QUALITATIVE AND MIXED METHODS RESEARCH
https://doi.org/10.1071/HC23021

CSIRO PUBLISHING
The Royal New Zealand College of General Practitioners
Te Whare Tohu Rata o Aotearoa
Journal of Primary Health Care

New Zealand pharmacists' views regarding the current prescribing courses: questionnaire survey

Mariam Ghabour[A,*], Caroline Morris[B], Kyle Wilby[C] and Alesha Smith[A]

For full list of author affiliations and declarations see end of paper

***Correspondence to:**
M. Ghabour
School of Pharmacy, University of Otago, 18 Frederick Street, Dunedin North, Dunedin 9016, New Zealand.
Email: awama109@student.otago.ac.nz; mariam.ghabour2020@gmail.com

Handling Editor:
Tim Stokes

Received: 17 February 2023
Accepted: 30 May 2023
Published: 19 June 2023

Cite this:
Ghabour M *et al.*
Journal of Primary Health Care 2023;
15(4): 324–332.
doi:10.1071/HC23021

ABSTRACT

Introduction. New Zealand pharmacists must complete a joint prescribing course offered by Otago and Auckland universities only, to be qualified as pharmacist prescribers. **Aim.** To identify knowledge and perceptions of New Zealand registered pharmacists, who are not pharmacist prescribers, on: pharmacist prescribing roles, courses and perceived barriers and facilitators to course uptake. **Methods.** Participants comprised registered practising New Zealand pharmacists ($n = 4025$), across all New Zealand regions. Invitations to participate in a questionnaire survey were sent in March 2021. Data were analysed using thematic analysis and descriptive statistics. **Results.** The response rate was 12% (482/4025), with 94% community pharmacists. Almost two-thirds (65%) had over 10 years of working experience. Nearly all (95%) agreed that pharmacist prescribing would improve healthcare delivery in New Zealand. Most reported that barriers to pharmacist prescribing course uptake were funding, lack of institutional support, up-to-date pharmacological/pharmaceutical knowledge, and 2 years of experience in collaborative health team prerequisites for enrolment, finding medical supervisors, and lack of remuneration for prescribing roles. **Discussion.** Pharmacist prescribing in New Zealand is still in its growing phase. Optimising uptake of prescribing courses and role requires a multi-level approach including all stakeholders. Government/policymakers should consider pharmacist prescribing training and remuneration in their funding plans. Employing institutions should provide required time and human resources (staff backfills). Training providers should consider methods of course delivery and assessment that are suitable for trainees in full-time employment.

Keywords: barriers and facilitators, education, New Zealand pharmacists, perceptions, pharmacist prescribing, prescribing course, questionnaire survey, training.

Introduction

Some countries have started to develop national strategies to resolve healthcare sector challenges including inequitable access to medicines. These strategies include increasing the number of medical school graduates, support with funds for medical school loans,[1] removal of challenges for foreign-trained physicians to practice, and development of non-medical prescribing (NMP).[2]

Non-medical prescribers are health professionals, who are not doctors (eg pharmacists, dietitians, midwives, nurses, optometrists, physiotherapists, podiatrists, radiographers), but have qualified to have prescribing rights.[3,4] Although Aotearoa New Zealand (NZ) has a shortage of medical practitioners,[5] and the need for non-medical prescribers is increasing, the uptake of the pharmacist prescribing path is low. There are only 46 registered pharmacist prescribers in NZ as of October 2022.[6]

Pharmacist prescriber training is relatively new both in NZ (first pharmacist prescribing course started in 2012),[7] and internationally (first pharmacist prescribing course in the UK started in 2003).[8] Internationally, pharmacist prescribing training can be either incorporated into an undergraduate or entry-to-practice degree, or taken as a post-graduate qualification, depending on the jurisdiction. These courses have been found to vary in content, structure, mode of delivery and assessment from country to country.[9]

WHAT GAP THIS FILLS

What is already known: Pharmacist prescribing is a novel approach that is expanding globally, with the aim of resolving health sector challenges such as improving healthcare delivery and achieving equity of access to medicine. Pharmacist prescribing in New Zealand is lagging behind other countries such as the UK and Canada.

What this study adds: A multi-level approach including all stakeholders is required as an initiative to improve the pharmacist prescribing course and role uptake in New Zealand. Government, employing institutions, and training providers should consider pharmacist prescribing training and role requirements (eg funding, time, staff backfill) in their strategic annual plans for healthcare development.

