth in pharmacist numbers.<br>o Historic changes to skilled migration list (pharmacists) cause increase in workforce pressure in regional areas.<br>o Policy changes and increased scope also contribute to excess demand. |
| **Advanced Pharmacy Australia*** *SHPA response to Unleashing the Potential of our Health Workforce: Scope of Practice Review - Issues Paper 2 (41)* | May 2024 | o Workforce shortages are a significant in hospital pharmacy settings.<br>o Burnout and unsustainable workloads impact staff wellbeing and service delivery. |
| **Pharmaceutical Society of Australia (PSA)** PAMELA Survey 2023 The *Pharmacy in Australia: Measuring Employment, Labour Decisions and Activity* (43, 44) | May, 2023 | o Workforce pressures exacerbated by increased healthcare demands and COVID-19.<br>o Low levels of job satisfaction among pharmacists, interns, and students.<br>o The need for expanded research to improve recruitment and retention strategies for policy makers responsible for reform of the health workforce |

The trend in retention is illustrated in Figure 1.3. The data clearly show a steeper decline in the 35-49 age group than for those aged 50 years and over, indicating the need for further investigation into non-retention in this age demographic.

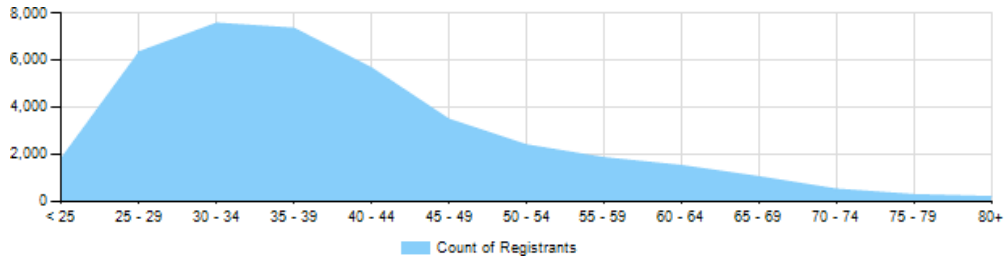



Figure 1.3 Registration by age group

Source: Pharmacy Board of Australia Registrant Data: Reporting period: 01 Jan 2025-31st Mar 2025 https://www.ahpra.gov.au/documents/default.aspx?record=WD25%2f34792&dbid=AP&chksum=br3FzohzDfwrv1hOYw0ZJQ%3d%3d&_gl=1*14zuf0u*_ga*MTgyNzYzMjcyMi4xNzQ4NzM0MDgy*_ga_F1G6LRCHZB*czE3NDkzNDc5MTIkbzgkZzEkdDE3NDkzNDc5OTkkajYwJGwwJGgw (37) Accessed 7 June 2025

### *1.4.2 Gender distribution*

Worldwide, women account for a higher proportion of the pharmacy workforce, more than 65% in some regions. (2). The gender distribution among Australian pharmacists has also shifted in recent years in line with the global trend of an increasing female proportion in the workforce. This proportion increased from 63% in 2021 (Table 1.4) to 64.6% (Table 1.5) in 2025. A third non-binary category was introduced in 2025.

Table 1.4 Registrants by gender percentages 2021

| Gender | ACT | NSW | NT | QLD | SA | TAS | VIC | WA | No PPP | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Female | 66.7% | 62.2% | 63.7% | 63.0% | 62.2% | 61.3% | 62.9% | 64.8% | 66.9% | **63.0%** |
| Male | 33.3% | 37.8% | 36.3% | 37.0% | 37.8% | 38.7% | 37.1% | 35.2% | 33.1% | **37.0%** |

Source: Pharmacy Board of Australia Registrant Data: Reporting period: 01 Jan 2021-31st Mar 2021 https://www.ahpra.gov.au/documents/default.aspx?record=WD21%2f30876&dbid=AP&chksum=84s1b0rTQr8Fusln6P3Prw%3d%3d&_gl=1*1yuus8l*_ga*MTgyNzYzMjcyMi4xNzQ4NzM0MDgy*_ga_F1G6LRCHZB*czE3NTA0MDQyNzMkbzExJGcxJHQxNzUwNDA0MzA2JGoyNyRsMCRoMA. Accessed 13 Apr 2022.(38)

Table 1.5 Registrants by gender percentages 2025

| Gender | ACT | NSW | NT | QLD | SA | TAS | VIC | WA | No PPP | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Female | 68.8% | 63.9% | 66.2% | 65.3% | 62.5% | 61.6% | 64.9% | 66.5% | 62.5% | **64.6%** |
| Male | 31.3% | 36.1% | 33.8% | 34.7% | 37.4% | 38.4% | 35.1% | 33.5% | 37.4% | **35.4%** |
| Not stated or Intersex or Indeterminate | | <0.1% | | <0.1% | <0.1% | | | | <0.1% | **<0.1%** |

Source: Pharmacy Board of Australia Registrant Data: Reporting period: 01 Jan 2025-31st Mar 2025 https://www.ahpra.gov.au/documents/default.aspx?record=WD25%2f34792&dbid=AP&chksum=br3FzohzDfwrv1hOYw0ZJQ%3d%3d&_gl=1*14zuf0u*_ga*MTgyNzYzMjcyMi4xNzQ4NzM0MDgy*_ga_F1G6LRCHZB*czE3NDkzNDc5MTIkbzgkZzEkdDE3NDkzNDc5OTkkajYwJGwwJGgw (Pharmacy Board of, 2025) Accessed 7 June 2025 (37)

The implications of gender disparity have been more extensively explored in other health professions, including medicine, dentistry and nursing. For example, the Balancing Employment and Life longitudinal cohort study (2008–2016), which surveyed 4,896 physicians across career stages in Australia, found that women in rural medical settings were disproportionately represented in junior roles, with significantly fewer women occupying senior consultant positions. (45) Additionally, pre-registration female physicians in rural areas reported lower access to mentoring support compared to their urban counterparts. (46) Gender-related challenges have also been documented among female rural surgeons in Australia. (47) In response, researchers have proposed dual mentorship models aimed at improving job satisfaction and retention among women health professionals in the rural health workforce. (48) Understanding the factors that influence women's uptake of rural

health roles is essential. These factors include job satisfaction, work-family balance, career opportunities and barriers to advancement. (49)

In addition to workforce composition, gender significantly influences healthcare engagement. Gender has been identified as a determinant at multiple levels of healthcare delivery and access. For instance, research examining patient engagement during primary healthcare encounters highlights that gender can affect how individuals interact with and access care services. (50) This underscores the importance of a balanced and diverse healthcare workforce capable of equitable delivery of care and fostering inclusive patient engagement.

Cultural norms further complicate this dynamic. In many cultural contexts, patients may prefer healthcare providers of the same gender, which can influence their willingness to seek care and disclose sensitive health information. (51) These preferences become even more critical when considering the spectrum of gender identities beyond the traditional binary framework. A workforce lacking gender diversity may inadvertently contribute to disparities in healthcare access and outcomes. (52)

These concerns are particularly pronounced in rural and remote areas of Australia, where healthcare resources are limited. Evidence suggests that women in these regions experienced more pronounced negative changes in health behaviours during the COVID-19 pandemic, as well as poorer outcomes in maternity and mental health care. (53) This positions women in rural settings as a particularly vulnerable group, further emphasising the need for a gender-diverse and culturally responsive healthcare workforce to mitigate disparities and enhance patient engagement.

### *1.4.3 Workforce distribution*

The pharmacist registration data for the period 1 January to 31 March 2025 (37) indicates relative stability in the distribution of pharmacists across Australian jurisdictions. Minor inter-state fluctuations are compared in Table 1.6, where the two most significant changes can be seen as a decline for New South Wales and an increase in the number of pharmacists without a principal place of practice. The latter reinforces the increase in non-practising levels, or an as yet undescribed new mode of practice which would benefit from further investigation.

Table 1.6 Principal Place of Practice by Jurisdiction 2021 & 2025

| | Principal Place of Practice (%) | | |
|---|---|---|---|
| **Jurisdiction** | **2021** | **2025** | **% Change +/-** |
| NSW – New South Wales | 29.85 | 28.14 | **-1.71** |
| VIC – Victoria | 25.63 | 26.28 | 0.65 |
| QLD - Queensland | 19.93 | 19.48 | **-0.45** |
| WA – Western Australia | 10.67 | 10.81 | 0.14 |
| SA - South Australia - | 7.01 | 6.71 | **-0.3** |
| TAS – Tasmania | 2.55 | 2.28 | **-0.27** |
| ACT – Australian Capital Territory | 2.01 | 2.01 | 0 |
| NT – Northern Territory | 0.8 | 0.7 | **-0.1** |
| No Principal Place of Practice | 1.55 | 3.59 | 2.04 |

Source: Pharmacy Board of Australia Registrant Data: Reporting period: 01 Jan 2025-31st Mar 2025 (37) and Pharmacy Board of Australia Registrant Data: Reporting period: 01 Jan 2021-31st Mar 2021 (38)

A critical limitation of this dataset is its aggregation at the state and territory level, which obscures intra-jurisdictional variation. Specifically, it fails to capture the spatial distribution of pharmacists across urban, regional and remote areas, thereby limiting

insights into relative workforce supply and potential shortages in relation to population density. This lack of granularity constrains the utility of the data for informing targeted localised health workforce planning and policy development.(37)

Both the community and hospital workforce sectors face persistent challenges related to the inequitable distribution of pharmacists, particularly across rural and remote regions. This disparity is clearly demonstrated in the Pharmacy Workforce Snapshot, June 2023 (14), which highlighted significant variation in pharmacist density across jurisdictions (states and territories). From this report, Figure 1.2 presents pharmacists per 100,000 head of population across jurisdictions and further categorised by remoteness using the MMM. Whilst the latter provides better insight in regard to population density, it does not provide the greater granulation of location within jurisdictions needed to facilitate workforce monitoring and strategy development by identifying localised shortages or key target areas.

These data align the geographical distribution patterns of the pharmacy workforce in Australia with global assessment of workforce shortages. (3) They also highlight the significant workforce challenges associated with improving distribution to less populated areas in Australia. A rural health workforce scoping review published in 2019 suggested that more research was needed to better understand the social processes that affect retention in less populated locations. (49) Although these data are useful, their lack of granularity is an important limitation. For example, available data do not specify whether female pharmacists constitute a majority in these regions, as they do at the national level. Gender distribution within the pharmacy workforce should be examined in the broader context of the ongoing shortage of pharmacists in rural and remote areas of Australia.

### *1.4.4 Summary*

This analysis reveals several key factors. First, the demand for pharmacists exceeds the rate at which new pharmacists are entering the workforce, while the current level of data granularity limits our understanding of local workforce challenges. Second, the increase in the number of non-practising pharmacists, alongside broader issues of workforce retention, calls for further investigation to enhance workforce management and planning. Finally, the interaction between gender disparities and geographic location presents a complex issue that merits additional study. In particular, examining the distribution of pharmacists by gender across different geographic classifications could provide valuable insights into the factors driving these trends, thereby informing more effective health workforce policies.

To fill this gap, the present study sought better understanding of these motivational factors at the micro level of individual pharmacists. The following section discusses the theoretical frameworks that were considered relevant to this aim.

## 1.5 Work Satisfaction Theories

In the context of this evolving health landscape, characterised by increasing complexity and diversification of pharmacist roles, understanding motivation and satisfaction is essential to addressing the sustainability and effectiveness of the pharmacist workforce in Australia. Several motivation and job satisfaction theories offer a robust framework for examining the factors that influence workforce engagement, retention and career choices. These theories are commonly grouped into two categories, Content Theory, which looks at *what* motivates, and Process Theory, which explores *how* to motivate. These are elaborated below.

### *1.5.1 Content theories*

*Maslow's Hierarchy of Needs* (54) is a motivational theory that organises human needs into a structure, often depicted as a five-tiered pyramid. The model proposes that when fundamental survival needs, such as food, water, and shelter, are met, other higher-order needs start to take precedence. These move through the need for safety, social belonging and self-esteem, culminating in self-actualisation, where individuals strive to realise their fullest potential. When applied to the workplace context, Maslow's framework offers a valuable lens through which to understand employee motivation and job satisfaction. Basic needs encompass essential employment conditions such as job security, adequate remuneration and physical safety in the work environment. As these needs are met, individuals seek higher-order fulfilments, including a sense of belonging within a team or workplace culture, recognition of their contributions, opportunities for personal and professional growth, and the ability to engage in meaningful and autonomous work that aligns with their values and aspirations.

Maslow's theory can enrich the development of investigations designed to explore pharmacists' fulfillment in their professional roles and provides a conceptual foundation for investigating how various needs contribute to their sense of fulfillment, considering factors such as career stage, organisational changes and personal development.

In addition to Maslow's framework, *Herzberg's Motivation-Hygiene Theory* (55) offers a complementary perspective on workplace motivation and job satisfaction. This theory identifies *intrinsic motivators* such as achievement, recognition, the nature of the work itself, responsibility and opportunity for

advancement as contributing directly to job satisfaction and motivation, and *extrinsic hygiene factors* which can lead to dissatisfaction if they are absent or inadequate, for example, salary, workplace policy and culture, job security and working conditions.

This theory provides a nuanced framework to explore professional fulfillment for pharmacists with a focus on elements that foster genuine job satisfaction and retention in both the workplace and the profession. For example, satisfaction may stem from patient care services and independent clinical decision making, while dissatisfaction may arise from workload, administrative burden or limited advancement opportunities.

Another content theory, the Dispositional Approach, proposes that individuals have stable personality traits that influence their job satisfaction and career trajectories. (56) This perspective is beneficial to explore how pharmacists' inherent dispositions, such as optimism, self-efficacy or conscientiousness, could shape their career choices and responses to workplace challenges.

In the context of public health sector research, Adamopoulos argues that valuable insights can be obtained by applying *Alderfer's ERG Theory*, which is a refinement of Maslow's model of hierarchical needs. (56) This theory clusters human needs into three categories, Existence, Relatedness and Growth (ERG), and posits that these needs can be pursued simultaneously rather than sequentially. Whilst empirical support for ERG theory has been comparatively limited due to the complexity of considering the simultaneous pursuit of needs, it could usefully inform the collection and analysis of data from pharmacists in a complex work environment.

*McGregor's Theory X and Theory Y* (56) shifts the focus to leadership styles, suggesting that managerial assumptions about employee motivation, whether

*authoritarian* (Theory X) or *participative* (Theory Y), significantly influence workplace culture and employee engagement. This perspective may be particularly valuable in shaping questions related to pharmacy workplace culture and leadership influences on pharmacist motivation.

*McClelland's Achievement Motivation Theory* identifies three core motivational drivers: the need for achievement, affiliation and power. (57) This theory highlights the importance of cultivating staff and balancing needs to influence job satisfaction and retention, offering a framework for exploring the role of workplace culture and support in meeting pharmacists' needs.

Lastly, the *Job Characteristics Model* identifies five core job dimensions that affect motivation and job satisfaction: skill variety, task identity, task significance, autonomy, and feedback. (57) In the present study, these dimensions proved useful in formulating questions exploring how pharmacists' roles impacted engagement, retention and career advancement.

In summary, content theories of motivation can help researchers to explore what drives pharmacists to remain in or leave the profession, and what contributes to their sense of fulfillment and professional identity.

### *1.5.2 Process theories*

Several theories in this category were explored. These included *Adam's Equality and Justice theory*, which highlights the importance of balance of input and output: an equal balance leads to satisfaction, while lack of balance is likely to result in dissatisfaction. (57) This theory supports the value of incorporating questions exploring workload and fair treatment in the workplace in any investigation into work satisfaction.

*Vroom's Expectancy Theory* proposes that motivation is the outcome of three elements: expectancy (effort leads to good performance), instrumentality (good performance results in rewards) and valence (the value of the reward to the individual). (58) Thus, it suggests the importance of considering the relationship between work effort and reward as a factor in pharmacists' career decision making.

*Locke's Goal Setting Theory* posits that motivation and performance are directly influenced by the process of setting and achieving goals. (58) Key factors to consider include the level of challenge involved in specific goals, the extent of commitment to achieving them, the availability of feedback in the workplace and the balance between skill level and task complexity, especially for early career pharmacists. This theory is particularly relevant in the current context of scope extension in the Australian pharmacy workforce and the changing dynamic of the profession.

These theories informed the development of the present study, which sought to capture the complex interplay of personal, organisational and leadership factors that shape pharmacists' professional fulfilment over time and influence career choice, progression and retention.

## 1.6 Conclusion

This review has documented the predominance of females in the pharmacy workforce, the shortage of healthcare workers in rural and remote areas, the disparate distribution of the workforce across metropolitan, regional, rural and remote areas of Australia, and considered the complex shifts in practice scope that are impacting the industry today. It has revealed the need for further research to provide greater depth of understanding of the facilitators and barriers to retention and job satisfaction, especially among women. The discussion of well-known theories of motivation

identified frameworks for analysing the factors that impact how pharmacists make decisions around career choices.

## 1.7 Research Aims and Objectives

The broad aim of this study was to explore factors influencing career choices of pharmacists in the Australian workforce across geographical and professional areas, with particular focus on the influence of workplace characteristics and social factors on career choices.

Specific objectives were to:

1. Identify factors driving pharmacist career pathways and location choices for practice.
2. Examine female pharmacists' reasons for choosing particular career settings.
3. Document factors influencing rural workforce participation.
4. Analyse sources of motivation and satisfaction in the pharmacist workforce.
5. Report the self-identified needs of pharmacists for professional training, support, resources and opportunities to remain in the workforce, particularly in more remote areas.

The findings are expected to contribute to the development of strategies to improve equitable distribution, career satisfaction and retention in the workforce, leading to optimal pharmacy service provision across Australia.

**References**

1. World Health Organization. Global strategy on human resources for health: workforce 2030. Geneva: World Health Organization; 2016.
2. Bates I JC, Bruno A, Fu P, Aliabadi S. An analysis of the global pharmacy workforce capacity. Human Resources for Health. 2016;14(1):61.
3. Udoh A, Ernawati DK, Akpan M, Galbraith K, Bates I. Pharmacies and primary care: a global development framework. Bulletin of the World Health Organization. 2020;98:809-11.
4. Australian Health Practitioner Regulation Agency [AHPRA] Annual report 2023/2024. Melbourne; 2024 Nov.
5. Tan J, Divakar R, Barclay L, Bayyavarapu Bapuji S, Anderson S, Saar E. Trends in retention and attrition in nine regulated health professions in Australia. Australian Health Review. 2025;49(2).
6. Pharmacy Board of Australia. Annual summary 2023/24. Australian Health Practitioner Regulation Agency; 2024.
7. Pharmacy Guild of Australia. Workforce capability project: Chapter 1 – Pharmacy Workforce Supply and Demand. Canberra: Pharmacy Guild of Australia; 2023.
8. Pharmacy Guild of Australia. Vital Facts Bulletin. Pharmacy Guild of Australia; 2024.
9. Pharmacy Guild of Australia. Guild Digest 2020. Pharmacy Guild of Australia; 2020.
10. Australian Government Department of Health and Ageing. Modified Monash model 2023. Available from: https://www.health.gov.au/topics/rural-health-workforce/classifications/mmm.
11. Australian Institute of Health and Welfare [AIHW]. Profile of Australia's population 15 April 2025. Available from: https://www.aihw.gov.au/reports/australias-health/profile-of-australias-population.
12. World Health Organization. Social determinants of health: World Health Organization; 2025 [updated 2025/06/06; cited 2025 18/06/2025]. Available from: https://www.who.int/news-room/fact-sheets/detail/social-determinants-of-health.
13. Australian Institute of Health and Welfare. Rural and remote health. 2024.
14. Australian Health Practitioner Regulation Agency AHPRA. Pharmacist Workforce Snapshot as at 30 June 2023; 2023 June.

15. Moullin JC, Sabater-Hernández D, Fernandez-Llimos F, Benrimoj SI. Defining professional pharmacy services in community pharmacy. Research in social and administrative pharmacy. 2013;9(6):989-95.
16. Hindi AMK, Campbell SM, Jacobs S, Schafheutle EI. Developing a quality framework for community pharmacy: a systematic review of international literature. BMJ Open. 2024;14(2):e079820.
17. Dominique J, Josep MG-S, Gonçalo S-P, Lin-Nam W. How COVID-19 has impacted the role of pharmacists around the world. Farmacia hospitalaria. 2021;45(2):89-95.
18. Australian Government Department of Health, Disability and Ageing. Pharmacists | Cheaper medicines. Australian Government Department of Health, Disability and Ageing. 2024.
19. Finn S, D'arcy E, Donovan P, Kanagarajah S, Barras M. A randomised trial of pharmacist-led discharge prescribing in an Australian geriatric evaluation and management service. International Journal of Clinical Pharmacy. 2021;43(4):847-57.
20. Sarwar MR, McDonald VM, Abramson MJ, Wilson S, Holland AE, Bonevski B, et al. Credentialed pharmacist-led home medicines reviews targeting treatable traits and their impact on health outcomes in people with chronic obstructive pulmonary disease: a pre- and post-intervention study. International Journal of Clinical Pharmacy. 2025;47(1):157-65.
21. Woodhams L, Chalmers L, Hillis GS, Sim TF. Developing community pharmacists' role in the management of type 2 diabetes and related microvascular complications: a nationwide survey in Australia. PeerJ. 2023;11:e14849-e..
22. Puspitasari HP, Aslani P, Krass I. Australian community pharmacists' awareness and practice in supporting secondary prevention of cardiovascular disease. International journal of clinical pharmacy. 2013;35(6):1218-28.
23. Fathabadi S, O'Reilly CL, Collins JC, Hamilton B, Fowler D, Janiszewski CMS, et al. Potential roles for pharmacists within youth mental health services: A qualitative exploration of staff views. Exploratory research in clinical and social pharmacy. 2024;15:100480.
24. Zieck MRM, Um IS, Chaar BB. The future of weight management in pharmacy education – perspectives of new generation pharmacists. Currents in Pharmacy Teaching and Learning. 2018;10(5):596-601.
25. Saini B, Krass I, Smith L, Bosnic-Anticevich S, Armour C. Role of

community pharmacists in asthma - Australian research highlighting pathways for future primary care models. Australasian Medical Journal [Internet]. 2011;4(4):190. Available from: ProQuest Central.

26. Cheung DHK, Schneider CR, Um IS. The role of community pharmacy in wound care: a scoping review. Journal of Wound Care. 2023;32(11):728-37.

27. Crawley L, Edwards G, Gibbs H, Tong E. The medical emergency team pharmacist: describing an overnight service. Journal of Pharmacy Practice and Research.2024;54(2):145-50.

28. SHPA. Pharmacy Forecast Australia 2021. 2021.

29. Penm J, Yeung K, Moles RJ, Criddle D, Elliott RA, Rigby D, et al. Timely post-discharge medication reviews to Improve Continuity—the Transitions Of Care stewardship (TIC TOC) study in rural and regional Australia: a parallel-group randomised controlled trial study protocol. BMJ Open. 2025;15(6):e100588.

30. Welch S. Antimicrobial stewardship in Australian emergency departments. Emergency Medicine Australasia. 2015;27(5):427-30.

31. Swetenham K, Rowett D, Stephenson D. Clinical networks influencing policy and practice: the establishment of advanced practice pharmacist roles for specialist palliative care services in South Australia. Australian Health review. 2014;38(2):238-41.

32. Sudeshika T, Naunton M, Deeks LS, Thomas J, Peterson GM, Kosari S. General practice pharmacists in Australia: a systematic review. PloS one. 2021;16(10):e0258674-e.

33. Tan ECK, Stewart K, Elliott RA, George J. Integration of pharmacists into general practice clinics in Australia: the views of general practitioners and pharmacists. International Journal of Pharmacy Practice. 2014;22(1):28-37.

34. Couzos S, Smith D, Stephens M, Preston R, Hendrie D, Loller H, et al. Integrating pharmacists into Aboriginal Community Controlled Health Services (IPAC project): protocol for an interventional, non-randomised study to improve chronic disease outcomes. Research in Social and Administrative Pharmacy. 2020;16(10):1431-41.

35. Pagone T, Briggs, L. Aged Care Royal Commission Final Report: Summary. Australian Government Royal Commission; 2021.

36. Haider I, Kosari S, Naunton M, Koerner J, Dale M, Nizamani S, et al. The role of on-site pharmacist in residential aged care facilities: findings from the PiRACF study. Journal of Pharmaceutical Policy and Practice. 2023;16(1):82-.

37. Pharmacy Board of Australia. Registration Data Table – 31 March 2025. Report. Canberra, Australia: Australian Health Practitioner Regulation Agency (AHPRA); 2025 2025/03/31.Available from: https://www.pharmacyboard.gov.au/About/Statistics.aspx

38. Pharmacy Board of Australia. Registrant data – Pharmacy Board of Australia; 2021 31 March

39. Australian Pharmacy Council. Peak bodies commit to change - Interprofessional Colloquium outcome statement2022 04 June 2025]. Available from: https://www.pharmacycouncil.org.au/media-hub/Peak-bodies-commit-to-change-Colloquium-Outcome-Statement/.

40. Pharmacy Guild of Australia . The Workforce Capability Project-pharmacy workforce supply and demand Edition 2. 2024 April.

41. Society of Hospital Pharmacists of Australia. SHPA response to Unleashing the potential of our health workforce: scope of practice review - Issues Paper 2. SHPA; 2024.

42. Advanced Pharmacy Australia Pharmacy Forecast Australia 2024. Melbourne; 2024

43. Pharmaceutical Society of Australia. Pharmacy in Australia: Measuring Employment, Labour Decisions and Activity (PAMELA). Pharmaceutical Society of Australia; 2023.

44. Thai T, Lancsar E, Spinks J, Freeman C, Chen G. Understanding Australian pharmacy degree holders' job preferences through the lens of motivation-hygiene theory. Soc Sci Med 2024;348:116832-.

45. Johnson G, Foster K, Blinkhorn A, Clive Wright FA. Rural clinical school dental graduates views on rural and metropolitan employment. Eur J Dent Educ. 2020;24(4):741-52.

46. Ostini R, McGrail MR, Kondalsamy-Chennakesavan S, Hill P, O'Sullivan B, Selvey LA, et al. Building a sustainable rural physician workforce. Med J Aust. 2021;215 Suppl 1:S5-S33.

47. Hutchison K. Four types of gender bias affecting women surgeons and their cumulative impact. Journal of Medical Ethics. 2020;46(4):236-41.

48. Wozniak TM, Miller E, Williams KJ, Pickering A. Championing women working in health across regional and rural Australia - a new dual-mentorship model. BMC medical education. 2020;20(1):299-10.

49. Cosgrave C, Malatzky C, Gillespie J. Social determinants of rural health workforce retention: a scoping review. International Journal of Environmental Research and Public Health.2019;16(3):314.

50. Paukkonen L OA, Kähkönen O, Kyngäs H. Patient participation during primary health-care encounters among adult patients with multimorbidity: a cross-sectional study. Health Expectations. 2021.

51. Simkhada B VM, van Teijlingen E, Blunt H. Cultural issues on accessing mental health services in Nepali and Iranian migrants communities in the UK. International Journal of Mental Health Nursing. 2021.[ International Journal of Mental Health Nursing, 30(6), 1610–1619. ]

52. Alston M, Allan J, Dietsch E, Wilkinson J, Shankar J, Osburn L, et al. Brutal neglect: Australian rural women's access to health services. Rural Remote Health. 2006;6(1):475.

53. Glenister KM, Ervin K, Podubinski T. Detrimental health behaviour changes among females living in rural areas during the COVID-19 pandemic. Int J Environ Res Public Health. 2021;18(2).

54. Maslow AH. A theory of human motivation. Psychological Review. 1943;50(4):370-96.

55. Herzberg F, Mausner B, Snyderman BB. The motivation to work. 2nd ed. New York: Wiley; 1959.

56. McGregor D. The human side of enterprise. New York: McGraw-Hill; 1960.

57. Ryan JC. Old knowledge for new impacts: Equity theory and workforce nationalization. Journal of Business Research. 2016;69(5):1587-92.

58. Locke EA, Latham GP. Building a practically useful theory of goal setting and task motivation: a 35-year odyssey. American Psychologist. 2002;57(9):705-17.

# Chapter 2. Methods

## 2.0 Chapter overview

This chapter outlines the rationale for the methods used in this study, along with the theoretical and research foundations that informed their selection for data collection and analysis. While Chapter 3 includes a Methods section within the manuscript prepared for publication, this chapter expands on the underlying frameworks and methodological justifications that could not be fully detailed due to the journal's focus and word limit constraints.

## 2.1 Rationale for Choice of Methods

As highlighted in Chapter 1, there is a paucity of literature exploring contemporary issues affecting the Australian pharmacy workforce's career-related decision-making and overall career satisfaction. Research that was identified and discussed in Chapter 1 was predominantly quantitative, comprising broad evaluations or reports from authorities responsible for health workforce planning. The review revealed a gap in more in-depth or theory-informed research on health workforce development across all health disciplines and for the pharmacy workforce in Australia in particular.

Further, the Australian pharmacy profession is currently in a rapid state of evolution, with much investment into pharmacy services by state and federal governments to trial the expansion of pharmacists' scope of practice. (1) These investments appear to have been spurred by the lived experience of communities during the pandemic, when pharmacies served a critical role, remaining open to provide services and participating in the national Covid-19 vaccination campaign. (2) Given the quantitative estimates indicating a deceleration in the growth rate of the Australian pharmacy workforce, it

has been argued that this expanding scope of practice will simply lead to non-uptake or burnout. (3)

Accordingly, a qualitative exploration was deemed both necessary and timely to examine factors influencing pharmacy career decisions. It was expected that such in-depth information would provide previously unavailable insights for educators, professional bodies and policy makers into pharmacists' career-related choices and the factors impacting them, with the ultimate goals of maintaining a viable pharmacy workforce with an equitable distribution of professionals, fostering inclusive career development opportunities and promoting the adoption of emerging roles for pharmacists to deliver health services.

## 2.2 Qualitative Research Methods

Qualitative methods are well suited to investigating factors influencing the career choices and trajectories of Australian pharmacists, which are likely to involve complex, context-dependent behavioural and social phenomena. (4)

### *2.2.1 Advantage of using qualitative paradigm for our study aim*

Qualitative methods enable researchers to better capture the "why" or "how" of such phenomena, which take place in diverse workplace settings, including rural and remote areas which may have an undersupply of healthcare and which are not effectively captured by quantitative methods. (5)

Qualitative approaches have been increasingly recognised in pharmacy practice research for their ability to provide insight into the social and cultural dimensions of health care delivery, including how pharmacists interpret their role in healthcare provision, interaction with other health professionals, patient interactions and workplace change. (5) For example, qualitative data collection via semi-structured

interviews and focus groups can reveal the underlying factors influencing initial degree selection, later career choices, workplace stressors, or professional identity. (5)

### *2.2.2 Epistemological approach*

The epistemological approach identified to be most appropriate for this research project was constructivism. Constructivist approaches in the context of qualitative research imply that the focus of the researchers is on exploring how participants make sense of their own experiences with relevance to their socio-cultural contexts, rather than simply a surface analysis of statements rendered by them in interviews. (6) In other words, the viewpoint of the participants is 'interpreted' by the researcher to construct meanings from the participant's narration. (4) This approach was deemed suitable, as the research team wanted to understand how participants constructed a picture of their career progression, their choices and the factors that may have shaped these decisions. (7). Additionally, this approach recognises that the lived experience of the research team themselves as pharmacists or observers of the profession provides valuable background for analysis of the data. Hence the results are shaped by multiple lived realities rather than reflecting the passive delivery of information from participants to researchers.

### *2.2.3 Data collection method*

Whilst focus groups and surveys were amongst the methods considered, individual interviews were deemed the most suitable method to explore *what* participants experienced and *how* they made sense of the experience. (8)

Research interviews can range from a highly structured, quantitative format in which interviewees respond to standardised questions to a largely unstructured format in which the topic is explored freely and where each interview will evolve differently.

(9) The semi-structured interview lies between structured and unstructured forms, in which data collection is aided by a broad topic guide with key questions, supported by prompts, around which the conversation can flow and evolve. This is different to an unstructured approach where a discussion is seeded by setting a broad topic and participants then provide undirected responses. Semi-structured interviews thus offer flexibility; responses follow a participant's train of thought but prompts from the interviewer can maintain direction towards the topic of interest. Semi-structured interviews are one of the most common approaches used in qualitative research on the social dimensions of pharmacy. (8)

### *2.2.4 Framework for development of the interview guide*

The interview guide (*Chapter 3 Publication, Appendix 1*) comprised open-ended seed questions to explore key aspects of the topic along with closed-ended items to collect demographic and other background data. The questions were developed based on a review of the extant literature around the research aims. This included Australian studies and research from other countries with similar health systems in order to provide a broad context for the interpretation of data on such factors as the demographic composition of the pharmacy workforce and the role of geographic location in pharmacy career decision making.

Key topics identified from the literature for inclusion in the interview guide were: challenges in the Australian pharmacist workforce, such as continuing education and workload; career choices and development; leadership and management opportunities; and industry-specific issues such as remuneration.

The review of established theories relating to job satisfaction and motivation, as outlined in Chapter 1 and summarised in Appendix F. (*Table F: Theoretical Framework Summary (Chapter 1))*, provided a conceptual foundation from which to

explore psychological and contextual factors contributing to challenges, satisfaction levels and career decisions. For example, Herzberg's Motivation-Hygiene Theory (10) informed questions examining motivation for achievement or recognition and 'extrinsic hygiene factors' such as remuneration, job security and working conditions. This theory was particularly relevant for exploring professional fulfillment and dissatisfaction.

Maslow's Hierarchy of Needs (11) further helped frame questions around how pharmacists' needs evolve over time and how these shifts influence career progression or transitions. Lastly, the five core job dimensions of the Job Characteristics Model (12) informed questions about motivation and satisfaction derived from work tasks. This multidimensional approach to construction of the interview questions aimed to capture the lived experiences of pharmacists in ways that broadly aligned with established psychological constructs, while facilitating the collection of a rich and nuanced data.

The interview guide adopted a structured, yet flexible design that combined the four-phase interview model of DiCicco-Bloom and Crabtree (13) along with the funnelling model (9) to ensure clarity, logical progression and effective rapport building throughout the interview process. (14) Key elements included: obtaining participants' consent; conscious intent to put participants at ease; contextual questions to situate the participant's career journey; broad seed questions; and prompts to clarify issues or elicit deeper reflections. Rapport was developed and maintained throughout the interview, building on prior discussions as the conversation moved to more sensitive topics.

## 2.3 Conducting Interviews

### *2.3.1 Ethical considerations*

Ethical and responsible research principles were followed to ensure the dignity, welfare and rights of participants would be protected. The project was approved on 11 October, 2022 by the University of Sydney Human Research Ethics Committee (HREC Approval No:2022/613, Appendix B), confirming that it complied with the National Health and Medical Research Council's *National statement on ethical conduct in human research* (2007).

This process ensured that the project met legal and institutional requirements, that it had identified and managed potential ethical risks before commencement and enhanced credibility and integrity in preparation for future publication. Relevant documents are included in appendices, namely: Participant Information Statement Appendix C), Participant recruitment template (Appendix D), Participant Consent Form (Appendix E) and Interview Guide (*Chapter 3, Publication Appendix 1*).

### *2.3.2 Interview preparation*

To prepare for the interviews, the primary researcher spent time on familiarisation and interview training. Reciprocity, a mutual, respectful exchange between the interviewer and participant, is considered pivotal to the success of an interview, which should not be one-sided but, rather, a guided conversation that encompasses active listening, thoughtful responses and flexible adaptation as the participant's narrative evolves. This collaborative process requires a careful balance of responsiveness, allowing the participant space to fully express themselves without interruption and interviewer anticipation of directions in which the conversation may travel, remaining open for unexpected insights and to capture the nuances. Whilst the primary researcher had

mature communication skills and a broad understanding of the pharmacy context across different settings, which facilitated collaborative interactions, practice interviews were conducted with senior experienced qualitative researchers on the supervisory team to build familiarity with the interview guide, strengthen research interviewing skills and fine-tune the questioning approach. Practical aspects, such as administrative and technological issues associated with online delivery, such as explanation of the Participant Information statement and completion of the Participant Consent Form, were also finalised.

### *2.3.3 Sampling and recruitment*

Qualitative sample sizes are not determined via statistical power calculations; rather, saturation is a universally accepted method of determining sample size adequacy in interview-based data collection. (15)

The decision to use an initial purposive convenience sampling round was to enable the research team to capitalise on their combined network of colleagues across a wide variety of pharmacy contexts. The 'purposive' nature of the sample (4) allowed for the introduction of known participants' contextual knowledge and expertise. These participants forwarded an invitation to participate in the research to their respective networks, facilitating the second recruitment phase via passive snowballing. (16)

The aim for recruitment was to seek diversity in the participants in relation to geographical location, age and gender and pharmacy setting (community, hospital, industry, advocacy, academic), as well as potentially including pharmacists who may have considered, trialled or worked across these different settings and pharmacy owners, executives and managers responsible for recruitment and retention.

This recruitment strategy supported the principles of qualitative research to achieve as maximally varied a sample as possible (15) in order to capture a wide range of perspectives and explore how context may influence career decisions, experiences and perspectives.

### *2.3.4 Interview process*

Online interviews were selected as the primary data collection method due to the widespread adoption of virtual conferencing tools, such as Zoom, following COVID-19 restrictions. Zoom was chosen specifically for its flexibility, enabling participants to schedule interviews at their convenience and allowing access to individuals across diverse professional backgrounds and geographic locations. This approach also aligned with the budgetary constraints of the unfunded study, as it incurred no cost for either researchers or participants. Zoom software (Version 5.0.2) was deemed the most accessible platform for conducting interviews; however, participants were also offered the alternative of a recorded telephone interview. At the start of each session, participants were informed that they could pause or stop the recording or, indeed, the interview at any time to suit their preference or manage interruptions. The ease of use afforded by the Zoom platform required minimal technical expertise for participants (17) and was useful in building rapport and supporting flexibility.

All interviews using Zoom were recorded by the primary researcher and saved directly to a secure university storage system, alongside electronic copies of participant consent forms submitted via email. Interviews conducted by telephone were audio recorded on a digital recorder and were deleted after being transferred and stored securely.

## 2.4 Data Analysis

### *2.4.1 Transcription and deidentification*

The stored recordings were used to transcribe the interview verbatim. This step was completed by the primary researcher using transcription computer software. Microsoft Word online and Zoom audio transcripts (closed captioning) were trialled in the early stage of transcription, but the majority of transcription was completed using Otter online due to its superior accuracy, ease of use and efficiency. Transcriptions were checked against the audio recordings and field notes for accuracy and for deidentification of personal and location details throughout. To ensure confidentiality, only the primary researcher handled the raw data, transcription files and data storage. All files online were deleted after transfer to secure university storage. In compliance with the university's human ethical requirements, after analysis the participants' files will be stored for a maximum of 5 years then destroyed.

### *2.4.2 Analysis of data*

Analysis of data was guided by inductive thematic analysis, as described in Chapter 3. This is a foundational method that is flexible and which allows identification and analysis of patterns of meaning or themes that emerge directly from the data, rather than using a pre-existing framework or theory. (18) Inductive thematic analysis is ideal where little prior knowledge of a research area exists and was therefore well suited to the present project, since it allowed themes to emerge organically from participants' perspectives and lived experiences.

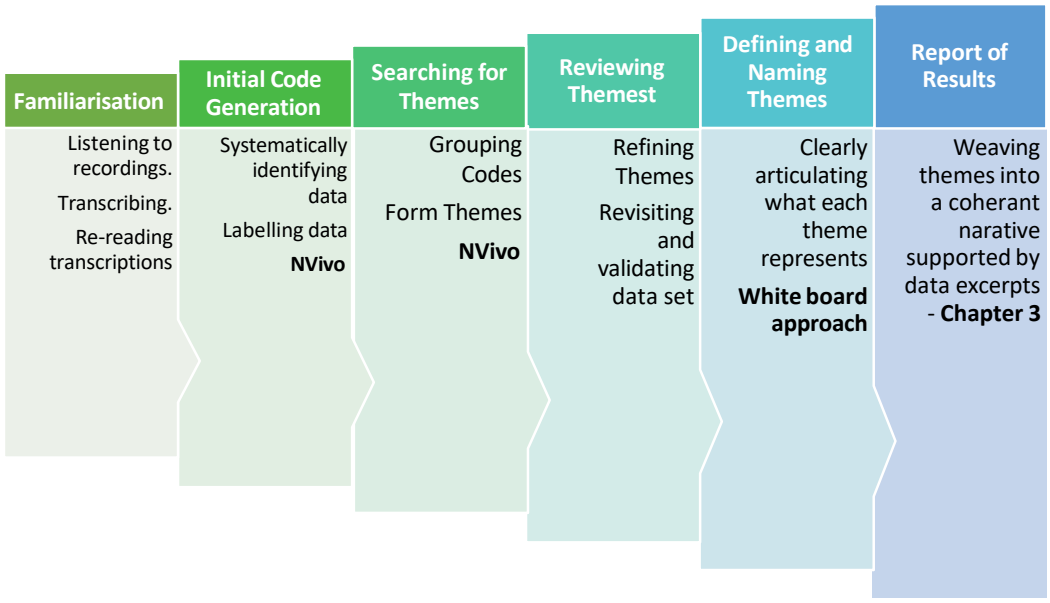



Figure 2.1 Phases of thematic analysis (Braun & Clarke, 2006).

Completed transcripts of interview recordings were uploaded to NVivo 14 Software, a tool that allows uploading of transcriptions and field notes in one location for efficient review and triangulation (Figure 2.1). The software enabled the labelling and identification of initial text as codes, the organisation and grouping of coding and the development of a hierarchical structure of themes and subthemes. It is particularly useful in a collaborative research team for both thematic process and enhanced transparency. (19) NVivo coding visualisation was used to refine the hierarchical structure, which consisted of parent (primary) codes and child (secondary) codes as illustrated in Figure 2.2.