In comparison to many international counterparts, The NZ Pharmacy Council requires pharmacists to complete an accredited pharmacist prescribing course (a joint course offered by pharmacy schools at Otago and Auckland universities) to register in pharmacist prescribing scope of practice.[10] This postgraduate qualification is self-funded, has extensive pre-requisites, is educationally demanding, and has longer practicum requirements (see Table 1).[7,10]

Pharmacists are a large and highly skilled workforce, yet are often not working at the top of their scope. Literature suggests that a lack of support from governing bodies, employers, and other health professionals, inadequate training regarding diagnostic skills, insufficient funding, lack of governance procedures to support pharmacist prescribing, poor awareness of pharmacist prescribers' role among stakeholders, perceived professional encroachment on medical dominance, difficulties making decisions about prescribing, and concerns about potential conflict of interest between multiple roles of pharmacist are barriers to becoming prescribers.[11,12]

This study aims to identify the knowledge and perceptions of NZ registered pharmacists, who are not pharmacist prescribers, on pharmacist prescribing roles, courses and perceived barriers and facilitators to course uptake.

Methods

Ethical approval was obtained from the University of Otago human ethics committee (D20/331) and Māori consultation was undertaken with the Ngāi Tahu research unit.

This study used an online snapshot questionnaire survey that included both open and closed questions. An online platform was chosen (SurveyMonkey by momentive) www.surveymonkey.com/mp/audience for ease of data collection.

Survey design

The development of the survey was conducted in several phases using best practice:[13]

1. It started with an overview of the published literature on factors influencing successful implementation of non-medical prescribing in the UK, Canada, Australia, and NZ.
2. Then, using the overview content, the research team determined suitable questions for a survey targeting NZ pharmacists with 25 questions selected for all pharmacists to answer.
3. After piloting the survey's questions ($n = 5$), we received additional insights through personal communication with some general practitioners (GPs) and pharmacists.
4. Minimal changes such as language modifications were made before being deployed to SurveyMonkey.

The survey was designed to examine pharmacists' familiarity with the currently offered prescribing course and pharmacist prescribers' scope of practice in NZ, confidence to prescribe without additional training, current postgraduate course issues, stakeholders' support and barriers and facilitators to course enrolment.

Data collection: participants and recruitment

All NZ pharmacists without a prescribing qualification ($n = 4025$) were invited to participate via email, which contained the survey link. Email addresses for pharmacists, who have consented to receive research invitations, were obtained from the NZ Pharmacy Council.

Consent to participate

Participants who indicated that they were interested in participating were provided a participant information sheet (see Supplementary File S1) to read. Completing the survey was regarded as implying consent. Survey data were collected from March to September 2021; an initial email invitation was followed by two reminder emails, at fortnightly intervals. During data analysis, all participants were allocated a unique identification number (eg Respondent #01, Respondent #02, etc.).

Data analysis

Descriptive statistics were used to analyse the quantitative data from closed questions. Survey data from open questions were analysed using thematic analysis. The standards for reporting qualitative research (SRQR) were followed.[14] Qualitative data were analysed by reading responses carefully using an immersion–crystallisation iterative approach.[15] Thematic grouping was undertaken after coding individual responses and was discussed among the research team before the final analysis. For coherence and transparency,

Table 1. Requirements for pharmacist prescribing registration in New Zealand, UK, and Alberta.

Country/model of prescribing after attaining the program/year of introducing this role	Qualification required to become a pharmacist prescriber	Prerequisites of the qualification	Practical training/additional assessment	Funding of the training course
New Zealand – Designated prescriber – 2013[7]	– Postgraduate Certificate, Level 8 New Zealand Qualifications Framework (NZQF) 600 learning hours (60 credits equivalent to half a year full time).[7]	– Registered pharmacist – Having clinical skills or area of practice – At least 2 years of post-registration experience in a collaborative, patient-facing practice that is relevant to the area of practice in which they plan to prescribe.[16,17]	300 h practice, 150 h supervised by Designated Medical Practitioner (DMP).[7]	The Postgraduate Certificate programme is subsidised by the Tertiary Education Commission and students are eligible for a student loan for the fees. The subsidy is 7357 NZD and the tuition fees are 4637.40 NZD. Student services fees (426 NZD) may also be added onto this. Unlike medical and nursing programmes, there is no additional support provided by Health Workforce New Zealand.[7]
United Kingdom Independent prescriber – 2006[7]	Must complete minimum 200 h (26 days) over 3–6 months on a General Pharmaceutical Council (GPhC)accredited programme at 1 of 47 universities. Programme must be at least at a Master's degree level (NZQF level 9).[7]	– Must be a registered pharmacist with the GPhC or Pharmaceutical Society of Northern Ireland (PSNI).[7] – Applicants must have relevant experience in a UK pharmacy setting.[18] – Applicants must identify an area of clinical or therapeutic practice on which to base their learning.[18]	12 days (90 h) learning in a practice environment while being mentored by a DMP[7] or Designated Prescribing Practitioner (DPP).[19]	Government funding through local bodies or organisations, such as the National Health Service.[9]
Canada – 2007[7]	Nothing beyond PharmD. PharmD is usually 4 years of full-time study preceded by 2 years of introductory study.[7]	Additional Prescribing Authorisation (APA), requires good standing on clinical register, 1- year full-time direct patient care while on the clinical pharmacist register. From 2018, entry level Doctor of Pharmacy (PharmD) graduates from The Canadian Council for Accreditation of Pharmacy Programs (CCAPP) accredited Canadian schools of pharmacy will have the 1-year practice requirement waived.[7]	Must be approved by Alberta College of Pharmacy (ACP) using an application form showing evidence of relevant knowledge and skill, including clinical case studies from post registration practice.[7]	– Self funding[9]