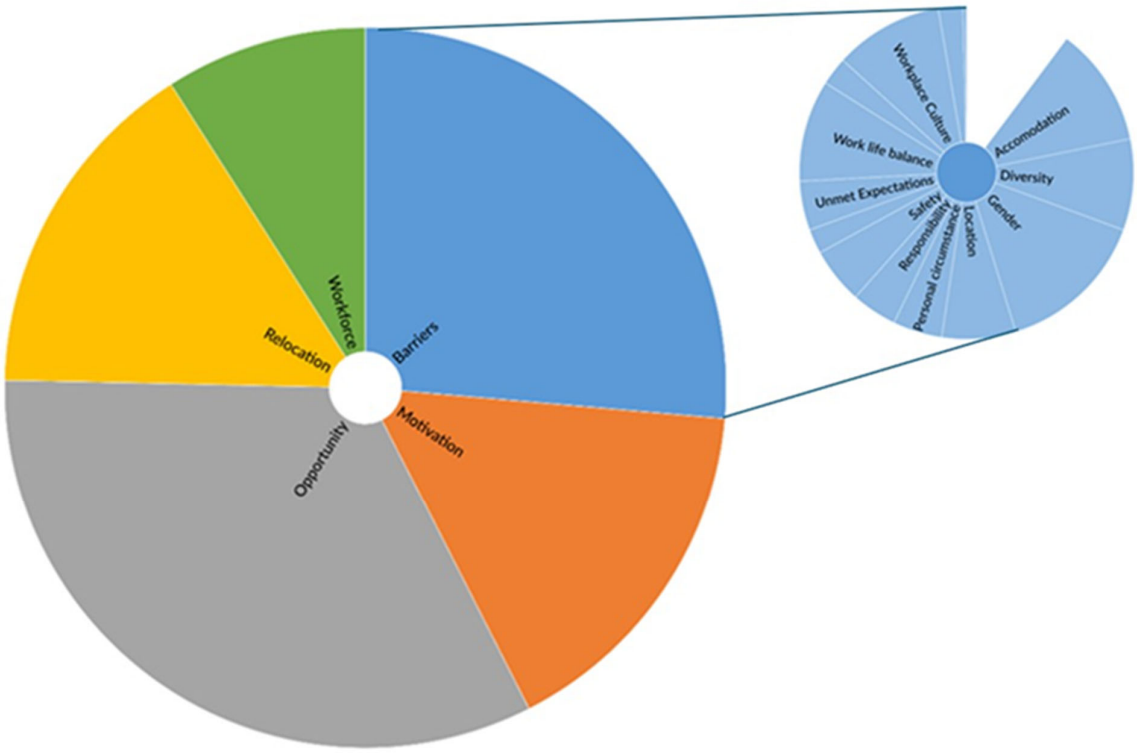



Figure 2.2 NVivo visualisation of parent and child codes (*export: February 2025*)

As detailed in Chapter 3, independent coding of a select number of transcripts was undertaken to ensure relevance of coding and to minimise bias during analysis. Once this step was completed, the primary researcher conducted the coding and met frequently with the team to discuss the progression of coding and evolving ideas and concepts around the development of themes from codes. A whiteboard (Figure 2.4) was used to chart ideas and link codes into theme families by graphing codes and theme structures. (20)

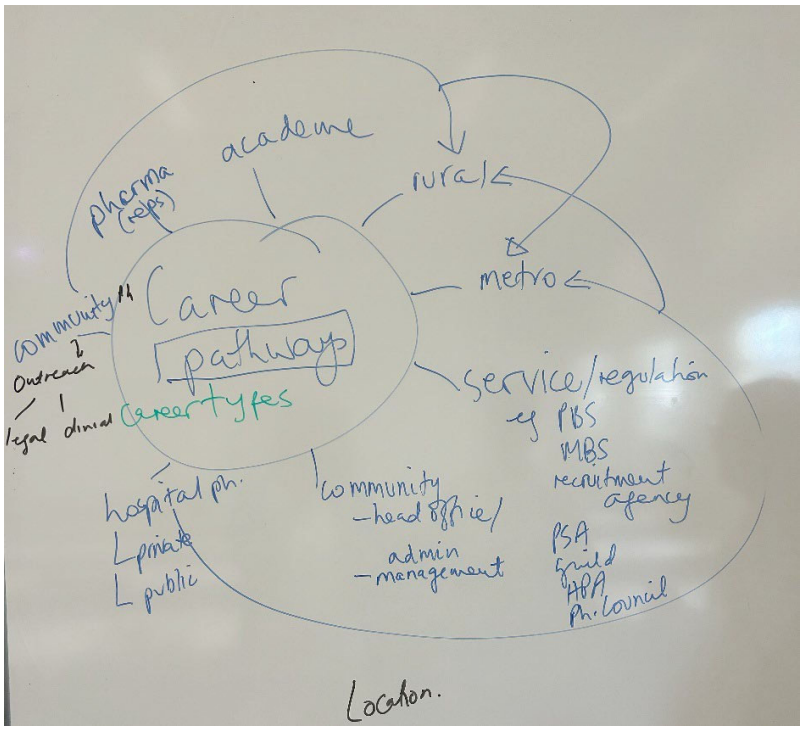



Figure 2.4 Whiteboard visual analysis of themes

This process allowed for shared decision making and meaningful derivation of themes.

**References**

1. Taylor S, Cairns A, Glass B. Health professional perspectives of expanded practice in rural community pharmacy in Australia. Int J Pharm Pract. 2020;28(5):458-65.
2. Chiu K, Thow AM, Bero L. "Never waste a good crisis": Opportunities and constraints from the COVID-19 pandemic on pharmacists' scope of practice. 2022.
3. Dee J, Dhuhaibawi N, Hayden JC. A systematic review and pooled prevalence of burnout in pharmacists. International Journal of Clinical Pharmacy. 2023;45(5):1027-36.
4. Thompson S, Schick-Makaroff K. Qualitative research in clinical epidemiology. In: Parfrey PS, Barrett BJ, editors. Clinical epidemiology: practice and methods. New York, NY: Springer US; 2021. p. 369-88.
5. Kaae S, Traulsen JM, Babar Z-u-D. Qualitative methods in pharmacy practice research. Singapore: Springer Singapore Pte. Limited; 2020. p. 31-54.
6. Lerman S. Constructivism, mathematics and mathematics education. Educational Studies in Mathematics. 1989;20(2):211-23.
7. Yilmaz K. Comparison of quantitative and qualitative research traditions: Epistemological, theoretical, and methodological differences. European Journal of Education. 2013;48(2):311-25.
8. Neubauer BE, Witkop CT, Varpio L. How phenomenology can help us learn from the experiences of others. Perspectives on Medical Education. 2019;8(2):90-7.
9. Magaldi D, Berler M, Shackelford TK, Zeigler-Hill V. Semi-structured interviews. Cham: Springer International Publishing; 2020. p.4825-30.
10. Herzberg F, Mausner B, Snyderman BB. The motivation to work. 2nd ed. New York: Wiley; 1959.
11. Maslow AH. A theory of human motivation. Psychological Review. 1943;50(4):370-96.
12. Hackman JR, Oldham GR. Motivation through the design of work: test of a theory. Organizational Behavior and Human Performance. 1976;16(2):250-79.
13. DiCicco-Bloom B, Crabtree BF. The qualitative research interview. Medical Education. 2006;40(4):314-21.
14. Galletta A. Conducting the interview: the role of reciprocity and reflexivity. 18. New York, USA: New York University Press; 2020. p. 75-118.

15. Walker JL. The use of saturation in qualitative research. Canadian Journal of Cardiovascular Nursing. 2012;22(2):37-46.

16. Noy C. Sampling knowledge: The hermeneutics of snowball sampling in qualitative research. International Journal of Social Research Methodology. 2008;11(4):327-44.

17. Gray LM, Wong-Wylie G, Rempel GR, Cook K. Expanding qualitative research interviewing strategies: Zoom video communications. Qualitative Report. 2020;25(5):1292-301.

18. Braun V, Clarke V. Using thematic analysis in psychology. Qualitative Research in Psychology. 2006;3(2):77-101.

19. Brandão C, Bazeley, P, Jackson K. Qualitative data analysis with NVivo. 2nd ed. (2013). London: Sage. London: Routledge; 2015. p. 492-4.

20. Fischer T, Schneider F, Petersen-Frey F, Haque ASM, Eiser I, Koch G, et al., editors. Extending the discourse analysis tool suite with whiteboards for visual qualitative analysis. Proceedings of the 2024 Joint International Conference on Computational Linguistics, Language Resources and Evaluation pages 7017–7022, Torino, Italia. ELRA and ICCL. 2024 May. p. 7017-7022.

# Chapter 3. Results

## 3.1 Chapter Overview

This chapter forms the results of this thesis. It contains a manuscript which is an exact replica of the water-marked final pre-publication version of the journal article which may have different pages numbers to those in this thesis. The manuscript forms page 45-73 of the thesis.

## 3.2 Manuscript Citation

"Bussing, J., Smith, L.; Saini, B. (2025) Factors affecting career-related decisions within the contemporary pharmacy workforce in Australia. Exploratory Research in Clinical and Social Pharmacy," Volume 20, December 2025, 100648https://doi.org/10.1016/j.rcsop.2025.100648

## 3.3 Author Attribution

Author attribution can be found in the forward of this thesis on page (ii) and is signed by all authors. The corresponding author for this publication is Jocelyn Bussing. The CRediT roles for all authors are:

**Jocelyn Bussing**: Writing – review & editing, Writing – original draft, Project administration, Methodology, Formal analysis, Data curation, Conceptualisation. **Lorraine Smith:** Writing – review & editing, Supervision, Formal analysis, Conceptualisation.

**Bandana Saini:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Formal analysis, Conceptualisation.

Note: Post-examination demographic data relating to participant sector of practice experience, not in the manuscript, is included in Appendix G.

Exploratory Research in Clinical and Social Pharmacy 20 (2025) 100648

Contents lists available at ScienceDirect

Exploratory Research in Clinical and Social Pharmacy

journal homepage: www.elsevier.com/locate/rcsop

# Factors affecting career-related decisions within the contemporary pharmacy workforce in Australia

Jocelyn Bussing *, Lorraine Smith, Bandana Saini

*Sydney Pharmacy School, Faculty of Medicine and Health, The University of Sydney, NSW, Australia*

ARTICLE INFO

*Keywords:*
Pharmacy
Pharmacist
Career satisfaction
Career choice
Career motivation

ABSTRACT

*Introduction:* Pharmacists are essential to healthcare delivery in Australia, making effective workforce planning critical to ensure equitable health outcomes. This study explores factors influencing the career decisions of Australian pharmacists from diverse demographic and geographical backgrounds with implications for recruitment, retention and policy strategies to address workforce shortages.

*Method:* We conducted semi-structured interviews between November 2022–February 2024. An interview guide informed by relevant literature was used to facilitate the interview process. Participants were recruited through purposive convenience sampling complemented by passive snowballing. All interviews were recorded, field notes were taken and the data transcribed, deidentified, and analysed using NVivo software through an inductive thematic process.

*Results:* Participants exhibited a range of ages, genders, practice settings and locations, which revealed distinct career trajectories and decision-making influences. Three main themes emerged: career initiation (choosing pharmacy as a profession), career development, satisfaction and retention, and the roles of gender, geography and other life issues. Findings indicate that the initial choice to pursue pharmacy was driven by personal aptitude, accessible training locations, promising employability, gender-suitable work configurations, flexibility, and early educational exposure. Early career decisions were shaped by factors such as mentorship, specialised roles, employee benefits, and supportive work environments, while personal life factors further influenced career trajectories. Leadership or ownership aspirations were notably tied to mentors and role models. Limitations include underrepresented perspectives, limited gender diversity among participants, and an all-female research team.

*Conclusion:* These nuanced insights offer Australian pharmacy leaders and policy makers factors to address or capitalise on, to ensure a robust, equitably distributed and motivated workforce.

## 1. Introduction

Pharmacists are an important element of the health workforce globally. The role of pharmacists bridges the medical aspects of health care (diagnosis, testing, prescription) with actual supply and use of prescribed treatments (dispensing, counselling, monitoring effects). The expertise of the pharmacy workforce also spans many areas ranging from drug discovery, formulation science, regulatory activities, direct patient care, medication centred education for all consumers, research and academia.[1] In general, successful health workforce planning involves a cyclic process of scope of work definitions, charting current workforce activities, forecasting requirements, identifying gaps, developing an action plan and ongoing monitoring of health workforce plans.[2] As an objective marker of current workforce participation and a tool to aid in forecasting, global pharmacy workforce planning, strategists recommend an optimal ratio of pharmacists per head of population for each country, and this ratio is a workforce development indicator in the International Federation of Pharmacy (FIP) global health observatory data.[3] The pharmacist per capita ratio should ideally remain constant across geographic or socio-economic variations within any country so as to provide required services of the same quality to all citizens. Indeed, Australia's National Medicines Policy framework focusses on consistent delivery of medicines and related services for all Australians.[4]

Current trends in any national pharmacist workforce need to be examined in the context of the global health workforce and the workforce shortages predicted by the World Health Organisation by 2030.[5]

* Corresponding author at: Sydney Pharmacy School, Pharmacy and Bank Building A15, The University of Sydney, Camperdown, NSW 2006, Australia.
*E-mail address:* jocelyn.bussing@sydney.edu.au (J. Bussing).

https://doi.org/10.1016/j.rcsop.2025.100648
Received 3 June 2025; Received in revised form 8 August 2025; Accepted 18 August 2025
Available online 21 August 2025

Globally, pharmacist workforce variation is seen across countries with differing socioeconomic development, different levels of investment in pharmacist education and training as well as diverse employment strategies. Recent data published for the pharmacist workforce in Australia reports 13.2 pharmacists per 10,000 head of population, based on pharmacist registration data and population data from the latest census as at March 2023.[6] Global pharmacist data suggests this ratio can be as high as 25.5 per 10,000 as reported in Malta, almost double that of Australia, however, in turn, the Australian ratio is higher than that reported for either Canada or the United States of America, i.e., 10.4 and 9.62 per 10,000 respectively, in the most recent data from the World Health Organisation.[7]

At a local level for any country, two factors driving workforce participation and distribution may be gender representation and geographical variability, and both of these are pertinent issues for Australia. For example, current data highlights that in Australia, 64.1 % of the pharmacist workforce is female.[8] Research indicates that while progress has been made in harmonising gender balance in leadership positions within key pharmacy organisations in Australia,[9] it remains unclear whether women in the pharmacy workforce are as represented in pharmacy leadership globally, or have the same continuity of roles in settings where they work, or indeed, equitable terms of remuneration with their male counterparts outside of key professional organisations.[10] Data from several countries suggests that while female participation in the pharmacy workforce is high, they are less represented in ownership and managerial roles.[11] Organisations such as the International Pharmaceutical Federation (FIP) suggest that a better understanding of the factors which influence career choices for females is required to inform recruitment and retention strategies for the pharmacist workforce.[12,13]

The second significant workforce trend is geographical distribution. In Australia, the distribution of health service and workforce are analysed and classified by the Modified Monash Model (MMM).[14] This is a geographic classification system compiled using the Australian Statistical Geography Standard – Remoteness Areas (ASGS-RA) framework to classify seven levels of remoteness labelled as metropolitan areas, regional centres, large, medium and small rural towns, remote and very remote communities.[15] These classifications aid in policy making and program implementation. The literature highlights an ongoing pattern of pharmacy workforce shortages in remoter areas of Australia.[16] Currently in Australia, less than 5 % of pharmacists across all states are working in areas classified as rural, remote or very remote, whilst 79.5 % of the workforce are located in metropolitan areas.[8] The inequity of pharmacist distribution in Australia aligns with the health workforce shortages associated with poorer health outcomes outside of metropolitan areas.[17] This undersupply also places an increased burden on pharmacies in areas with a lower population density to provide professional services in their communities and is now amplified by the increase to scope of practice for Australian pharmacists for meeting future pharmacy workforce demands and predicted shortfalls in supply.[11] A contemporary, in-depth and nuanced understanding of the factors driving choices for non-metropolitan relocation and career pathways will aid both policy and strategy development for attracting and retaining pharmacists to underserviced areas and with gender equity across roles and remuneration.

To these ends, our research aims to explore the factors which potentially drive pharmacist career pathways and location choices for practice, in a qualitative exercise.

## 2. Methods

Approval to conduct this research was obtained from the Human research ethics committee at the [deidentified].

### 2.1. Study design

A qualitative exploratory approach was employed to investigate factors which affect career path decisions and location choices within the Australian pharmacist workforce.[18] The paucity of research data in Australia deemed the exploratory method appropriate for this study. Using constructivism as an epistemological approach the data analysis was guided by an inductive, interpretive description.[18] Semi-structured interviews were conducted with a purposive convenience-based sample of pharmacists to gain rich, in-depth insights into their lived experiences, viewpoints and attitudes. An interview guide was developed after a comprehensive literature review on health workforce participation and work motivation theories. The interview guide used a cognitive funnelling approach which involved initial probes designed to be easier to respond to with more nuanced and reflective questions sequenced later.[19] Given the literature, some discussion probes focussed on gender and geography issues outlined in the literature, however many broad questions were added to ensure open ended discussions.[20] Early interviews iteratively informed further depth and targeting of question channels in subsequent interviews.

### 2.2. Participant recruitment

After an initial round of purposive convenience sampling from the research team's professional networks a second round was conducted via passive snowballing. In this approach, initial participants, selected purposively based on their known expertise and experience, such as pharmacy sector experience and geographic location of work, were invited to share research participation invitations within their networks in a passive snowballing phase. Whilst this latter phase was included to maximise variability, it was planned that monitoring of participant socio-demography be undertaken and targeted recruitment attempted if there were clear gaps in the participant sample. In this approach, initial participants, selected based on their known expertise and experience, were invited to share research participation invitations within their networks. This approach aimed to achieve a maximally varied sample, representing diverse ages, genders, experience levels, ownership or employee experiences, geographical locations, and workforce sectors.[18]

### 2.3. Data collection

Interviews were conducted between November 2022 and February 2024 either online or by phone and were recorded for transcription and analysis. Transcribed interviews were verified against the recordings to ensure accuracy and complete deidentification. Participants were allocated a unique code by the primary researcher, which was then used to name files and during discussions to support the deidentified data. These codes (denoted by MP. followed with the unique number, gender and location) are used in participant exemplar quotes in the results section of the manuscript to illustrate the thematic derivation. All interviews were conducted by the same interviewer (primary researcher; female; experienced community pharmacist and academic) using the before mentioned semi-structured interview guide.

### 2.4. Data analysis

Analysis of transcribed interview data was facilitated through use of the NVivo software (Version 14). The research team, comprising members from different health disciplines, engaged in regular consultations to establish and refine themes. Triangulation was achieved through reviewing transcripts with audio recordings and field notes.[21]

The thematic analysis process was multi-stepped,[22] and involved: familiarisation with the data, generation of initial codes, searching for themes, reviewing themes, defining and naming themes, and finally, writing the report.

### 2.5. Ensuring trustworthiness

To ensure trustworthiness for all stages of this qualitative research

the criteria described in Table 1 was adopted.[23] The research team, trained in health disciplines including pharmacy and psychology, allowed for diversity in data analysis. To ensure clarity and comprehensive reporting, the consolidated criteria for reporting qualitative research (COREQ) framework was used.

Interviews were conducted until data saturation was achieved, defined as the '*data collection point at which new data repeated what was expressed in previous data*'.[25]

## 3. Results

Interviews were conducted via Zoom[21] or telephone,[1] with an average duration of 59 min (ranging between 27 and 102 min). Of the 22 interviews, 21 had usable recordings which could be analysed.

The participants displayed variability in age, primary gender, practice backgrounds and geographical location with participant characteristics depicted in Table 2.

The analysis identified three key themes which influenced career choices. In general, the interviews yielded rich data on participants' career trajectories and the varied factors that influenced career choice and decisions on directions and key issues that affected career direction and changes.

**Theme**

**1: Career initiation – choosing pharmacy as a profession**

1.1 *Primary decision to study pharmacy at university*

Pharmacy as a career choice was usually a decision influenced by family/friends rather than school career advisors, who reportedly often discouraged pharmacy. Gender appeared to be a key influence with many female participants suggesting that flexible hours were an attractive option in the context of managing families. The lower duration of training commitment towards registration and employment was also viewed positively by some participants, especially in comparison to careers in medicine. Employability, with defined career options and reasonable remuneration led to many favouring pharmacy as a career decision. Several participants cited inherent interest in key subjects such as chemistry and biology, anatomy etc. that led to their choice for pharmacy. Altruism, i.e. a desire to help/care for people, motivated some participants towards a pharmacy career choice. Finally, in some cases, actual exposure to pharmacy practice via part time jobs as pharmacy/shop assistants or experiential placement during school years appeared to have whet appetites for pharmacy as a career.

> *"I knew that I didn't have the staying power for medicine, although I would have loved to do it. I didn't think I could study for that many years. I tossed up between physiotherapy and pharmacy… I remember my father saying he thought physiotherapy would be physically demanding and that pharmacy would be a great profession for a female because you can have children and work part time." MP.08.female.metropolitan.*

Several participants mentioned the choice to train in pharmacy had been based on the degree offering being available at a specific institution. For example, some participants preferred to study only at nearby rural or regional campuses, whereas others sought a change of environment to move elsewhere.

> *"I was limited by the fact that … we didn't have a lot of money, so the nearest [University] was my option, I had to choose something at that uni, … bachelors science, arts, commerce, and the two professions they had were pharmacy and law." MP.20.female.rural.*

> *"I started working in a pharmacy … while a student in pharmacy. That really gives you a better picture. I couldn't recommend that highly enough to people studying at the moment. It's almost like you get your own work integrated learning as you're going."MP.21.female.rural.*

*1.2 Pharmacy career choices post registration*

In Australia, the traditional pathway for commencing mandatory internship hours typically begins following the conferral of the degree

**Table 1**
Factors that ensure rigour in the data collection and analysis.

| | | |
|---|---|---|
| Credibility | Research team training | Completion of training of interviewer (R1) by 2 experienced researchers (R2 and R3). *This training included practice with framing and reframing non-leading questions for participant clarity, conducting a uniform interview and interview steering skills.* |
| | Corroborating interview data | Use of field notes during and immediately after interviews. |
| | Analysis and data collection | Team discussion around any interviewer biases – e.g. during independent review of codes by all three team members. |
| | Triangulation | Review of transcripts against audio recordings to verify accuracy and triangulating to the field notes during coding. Diversity of research team facilitated effective data triangulation. *This diversity involved variation in experience (2 more experienced researchers BS, LS), demographics (one researcher from a culturally and linguistically diverse background different, BS) profession (two pharmacists JB and BS) and one psychologist LS) and management experience (one researcher with experience in managing pharmacies JB, one with management qualifications).* |
| | Peer debriefing (consultation) | Independent coding of selected transcripts was initially undertaken by two members of the research team (R1, R2). Once complete the researchers jointly undertook a line-by-line comparison of coded text for each independently coded transcript.[24] Where coding differences were linguistic, they were usually resolved by discussion, or by lexicon consultation for a best fit name. For other ideas-based differences, the two coders followed the above process, referring to the third researcher (R3) to arbitrate if the coding difference was not resolved. The initial coding tree thus created was iteratively refined by agreement at frequent meetings between the main coder (R1) and the rest of the team (R2, R3).[24] |
| Transferability | Maximum variation | Broad representation in participants to achieve maximally varied sample and facilitate drawing credible conclusions from participants real world experience. |
| | Detailed methodology | Establishment of a detailed outline of methodology for data collection and analysis to enable a comprehensive interpretation of findings evidenced with illustrative codes. This process facilitated "repeatability and transferability" |
| Dependability | Independent review | Discussion of the results between all research team members to find consensus. |
| | Verification of Analysis | Verification of thematic structure by team examination of underlying coded code feeding into given themes. |
| Conformability | Illustration of data derivation | As above. |
| | Reflexivity | Several rounds of team discussion and white board charting and data-re-examination matching to allow reflexivity during analysis. |
| | Maintaining audit trails | Maintenance of an audit trail within NVivo which was used to cross check by other research team members. |
| Authenticity | Uniformity | Application of uniform processes to conduct this research and ensuring clarity of research aim for all participants to obtain fit-for-purpose data. |

(*continued on next page*)

**Table 1** (*continued*)

| | | |
|---|---|---|
| | Non-Uniformity | Inclusion of non-confirming evidence in the analysis and presentation wherever relevant. |

**Table 2**
Participant demographic characteristics ($n = 21$).

| Characteristics | Categories | Number (n) | Proportion of sample % |
|---|---|---|---|
| Gender | Female | 17 | 81 |
| | Male | 4 | 19 |
| Age | 21–25 | 2 | 10 |
| | 26–30 | 3 | 14 |
| | 31–35 | 2 | 10 |
| | 36–40 | 0 | 0 |
| | 41–50 | 3 | 14 |
| | 51–60 | 6 | 28 |
| | 61–70 | 5 | 24 |
| Diversity | Culturally & linguistically diverse | 3 | 14 |
| | First Nations Peoples | 0 | 0 |
| Current location | Metropolitan | 9 | 43 |
| | Rural | 7 | 33 |
| | Remote | 5 | 24 |
| Higher Education | Pharmacy Degree | 21 | 100 |
| | Other degree or Higher degree | 7 | 33 |

Legend Table 2: 'Other degree or higher degree' refers to a degree completed after a qualifying BPharm or MPharm degree, for example other degree,(e.g. other than pharmacy) or a Master's or PhD.

that qualifies students towards a registration pathway.[26,27] Most participants regarded the choice of internship location as critical, as it significantly influenced subsequent career paths (Fig. 1).

Positive perception of preceptors, long-term employment offers, supportive learning environments, networking opportunities, and variegated role exposures (e.g., compounding and clinical rotations) seemed to have influenced many participants' decisions for choosing internship sites. Participants who were either managers or pharmacy owners stressed that attractive internship packages were crucial to attracting interns, particularly in rural areas. They recommended strategies such as scholarships, organised accommodation, tax or student loan relief, and enhanced clinical development opportunities to draw interns to rural pharmacy. Participants with recent internship experience confirmed these factors influenced their career decisions.

> *"I really wanted to be going another way, but I had this contract that said I had to go back for 2 ½ years and I did. I don't regret it, but I think it was very clever on their part to lock in a young pharmacist with this contract, then I had no ability to choose other than that."MP.04.female.rural.*

**Theme**
**2: Career development, satisfaction and retention**

The second theme which emerged focussed on career satisfaction and reasons for staying in a job or seeking change as described below.

*2.1 Satisfaction*

When asked about their level of satisfaction working as a pharmacist, most participants described a range of factors which reduced satisfaction and consequently affected retention. These included high level of responsibility, overwork, administrative burden, compromise of personal standards, loss of interest, and burnout. Participants also described factors which improved their satisfaction including role-diversity, workplace factors such as good management and supportive teams, the ability to influence positive health outcomes for patients and strong relationships with communities served. Community based health programs appeared to provide community pharmacists with opportunities to promote local health and enhanced professional fulfilment.

> *" I wasn't overly happy in the end… too much responsibility had fallen on my shoulders… and I decided to leave. I think that there's a lot wrong with the industry but I really love the environment that I work in now and my satisfaction's quite high with that workplace specifically" MP.04.female.rural.*

> *"Up and down is a great descriptor. Some days, I absolutely love it. Some days you come home and you're really exhausted … We're very one on one with customers and patients, so it can be quite intense. I do love that aspect of it as well… to actually get to know them and have a conversation with them." MP.13.female.rural.*

Early career participants listed having mentoring in pharmacy management, business decision-making, and specialised clinical skills provided by their employers as motivators to commit to a job. Participants who were employers corroborated this by noting that employees

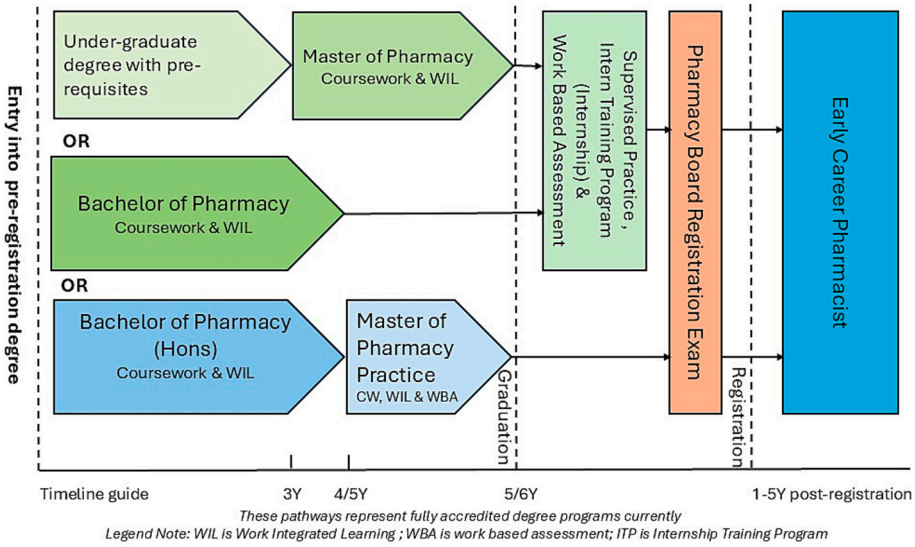



**Fig. 1.** *From Enrolment to Early career – Australian pharmacy registration pathways.* Adapted from Pharmacy Board of Australia. Graduates of Australian programs. Available online at: https://www.pharmacyboard.gov.au/Registration/Graduates-of-Australian-programs.aspx accessed 4th Aug 2025.[27] and, Australian Pharmacy Council, fully accredited degree programs as at 18 March 2025. Available online at: https://www.pharmacycouncil.org.au/education-provider/accreditation/pharmacy-degree-programs-australia/accredited-pharmacy-degree-programs/ Accessed 6th August.[26]

who sought learning challenges beyond routine roles were often lured away to hospitals and clinical roles. They welcomed changes such as an expanded scope of practice for staff retention as they felt that the 'clinical' aspect of routine community pharmacy work had been undervalued in the past.

*"… pharmacies that want to be clinical, think scope of practice … we run a real risk of losing our guys because hospital is perceived to be more clinical." MP.03.male.rural.*

*" Rural pharmacy is very clinical, and there's often lack of doctors, lack of allied health, and you get thrown into that makeshift role that you'll be the first person they come and talk to. It gives you good opportunity to implement professional services and other programs that build that bridge of 'I can't see a doctor for four weeks, but I have a problem now. …" MP.12.male.remote.*

Agility was evident in the participant sample, with some reporting starting out in community pharmacy or hospital roles, and switching from one to another, when bored or frustrated.

*"I got very disillusioned with hospital. I love the clinical side of it, love the social side of it, love the patient side of it, but hated bureaucracy with a passion, which is probably good because that drove me back to (community) pharmacy." MP.03.male.rural.*

*2.2 Ongoing career and professional development*

A commitment to further development was evident in the data. Most participants spoke of seeking or having sought opportunities for postgraduate study to extend their knowledge. Examples were a diploma in hospital pharmacy or specialisation such as vaccination or accreditation to conduct home medicines reviews (HMRs). A small number of participants continued to higher degrees in research and pursued academic pathways rather than a hospital or community pathway. Despite this thirst for skill/knowledge acquisition, the costs of training sometimes appeared to impede uptake. Participants who were managers also noted that while conferences could incentivise staff, their associated costs were a barrier and sometimes their employee pharmacists perceived these as leading to low uptake as they were seen as extra work.

*"… I wanted to learn more and do more, and it was impossible …. I was really frustrated that pharmacists were not given the opportunity to do the things that I really thought pharmacists could do … So, I went off and did a PhD while I worked at the Hospital." MP.19.female.metropolitan.*

*2.3 Professional progression – motivators and barriers*

Participants also described finding career support through networks of pharmacist colleagues and other health professionals. Most participants reported that interaction with pharmacist colleagues was particularly beneficial in early career stages, contributing to opportunities, shared learning and morale. For some, engaging with other allied health professionals enriched their experience in new communities through shared experiences, mutual respect, social opportunities, and positive patient outcomes. Several participants highlighted the impact of roles in pharmacy organisations, particularly in representative or leadership positions, on their career development.

*"I found that every opportunity I've had here actually came through someone knowing someone who knew someone, and that's the way that doors open." MP.21.female.rural.*

*"… it wasn't so much about the topics that were presented, but it was the networks that you made. … I think if a student had one or two good experiences, say at a conference or a collaborative placement, it would improve morale…." MP.07.female.metropolitan.*

Participants reported that remuneration was not a primary determinant in career decision-making, rather, factors such as job satisfaction, lifestyle preferences, and alignment with community values were perceived as more influential. However, employer participants noted that remuneration was crucial for attracting candidates and offering relocation expenses, accommodation allowances, and higher wages were advantageous for rural pharmacy employers. It was suggested that government incentives should support pharmacy recruitment in rural areas, similar to other professions. Further, many participants noted that the Pharmacy Industry award rate (this being a government set and legally mandated minimum wage for each job type in Australia) did not accurately reflect market rates and pressures significantly impacted job recruitment.

*"…money wasn't the key driver that people were interested in. What they were doing and the type of work that they did, not so much the money…. They would be happy to go to a regional, rural area and use their training to provide a good outcome for people, so they were happy around lifestyle and the work, more than the money." MP.19.female.metropolitan.*

*"The award is pointless. The award does not represent what the majority of the industry is doing. The fact is that rural pharmacists probably can command a premium because there's not enough of them and so market forces take care of that." MP.02.male.metropolitan.*

*2.4 Mentoring, leadership and investing in pharmacy*

Participants described mentorship as essential during their early career challenges of transitioning from academic study to full-time practice, with experienced mentors providing guidance on everything from day-to-day management and human resources challenges to strategic decision-making, thereby instilling confidence and fostering problem-solving skills. Concurrently, supportive management structures encouraged them to share ideas, develop autonomy, and aspire to leadership roles and alleviate the difficulties inherent in early career experiences. This supportive foundation accelerated pathways to management positions and ownership opportunities.

*"I bought the pharmacy when the owner I was working for was ready to retire, and he approached me and asked if I would be interested in purchasing." MP.11.female.metropolitan.*

*"We actually ran scholarships which helped… got two business partners out of those… when we've had pharmacists that we really like and trust and don't want to lose them, we've offered them a partnership to keep them." MP.01.female.rural.*

**Theme 3: Gender, geography and other life issue**

*3.1 Gender*

Gender considerations featured heavily when selecting pharmacy for university study, with pharmacy jobs deemed 'safe and suitable' by females/their families as described in Theme 1. Further, participants described issues such as lower female gender representation in business and leadership roles and specific challenges faced by women, and culturally-, linguistically- or gender-diverse pharmacists. Participants noted that women faced challenges such as balancing family responsibilities with long workdays, need for flexible work hours, availability of childcare and barriers to career advancement due to male hierarchy in some contexts. However, several participants, while they perceived a male predominance in senior management positions in some organisations, also noted that the pharmacy workforce had a female majority regardless of geographical locations and identified empowered female pharmacy owners and professional leaders who exhibited strong leadership capabilities.

"*At a large chain there was more importance for males. The owners only appreciated male workers … and managers were always males. Females were never given the opportunity … they changed to other pharmacies… where they had the opportunity to be pharmacist in charge." MP.15.female.metropolitan.*

Participants emphasised that proximity of their workplace to family was critical, especially for those with or planning young families, as it helped balance work and caregiving while addressing health, welfare, or educational needs. In contrast, some participants appreciated being at a

distance from family and valued independence. Relationship breakdowns, bereavement or health issues appeared to have necessitated change in location or career direction in some cases. Career decisions were shaped by a partner's career, sometimes necessitating relocation or staying in location.

*"We loved it there, but we missed our family, so we moved back home, and then it was all about just following my husband and his career, MP.16.female.remote.*

*"Mostly because of our children…all three require additional support, and that was hard to get … to see a pediatrician was quite a lengthy wait, whereas here, you drive for half an hour and you see a pediatrician quite quickly… we felt that there were more opportunities for their schooling, university, and job opportunities as they got older." MP.22.male.remote.*

### 3.2 Geography

Many participants emphasised the importance of strong community relationships, noting experiences in new communities ranged from feeling welcomed to feeling daunted—especially in rural areas where balancing community ties with commercial decisions proved challenging. Cultural factors also shaped participants' sense of community and career choices, particularly during transitions from supportive to unfamiliar environments. Additionally, work location decisions were influenced by factors such as place/country of origin, university attended, work placement experience, accommodation or childcare availability, and commuting time.

*"It's very, very rewarding. I feel like you may get to know your patients on a deeper level and may like that strong community feel and so it might just be that little bit stronger, that sense of community." MP.16.female.remote.*

*"If we have someone who comes here who practices a different religion … if we want them to stay, we need to make this feel like home and like they're not outsiders." MP.05.female.remote.*

*"… I think that's such a daunting aspect as well… you're this 22-year-old ready to go and start living your real life and regional areas just don't have as much to … I think that's big." MP.04.female.rural.*

Several participants also noted cost of living differences between urban and rural areas and how these impacted decisions to move or remain in a particular location. Finding stable accommodation, available and affordable rentals, or purchasing property were often seen as challenges to changing geographical areas. Female participants indicated that access to childcare positions in rural settings was a challenge when relocating. When choosing a new geographical area, participants described fear and discomfort, particularly among females, associated with living alone. Participants noted that often their parents expressed concerns for young pharmacists moving to unfamiliar locations, considering the availability, quality, and security of accommodations, and broader safety issues within some communities, such as crime rates, drug trade, and general roughness.

*"It's a beautiful place to work and live… a lot of community… everything you could possibly want to be part of, but housing, cost of living and childcare are the three biggest things that are stopping people moving here." MP.17.female.rural.*

Some owner participants highlighted the advantages of accepting partnerships, such as combining management skills with other partners and fostering growth in management and leadership skills overall.

*"I thought, I don't want a partnership. That would be giving up too much freedom…. I quickly realised that it's not. Having a fair and equitable partnership, you're not giving up freedom, you just get access to other people's skills and talents." MP.02.male.metropolitan.*

*"I'm managing partner here … we look at pretty much all operations in store, all the database, the management of staff, HR recruitment, then also looking at low level accounting, business handling and … currently I look after recruitment and retention for the group, as well as the professional services role." MP.12.male.rural.*

## 4. Discussion

A motivated, equitably distributed and skilled pharmacy workforce is critical for improved health outcomes in any nation. In Australia, current pharmacy workforce issues have been explored primarily through workforce statistics or with a focus on geographically equitable distribution rather than an explorative lens. Recent statistics evidence low growth rates and aging of the Australian pharmacy workforce, which necessitates a contemporary exploration of workforce issues.[21] Our rigorously conducted qualitative study uniquely explored the perspectives of twenty-one Australian pharmacy professionals across their career trajectories, focussing primarily on factors that influenced decisions to choose pharmacy as a career, invest in professional and career development and career progression. Taking up pharmacy as a career choice when entering university was mainly influenced by aptitude, convenience of training institute location, employability, gender-suitable work configuration and flexibility as well as work exposure during school-years. Early career pathway decisions relied on job satisfaction fostered via mentoring, availability of specialised roles, employee benefits and work environments. Family or personal circumstances, connectivity with communities, or access to facilities impacted career decisions. Decisions to embark on leadership or ownership mainly relied on facilitative mentors and role-models. This study therefore offers in-depth and nuanced insight into factors that Australian pharmacy leaders and policy makers need to capitalise on or address to ensure a healthy, equitably distributed and motivated pharmacy workforce.[28] The factors influencing the decision to study pharmacy in university in our sample of pharmacists were, in general, much the same as those reported by an Australian study conducted with pharmacy students a decade ago,[29] and very similar to those reported internationally from a range of countries.[30] Intellectual reasons included an interest in science, whilst instrumentality was evident given that many participants mentioned future prospects such as stable employment, defined jobs and reasonable remuneration as playing a role in course selection. Female participants noted their preference for this career was based on flexible work options that pharmacy offered; this has also been observed in other research internationally.[10] Our participant sample did not, however, report a high level of entrepreneurial spirit or altruism as reasons for choosing pharmacy, though the latter was mentioned by some participants. This is different to results showcased in an older New Zealand questionnaire-based study.[31] Altruism has been reported to be in decline in other professions such as nursing[32] and medicine,[33] though this trend is not, to the best of our knowledge, reported in pharmacy. Instrumentality (i.e. expectation of rewards) in career choice was quite evident in our sample. Clearly, in attracting new recruits to study pharmacy, benefits such as graduate employability, remuneration and other benefits need to be highlighted.

Motivators for continued engagement with pharmacy jobs reported by our pharmacist sample fit classic work theories. Herzberg's two factor theory is one such theory which posits that two key factors drive career satisfaction, namely *hygiene factors* – which must be addressed to prevent dissatisfaction, and *motivating factors* that enhance satisfaction.[12] Our data clearly indicated that a range of hygiene factors impacted satisfaction – including flexible work arrangements, remuneration and workload, leading to dissatisfaction if not offered.[12] Motivating factors evident in our data included facilitative mentoring, training about business management, opportunities to have diverse clinical roles, opportunities for self-development and a feeling of 'belongingness' with communities served. In an elegant piece of work, Thai et al., 2024, undertook a discrete choice experiment-based survey to explore trade-offs that Australian pharmacy degree holders are willing to make between

*motivators* and *hygiene* factors, especially in the context of employment preferences.[34] Interestingly the experiment revealed ($n = 628$ pharmacy degree holders) that in the hospital pharmacy sector, motivators such as specialised clinical role opportunities prevailed, whilst in the community pharmacy sector, geography (rural versus urban) and salary were key hygiene factors that influenced career/employment decisions.[34]

The above findings are also clearly reflected in our data. As discussed by our participants, community pharmacy is not regarded as a career which offers complex clinical decision making or roles and often leaves those with a clinical thirst feel thwarted and leaving community pharmacy for more clinical pastures. As Thai et al. 2024[34] discuss, expanding the scope of practice for more clinically challenging roles such as chronic disease management, medication reviews and prescribing may enhance satisfaction with and retention in community pharmacy careers.[35] Similarly, Herzberg's two factor theory was also used to study job satisfaction of pharmacists in four Saudi hospitals – with results suggesting that employees, especially early career employees, value *motivating factors* (recognition, career progression opportunities) whilst managers rank *hygiene factors* (salary, and employment benefits) higher. In our sample too, participants who were employers considered salary and benefits such as accommodation in rural settings as perquisites and did not discuss personal investments into mentoring new employees to a great extent.

One of the initial queries that were of focus was the issue of 'gender' equity in pharmacy. Although two thirds of the Australian pharmacy workforce are female, there appeared to be a perception that female pharmacists are less likely to move towards ownership/management roles or leadership roles, though participants could cite examples of inspirational women pharmacy leaders. However, at least in terms of leadership, this perception is not accurate, given that a 2024 study reported that nearly 60 % of leadership positions in Australian pharmacy organisations are held by females.[36] However, in the private sector arena of community pharmacy, it is reported that only 34 % of pharmacy owners identify as female.[37] Overseas research also indicates that within the pharmacist workforce, females are reported to have less appealing jobs and lower wages than male counterparts.[38] As identified in our data and highlighted in the literature,[39] the situation can be remedied by heavier investment in motivating factors as defined in the two-factory theory e.g., leadership development, entrepreneurship training, management-upskilling. Merely taking pride in proportional majority of females in the pharmacy workforce or using successful female pharmacists as 'showpieces' for the gender equity in the profession is not sufficient and merely tokenism.

Many participants voiced concerns about a high workload, particularly administrative, eventuating in possible burnout. Strategies that may be deployed here could include better use of technology with robotic dispensing and artificial intelligence. Workload-redistribution, for example harnessing the skills of pharmacy assistants and technicians[40,41] would be a parsimonious step forward, given technological innovations may be expensive and futuristic. Resilience training and better preparation for job-readiness remains a responsibility for educators, one that is perhaps not being fully deployed.[42] Given pharmacists in many developed countries have emigrated from abroad, supporting these overseas trained pharmacists, particularly when they are employed in less diverse environments, or lack professional social support strategies, are also areas that need to be addressed. This is especially relevant in Australia, with its highly diverse social fabric. Such strategies would serve other factors, as several participants expressed concerns about relocating to unfamiliar areas, experiencing loneliness, and lacking access to essential facilities.

Whilst our study offers in-depth insights about career choice and trajectories, some limitations should be acknowledged. The representativeness of participants in this study was broad in age, and in diversity of experience and location, however the ratio of female to male participants was skewed, and there was also an absence of gender-diverse participants. Further, more than half of participants were aged fifty years or older, hence there may have been some potential for recall bias in recounting early career journeys. Other limitations include not inviting participants who had left the pharmacy profession introducing the possibility of survivorship bias in the data. It may also be noted that the research team comprised only female researchers, which may have influenced participant responses or the interpretation of data, particularly in gender-sensitive contexts.

These limitations highlight the need for future research to sample more broadly, for example aiming for participant diversity across the spectrum of varied gender identities, cultural backgrounds, those living with a disability or those who have chosen to leave the profession. This would allow researchers to further explore key drivers for workforce development, motivation and retention, and enhance the richness and applicability of findings across these broader contexts.

## 5. Conclusion

Our findings underscore a pressing challenge within the Australian pharmacy workforce, notably marked by staff shortages, retention struggles, reduced participation, an aging demographic, and limited coverage in rural areas. Addressing these multifaceted issues requires a comprehensive, multi-level strategy. At the macrosystem level, policy reforms that recalibrate remuneration structures and service fees are essential to underpin fair compensation and professional sustainability. At the meso-institutional level, professional organisations and educational institutions play a critical role in cultivating leadership and fostering inclusivity, thereby equipping current pharmacists, at the micro system level, with vital skills in staff development, workforce environment management, and business acumen—particularly in areas such as technology adoption and role redesign. Collectively, these initiatives provide a strategic blueprint for mitigating workforce challenges and strengthening the resilience of Australia's pharmacy sector.