Modified from the Pharmacist Prescriber Qualification Project prepared by Jane von Dadelszen for the NZ Pharmacy Council.[7]

the study results are grounded in example quotations from the raw data.

Results

Four hundred and eighty-two NZ pharmacists (12% response rate) participated from all regions across NZ and different work settings (Table 2). Participant demographics were broadly representative of the overall NZ pharmacist cohort.

Table 3 below collates the weighted score for each of the Likert scale questions provided in the survey.

Pharmacist-related issues

Pharmacists were asked about their familiarity with the prescribing course, their perceptions on the benefits of pharmacist prescribing implementation in NZ, and their perceived confidence in prescribing.

Of 482 participants, 253 (52.5%) had no or only a slight familiarity with pharmacist prescribers' scope of practice.

> No idea, never see it advertised. (Respondent # 124)

Despite 63% of participants (n = 303) having no or slight familiarity with NZ pharmacist prescribing courses, they still provided comments around how lengthy and burdensome they believe the process to be. However, as the participants are not pharmacist prescribers, and did not study the provided courses, their opinions may not potentially represent the situation in practice.

> The training is time consuming, costly and no promise of a job at the end of it. This has been a deterrent to many. Have heard the comments it's easier for nurses to train as prescribers and they are more accepted. Pharmacy needs to up profile. (Respondent # 461)

> They have always appeared too time consuming and difficult to complete. (Respondent # 284)

Although participants were not overly familiar with the NZ pharmacist prescribing course, a high majority (n = 457, 95%) agreed that pharmacist prescribers would improve NZ healthcare service delivery. A low number (n = 43, 9%) mentioned that pharmacist prescribing provides better access to medicines, especially with accidental loss or inadvertently running out of medicines in addition to renewing prescriptions or managing long-term conditions when doctors are not available. It was also acknowledged by a few (n = 28, 6%) that pharmacist prescribing would overcome long waiting times resulting from doctors' shortage and overstretched doctors, freeing up doctors' times to triage more complex cases.

More than two-thirds (n = 327, 68%) agreed that pharmacist prescribing would improve their job satisfaction, as they will be able to better use their skills and clinical knowledge, increase their scope of practice, feel more valuable and recognised, motivate them to achieve more professional development, and improve their collegiality with doctors.

When asked if they felt they could prescribe without undertaking additional prescribing training, 30% of the participating pharmacists (n = 145) felt very or extremely confident due to work experience. A risk of overconfidence can be noted here, as participants have not undergone any training yet to understand weaknesses in their knowledge. Participants linked their confidence to the scope of prescribing versus their personal areas of experience and commented that a refresher course with a clinical focus would increase their confidence further.

> I have been a clinical pharmacist for 10 years, the experience I have built I believe overshadows what the prescribing paper aims to achieve. I think the significance of on the job experience is not appreciated or taken into account. (Respondent # 455)

Course-related issues

Course-related issues such as course content, medical supervision, and funding were explored.

Course content

Of 477 respondents who answered this question, 62.3% (n = 297) would prefer a more general content focus rather than specific clinical areas (eg respiratory, cardiovascular).

Table 2. Characteristics of participating pharmacists.