## CRediT authorship contribution statement

**Jocelyn Bussing:** Writing – review & editing, Writing – original draft, Project administration, Methodology, Formal analysis, Data curation, Conceptualization. **Lorraine Smith:** Writing – review & editing, Supervision, Formal analysis, Conceptualization. **Bandana Saini:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Formal analysis, Conceptualization.

## Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work the author(s) used Microsoft Copilot Agent in order to improve readability and condense content. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

## Declaration of competing interest

The authors have no conflicts of interest to declare.

## Acknowledgements

All pharmacists who participated are sincerely acknowledged for their time, as the study had no funding with which to reimburse participants. The Sydney Pharmacy School, Faculty of Medicine and Health the University of Sydney is acknowledged for providing infrastructure support for the primary author to complete this research as part of her Master of Philosophy research project.

## Appendix A. Semi structured Interview Guide for Pharmacists and Interns

Interviewee: _____

Date & time of Interview: _____

Consent form received: _____

### A. GENERAL INTRODUCTION

*This research study will explore the factors which influence participation and distribution of pharmacists in the workforce across different geographical locations in Australia. Data suggests there is significant disparity in the distribution of the pharmacy workforce across metropolitan, regional and rural areas. The distribution of the workforce is key to improved health care delivery for all Australians. This exploratory workforce analysis aims to actively identify factors which influence pharmacist career pathway choices and locations of practice.*

### B. DEMOGRAPHIC DETAILS

*First, we will just ask some background details about you, so we can better understand which questions may apply to you, and also later to see how different groups of participants respond.*

| | |
|---|---|
| **Gender** | |
| ¨Female ¨Male ¨Non-binary ¨Prefer not to say ¨Other | |
| **Age:** | |
| ¨21–25 ¨26–30 ¨31–35 ¨36–40 ¨41–50 ¨51–60 ¨61+ years | |
| **Family background:** | |
| Are you from a Culturally or linguistically diverse background? | If yes, please describe how you identify yourself. |
| Do you identify as Aboriginal or as a Torres Strait Islander? | If yes, please describe which Country or Land you identify with. |
| **Pharmacy Qualifications: Please describe your qualifying degree:** | |
| BPharm/BPharm (Hons)/ BPharm and Management/ MPharm/ Pharm D other | |
| **Please summarise your experience since completing your qualification.** | |
| **What are your current roles and responsibilities?** | |
| **What is the location of your current workplace?** | Suburb and postcode. *Will be classified based on rurality and deidentified in analysis* |

### C. MAIN INTERVIEW GUIDE

*Now we would like to ask you about specific career and work choices you made and factors that influenced these.*

| KEY QUESTION | PROMPTS | Time |
|---|---|---|
| What influenced you or led you to choose a career in health, specifically in pharmacy? | • Preference for pharmacy | 2 min |
| Would you mind outlining your career journey thus far? | • Placements, internship, first offer current role, other roles | 2 min |
| Would you please describe factors or issues which have impeded your desired career directions in this journey? | • **Personal reasons:** Family, family stage/partner's preferences<br>• **Support network**(s): Social issues /social circles/ members of ethnic community groups present in rural/regional areas<br>• **Opportunity:** competition between career choices in rural/regional settings/ limited opportunities in one role versus others | 2 min |
| Could you please describe factors or issues which have facilitated your desired career directions in this journey? | • Explore reasons if not covered above | 2 min |
| How would you describe your professional satisfaction with your overall career? | • Explore level of satisfaction | 5 min |
| | • Explore at what points different choices would have been made or could be made. | 5 min |
| Overall (***link to participants previous answers***), what is your opinion about being part of a rural/regional pharmacy workforce/workplace?<br>OR<br>What would your opinion be about a future career the in rural/regional pharmacy workforce/workplace? | • Explore why choices for rural/regional have been made or would be made/ not made<br>• Explore Retention<br>• Explore Satisfaction | 5 min |
| How would the rural/regional pharmacy work structure (community/hospital/other) need to be reformed to make it a 'desirable' option for graduates? | • Explore -Payrates/rural-regional separate award rates;<br>• Specialty accreditation/specialty recognition (eg Canberra Taskforce)<br>• Compulsory placements with scholarships/training to include rural health (eg veterinary science, agricultural science etc. specialty topics covered in training)<br>• Better integration with other health services | 5 min |

(*continued on next page*)

(*continued*)

| | | |
|---|---|---|
| | • Industry or government incentive for top 20 % of students to elect rural/ regional employment. | |
| Moving the discussion towards gender issues in the rural/regional pharmacy workforce, what do you feel is the current gender distribution in the rural/regional pharmacy workforce? | • Explore general observations | 2 min |
| What do you see as opportunities and barriers to management and ownership in the rural/regional workplace for women pharmacists (pharmacists who identify as women)? | • Explore opportunities<br>• Explore barriers | 5 min |
| How would the rural/regional pharmacy work structure (community/hospital/other) need to be reformed to make it a 'desirable' option for female graduates? | • Request suggestions (link to barriers/opportunities above) | 5 min |
| How do you feel have post covid preferences changed the desirability of rural/regional pharmacy work in the profession? | • Explore preferences for - work/occupational geography;<br>• Preferences based on social factors – family/schooling/work/life balance;<br>• Could this affect gender diversity in the rural/regional pharmacy workforce? | 5 min |
| This research is exploring the workforce balance and distribution in the pharmacy profession between urban and rural/regional settings. This includes the diversity of gender, experience, backgrounds etc. across these locations. Would you have any comments or ideas not covered above that you would like to share on this topic? | | 5 min |
| D. **CONCLUSION** | | |
| *Thank you for your time and willingness to participate in this interview. The research will provide important elements to explore current and shape future pharmacy workforce strategy.* | | |

## References


1. Bates IJC, Bruno A, Fu P, Aliabadi S. An analysis of the global pharmacy workforce capacity. *Hum Resour Health*. 2016;14(1):61.
2. Al-Sawai AA-SM. Health workforce planning: an overview and suggested approach in Oman. *Sultan Qaboos Univ Med J*. 2015;Feb(15):27–33.
3. Uzman NSA, Pehlivanovic B, Balta E, et al. Enabling positive practice environments for women in science and education with FIPWiSE toolkit. *Pharm Educ*. 2022;22(1): 761–770.
4.. Australian Government. National Medicines Policy [cited 2025 15th March]. Available from: https://www.health.gov.au/resources/publications/national-medicines-policy?language=en; 2022.
5.. WHO. World Health Organisation Health Topics Overview [Available from: https://www.who.int/health-topics/health-workforce#tab=tab_1; 2024.
6.. Pharmacy Guild of Australia. *Vital Facts on Community Pharmacy*. The Pharmacy Guild of Australia; 2021.
7.. WHO. The Global Health Observatory [Available from https://www.who.int/data/gho/data/indicators/indicator-details/GHO/pharmacists-(per-10-000-population); 2024.
8.. AHPRA. *Pharmacist Workforce Snapshot as at 30 June 2023*. 2023 June 2023.
9. Martin A, Naunton M, Peterson GM. Gender balance in pharmacy leadership: are we making progress? *Res Social Adm Pharm*. 2021;17(4):694–700.
10. LDH Consulting. *Women in Pharmacy: The Current Landscape. Internet*. Ottawa,ON: Canadian Pharmacists Association; 2023.
11. Boniol MM, Xu L, Wuliji T, Diallo K, Campbell J. *Gender equity in the health workforce: Analysis of 104 countries*. World Health Organisation; 2019. March 2019. Contract No.: WHO/HIS/HWF/Gender/WP1/2019.1.
12. Herzberg F, Mausner B, Snyderman BB. *The Motivation to Work*. 2nd ed. New York: Wiley; 1959.
13. Judge TA, Locke EA, Durham CC, Kluger AN. Dispositional effects on job and life satisfaction: the role of core evaluations. *J Appl Psychol*. 1998;83(1):17–34.
14.. Australian Government. Dept.of Health & Aged Care. Modified Monash Model [Available from: https://www.health.gov.au/topics/rural-health-workforce/classifications/mmm; 2023.
15.. Australian Bureau of Statistics. *Remoteness Areas Jul2021-Jun2026 [Internet page]*. Canberra: ABS; 2023 [updated 21/03/2023; cited 2024 July 4]. Available from: https://www.abs.gov.au/statistics/standards/australian-statistical-geography-standard-asgs-edition-3/jul2021-jun2026/remoteness-structure/remoteness-areas.
16.. Pharmacy Guild of Australia. *Workforce Capability Project: Chapter 1 – Pharmacy Workforce Supply and Demand*. Canberra: Pharmacy Guild of Australia; 2023.
17. Cosgrave C, Malatzky C, Gillespie J. Social determinants of rural health workforce retention: a scoping review. *Int J Environ Res Public Health*. 2019;16(3):314.
18. Thompson S, Schick-Makaroff K. Qualitative research in clinical epidemiology. In: Parfrey PS, Barrett BJ, eds. *Clinical Epidemiology: Practice and Methods*. New York, NY: Springer US; 2021:369–388.
19. McGrath C, Palmgren PJ, Liljedahl M. Twelve tips for conducting qualitative research interviews. *Med Teach*. 2019;41(9):1002–1006.
20. DiCicco-Bloom B, Crabtree BF. The qualitative research interview. *Med Educ*. 2006; 40(4):314–321.
21. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International J Qual Health Care*. 2007;19(6):349–357.
22. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3 (2):77–101.
23. Guba EGL. Paradigmatic controversies, contradictions, and emerging confluences. In: Denzin NKL, ed. *The Sage Handbook of Qualitative Research*. Thousand Oaks, CA: Sage Publications; 2005:191–215.
24. Coates WC, Jordan J, Clarke SO. A practical guide for conducting qualitative research in medical education: part 2—coding and thematic analysis. *AEM Educ Train*. 2021;5(4). e10645-n/a.
25. Saunders B, Sim J, Kingstone T, et al. Saturation in qualitative research: exploring its conceptualization and operationalization. *Qual Quant*. 2018;52(4):1893–1907.
26.. Australian Pharmacy Council. Accredited Pharmacy Degree Programs [Available from: https://www.pharmacycouncil.org.au/education-provider/accreditation/pharmacy-degree-programs-australia/accredited-pharmacy-degree-programs/; 2025.
27.. Pharmacy Board of Australia. Graduates of Australian Programs [Online] [updated 18th July 2025. Available from: https://www.pharmacyboard.gov.au/Registration/Graduates-of-Australian-programs.aspx; 2025.
28. Jackson JK, Liang J, Page AT. Analysis of the demographics and characteristics of the Australian pharmacist workforce 2013–2018: decreasing supply points to the need for a workforce strategy. *Int J Pharm Pract*. 2021;29(2):178–185.
29. Shen G, Fois R, Saini B. Course experiences, satisfaction and career intent of final year pre-registration Australian pharmacy students. *Pharm Pract*. 2014;12(2): 392–395.
30. Alnahar SA, Mamiya KT, John C, Bader L, Bates I. Experience with pharmacy academic programmes and career aspirations of pharmacy students and young pharmacists-an international cross-sectional study. *BMC Med Educ*. 2022;22(1):444.
31. Capstick S, Green J, Beresford R. Choosing a course of study and career in pharmacy - student attitudes and intentions across three years at a New Zealand School of Pharmacy. *Pharm Educ*. 2007;7(4):359–373.
32. Slettmyr A, Schandl A, Arman M. The ambiguity of altruism in nursing: a qualitative study. *Nurs Ethics*. 2019;26(2):368–377.
33. Al-Rumayyan A, Van Mook WNKA, Magzoub ME, et al. Medical professionalism frameworks across non-Western cultures: a narrative overview. *Med Teach*. 2017;39 (sup1):S8–S14.
34. Thai T, Lancsar E, Spinks J, Freeman C, Chen G. Understanding Australian pharmacy degree holders' job preferences through the lens of motivation-hygiene theory. *Soc Sci Med (1982)*. 2024;348:116832.
35. Slimane NSB. Motivation and job satisfaction of pharmacists in four hospitals in Saudi Arabia. *J Healthc Manag*. 2017;19(1):39–72.
36. Pham TL, Peterson GM, Martin A, Naunton M. Gender balance in Australian pharmacy organisations: are we there yet? *Explor Res Clin Soc Pharm*. 2024;14: 100442.
37. Paoworth JK, Wickens J, Bridges G. The cliff's edge: a student perspective of women's leadership in pharmacy. *J Aust Pharm Students' Assoc*. 2022;1(2).
38. Carvajal MJ, Popovici I. Gender, age, and pharmacists' job satisfaction. *Pharm Pract*. 2018;16(4):93–104.
39. Mousa M, Boyle J, Skouteris H, et al. Advancing women in healthcare leadership: a systematic review and meta-synthesis of multi-sector evidence on organisational interventions. *EClinicalMedicine*. 2021;39:101084.
40. McKeirnan K, Fogarty T-L, Durinck C, et al. Advancing a global pharmacy support workforce through a global strategic platform. *Res Social Adm Pharm*. 2022;18(8): 3448–3452.
41. Sparkmon W, Barnard M, Rosenthal M, Desselle S, Ballou JM, Holmes E. Pharmacy technician efficacies and workforce planning: a consensus building study on expanded pharmacy technician roles. *Pharmacy*. 2023;11(1):28.
42. Cassidy S, Mawdsley A, Langran C, Hughes L, Willis SC. A large-scale multicenter study of academic resilience and well-being in pharmacy education. *Am J Pharm Educ*. 2023;87(2). ajpe8998-272.

# Chapter 4. Discussion

## 4.1 Introduction

### *4.1.1 Overview of research area and relevance to research conducted*

Over the past quarter-century, the global health professional workforce has experienced profound transformation. This evolution encompasses shifts in professional roles, job satisfaction, scope of practice and diversity of employment settings.(1) Key drivers include rapid technological advancements, such as digital health, automation and artificial intelligence,(2) a growing emphasis on equity, diversity and inclusion in the workplace, (3) increasingly complex treatment protocols fuelled by accelerated scientific discovery, (4) rising litigation trends with shifting societal constructs of family, including the emergence of nuclear and single-parent households (5) as well as workforce migration across countries. (6) Collectively these are factors which drive the sustainability of the pharmacy profession.

Traditionally viewed as suppliers of medicines, pharmacists now play a vital role in providing specialised and expanded professional services in an environment of rapid technological innovation. In Australia, this transformation is evident in services such as Home Medicine Reviews (7) prescribing for approved indications, (8) smoking and vaping cessation, (9) chronic disease management and health assessment and screening services. (10) Technological advancements have further reshaped pharmacy operations. Innovations range from simple dose administration aids to sophisticated, automated systems for medication dispensing and packing in aged care settings. (11) Broader electronic health initiatives, such as electronic prescriptions and electronic medical records, (12) have also enhanced efficiency and integration within the

healthcare system. These developments reflect a growing entrepreneurial spirit and a commitment to improving chronic disease management and quality use of medicines. The pace of change in professional scope and technology has been so rapid that it is often seen as disruptive, reshaping workflows, operations and workforce adaptability. (13) Automation, now embedded across hospital and community settings, has prompted a strategic reallocation of human resources. Understanding these changes is essential for preparing the pharmacy workforce to meet future healthcare demands and to ensure pharmacists continue to contribute meaningfully to patient care and system-wide innovation.

### *4.1.2 Focus of research and contribution to workforce development discourse.*

Against the backdrop of rapid professional transformation, there remains a notable gap in research examining the impact of these changes on the pharmacy workforce. As outlined in Chapter 1, existing analyses predominantly focus on quantitative metrics, highlighting workforce shortages in rural areas, projected national shortfalls, a stable trend toward a feminised workforce and concerns regarding retention. (14) This study aimed to move beyond statistical trends to explore, in depth, the factors that may be influencing pharmacists' career trajectories. It investigated motivations for entering the profession, career decision-making processes at early entry points into professional life, job satisfaction and long-term aspirations. Although national data indicates a steady increase in pharmacist numbers, persistent shortages, particularly in rural and remote regions, underscore the need for a more nuanced understanding of career drivers. (15)

The research was particularly timely, conducted after the Covid-19 pandemic, a period characterised by rapid changes in pharmacy practice. Among the most recent changes

is the integration of artificial intelligence into clinical settings, further facilitating the expansion of pharmacists' roles. (2, 16, 17) These developments have introduced new complexities that influence pharmacists' expectations, motivations, satisfaction and perceptions of professional identity and career sustainability (14). Hence our focus on the 'what', 'how' and 'why' of pharmacist career development was especially relevant.

Grounded in established human resources development theories (Chapter 1), the study employed a rigorous and reflective qualitative methodology (Chapter 2) to generate richly themed data. This approach enabled a deep exploration of the *social, motivational* and *structural* factors shaping pharmacists' career choices. Particular attention was given to geographical distribution, the influence of social and professional networks and the impact of intrinsic and extrinsic motivators on workforce engagement. A summary of the links between the thematic findings, foundational theories (Chapter 2,) and the interview guide can be found in Appendix F.

By complementing existing quantitative data with rich qualitative insights, this study offers a more holistic understanding of workforce dynamics in Australian pharmacy. The findings have practical implications for planning strategies, policy development and the design of targeted interventions. Ultimately, the findings of this research could contribute to developing effective strategies for building a sustainable and responsive pharmacy workforce, one that is equipped to adapt to evolving healthcare demands and technological advancements.

### *4.1.3 Our results in summary*

The qualitative analysis of the data revealed three distinct but interconnected themes that offer a deeper understanding of pharmacists' career journeys (Chapter 3). The

first theme, **Career Initiation,** explores the choice to pursue a pharmacy degree, university experience and career choices made upon graduation. The second theme, **Career Development, Satisfaction and Retention,** delves into the factors which either support or hinder professional satisfaction, development of professional skills and knowledge, employment transitions and opportunities for career progression. The third theme, **Gender, Geography and Other Life Issues**, highlights how personal circumstances, such as gender-related decision-making, geographical preferences and unexpected life events, can significantly influence career trajectories. Together, these themes provide rich insight into the complex and evolving nature of pharmacy careers. This understanding is vital for policymakers, strategists, educators, recruiters and managers seeking to strengthen the pharmacist workforce.

Our findings strongly align with global conversations about the pharmacy workforce. A recent international review of nearly 70 publications identified key challenges, such as uneven pharmacist distribution favouring urban areas and a growing predominance of female pharmacists working fewer hours. Additionally, they identify a preference for pre-registration training to occur near trainees' homes. (18) These trends mirror our own data, particularly around what we termed **issues of geography** and **gender**.

Below we present an in-depth discussion of several specific issues raised in earlier chapters, including, but not limited to, 'gender and geography', that should be considered in future workforce planning.

### 4.2 Factors specifically related to gender

A key aim of this research was to deepen understanding of workforce issues affecting the statistically dominant female sector of the pharmacy profession. This focus aligns with policy directives from the World Health Organisation (WHO), which advocate

for improved working conditions in highly feminised occupations, equitable inclusion of women and fair opportunities in terms of career advancement and remuneration.(19)

In our collected data, gender emerged as a defining factor influencing career choice, perceptions of workforce challenges and trajectories of professional progression. Below, we explore specific themes from our findings related to career journeys through the lens of gender, highlighting how these dynamics shape workforce experiences and planning considerations.

### *4.2.1 Choice of profession and flexible work*

Our research underscores the significant influence of gendered perceptions on career choice in pharmacy, with the profession often viewed by participants and their families as a safe and appropriate career. However, this perception merits critical examination. A UK study by Gidman et al, focussing on female pharmacists over the age of 30, a demographic with high rates of part-time employment, identified persistent challenges in balancing pharmacy work with family responsibilities. (20) These included inflexible scheduling, limited access to leave and regulatory requirements in community pharmacies mandating pharmacist presence. Many of these constraints are similarly present in Australian pharmacy settings. Our findings echo these concerns. Structural constraints were consistently described by participants as barriers to both family engagement and career satisfaction, particularly among those working in areas with pharmacist shortages, such as rural and regional pharmacies. Whilst some participants described well run workplaces with multiple pharmacists, these were more commonly found in larger or metropolitan pharmacies. In line with the UK study, our data highlights the need for targeted action by

employers and workforce planners to enhance flexibility, improve access to leave and provide greater support for caregiving responsibilities across all genders.

### *4.2.2 Family support and childcare*

Our research highlighted that many female participants prioritised proximity to family support networks, underscoring the critical role of informal care in sustaining workforce participation rates. Many of these participants stressed the issue of availability of formal childcare places, particularly in rural locations citing long waiting times for availability. This suggestion is borne out with Australian Bureau of Statistics national data (2022), which suggest that caregiving responsibilities significantly constrain women's labour force engagement, with improved childcare access identified as a key enabler. Recent studies by the Mitchell Institute (2022, 2024) further highlight geographic disparities in childcare availability, identifying rural and remote areas as "childcare deserts." (21, 22) Pharmacy employers should be aware of local childcare capacity when advertising for pharmacist positions. Sustainable solutions require active partnerships between employers and communities to support current and future employees. (23) Addressing these structural barriers is vital to improving recruitment, retention and gender equity in pharmacy and the wider health workforce.

### *4.2.2 Leadership, entrepreneurship and safe workplaces – improving conditions and opportunity*

There is extensive literature examining gender-based differences in workforce participation, which has informed key policy directives from the World Health Organisation aimed at improving conditions for women in the global health workforce.(19) Issues such as willingness to pursue leadership roles, (24) reduced

access to entrepreneurial opportunities (25) and gender pay gap (26) are well-documented in the literature and align closely with the findings of our research.

*i. Increase in Leadership representation – equity quota or sustainable change?*

Leadership roles described by female participants in our study revealed not only challenges related to opportunity and sustainability, but also the personal cost associated with such positions. Travel demands, family commitments and particularly the responsibilities of raising children were frequently cited as significant barriers to pursuing or maintaining leadership roles.