Characteristic (n = 482)	n (%)
Place of work	
Community pharmacies	453 (94)
Hospitals, PHOs,[A] general practices	29 (6)
Location of work (n = 462)	
Major cities	203 (44)
Provincial cities	144 (31)
Provincial towns	90 (19)
Rural areas	25 (5)
Years of experience	
>10	313 (65)
≤10	169 (35)
Working hours (n = 464)	
Full time	310 (67)
Part time	144 (31)
Not working	10 (2)

[A]Primary Health Organisations (PHO): ensure the provision of essential primary health care services, mostly through general practices, to people who are enrolled with the PHO.

Table 3. Weighted response scores.[A]

Question	Likert scale	1	2	3	4	5	Likert scale
Pharmacist							
How familiar are you with the pharmacist prescribing courses provided in New Zealand?	Extremely familiar			3.77			Not familiar
How familiar are you with pharmacist prescribers' scope of practice in New Zealand?	Extremely familiar			3.55			Not familiar
Would becoming a pharmacist prescriber improve your job satisfaction?	Definitely		2.14				Definitely not
Would you be confident to start prescribing now without taking prescribing course?	Extremely confident			3.05			Not confident
Course related							
Funding the course costs	Not a barrier			3.06			Extreme barrier
How challenging would it be to complete assignments and relevant paperwork related to the course, while working full time?	Extremely challenging		2.12				Not challenging
Would it be easy to find a medical supervisor for practical training?	Very easy			3.61			Very difficult
Stakeholder related							
No remuneration for pharmacist prescribing role	Not a barrier			3.93			Extreme barrier
Would your employer provide you with financial support to complete the prescribing course?	Strongly support			3.72			Strongly oppose
Would your employer provide you with time support to complete the prescribing course?	Strongly support			3.34			Strongly oppose
Would your employer provide you with the managerial support to complete a prescribing course?	Strongly support			3.11			Strongly oppose
Barriers to enrolment							
Needing a current annual practicing certificate as a prerequisite for enrolment	Not a barrier	1.12					Extreme barrier
Needing to demonstrate competence in standard domains M1,[B] M2[C] and O1[D] of the pharmacist scope of practice as a prerequisite for enrolment	Not a barrier	1.36					Extreme barrier
Needing 2 years of experience within a collaborative health team environment as a prerequisite for enrolment	Not a barrier		2.64				Extreme barrier
Needing to have up-to-date clinical, pharmacological, and pharmaceutical knowledge as a prerequisite for enrolment	Not a barrier		2.06				Extreme barrier

[A]A weighted score of 1 would indicate that 100% of respondents selected the left-hand response (eg definitely or extremely familiar), a weighted score of 5 would indicate that 100% of respondents selected the right-hand response (eg definitely not or not familiar). For example, a weighted score of 2–3 (eg 2.1, 2.6) indicates that a majority of respondents selected slightly familiar or somewhat of a barrier, whereas 3.77 (the first line in the table) indicates that a majority of respondents selected the middle or neutral response (eg moderately familiar with pharmacist prescribing courses).
[B]Professionalism in pharmacy competence standard.
[C]Communication and collaboration competence standard.
[D]Health and medicine management competence standard.

Participants commented that it is better to get the general content first due to multiple co-morbidities than to specialise in specific areas according to their desire or the scope of practice, as per doctors' pathway.

> General [approach] with the option to specify part way through if you would like or specialise in general practice just like a GP would. (Respondent # 478)

Medical supervisors

Of 465 respondents who answered this question, just under two-thirds (61%, $n = 284$) identified the difficulty in finding their own medical supervisor for the practical training aspect of the course as a major barrier.

Seventy-two participants expressed their thoughts about GPs' reluctance to supervise them; 8.3% ($n = 6$) thought that GPs are not aware of the pharmacist prescribing role or the offered training programs, so they doubt pharmacists' skills to prescribe. Forty-two percent ($n = 30$) mentioned that GPs are overstretched, have time constraints, and they already take on mentoring roles for other GPs. Thirty-two percent ($n = 23$) felt that most GPs oppose the pharmacist prescribing role due to fear of professional encroachment on their scope or crossing the line, and that this may

affect their capitation payment rate. Eighteen percent (n = 13) believed that GPs would not sacrifice their time without benefits or remuneration, even if there is a good relationship between them and pharmacists.

> The current demand for pharmacist prescribers is not high. As pharmacists we already find it difficult to prove to doctors we are capable of doing what we do (oral contraceptive provision by pharmacists was opposed by a large portion of doctors). I feel that doctors will see this as a further attack on what they consider their job. (Respondent # 32)

Others (n = 40; 8.6%) suggested that a good relationship with local GPs, working in a pharmacy that is attached/integrated/located inside medical centres, working in general practice or in a multidisciplinary team with prescribers facilitates finding a clinical mentor. Six (1.3%) participants mentioned that working rurally makes it harder to find a supervisor.