Longitudinal research on female leadership in pharmacy in Australia has shown steady progress in gender representation. Early studies reported gradual growth, culminating in 34% female representation in key professional organisations by 2018. (27) More recent research in the post-pandemic era indicates a sharper increase, with female pharmacists holding 58% of leadership roles in 2023, surpassing the original 50% target ahead of schedule. (27, 28) However, as these studies focused solely on representative organisations, there is a clear need to broaden the scope of inquiry to include leadership across all pharmacy sectors - community, hospital, industry and government. (29) Participants in our study emphasised the personal toll of leadership, including its impact on work-life balance and career satisfaction, endorsing the need for support to sustain leadership roles. Further investigation is required to determine whether these leadership positions can be maintained over time and whether satisfaction levels among women in leadership have improved.

To ensure that this progress reflects meaningful change rather than superficial compliance with equity targets, sustained monitoring of leadership outcomes is essential. This includes providing adequate funding, resources and professional

development opportunities to ensure women not only access leadership roles but are also supported to sustain and thrive within them.

### *ii. Diversity and inclusion in leadership - exploring medicine and pharmacy*

The WHO goals for equity for women in health extend across all health professions. Indeed, as emphasised in a letter to the editor of the Medical Journal of Australia, a shift from quota-based approaches to the implementation and evaluation of sustainable strategies that promote equitable and diverse leadership is required.(30) There is obvious alignment in the medical profession, but the authors further challenge that barriers are greater for Aboriginal and Torres Strait Islander women, women of colour or those with a disability, and that diversity emphasises the need to address diversity alongside gender to achieve true equity in medical leadership, in other words gender equity requires an intersectionality lens.

While this intersectional challenge was not clearly reflected in our participant data and is a limitation of the study, it warrants further exploration in the pharmacy context. Specifically, future research should examine diversity and inclusion within leadership across all pharmacy sectors, based on workforce experiences.

### *iii. Entrepreneurship*

There is a growing need to foster entrepreneurship alongside leadership within the pharmacy profession. Participants in this study demonstrated varying levels of entrepreneurial engagement including business ownership and innovative clinical practice or did not pursue opportunities due to personal circumstances. Others reported not pursuing such opportunities due to personal circumstances. Influencing factors included access to mentorship, the nature and location of opportunities and individual considerations such as a partner's career or proximity to family.

Barriers to entrepreneurial and leadership advancement were described as both structural and personal. Structural barriers included male-dominated hierarchies and limited pathways for progression, while personal barriers reflected competing responsibilities and life-stage considerations. Existing literature confirms lower female representation in ownership and management roles, as well as in leadership, as previously discussed.(31) A Canadian Pharmacy Association Journal opinion piece argues that cultivating an entrepreneurial mindset is essential for pharmacists to navigate emerging challenges, including technological and pharmacological advances such as artificial intelligence and pharmacogenomics. (32)

In Australia, entrepreneurship has long been visible in community pharmacy ownership, ranging from sole proprietorships to corporate franchises (Chapter 1). Despite this, research into female entrepreneurial participation remains limited. This underrepresentation reflects broader national trends. Data from the Australian Bureau of Statistics (2023) and a 2024 survey (n=1002) indicate that imposter syndrome affects more women (16.4%) than men (5.8%), potentially undermining entrepreneurial confidence and leadership aspirations.(33) As confirmed by our participants, while some pharmacy groups demonstrate inclusive cultures with visible female leaders, others do not.

To address these disparities, expanding business education and implementing targeted initiatives, such as structured mentorship programs, could help foster entrepreneurship and inclusive leadership, particularly for women.

### *iv. Sexual Harassment, Bullying and Unreasonable Workload in Workplaces*

Workplace management in Australia is governed by legislation that mandates safe working conditions and manageable workloads. However, increasing societal awareness of workplace has drawn attention to the need for targeted improvements,

particularly in gender-imbalanced sectors such as pharmacy and in regard to sexual harassment, bullying and workload equity.

Although no participants in our study (of any gender) explicitly reported experiences of harassment or bullying, this absence is not unexpected. National data indicate widespread under-reporting of such issues across all industries. (34) This raises important questions about how pharmacy workplaces are actually performing in this regard. The 2022 Australian Human Rights Commission survey found that one in three employees had experienced sexual harassment in the preceding five years, yet only 18% of these incidents were formally reported. Furthermore, two-thirds of respondents believed their organisations were not doing enough to address the issue. (34) It is therefore reasonable to assume that under-reporting may also be prevalent in pharmacy settings.

To address this, routine workplace screening, similar to the Medical Training Survey conducted by the Medical Board of Australia, could be implemented in pharmacy workplaces. (35) Such surveys would help identify issues, raise awareness and foster a culture of accountability. They should also include questions about behaviours which may underlie more overt forms of intimidation. Anecdotal reports suggest that unreasonable rostering and excessive workplace demands may also contribute to a hostile work environment.(36). These issues remain largely unexplored in the pharmacy workforce context. Future research should investigate their prevalence and impact. If present, addressing them could play a critical role in improving conditions and subsequently both workplace retention and long-term engagement with the profession.

## 4.3 Discussing factors related to Geography

Initial exploration of this research area revealed a significant disparity in the geographical distribution of pharmacists across Australia (Chapter 1) with metropolitan areas attracting a high concentration of professionals, while rural and remote regions face persistent shortages and referenced earlier in this chapter as being observed globally. Study participants highlighted this as a significant workforce challenge.

Factors influencing work location decisions described by participants in our research included emotional and psychological barriers to relocation, particularly anxiety and apprehension about unfamiliar environments. Practical challenges, such as securing housing, accessing childcare and education and managing commuting times, were also influential in decision-making. Participants' career trajectories were shaped by a complex interplay of personal circumstances, including familial responsibilities, partner's career moves and life events. Proximity to family was identified with location of study and also emerged as a dominant factor for work location choices. Participants practicing in rural areas provided more richly layered perspectives. Their decisions to remain in or return to rural practice were shaped by place of origin, the location of the university they chose to train from and positive rural placement experiences. These findings underscore the multifaceted nature of recruitment and retention challenges, the importance of early exposure and diverse educational experience and highlights the need for locally tailored, flexible workforce strategies.

### *4.3.1 Rural recruitment and educational pathways.*

Early attraction of potential students and flexible education delivery are two initiatives to improve recruitment and retention strategies and address distribution of the

pharmacy workforce. Our study participants, from diverse geographic and educational backgrounds highlighted the importance of recruitment from rural areas and offering rural study options as strategies to address workforce shortages and improve retention. Promotion of pharmacy as a career during secondary education was identified by participants as a key opportunity to engage students early, particularly by those in rural communities. Several participants noted that pre-university experiences, such as part-time work in pharmacies or school-based exposure influenced their decision to pursue pharmacy and that relocation for study was a challenge.

The literature supports the use of rural pipeline programs, both in Australia and internationally, to strengthen the rural health workforce. A recent U.S. study emphasised the value of outreach to rural students to raise awareness of healthcare career pathways. (37). In Australia, while course offerings in rural and regional areas have expanded, authors of a recent audit of health courses also found relocation and travel to regional centres remain significant barriers for both school-leavers and mature-age students, finding only six Australian universities offer accredited pharmacy programs outside metropolitan areas of which five are located in regional centres, one in a large rural town and none in more remote areas. (38)

To attract potential students to pharmacy at an earlier stage, current university-led recruitment strategies should become a collaboration with government and professional bodies to develop initiatives that engage secondary school students, particularly in rural and underserved areas, aiming to raise awareness of pharmacy career pathways.

To improve access to education, structured initiatives by governments and universities should support students in completing registration pathways while remaining connected to rural life. Technological advancements and hybrid teaching models offer

promising solutions that warrant further exploration. For example, the University of Colorado School of Pharmacy in Aurora, USA, has implemented a remote-access PharmD pathway. This model integrates online participation into hybrid on-campus classes, supplemented by periodic in-person skills training and experiential placements, some of which can be arranged near students' remote locations. In this approach, remote students are fully integrated into classroom activities and build relationships with on campus students and teachers alike. Since the program's inception, 15% of students have entered via the remote-access pathway.

Applying these principles to pharmacy education in Australia would require investment into technological infrastructure and hybrid delivery models, enabling students to remain connected to rural communities while completing registration pathways. The shift from a 'concentrated' to a 'distributed' model of education, where expertise and learning resources are accessible remotely, has already shown promise from Commonwealth support in medicine education.(39) Pharmacy education could similarly benefit from Commonwealth and state-level policy support to fund innovative program delivery, including remote learning hubs and flexible placement structures with streamlined access to student funding.

### *4.3.2 Community collaboration and Social Connectedness*

Access to childcare and relocation support have been discussed earlier, but key to sustainable workforce improvement would be local area collaborations between local governments and employers or health care agencies. Participants in our study described the benefits to community connectedness toward improving professional and personal satisfaction.

Collaborative relationships that address both social and healthcare needs are increasingly recognised as vital to workforce sustainability, particularly in rural and

underserved areas. A recent thematic analysis of rural healthcare in Japan identified strong community collaboration as central to reducing social isolation and supporting both patients and health professionals.(40) In Australia, the Pharmacy Community Apgar Questionnaire (PharmCAQ) was developed and piloted using a modified Delphi technique involving rural pharmacists and stakeholders across multiple regions. This tool aimed to identify community assets and capabilities that support pharmacist recruitment and retention, offering valuable insights into how social connectedness, professional support and community engagement contribute to workforce stability. (41, 42)

A deeper understanding of pharmacist recruitment in rural areas, combined with collaboration among local stakeholders and insight into satisfaction and motivational drivers, should inform strategic workforce planning. These elements are essential, not only for improving retention but also for enhancing health outcomes tailored to community needs. Utilising tools such as the PharmCAQ, investing in community engagement and upskilling managers and owners in recruitment and retention strategies will support the development of a socially connected and sustainable pharmacy workforce.

### 4.4 Satisfaction, motivation and workplace culture

While previous sections focused on gender and geographical factors, this section explores key factors influencing pharmacist retention, both to a workplace and to the profession. Drawing on participant insights, four interrelated themes emerged as critical to sustaining a committed and resilient pharmacy workforce: (1) satisfaction, motivation, and workplace culture; (2) remuneration and recognition, including gender-based undervaluation and evolving roles; (3) support during career transitions through mentorship and leadership development; and (4) resilience training as a

strategic educational intervention. Together, these themes highlight opportunities for targeted reform in education, workplace policy and professional development to improve retention and long-term workforce sustainability.

### *4.4.1 Retention through Satisfaction, motivation and workplace culture*

Participants in our study shared both positive and negative perceptions of the pharmacy profession, shaped largely by workplace culture, management practices, and workload (Chapter 3). Participants described two dimensions of satisfaction: (1) employee satisfaction, related to day-to-day work experiences and (2) professional satisfaction, relating to their identity and responsibilities as healthcare providers.

Recent workforce data show that pharmacists had the fifth highest exit rate (8.7%) of 19 health professions. (43) Factors such as burnout, lack of recognition and improved job satisfaction are likely to increase retention. (44) These findings align with broader research across nine health professions, which identified similar drivers of workforce departure: burnout, undervaluation, and diminished satisfaction. (45) Pharmacy-specific studies further emphasise the importance of understanding motivators to support retention and sustainability. (46)

Improving both employee and professional satisfaction requires closer examination of workplace culture and management practices. This highlights the need for targeted training in leadership and human resource management. Educators have an opportunity to embed these competencies early in pharmacy curricula and reinforce them through postgraduate and continuing professional development pathways.

Pharmacy education should incorporate foundational training in workforce dynamics, human resource planning, recruitment and retention strategies, change management and the relationship between geography and health outcomes. These skills are

essential for work readiness and career development, particularly in Australia's diverse practice settings which span from busy metropolitan centres to remote and very remote communities. Well-structured placements are critical for preparing students for real-world challenges and national consistency in placement outcomes, supported by accreditation standards, would enhance training quality. Strengthening management training requirements within the Australian Pharmacy Council (APC) standards should be investigated to further support this goal.

Structured investment in the pharmacy workforce, through education, leadership development and workplace reform, can foster more supportive workplace cultures and improve resilience in pharmacists. Such efforts are critical to enhancing pharmacist motivation and morale, strengthening retention and ultimately improving patient care outcomes.

### *4.4.2 Remuneration - Gender based undervaluation and emerging roles.*

The remuneration of pharmacists remains a critical factor influencing job satisfaction, motivation and workplace culture, particularly in the context of gender-based undervaluation, variable market wages and the emergence of new professional roles.

Participants frequently noted that the Pharmacy Award was not reflective of market rates from as early as internship positions. Minimum pay and employment conditions are determined by industry specific award rates under Australian industrial relations law. Several of these have been prioritised for review due to concerns about gender-based undervaluation, including the Pharmacy Industry award. Findings of the review showed undervaluation was present (April 2025), that modernised classifications were needed and determined a phased 14.1% pay increase over three years. (47)

Unlike other health professions, pharmacists (especially community pharmacists often employed in small private businesses) are often excluded from workforce incentive schemes and rural support programs. For example, the Workforce Incentive Program supports multidisciplinary care in general practice but excludes pharmacists from its allied health category. (48) Commonwealth placement support is available for students in teaching, nursing, midwifery and social work, but not pharmacy. (49) Similarly, Higher Education Loan Program debt relief applies only to doctors and nurse practitioners working in rural areas.(50) Several participants highlighted the need to extend these supports to pharmacists to improve recruitment and retention in underserved regions.

Despite the expanding scope of practice and increasing responsibilities of pharmacists, pay structures must evolve to reflect the complexity and value of their contributions. Drawing on Herzberg's Two-Factor Theory, remuneration is a hygiene factor: while inadequate pay can lead to dissatisfaction, fair compensation alone does not necessarily enhance motivation. However, when combined with intrinsic motivators such as recognition, professional development and meaningful work, remuneration can contribute to a more engaged and resilient pharmacy workforce. Addressing the intersection of pay equity, gender and evolving roles is essential for fostering a workplace culture that supports both satisfaction and sustained motivation.

### *4.4.3 Supporting transitions: Mentorship, Leadership and Management Training*

Participant descriptions of the importance of mentorship were described in chapter 3. Of particular note were times of transition, development of confidence and the positive effect on motivation. Targeted investment in mentorship and management training programs could significantly support these transitions, improve induction into

new roles, contribute to job satisfaction and workforce retention. Evidence from other health professions underscored the value of structured support during critical career junctures.

A systematic review conducted by researchers in the United Kingdom examined the impact of mentorship on first-year doctors and proposed a framework applicable across health professions. (51) The review found that formalised, near-peer mentoring programs led by individuals who had recently navigated similar transitions, provided substantial support in high stress environments characterised by negative workplace culture and burnout and possible failure to transition to this early career stage. The authors concluded that successful mentorship requires standardised program design, mentor training, ongoing evaluation of mentor-mentee satisfaction and socio-cultural awareness.(51) A second study from Singapore explored perceptions of mentorship among health professionals from various disciplines during the transition from academic training to clinical practice. (52) Conducted through interactive workshops, the study found that over 90% of participants believed mentorship could help bridge the gap between study and work. Key elements identified for effective mentorship included time commitment, mentor preparation and structured program organisation. (52)

Elements of mentorship are evident in existing Australian pharmacy training programs, such as internship training, hospital residency programs and preceptor training initiatives. (53) Broader investment in a national, profession-wide mentorship framework, designed to ensure equitable access and consistent delivery, with a focus on small organisations and rural or remote areas, could strengthen professional identity and resilience during key transition periods. Flexible program design and delivery would be essential to support diverse practice settings.

### *4.4.4 Resilience Training - an educational opportunity for retention*

Beyond social connectedness, participants in our study identified burnout risks stemming from high workloads, career decisions influenced by personal circumstances and the critical role of support from family and social networks. As discussed in Chapter 3, resilience training and preparedness currently fall within the remit of university educators. However, such training is not yet widely implemented across the profession and warrants further development.

A large-scale UK study (N=1161) across three pharmacy schools assessed academic resilience and well-being using psychometric surveys. The authors emphasised the importance of equipping students with skills to navigate complex workplaces, recommending curriculum enhancements such as small-group discussions of real-world scenarios, mentoring by faculty and peers and access to well-being services (54) Similarly, a Malaysian study involving students from medicine, dentistry, pharmacy and nutrition disciplines concluded that soft skills training, authentic workplace exposure and mentoring are essential for preparing students to manage pressure in healthcare settings.(55) Key soft skills, communication, emotional regulation, time management and problem-solving, were found to enhance students' capacity to adapt and recover from adversity.(55)

The findings of these two pharmacy and health student studies align with the Academic Resilience Model (ARM) developed by Durso et al. (2021), which conceptualises resilience in higher education students (across all disciplines) as a dynamic interaction between stress/adversity and protective mechanisms across three systems: individual, academic and external. (56) The ARM highlights that resilience is not merely the absence of stress but the ability to maintain satisfaction and commitment to one's career despite significant challenges. Protective factors such as

adaptability, self-control, peer and faculty support and importantly, family support, were shown to mitigate risks like burnout, dropout and professional identity formation.

Integrating resilience training into health education offers a proactive strategy to reduce burnout, enhance retention and foster adaptive, work-ready graduates. By cultivating protective mechanisms early, universities can better equip students to thrive in demanding healthcare environments. As resilience can be developed, embedding it into curricula is not just beneficial—it is essential for sustainable workforce development and wide university uptake into pharmacy programs should be supported by frameworks and accreditation development.

### 4.5 Strengths and limitations:

This study offers rich, in-depth insights into career choice and professional trajectories within pharmacy, drawing on the lived experiences of a diverse participant group. The use of semi-structured interviews enabled exploration of nuanced perspectives, allowing participants to reflect on personal and professional turning points in their careers. Thematic analysis facilitated the identification of patterns across varied contexts, contributing to a deeper understanding of workforce motivation and retention.

However, several limitations should be acknowledged. While the sample was diverse in terms of age, geographic location and professional experience, the gender distribution was skewed toward female participants and no gender-diverse individuals were represented. This limits the transferability of findings to the broader pharmacy workforce, particularly in relation to gender-sensitive issues. Additionally, over half of the participants were aged fifty years or older, which may introduce recall bias, as

retrospective accounts of early career experiences could be influenced by time, memory reconstruction, or current professional perspectives.

Another limitation is the exclusion of individuals who have left the pharmacy profession. This introduces survivorship bias, as the study captures only the views of those who remained in the profession, potentially overlooking critical insights into dissatisfaction, burnout, or systemic barriers that led others to exit. Including such voices in future research would provide a more comprehensive understanding of workforce attrition.

It is also important to note that the research team comprised exclusively female researchers. While reflexivity was practiced throughout the study, this may have influenced both the dynamics of the interviews and the interpretation of data, particularly in discussions involving gender, workplace culture and leadership. Researcher positionality can shape the co-construction of meaning in qualitative inquiry and future studies may benefit from more diverse research teams to mitigate potential bias and enhance interpretive depth.

These limitations underscore the importance for future research to sample widely and inclusively more broadly and inclusively. Diversity would enrich the data, enhance credibility and transferability and support the development of more inclusive and responsive workforce policies. Expanding the scope of inquiry will also allow for deeper exploration of the structural and personal factors that influence career satisfaction, motivation and retention in pharmacy.

## 4.6 Conclusion

This study provides a timely and nuanced exploration of the factors shaping pharmacists' career trajectories, satisfaction and retention. Through qualitative inquiry, it captures the lived experiences of pharmacists across diverse settings,

revealing how gender, geography, workplace culture, remuneration, mentorship and resilience intersect to influence professional engagement and sustainability.

Findings highlight that retention is not solely a matter of workforce supply but of meaningful investment in the conditions that support pharmacists to achieve their goals. Flexible work arrangements, inclusive leadership pathways, equitable remuneration and targeted support during career transitions emerged as critical enablers. The importance of early exposure to rural practice, community collaboration and resilience-building through education further underscore the need for a holistic, future-focused workforce strategy.

To move beyond fragmented efforts, a coordinated, cross-sector pharmacy workforce plan is essential. Such a plan should integrate insights from across community, hospital, industry and academic sectors and be informed by the voices of pharmacists at all career stages, including those who have exited the profession. This would enable educators, regulators, professional bodies and policymakers to align on standards, incentives and development pathways that reflect the evolving scope and complexity of pharmacy practice.

Ultimately, strengthening the pharmacy workforce requires more than addressing shortages, it demands a commitment to equity, adaptability and professional fulfilment. By embedding these principles into workforce planning and educational reform, the profession can better support pharmacists to remain engaged, resilient and impactful contributors improving health outcomes for all Australians.

**References**

1. World Health Organization. Global strategy on human resources for health: Workforce 2030. Geneva: World Health Organization; 2016.

2. Chalasani SH, Syed J, Ramesh M, Patil V, Pramod Kumar TM. Artificial intelligence in the field of pharmacy practice: A literature review. Explor Res Clin Soc Pharm. 2023;12:100346.

3. Australian Government Department of Health Disability and Ageing. Inclusion Framework. Australian Government Department of Health, Disability and Ageing; 2025.

4. Rasmussen B. Implications of the business strategies of pharmaceutical companies for industry developments in Australia. Centre for Strategic Economic Studies, Victoria University of Technology; 2002.

5. Australian Institute of Family Studies. Family trends and transitions 2023 [01 July 2025]. Available from: https://aifs.gov.au/all-research/facts-and-figures/families-and-family-composition

6. Aluttis C, Bishaw T, Frank MW. The workforce for health in a globalized context - global shortages and international migration. Global health action. 2014;7(1):23611.

7. Sarwar MR, McDonald VM, Abramson MJ, Wilson S, Holland AE, Bonevski B, et al. Credentialed pharmacist-led home medicines reviews targeting treatable traits and their impact on health outcomes in people with chronic obstructive pulmonary disease: a pre- and post-intervention study. International journal of clinical pharmacy. 2025;47(1):157-65.