> The GPs here are swamped with work & [patch] protection [is] the biggest issue. At a recent service level agreement (SLA) [area] meeting a pharmacist colleague reported that a suggestion that pharmacist being able to help with minor ailments & prescribing or doing telephone scripts for pain relief, eg Paracetamol, etc. was met with complete push-back from GP – and they were adamant they would still need a consultation with a GP. I believe that they don't want to miss out on their gross margin scheme (GMS) – everything is usually about money! (Respondent # 281)

Course funding

Of 429 respondents who answered this question, 8.9% (n = 38) mentioned that it should be fully funded, especially for those in rural areas, whereas 29% (n = 124) expressed that they can self fund or partially pay the course fees, 6.5% (n = 28) of them agreed to self fund if there is future remuneration after completion of the course, and 17.5% (n = 75) preferred to have the cost shared or as a loan.

With regards to cost sharing and funding, 18.4% (n = 79) of participants reported that the Government should financially support pharmacists' postgraduate training, since pharmacist prescribing will benefit NZ's healthcare system. Some (n = 75, 17.5%) mentioned that nurse training is funded through District Health Boards (DHBs), so similar models could be applied, whereas some mentioned that it could be funded by DHBs with a bonded period to ensure return of investment. It was believed that DHBs would benefit from this service because pharmacists will relieve pressures on the healthcare system.

Barriers to course enrolment

When asked if they found course prerequisites as barriers to enrolling, the majority of respondents agreed that up-to-date pharmacological and pharmaceutical knowledge (65.6%, n = 316) and 2 years of experience within a collaborative healthcare team (66.4%, n = 320) act as a barrier to joining a prescribing course, for the following reasons:

Forty-seven (9.7%) participants highlighted that working in community or retail pharmacies, which engenders greater isolation and independence from the rest of healthcare team, is the main reason that makes it difficult to meet these two requirements. They also felt that their clinical knowledge tends to decline while working in a community pharmacy and that it is difficult to get jobs in hospitals or medical centres to upskill.

> It is not a course designed to appeal to community pharmacists. It's something that is more targeted to hospital pharmacists - their clinical and pharmacological knowledge is used in depth every day. In community, accuracy is a greater focus that pharmacology. I have rarely ever used an eGFR in community pharmacy and I know some hospital pharmacists that basically do an eGFR everyday. (Respondent # 312)

Stakeholder-related issues

Employer support

Of 460 respondents who answered this question, 19 (4.1%) stated that their employers are likely to support them to complete the course if there are financial returns or gains for them.

Some of the respondents who were pharmacy owners (n = 16, 3.5%) mentioned that they can support themselves to undertake the course, but stated they would find it difficult to support their employees, mainly due to the shortage of backfills.

Funding and lack of staff appeared to consistently be raised; for example, pharmacists mentioned that community pharmacies are currently struggling financially to survive under the current remuneration scheme, whereas others highlighted the shortage of staff as the main reason behind the lack of their organisational support.

Facilitators were identified as organisational support, such as having motivated managers, who are interested in workforce development or a practice setting where a need has been identified, specifying that medical centres settings are the best.

Remuneration

Our study has shown that lack of remuneration was the highest weighted score as a barrier to pharmacist prescribing course uptake (see Table 3). Of 481 participants, 365 (75.9%) considered the lack of remuneration for prescribing roles as an extreme or strong barrier to becoming a pharmacist prescriber.

Discussion

This study identified perceptions of NZ-registered pharmacists on their: familiarity with the currently offered prescribing

course and pharmacist prescribers' scope of practice in NZ; confidence to prescribe without training; current postgraduate course issues; and stakeholders support and barriers and facilitators to course enrolment. Improving pharmacist prescribing training and role uptake would appear to benefit the NZ healthcare system in improving access to health services, better medicines management for patients, and delivering more effective and efficient patient care.[20,21] Most pharmacists agreed that development of pharmacist prescribing will improve patients' access to healthcare services, make better use of an underutilised workforce and increase their job satisfaction. International research has demonstrated that pharmacist prescribing allows pharmacists to be more integrated into the healthcare team, improve teamwork, and utilise their skills to full scope of practice, as well as improving patients' access to health care in many different scenarios including chronic disease/medicines management and better access to care in rural areas[22,23]

It is not surprising that the course prerequisites, the course design, and funding were noted as barriers to becoming a prescriber given NZ has more onerous requirements for becoming a registered pharmacist prescriber and is more expensive than the UK. The UK minimum postgraduate practice certificate is 30 credits in size, whereas the NZ Pharmacist Prescriber Postgraduate Certificate is 60 credits in size.[7] Government funding was recommended as a facilitator to undertaking the prescribing training. Research from the UK identified that lack of funding provision limits access to training courses.[24] Health Education England has also invested £15.9 million (in 2021) into postgraduate development of pharmacist-independent prescriber training to ensure that pharmacy teams are equipped to support the wider healthcare team.[25]

Prerequisites continue to be identified as barriers to undertaking training; this is despite changes in July 2019. After a comprehensive review of the pharmacist prescribing training programme, the NZ Pharmacy Council relaxed its requirements and removed completion of a postgraduate Diploma in Clinical Pharmacy as a prerequisite for enrolment to the programme;[16] however, there is still no change to the number of pharmacists enrolling. In 2022, the General Pharmaceutical Council (GPhC) in the UK dropped the experience requirement for independent prescriber training, and pharmacists are now able to begin accredited independent prescribing courses when they have 'demonstrated readiness', rather than having to first spend at least 2 years on the GPhC register.[26] They also removed the requirement for registered pharmacists to have relevant experience in a specific clinical or therapeutic area before enrolling.[26] If NZ were to make additional changes such as the aforementioned ones, we may see more pharmacists taking up prescriber courses.

Many respondents reported they would find it difficult to find their own medical supervisor. Due to a shortage of GPs and increasing workloads, it may be hard for GPs to find time for mentoring, especially because they already mentor other trainee GPs.[27] The NZ Pharmacy Council could help alleviate this problem by allowing other prescribing practitioners (ie nurse practitioners or pharmacist prescribers) to supervise pharmacists during training. This would be consistent with the professional regulatory changes in 2018–19 in the UK,[28] which allowed non-medical prescribers to take on a designated practitioner role. The Royal Pharmaceutical Society Great Britain identified that this has improved access to training opportunities with the potential to increase the number of non-medical prescribers.[28]

Some respondents mentioned that GPs refuse to supervise pharmacists through their practice training due to fears about pharmacists crossing medical professionals' role boundaries or taking over their patients, and their lack of awareness about training and pharmacist prescribing roles in general. It is known that some GPs are opposed to pharmacist prescribing due to fear of professional encroachment.[29] Promotion and evaluation of pharmacist prescribing roles' safety and efficiency (in terms of patients' health outcomes) may help other professions overcome these issues. In the UK, setting role boundaries was recommended through agreements between pharmacist prescribers and NHS trusts. This was described as a key element for successful prescribing practice;[29] however, this has not been implemented in NZ.

Students find fulfilling academic requirements while continuing their professional duties challenging. Employers should have robust clinical governance pathways, policies, and procedures for non-medical prescriber training.[24,30,31] These policies should document all required support and funding mechanisms such as study leave and backfill arrangements.[30,31] These types of policy and the governance should become more uniform across NZ as Te Whatu Ora (Health NZ) and Te Aka Whai Ora (Māori Health Authority) become employers of many of NZ's healthcare workforce.[32]

Lack of remuneration for the prescribing role was the largest barrier reported by pharmacists. This aligns with previous international research,[11] which found that lack of remuneration was the third most common barrier to pharmacist prescribing after inadequate training and lack of stakeholders' support. The government should consider this issue in the annual strategic plan for primary healthcare development. A government-based remuneration model for pharmacists' expanded scope of practice is important for the sustainability of these services.[33,34] The majority of research reported that pharmacists expanded clinical advanced roles significantly reduced healthcare costs, and have a good cost:benefit ratio.[34] A minor ailment state funding scheme is available in the UK and Canada, in which the government reimburses the pharmacy for the cost of medicine and provides remuneration for pharmacists' time. Delivering of these services by pharmacies instead of higher cost settings presents considerable cost savings to public and government-funded healthcare services; therefore, these repayments should allow for further development of pharmacy services.[34]

Strengths and limitations

This study was conducted during the COVID-19 pandemic, which has likely affected the level of participation. Lack of awareness and knowledge of some pharmacists participating in the survey about pharmacists' prescribing scope of practice in NZ or the offered prescribing courses potentially led to missed or ambiguous answers for some of the survey's questions. Despite these challenges, the survey gained good representation of pharmacists from across NZ and from diverse workplace settings. Using a survey as a research method also has its limitations, such as providing less in-depth data in comparison to focus groups or interviews.