8. Ogilvie M, Nissen L, Kyle G, Hale A. An evaluation of a collaborative pharmacist prescribing model compared to the usual medical prescribing model in the emergency department. Research in social and administrative pharmacy. 2022;18(10):3744-50.

9. Le D, Saba M, Bhurawala H, Rahman MA, Shah S, Saini B. Pharmacists' Perspectives on nicotine vaping products (NVPs) for smoking cessation in Australia: a qualitative analysis. Pharmacy. 2025;13(1):11.

10. Serhal S, Krass I, Saini B, Bosnic-Anticevich S, Emmerton L, Bereznicki B, et al. Delivery of enhanced asthma care in pharmacies: perceptions and experiences of Australian service providers. Journal of the American Pharmacists Association. 2025;65(1):102252.

11. Stevens,G. Webstercare's MedCare: the technology partner you can trust. Australian ageing agenda. 2022:26-7.

12. Hareem A, Stupans I, Park JS, Stevens JE, Wang K. Electronic health records and e-prescribing in Australia: an exploration of technological utilisation in Australian community pharmacies. International journal of medical informatics 2024;187:105472-.
13. Cossart AR, Kennedy E, Yong FR, Hillen JB, Freeman CR. Consumer perceptions of direct-to-consumer electronic prescription services in Queensland, Australia. Digital health. 2024;10:20552076241294184.
14. Barakat M, Sallam M. Pharmacy workforce: a systematic review of key drivers of pharmacists' satisfaction and retention. Journal of pharmaceutical policy and practice. 2025;18(1):2470848.
15. Pharmaceutical Guild of Australia . The workforce capability project - pharmacy workforce supply and demand Edition 2. 2024 April 2024.
16. Jordan D, Guiu-Segura JM, Sousa-Pinto G, Wang LN. How COVID-19 has impacted the role of pharmacists around the world. Farm Hosp. 2021;45(2):89-95.
17. Cheung DHK, Schneider CR, Um IS. The role of community pharmacy in wound care: a scoping review. Journal of wound care. 2023;32(11):728-37.
18. Hawthorne N, Anderson C. The global pharmacy workforce: a systematic review of the literature. Human resources for health. 2009;7(1):48-.
19. World Health Organization. Fair share for health and care: gender and the undervaluation of health and care work. World Health Organization; 2024. License: CC BY-NC-SA 3.0 IGO. Available at https://iris.who.int/.
20. Gidman WK, Hassell K, Day J, Payne K. Does community pharmacy offer women family-friendly working conditions and equal opportunities? The accounts of female community pharmacists over the age of 30. The International journal of pharmacy practice. 2007;15(1):53-9.
21. Childcare still largest barrier to female participation [press release]. 4th November 2022.
22. Hurley PT, M and Nguyen, H. International childcare: mapping the deserts. Victoria: Mitchell Institute, Victoria University; 2024.
23. Shop Distributive and Allied Employees' Association. (SDAEA)Submission to the Productivity Commission inquiry into early childhood education and care. Melbourne; 19th May 2023.

24. Canadian Pharmacists Association. Women in pharmacy leadership: a call to action. Ottawa, ON: Canadian Pharmacists Association; 2019.

25. Paoworth JK, S; Wickens, J; Bridges, G. The Cliff's Edge: a student perspective of women's leadership in pharmacy. Journal of the Australian Pharmacy Students' Association. 2022;1(2).

26. Popovici I, Carvajal MJ. Is Pharmacy a Friendly Profession for Everyone in the U.S.? A probe into gender and other income disparities. Pharmacy. 2025;13(2):49.

27. Smith L, Cooper G, Brown A. Gender equity in pharmacy leadership: a national survey. Australian journal of pharmacy practice. 2021;32(2):78–85.

28. Pham TL, Peterson GM, Martin A, Naunton M. Gender balance in Australian pharmacy organisations: Are we there yet? Exploratory research in clinical and social pharmacy. 2024;14:100442-.

29. Mill D, Burton L, Lim R, Barwick A, Felkai C, Sim TF, et al. A vision to advance gender equality within pharmacy leadership: next steps to take the profession forward. Research in social and administrative pharmacy. 2023;19(6):965-8.

30. Hempenstall A, Tomlinson J, Bismark MM. Gender inequity in medicine and medical leadership. Medical journal of Australia. 2019;211(10):475-.e1.

31. Pharmacy Guild of Australia. Women in pharmacy: representation in ownership and leadership. Canberra: The Pharmacy Guild of Australia; 2022.

32. Zhang PC, Austin Z. To succeed as health care innovators, pharmacists need to cultivate an entrepreneurial mindset. Canadian Pharmacists Journal / Revue des pharmaciens du Canada. 2023;156(3):110-1.

33. Reckon. Gender imbalance in Australian small business. online; 2024. Available at: https://www.reckon.com/au/small-business-resources/gender-imbalance-in-small-business/?srsltid=AfmBOorP-Tef3MFYYVM71SpmPGZh7vDFfk8lh979axGMe97cM7H6_e5M

34. Australian Human Rights Commission.. Time for respect: fifth national survey sexual harassment workplaces. Nov 2022.

35. Medical Board of Australia and Ahpra. Medical Training Survey 2024 Report.Feb 2024.

36. Pharmaceutical Defence Limited/Meridian Lawyers. Dispensing with inappropriate behaviour– a guide for pharmacists. Pharmacy insights. Meridian Lawyers; 2023. Available from: https://www.meridianlawyers.com.au/wp-content/uploads/2023/12/Pharmacy-Insight-PDL-Dispensing-with-inappropriate-behaviour-A-guide-for-pharmacists-December-2023.pdf.

37. Bolen R, Flesch M, Dennis J, Shouse L, Payton M, Ross D. Continuous rural high school educational outreach and lasting impact on health care career attitudes: qualitative pilot study. JMIR Form Res. 2025;9:e70505.

38. McKinstry C, Quilliam C, Crawford N, Thompson J, Sizer SM. Location and access to health courses for rural students: an Australian audit. BMC Med Educ. 2024;24(1):806.

39. Padley J. The Future of Rural Medical Education in Australia. The Australian journal of rural health. 2025;33(4):e70071.

40. Ohta R, Yakabe T, Sano C. Addressing health challenges in rural Japan: a thematic analysis of social isolation and community solutions. BMC Primary Care. 2024;25:1-9.

41. Terry DR, Peck B, Hills D, Bishop J, Kirschbaum M, Obamiro KO, et al. The pharmacy community apgar questionnaire: a modified Delphi technique to develop a rural pharmacist recruitment and retention tool. Rural and remote health. 2022;22(4):1-17.

42. Terry D, Peck B, Hills D, Bishop J, Kirschbaum M, Obamiro K, et al. Sustaining rural pharmacy workforce understanding key attributes for enhanced retention and recruitment. The Australian journal of rural health. 2023;31(2):218-29.

43. Australian Government Department of Health, Disability and Ageing Unleashing the potential of our health workforce - scope of practice review: stakeholder report 1. 27 Mar 2024.

44. Thai T, Lancsar E, Spinks J, Freeman C, Chen G. Understanding Australian pharmacy degree holders' job preferences through the lens of motivation-hygiene theory. Social science & medicine (1982). 2024;348:116832-.

45. Tan J, Divakar R, Barclay L, Bayyavarapu Bapuji S, Anderson S, Saar E. Trends in retention and attrition in nine regulated health professions in Australia. Australian Health Review. 2025;49(2).

46. Australian Health Practitioner Registration Agency (AHPRA). Pharmacist workforce snapshot as at 30 June 2023. June 2023..

47. Fair Work Commission. Gender-based undervaluation – priority awards review – Pharmacy Industry Award 2020. Sydney: Fair Work Commission; 2025 .

48. Australian Government Department of Health,Disability and Ageing. . Workforce incentive program (WIP) – practice stream. 2025.

49. Australian Government Department of E. Commonwealth prac payment (CPP). 2025.

50. Australian Government Department of Health, Disability and Ageing., HELP for rural doctors and nurse practitioners. 2025.
51. Winderbaum J, Coventry LL. The benefits, barriers and facilitators of mentoring programs for first-year doctors: a systematic review. Medical education. 2024;58(6):687-96.
52. Li H, Elaine Li Yen T, Mun Loke W, Ong MMA. Tackling study-work chasm: perceptions of the role of mentorship in the healthcare workplace. Asia Pacific Scholar (Online). 2022;7(3):10-22.
53. Knott GJ, Mylrea MF, Glass BD. A Scoping Review of Pharmacy Preceptor Training Programs. American Journal of Pharmaceutical Education. 2020;84(10):ajpe8039.
54. Cassidy S, Mawdsley A, Langran C, Hughes L, Willis SC. A Large-scale multicenter study of academic resilience and well-being in pharmacy education. American journal of pharmaceutical education. 2023;87(2):ajpe8998-272.
55. Chye SM, Kok YY, Chen YS, Er HM. Building resilience among undergraduate health professions students: identifying influencing factors. BMC medical education. 2024;24(1):1168-10.
56. Durso SdO, Afonso LE, Beltman S. Resilience in higher education: A conceptual model and its empirical analysis. Education policy analysis archives. 2021;29(August - December):156.

# Chapter 5. Next Steps

This chapter builds on the preceding analysis of factors influencing pharmacists' career trajectories, particularly those related to gender, geography, and career satisfaction, motivation and progression. Drawing on these findings, it identifies priority areas for future research that can inform the development of strategic priorities for workforce reform, with the aim of supporting a more sustainable pharmacy workforce with improved geographical distribution.

## 5.1 Short term recommendations for further research

Our results highlighted the challenges associated with points of transition in pharmacy careers, notably, the transition from university to intern, from internship to registration and thence to early career positions that may involve relocation to unfamiliar locations.

These early experiences can predict future career decisions and may also shape the professional stance of individuals throughout their career, including their mentoring of others. Therefore, the factors that shape these early experiences warrant thorough examination. Although our data captured these early career transitions, the interview guide did not explore the experience of leaving the profession, since participants in our study were still employed. This was identified as a limitation in earlier chapters, as career exit is another significant transition and may occur at any point in the career. Further investigation is needed to better understand *why* individuals exit the profession, whether by ceasing practice, shifting to non-pharmacy roles, or remaining registered but inactive. Such studies could provide valuable insights into retention challenges and inform the development of workforce sustainability initiatives. In many cases, premature exit from the profession could be preventable. Hence, we

propose that the next steps in research should focus on two critical periods of transition: career entry and career exit (Figure 5.1).

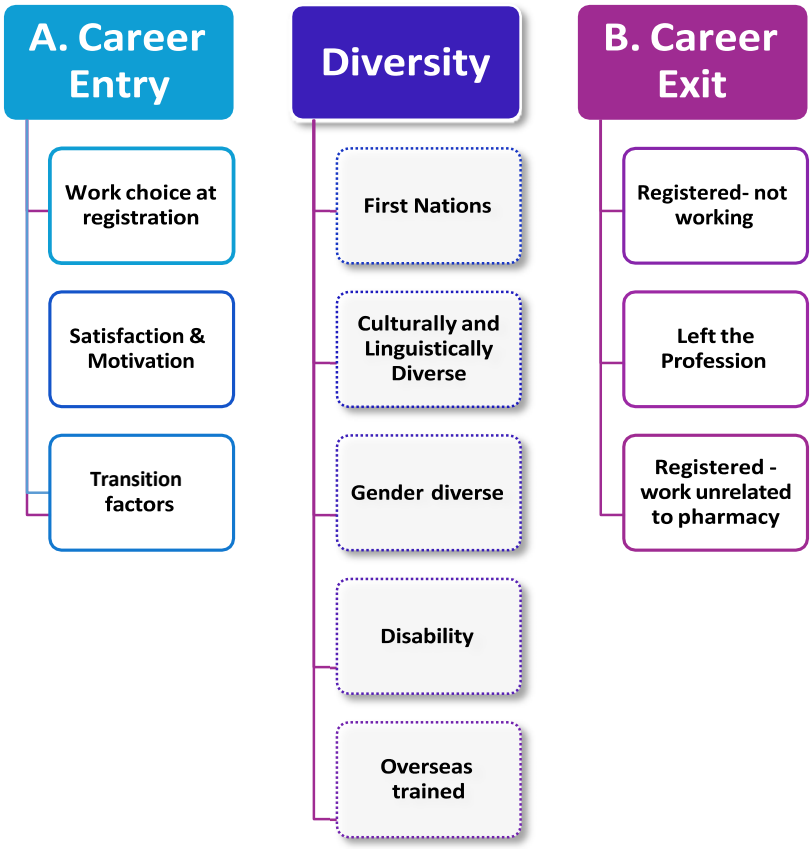



*Figure 5.1: Proposed future research focus to advance understanding of workforce challenges and diversity.*

As well as exploring these vital transition points, future pharmacy workforce research across the career continuum should be designed for greater inclusivity in participation. As discussed previously (Chapters 3 and 4), our participants represented a somewhat homogeneous sample in demographic terms. Five important sources of diversity are identified in Figure 5.1. Capturing a wider range of perspectives is essential to inform inclusive workforce planning and ensure that reform initiatives reflect the needs of all pharmacy professionals. Ongoing phases of the research could include starting with a similar research methodology to that used in this study, but with higher participant diversity. A cross-sectional survey could

also be useful to capture data from a representative sample of pharmacies at each career stage; this could account for some of the biases that may limit qualitative research.

## 5.2 Long term vision for research

Table 5.1 provides an integrated framework for long-term research planning that identifies key areas for intervention, links the themes developed in Chapter 3 with actionable goals, and identifies stakeholders who could take responsibility for working towards these goals. For instance, study participants frequently cited challenges in balancing professional responsibilities with caregiving duties, such as childcare. This concern is reflected in Table 5.1 under the theme of 'Workplace Support for Pharmacists', where proposed actions include enabling flexible work arrangements and recognising caregiving responsibilities.

In Table 5.1, the themes developed in Chapter 3 provide the foundation for identifying the key issues the profession is facing. In other words, they informed the *what* and the *why* columns in the table. The last column depicts *how* these issues may be addressed and *who* could action these strategies, that is, the stakeholders discussed in Chapters 3 and 4. The informal stakeholder mapping undertaken by the research team was based on in-depth knowledge of the profession, as discussed in Chapters 1, 3 and 4.

Table 5.1 Future Workforce Planning: What, Why and How

| **Workforce Priority (What)** | **Underlying issues from our results (Why)** | **Strategic Actions (How)** |
|---|---|---|
| Workforce Distribution and Sustainability | Challenges in attracting pharmacy students, particularly from rural backgrounds, alongside the need to support relocated professionals and enhance job satisfaction through inter-professional collaboration. ***Theme 1, 2 and 3*** | ○ *Develop targeted pharmacy student recruitment strategies to university. (FG, STG, POrg, UPP)*<br>○ *Expand flexible education (remote/hybrid learning) (UPP ITOrg, POrg)*<br>○ *Strengthen community connectedness of local pharmacies to improve retention of pharmacists relocating to rural and regional areas. (EMP, LG, LHD)*<br>○ *Support interprofessional collaboration across sectors, such as hospital and community, to enhance satisfaction (FG, STG, LHD, POrg, EMP)* |
| Early Career Support | Importance of mentorship and support for interns in early career and beyond to overcoming hardship and burnout. ***Theme 1 and 2*** | ○ *Specialised mentoring at the point where interns transition to career post-registration (PBO; PHM; LHD; ITOrg)*<br>○ *Stronger support for early career pharmacists (POrg, PBO, ITOrg)*<br>○ *Resilience training across all career stages (UPP, POrg)* |
| Workplace Support for Pharmacists | Difficulty balancing work and life responsibilities, workload or practicalities of relocation. ***Theme 2*** | ○ *Enable flexible work arrangements (PBO, LHD, PHM)*<br>○ *Recognise and support caregiving responsibilities (PBO, PHM)*<br>○ *Address local challenges, especially in rural areas (e.g. housing, childcare) (STG, LG)* |
| Workplace Development | Managing change in practice scope, technology.<br><br>Inclusive and gender balanced workplaces and leadership. ***Theme 2*** | ○ *Invest in leadership development (UPP; APC, EMP)*<br>○ *Build entrepreneurship and change management skills for advancement in practice scope and technological innovation.(APC, POrg, UPP, EMP)*<br>○ *Create safe and inclusive environments (POrg, UPP, EMP)*<br>○ *Workplace culture enhancement through leadership training (POrg, UPP, EMP)* |

| | | |
|---|---|---|
| Satisfaction and Motivation | Improving work satisfaction through remuneration and public recognition of pharmacy, reflecting their increased scope of practice and role in primary healthcare delivery.<br>***Theme 2*** | ○ *Reform remuneration and subsidies, such as rural intern incentives (FG; STG)*<br>○ *Wider recognition (public and other health professionals) of pharmacists' expanded scope of practice (FG; STG)*<br>○ *Support pharmacists' primary healthcare role (FG; STG) e.g. via reimbursement for approved service provision through the government national insurance scheme as for other health professionals.* |
| ***Themes (Chapter 3):*** *1: Career initiation – choosing pharmacy as a profession; 2: Career development, satisfaction and retention; 3: Gender, geography and other life issues*<br>***Stakeholders:*** *Federal Government (FG); State/Territory Government (STG); Local Government (LG); Local Heath District (LHD); Fair Work Commission (FWC); Australian Pharmacy Council (APC); Pharmacy Organisations (POrg); University Pharmacy Program(UPP); Internship Training Organisation (ITOrg); Employers (EMP); including Community Pharmacy Businesses, Public and Private Hospitals, Australian Pharmacy Council (APC).* | | |

Translation to practice of research findings is an important outcome of any study, and the relevance and impact of those findings are enhanced by engaging stakeholders in relevant research. For instance, a partnership with the Australian Health Practitioner Regulation Agency (Ahpra) could enable more targeted recruitment and data collection through their existing data collection mechanisms. Such a collaboration could support the continuation of the current study, as suggested above, by surveying early career pharmacists at the point of registration, as well as those exiting the profession on cancellation of their registration. A mixed-methods approach combining longitudinal survey data with qualitative methods would considerably enhance the database to inform workforce planning.

Future longitudinal research could build on the findings presented in this thesis, complemented by the results of the short-term projects suggested above. These studies

might explore the characteristics of healthy workplaces and examine the impact of evolving professional demands, including technological innovations, expanded scope of practice, and workforce reform initiatives. Perhaps researchers leveraging Ahpra's registration data over time could refine geographical workforce reporting by applying the Modified Monash Model (MMM). (1) This would offer more granular insights into workforce distribution, thereby supporting more effective region-specific planning.

## 5.3 Conclusion

The research strategies proposed in this chapter target important pharmacy workforce priorities, such as underrepresented groups and transitional career stages. The use of qualitative methods of inquiry will deepen understanding of career entry and exit points and inform early career support strategies. By linking the insights gained from the current study to actionable workforce priorities, this chapter provides a clear pathway for future research to directly inform policy and planning with key stakeholder involvement. Complementing this approach, access to data survey points, such as that collected by Ahpra, can enrich short-term findings with a longitudinal perspective that contextualises workforce trends over time, thereby enhancing the precision and relevance of planning initiatives. By embedding collaboration at every opportunity, future research can build a stronger evidence base to support inclusive, responsive and sustainable workforce strategies across the profession.

## References

1. Australian Government Department of Health, Disability and Aging. Modified Monash Model 2023. Available from: https://www.health.gov.au/topics/rural-health-workforce/classifications/mmm.

# Appendix A. Pharmacy Stakeholder Recent Sector Reports – Summary of Relevant Key Findings

| Organisation/Report Name | Report Date | Key Findings |
|---|---|---|
| **Australian Pharmacy Council (APC)** *Interprofessional Colloquium Outcome Statement 2022(39)* | September 2022 | • Uptake of technology to enhance asynchronous care.<br>• Interprofessional teams who identify cross discipline similarities and differences to 'seamlessly' provide patient care<br>• Mentorship from alumni to develop healthy and safe workplaces.<br>• Educator focus for producing a resilient and future-focussed workforce |
| **Pharmaceutical Society of Australia (PSA)** PAMELA Survey 2023 The *Pharmacy in Australia: Measuring Employment, Labour Decisions and Activity* (43, 44) | May, 2023 | • Insights into Pharmacist job satisfaction, roles, and remuneration.<br>• Workforce pressures exacerbated by increased healthcare demands and COVID-19.<br>• Low levels of job satisfaction among pharmacists, interns, and students.<br>• Willingness to adopt expanded roles in community pharmacy.<br>• Workforce preferences for flexibility and opportunities for career progression.<br>• The need for expanded research to improve recruitment and retention strategies for policy makers responsible for reform of the health workforce. |
| **Pharmacy Guild of Australia** *The Workforce Capability Project - Pharmacy Workforce Supply and Demand Edition 2(40)* | April 2024 | • Demand for pharmacists continues to exceed growth and attributed in part to trends of decreasing hours worked per week and distribution of workforce concentrated in metropolitan areas.<br>• Gender distribution and movement hospital sector do not appear to contribute to shortages.<br>• Growth in prescription volume not matched with growth in pharmacist numbers.<br>• Historic changes to skilled migration list (pharmacists) cause increase in workforce pressure in regional areas. |

| | | |
|---|---|---|
| | | • Policy changes and increased scope also contribute to excess demand.<br>• Underutilised non-professional workforce may improve shortages and pressure with advancement of competencies. |
| **Advanced Pharmacy Australia***<br>*SHPA response to Unleashing the Potential of our Health Workforce: Scope of Practice Review - Issues Paper 2 (41)* | May 2024 | • Workforce shortages are a significant in hospital pharmacy settings.<br>• Burnout and unsustainable workloads impact staff wellbeing and service delivery.<br>• Recruitment and retention challenges highlight the need for strategic workforce support.<br>• A review of remuneration is necessary to ensure fair compensation and recruitment.<br>• There is a need for clear training pathways and professional development supports.<br>• National workforce planning needs to support collaborative teams and encompass paraprofessional workforce, such as pharmacy technicians. |
| **Advanced Pharmacy Australia***<br>*Pharmacy Forecast Australia (42)*<br><br>**Advanced Pharmacy Australia (AdPha) – formerly Society of Hospital Pharmacists(SHPA)* | September 2024 | • Expanding hospital pharmacist scope of practise to improve patient healthcare outcomes.<br>• Investment in developing team based collaborative practice.<br>• Education expansion and investment to support new roles.<br>• Metropolitan support of underserviced rural areas and skilled staff.<br>• Explore potential new practice areas e.g. Pharmacist led outpatient clinics; involvement in screening and diagnostic testing, independent prescribing, pharmacist led outpatient clinics. |

Appendix B

THE UNIVERSITY OF SYDNEY

**Research Integrity & Ethics Administration**
HUMAN RESEARCH ETHICS COMMITTEE

Tuesday, 11 October 2022

Dr Bandana Saini
Pharmacy; Faculty of Medicine and Health
Email: bandana.saini@sydney.edu.au

Dear Bandana,

The University of Sydney Human Research Ethics Committee (HREC) has considered your application.