Implication of findings

A multi-level approach needs to be considered to increase and facilitate the pharmacist prescribing course, and therefore role uptake. The government/policymakers need to provide better pathways for training, funding and remuneration recommendations, post qualification. Employing institutions should support pharmacists with the required time and human resources to complete their courses. Training providers need to modernise the way they deliver their courses, and methods of assessment.

Conclusion

Pharmacist prescribing in NZ is still at the beginning of its growth curve; increasing uptake of pharmacist prescribing needs to be considered as part of a national drive to improve primary healthcare services and increase patients' access to medicines. Our study highlights that major changes need to be made from the government, educational sector, and employing institutions to optimise the pharmacist prescribing course and role uptake. A key change that would facilitate this is the removal of the 2 years' experience entry requirement for the prescribing course.

Supplementary material

Supplementary material is available online.

References

1 American Medical Association. 5 ways to improve access to health care. 2021. Available at https://www.ama-assn.org/delivering-care/patient-support-advocacy/5-ways-improve-access-health-care [accessed 8 February 2023].
2 British Columbia government. New health workforce strategy improves access to health care, puts people first. 2022. Available at https://news.gov.bc.ca/releases/2022HLTH0059-001464 [accessed 6 February 2023].
3 Royal College of Nursing. Non medical prescribers. 2022. Available at https://www.rcn.org.uk/get-help/rcn-advice/non-medical-prescribers [accessed 6 February 2023].
4 Department of Health. Prescribing by Non-Medical Healthcare Professionals. 2023. Available at https://www.health-ni.gov.uk/articles/pharmaceutical-non-medical-prescribing [accessed 6 February 2023].
5 The Royal New Zealand College of General Practitioners. Data and statistics. 2020. Available at https://www.rnzcgp.org.nz/our-voice/data-and-statistics/ [accessed 6 February 2023].
6 Pharmacy Council. Pharmacy Workforce Demographic 2022. 2022. Available at https://pharmacycouncil.org.nz/wp-content/uploads/2022/10/Workforce-Demographic-Report-2022-Final.pdf [accessed 6 February 2023].
7 Dadelszen J. Pharmacist Prescriber Qualification Project - history, qualifications and current international and New Zealand experience with health profession prescribing. 2019.
8 Cooper RJ, Lymn J, Anderson C, *et al.* Learning to prescribe – pharmacists' experiences of supplementary prescribing training in England. *BMC Med Educ* 2008; 8: 57. doi:10.1186/1472-6920-8-57
9 Ghabour M, Morris C, Wilby KJ, *et al.* Pharmacist prescribing training models in the United Kingdom, Australia, and Canada: snapshot survey. *Pharm Educ* 2023; 23(1): 100–8. doi:10.46542/pe.2023.231.100108
10 Pharmacy Council. Pharmacist prescribers. 2021. Available at https://pharmacycouncil.org.nz/pharmacist/pharmacist-prescribers/ [accessed 6 February 2023].
11 Zhou M, Desborough J, Parkinson A, *et al.* Barriers to pharmacist prescribing: a scoping review comparing the UK, New Zealand, Canadian and Australian experiences. *Int J Pharm Pract* 2019; 27(6): 479–89. doi:10.1111/ijpp.12557
12 Lloyd F, Parsons C, Hughes CM. 'It's showed me the skills that he has': pharmacists' and mentors' views on pharmacist supplementary prescribing. *Int J Pharm Pract* 2010; 18(1): 29–36. doi:10.1211/ijpp.18.01.0006
13 Kelley K, Clark B, Brown V, *et al.* Good practice in the conduct and reporting of survey research. *Int J Qual Health Care* 2003; 15(3): 261–6. doi:10.1093/intqhc/mzg031
14 O'Brien BC, Harris IB, Beckman TJ, *et al.* Standards for reporting qualitative research. *Acad Med* 2014; 89(9): 1245–51. doi:10.1097/ACM.0000000000000388
15 Borkan JM. Immersion–Crystallization: a valuable analytic tool for healthcare research. *Fam Pract* 2022; 39(4): 785–9. doi:10.1093/fampra/cmab158
16 Pharmacy Council. Guidance Statement - Enrolment in the post-graduate certificate programme in pharmacist prescribing. 2019. Available at https://pharmacycouncil.org.nz/wp-content/uploads/2021/03/Enrolment-in-the-PG-cert-PP-prog-guidance-statement-2019.pdf [accessed 7 February 2023].
17 University of Auckland. Postgraduate Certificate in Clinical Pharmacy in Prescribing. 2023. Available at https://www.auckland.ac.nz/en/fmhs/study-with-us/specialisations/pgcertclinpharm/prescribing.html [accessed 10 May 2023].
18 General Pharmaceutical Council. Standards for the education and training of pharmacist independent prescribers. 2022. Available at https://www.pharmacyregulation.org/sites/default/files/document/standards-for-the-education-and-training-of-pharmacist-independent-prescribers-october-2022.pdf [accessed 10 May 2023].
19 General Pharmaceutical Council. Education and training of pharmacist independent prescribers: evidence framework. 2023. Available at https://www.pharmacyregulation.org/sites/default/files/document/education-and-training-of-pharmacist-independent-prescribers-evidence-framework-may-2019.pdf [accessed 10 May 2023].
20 Ministry of Health. Pharmacist prescribers can now prescribe more medicines. 2021. Available at https://www.health.govt.nz/news-media/media-releases/pharmacist-prescribers-can-now-prescribe-more-medicines [accessed 10 May 2023].
21 Ministry of Health. Medicines (Designated Prescriber: Pharmacists) Regulations. 2014. Available at https://www.health.govt.nz/about-ministry/information-releases/regulatory-impact-statements/medicines-designated-prescriber-pharmacists-regulations [accessed 10 May 2023].
22 Jabbal R. Pharmacist prescribing: improving access to care in mental health. *J Can Acad Child Adolesc Psychiatry* 2010; 19(1): 3–4. Available at https://pubmed.ncbi.nlm.nih.gov/20119560/
23 Stewart DC, George J, Bond CM, *et al.* Views of pharmacist prescribers, doctors and patients on pharmacist prescribing