I am pleased to inform you that your project has been approved

Details of the approval are as follows:

| | |
|---|---|
| **Project No.:** | **2022/613** |
| **Project Title:** | **Factors which influence participation and distribution of pharmacists in the health workforces of different geographical areas.** |
| **Authorised Personnel:** | **Saini Bandana; Smith Lorraine; Bussing Jocelyn;** |
| **Approval Period:** | **11/10/2022 to 11/10/2026** |
| **First Annual Report Due:** | **11/10/2023** |

**Documents Approved:**

| Date Uploaded | Version Number | Document Name |
|---|---|---|
| 28/09/2022 | 2 | ATTACHMENT 1 ORGANISSATIONAL EMAIL INVITE |
| 28/09/2022 | 2 | ATTACHMENT 2 PIS VERSION 2_Clean |
| 28/09/2022 | 2 | ATTACHMENT 3 PCF VERSION 2_clean |

**Condition/s of Approval**

- Research must be conducted according to the approved proposal.
- An annual progress report must be submitted to the Ethics Office on or before the anniversary of approval and on completion of the project.
- You must report as soon as practicable anything that might warrant review of ethical approval of the project including:
  - Serious or unexpected adverse events (which should be reported within 72 hours).
  - Unforeseen events that might affect continued ethical acceptability of the project.
- Any changes to the proposal must be approved prior to their implementation (except where an amendment is undertaken to eliminate *immediate* risk to participants).
- Personnel working on this project must be sufficiently qualified by education, training and experience for their role, or adequately supervised. Changes to personnel must be reported and approved.
- Personnel must disclose any actual or potential conflicts of interest, including any financial or other interest or affiliation, as relevant to this project.
- Data and primary materials must be retained and stored in accordance with the relevant legislation and University guidelines.

- Ethics approval is dependent upon ongoing compliance of the research with the *National Statement on Ethical Conduct in Human Research*, the *Australian Code for the Responsible Conduct of Research*, applicable legal requirements, and with University policies, procedures and governance requirements.
- The Ethics Office may conduct audits on approved projects.
- The Chief Investigator has ultimate responsibility for the conduct of the research and is responsible for ensuring all others involved will conduct the research in accordance with the above.

This letter constitutes ethical approval only.

Please contact the Ethics Office should you require further information or clarification.

Sincerely,

**Professor Michael Skilton**
**Chair**
**Health Review Committee (Low Risk)**

**The University of Sydney of Sydney HRECs are constituted and operate in accordance with the National Health and Medical Research Council's (NHMRC) National Statement on Ethical Conduct in Human Research (2018) and the NHMRC's Australian Code for the Responsible Conduct of Research (2018)**

## Participant Information Statement

***Research Study: Factors which influence participation and distribution of pharmacists in the health workforces of different geographical areas.***

Professor Bandana Saini

Sydney Pharmacy School, Faculty of Medicine and Health
Phone: +61 2 93516789 | Email: bandana.saini@sydney.edu.au

Professor Lorraine Smith

Sydney Pharmacy School, Faculty of Medicine and Health.
Phone: +61 2 9351 4391 | Email: lorraine.smith@sydney.edu.au

Mrs. Jocelyn Bussing (Master of Philosophy student)

Sydney Pharmacy School, Faculty of Medicine and Health.
Phone: +61 2 8627 7447 | Email: jocelyn.bussing@sydney.edu.au

### 1. What is this study about?

We are conducting a research study exploring factors which influence participation and distribution of pharmacists in the workforce across different geographical locations in Australia. Data suggests there is significant disparity in the distribution of the pharmacy workforce across metropolitan, regional and rural areas. The distribution of the workforce is key to improved health care delivery for all Australians. This exploratory workforce analysis aims to actively identify factors which influence pharmacist career pathway choices and locations of practice.

Taking part in this study is voluntary.

Please read this sheet carefully and ask questions about anything that you don't understand or want to know more about.

### 2. Who is running the study?

The study is being carried out by the following researchers:

- Professor Bandana Saini, Sydney Pharmacy School, Faculty of Medicine and Health.
- Professor Lorraine Smith, Sydney Pharmacy School, Faculty of Medicine and Health.
- Mrs. Jocelyn Bussing (Master of Philosophy student (MPhil))

Jocelyn Bussing is conducting this study as the basis for the degree of Master of Philosophy at The University of Sydney.

## 3. Who can take part in the study?

We are seeking interns or registered pharmacists from a diverse practice spectrum. This includes interns/pharmacists working in a variety of geographical locations, at differing career stages, from any area of professional practice and both employed or currently owning the business in which they are working.

You have been invited to take part in this study because you are known by the research team through their professional networks, to be either

- an intern or registered pharmacist currently practicing in Australia or
- a leader within the pharmacy profession, or
- a representative of a key pharmacy professional organisation.

Given your current practice we believe you would have insight about how or why choices around building pharmacy careers are being made in the current practice environment.

## 4. What will the study involve for me?

If you decide to take part in this study, you will be invited for an interview which will take approximately 45-60 minutes. The interview questions will include some basic demographic information for research purposes, then continue with questions relating to career choices and professional pathways that you have taken since completing your Pharmacy degree. We will also ask you about factors which have influenced these choices and any directions you feel the profession needs to take to shape a workforce which is better able to deliver pharmacy services consistently across all geographical areas.

The interview will be conducted remotely using the ZOOM conferencing tool or telephone. An appointment for the interview will be made for a time that is convenient to you and based on your preference of doing the interview via ZOOM or telephone. If ZOOM is your preference, we will request your permission to record the video, however, only the audio transcripts will be used for analysis. Similarly, for a phone interview audio-recording will be transcribed and used for analysis.

## 5. Can I withdraw once I've started?

Participation in this study is completely voluntary and you are not under any obligation to consent to complete. Your involvement in the study is strictly confidential.

You can withdraw from the study at any time prior to the deidentification of transcript data, without penalty or prejudice and without affecting your relationship with the researchers or the University of Sydney, now or in the future.

We do not anticipate your decision will affect your relationship with your workplace as all geographical locations and places of work will be deidentified and classified only in general terms.

If you take part in an interview you may refuse to answer any questions that you do not wish to answer.

If you decide to take part in the study and then change your mind you can withdraw by advising your interviewer during the interview or by contacting the lead researcher, Bandana Saini, via the phone or email contacts at the start of this information statement.

If you choose to withdraw during the interview, the interviewer will not collect any more information from you. You can also let us know at the time you withdraw what you would like us to do with information we have collected about you up to that point.

If you decide to withdraw after your data has been transcribed and deidentified, any information that we have already collected will be kept in our study records and may be included in the study results.

## 6. Are there any risks or costs?

Aside from giving up your time, we do not expect that there will be any risks or costs associated with taking part in this study.

## 7. Are there any benefits?

You will not receive any direct benefits from being in the study. However, there is indirect benefit from the outcomes of this research as the results of this study will be used to inform future pharmacy workforce strategy.

## 8. What will happen to information that is collected?

By providing your consent, you are agreeing to us collecting information about you for the purposes of this study. Interview responses from participants will be recorded and transcribed and this data will be stored securely on a data base only accessible by the researchers. In accordance with NSW law, the data from the interviews will be stored for 5 years before being deleted.

The de-identified transcripts of your responses to the interview questions will be used for analysis purposes only and may be quoted anonymously in any publication or presentation. Study findings will be published anonymously as part of an MPhil thesis as well as in peer-reviewed journals.

## 9. Will I be told the results of the study?

You have a right to receive feedback about the overall results of this study. You will be asked a question in the consent form to indicate your preference for receiving the overall results. If you indicate you wish to do so, you will be required to complete your preferred contact details. This feedback will be emailed to you and in the form of a brief lay summary.

## 10. What if I would like further information?

When you have read this information, the following researcher/s will be available to discuss it with you further and answer any questions you may have:

- Prof. Bandana Saini, Sydney Pharmacy School, Faculty of Medicine and Health.
  E: bandana.saini@sydney.edu.au

## 11. What if I have a complaint or any concerns?

The ethical aspects of this study have been approved by the Human Research Ethics Committee (HREC) of The University of Sydney 2022/613 according to the *National Statement on Ethical Conduct in Human Research (2007).*

If you are concerned about the way this study is being conducted or you wish to make a complaint to someone independent from the study, please contact the University:

Human Ethics Manager
human.ethics@sydney.edu.au
+61 2 8627 8176

***This information sheet is for you to keep***

# Appendix D

Email template – Interview request

***Email subject: Invitation to participate in research about pharmacy workforce participation choices***

Dear

We would like to invite you to participate in our research project entitled "*Research Study: Factors which influence participation and distribution of pharmacists in the health workforces of different geographical areas."* This study aims to investigate the factors which influence participation and distribution of pharmacists in the workforce across different geographical locations in Australia.

Data suggests there is significant disparity in the distribution of the pharmacy workforce across metropolitan, regional, rural and remote areas. The distribution of the workforce is key to improved health care delivery for all Australians. This exploratory study aims to identify factors which influence pharmacist career pathway choices and locations of practice.

The study is being carried out by the following researchers:

- Professor Bandana Saini, Sydney Pharmacy School, Faculty of Medicine and Health.
- Professor Lorraine Smith, Sydney Pharmacy School, Faculty of Medicine and Health.
- Mrs. Jocelyn Bussing , Master of Philosophy student, Sydney Pharmacy School, Faculty of Medicine and Health

Jocelyn Bussing is conducting this study as the basis for the degree of Master of Philosophy at The University of Sydney.

We will be conducting the interviews online via Zoom or via telephone, at a time which is convenient for participants. Participation in this study is completely voluntary. Please find attached detailed information about the project. If after reading the information about the project, you would like to participate, please do complete and sign the attached Consent Form and send it back via email (or if you prefer, we can post a reply-paid envelope).

Feel free to reach out if you have questions about the study at the details outlined in the email signature below.

If we do not hear from you, we will send you one reminder after a week, after which we will assume you do not wish to participate.

Regards,

Bandana Saini
**BANDANA SAINI | Professor**
University of Sydney School of Pharmacy
Faculty of Medicine and Health
**The University of Sydney**

Affiliate Staff and Research Leader,
**Woolcock Institute of Medical Research**
**www.woolcock.org.au**
Rm No S346, Building No A15 | The University of Sydney | NSW | 2006
T +61 2 93516789 | F +61 2 93514791
E bandana.saini@sydney.edu.au<mailto:bandana.saini@sydney.edu.au

Appendix E

## Participant Consent Form

***Research Study: Factors which influence participation and distribution of pharmacists in the health workforces of different geographical areas.***

Professor Bandana Saini

Sydney Pharmacy School, Faculty of Medicine and Health
Phone: +61 2 93516789 | Email: bandana.saini@sydney.edu.au

Professor Lorraine Smith

Sydney Pharmacy School, Faculty of Medicine and Health.
Phone: +61 2 9351 4391 | Email: lorraine.smith@sydney.edu.au

Mrs. Jocelyn Bussing (Master of Philosophy student)

Sydney Pharmacy School, Faculty of Medicine and Health.
Phone: +61 2 8627 7447 | Email: jocelyn.bussing@sydney.edu.au

---

**Participant Name** _____

I agree to take part in this research study. In giving my consent, I confirm that:

- The details of my involvement have been explained to me, and I have been provided with a written Participant Information Statement to keep.
- I understand the purpose of the study is to investigate factors which influence participation and distribution of pharmacists in the workforce across different geographical locations in Australia.
- I acknowledge that the risks and benefits of participating in this study have been explained to me to my satisfaction.
- I understand that in this study I will be required to participate in an interview which will include some basic demographic information for research purposes, then continue with questions relating to career choices and professional pathways that I have taken since completing my Pharmacy degree.
- I understand that my participation may be audio and/or video-recorded.
- I understand that being in this study is completely voluntary.

- I am assured that my decision to participate will not have any impact on my relationship with the research team or the University of Sydney.
- I understand that I am free to withdraw from this study and that I can choose to withdraw any information I have already provided (unless the data has already been de-identified or published).

- I have been informed that the confidentiality of the information I provide will be protected and will only be used for purposes that I have agreed to. I understand that information about me will only be told to others with my permission, except as required by law.

- I understand that the results of this study may be published, and that publications will not contain my name or any identifiable information about me.

- I confirm the following:

| | | |
|---|---|---|
| I consent to recordings (audio/video) | Yes ☐ | No ☐ |
| I would like to review my interview transcripts | Yes ☐ | No ☐ |
| I consent to being contacted for future studies | Yes ☐ | No ☐ |
| I would like feedback on the overall results of this study | Yes ☐ | No ☐ |

If you answered **yes**, please provide your preferred contact details (email/telephone/postal address):

_____

_____

_____

_____

- I understand that after I sign and return this consent form it will be retained by the researcher, and that I may request a copy at any time.

**Participant Name** _____

**Signature** _____

**Date**

-

# Appendix F

Table F: Theoretical Framework Summary (Chapter 1)

| **Interview Question** | **Theory (s) which informed the shaping of interview questions.** | **Theory and Thematic Results** |
|---|---|---|
| What influenced you or led you to choose a career in health, specifically in pharmacy? | b, c | **Herzberg's[b] Two factor (motivation or hygiene) theory** describes intrinsic motivators that link with career satisfaction. For example, our results indicated strong links between intrinsic motivation with career satisfaction at the career initiation stage – this is well described in Theme 1(T1).<br>**The Dispositional Approach[c]** theory links to career choice, where our results also indicated that certain dispositions (science, desire to help people etc) led several participants to a career in pharmacy.(T1) |
| Would you mind outlining your career journey thus far? | | |
| Would you please describe factors or issues which have impeded your desired career directions in this journey? | a,b,c,d,e,f,g | Our results highlighted that unmet needs (Maslow[a]) and lack of satisfaction/motivation (Herzberg[b]) impeded career progression, influencing workplace retention (T2) and location choices (T3).<br>Contributing factors included organizational change, career stage, and personal development. Additional barriers reflected various content theories: complex work environments (Alderfer[d]), inadequate leadership (McGregor[e]), unmet individual needs (McClelland[f]) such as *family proximity*, and core job design issues (Job Characteristics Model[g]) such as limited autonomy, task structure, and feedback. |
| Could you please describe factors or issues which have facilitated your desired career directions in this journey? | a,b,c,d,e,f,g,i,j | Results on career directions, when viewed through a positive lens, revealed that fulfillment (Maslow[a]) satisfaction and motivation (Herzberg[b]) influenced : *early career choices* (T1), *retention within a workplace* (T2) or geographic location (T3), and the *pursuit of new opportunities or skills through goal setting* (T2) (Locke's Goal-Setting Theory[j]).<br>Positive role models, leadership, and goal-setting behaviours were evident in data around participants' experiences. These appeared to motivate participants to seek greater responsibility, representative roles, or further training and higher education pathways.<br>Thus, our results closely align with several such foundational theories we have described in Chapter 1. |
| How would you describe your professional satisfaction with your overall career? | a,b,c,d,e,f,g,h,i,j | Our findings also indicate a complex interplay of multiple motivation theories in shaping overall professional satisfaction. Satisfaction was evident across all major themes (T1, T2, T3) and reflected principles from several content theories, including Herzberg's[b] Two Factor Theory, Alderfer's ERG Theory[d] Job Characteristics Model[g]. These frameworks help explain factors such as recognition, achievement, |

| | | |
|---|---|---|
| | | salary, workplace culture and conditions, and work–life balance. Similarly, process theories were interwoven into participants' experiences of career satisfaction, with Vroom's Expectancy Theory[i] providing insight into how perceived effort, performance, and outcomes influenced motivation. |
| Given your experience now, what decisions would you have made differently?<br>OR<br>What would your opinion be about a future career the in rural/regional pharmacy workforce/workplace? | g,h,i,j | Our findings also suggest that effort–reward balance (Vroom[i]), equity considerations (Adams[h]), and goal-setting principles (Locke[j]), alongside job design factors (Job Characteristics[g]), strongly influenced retention and career decisions (T2, T3). Feedback (a key characteristic in Hackman and Oldham's Job Characteristic Model[g]) emerged as critical for early career pharmacists particularly those navigating rural/regional roles. |
| Overall (***link to participants previous answers***), what is your opinion about being part of a rural/regional pharmacy workforce/workplace?<br>OR<br>What would your opinion be about a future career the in rural/regional pharmacy workforce/workplace? | a,b,c,d,g | Participants' views on rural/regional pharmacy careers reflected fulfillment needs (Maslow[a]), motivation factors (Herzberg[b]), dispositional traits (Dispositional[c]), and Alderfer's ERG needs[d], with job design elements (Job Characteristics[g]) shaping geographical choices (T3). |
| How would the rural/regional pharmacy work structure (community/hospital/other) need to be reformed to make it a 'desirable' option for graduates? | a,b,c,d | Reforms to rural/regional work structures, suggested by participants in our study and described in the results, link to several ideas encompassed in key theories, i.e. satisfaction and motivation (Herzberg[b]), fulfillment (Maslow[a]) and Alderfer's ERG needs[d], emphasizing opportunities and balance across all themes (T1–T3). |
| Moving the discussion towards gender issues in the rural/regional pharmacy workforce, what do you feel is the current gender distribution in the rural/regional pharmacy workforce? | | This question was more on the perception of comparative proportionality of women in the rural/regional pharmacy workforce and was not exploring a psychological construct.<br><br>Of course, data such as the *Household, Income and Labour Dynamics in Australia (HILDA)*[6] *Survey,* led by the University of Melbourne, indicate a higher job satisfaction in women,[7] and there are theories proposed around gendered differences in career satisfaction[8] (but these were not the ideology behind this interview question). |
| What do you see as opportunities and barriers to management and ownership in the rural/regional workplace for women pharmacists (pharmacists who identify as women)? | e,f,g,h | Opportunities and barriers for women in management and ownership roles were associated with achievement, affiliation, and power needs (McClelland[f]), leadership style (McGregor[e]), and autonomy within job design (Job Characteristics[g]), influencing motivation and advancement (T2, T3). |
| How would the rural/regional pharmacy work structure (community/hospital/other) need to be reformed to make it a 'desirable' option for female graduates? | a,b,c,d,e,f,g,h,j | Creating desirable options for female graduates involved fulfillment (Maslow[a]) motivation (Herzberg[b]), Alderfer's ERG needs[d] achievement(McClelland[f]), autonomy (Job Characteristics[g]), equity (Adams[h]), and goal-setting principles (Locke[j]), impacting structure, opportunity, and balance across all themes (T1–T3). |

| | | |
|---|---|---|
| How do you feel have post covid preferences changed the desirability of rural/regional pharmacy work in the profession? | | |
| This research is exploring the workforce balance and distribution in the pharmacy profession between urban and rural/regional settings. This includes the diversity of gender, experience, backgrounds etc across these locations. Would you have any comments or ideas not covered above that you would like to share on this topic? | | |
| ***Theory Index:*** *a. Maslow's Hierarchy of Needs(1); b. Herzberg's Motivation-Hygiene Theory(2); c. Dispositional Approach (3); d. Alderfer's ERG Theory(4); e. McGregor's Theory X and Theory Y(4); f. McClelland's Achievement Motivation Theory(4); g. Job Characteristics Model(4); h. Adam's Equality and Justice theory(4); i. Vroom's Expectancy Theory(4); j. Locke's Goal Setting Theory (5); (Chapter 1, p.30-36)*<br>***Themes Index (Chapter 3):*** *T1: Career initiation – choosing pharmacy as a profession; T2: Career development, satisfaction and retention; T3: Gender, geography and other life issues (Article – p.3-6)* | | |

## References - Appendix F


1. Maslow AH. A theory of human motivation. Psychological Review. 1943;50(4):370-96.

2. Herzberg F, Mausner B, Snyderman BB. The motivation to work. 2nd ed. New York: Wiley; 1959.

3. McGregor D. The human side of enterprise. New York: McGraw-Hill; 1960.

4. Ryan JC. Old knowledge for new impacts: Equity theory and workforce nationalization. Journal of Business Research. 2016;69(5):1587-92.

5. Locke EA, Latham GP. Building a practically useful theory of goal setting and task motivation: a 35-year odyssey. American Psychologist. 2002;57(9):705-17.

6. The Melbourne Institute of Applied and Social Research, the University of Melbourne, The Household, Income and Labour Dynamics in Australia Survey. Available online at: https://melbourneinstitute.unimelb.edu.au/hilda. Accessed 22.12.2025.

7. Kifle t and Kler P. Job Satisfaction and Gender: Evidence from Australia. Conference Paper available online: https://melbourneinstitute.unimelb.edu.au/assets/documents/hilda-bibliography/conference-papers lectures/2007/Kifle_etal_job_satisfaction_and_gender.pdf. Accessed 22.12.2025

8. Gutek BA, Searles, Klepa L. Rational versus gender role explanations for work-family conflict. J Appl Psychol. 1991; 76(4):560–568.

# Appendix G

**Chapter 3: Results by pharmacy work sector.** Table G:

Participant experience in pharmacy work sectors.

| Sector of Practice | Number of participants with experience in sector (n=21) |
|---|---|
| Community | 20 |
| Hospital | 6 |
| Industry | 3 |
| Academia | 7 |
| Representative Body | 5 |
| Other: e.g. Aboriginal Medical Service or General Practice | 1 |