implementation. *Int J Pharm Pract* 2009; 17(2): 89–94. doi:10.1211/ijpp.17.02.0003
24 Graham-Clarke E, Rushton A, Noblet T, *et al.* Facilitators and barriers to non-medical prescribing – A systematic review and thematic synthesis. *PLoS One* 2018; 13(4): e0196471. doi:10.1371/journal.pone.0196471
25 Wickware C. Community pharmacists to get independent prescriber training through £16m fund. *Pharm J* 2021; 307(7955): Available at https://pharmaceutical-journal.com/article/news/community-pharmacists-to-get-independent-prescriber-training-through-16m-fund
26 General Pharmaceutical Council. GPhC Council agrees new guidance for entry to independent prescribing courses. 2022. Available at https://www.pharmacyregulation.org/news/gphc-council-agrees-new-guidance-entry-independent-prescribing-courses#:~:text=It%20means%20pharmacists%20will%20no,in%20an%20independent%20prescribing%20course [accessed 7 February 2023].
27 New Zealand Government. Plan for big boost in GP training numbers. 2022. Available at https://www.beehive.govt.nz/release/plan-big-boost-gp-training-numbers [accessed 7 February 2023].
28 Royal Pharmaceutical Society. Designated Prescribing Practitioner Competency Framework. 2019. Available at https://www.rpharms.com/resources/frameworks/designated-prescribing-practitioner-competency-framework [accessed 7 February 2023].
29 Dapar MP. An investigation of the structures and processes of pharmacist prescribing in Great Britain: a mixed methods approach. PhD Thesis, Robert Gordon University, Aberdeen, UK; 2012. Available at https://rgu-repository.worktribe.com/output/248179 [accessed 7 February 2023].
30 Noblet T, Marriott J, Graham-Clarke E, *et al.* Barriers to and facilitators of independent non-medical prescribing in clinical practice: a mixed-methods systematic review. *J Physiother* 2017; 63(4): 221–34. doi:10.1016/j.jphys.2017.09.001
31 Edwards J, Coward M, Carey N. Barriers and facilitators to implementation of non-medical independent prescribing in primary care in the UK: a qualitative systematic review. *BMJ Open* 2022; 12(6): e052227. doi:10.1136/bmjopen-2021-052227
32 New Zealand Government. Pae Ora (Healthy Futures) Act 2022. Public Act 2022 No. 30. Wellington; 2022. Available at https://legislation.govt.nz/act/public/2022/0030/latest/LMS575405.html
33 Park JY, Yuen J. Exploring patient willingness to pay for pharmacist-led clinical services in a primary care setting. *Can Pharm J* 2022; 155(3): 157–63. doi:10.1177/17151635221087193
34 Dalton K, Byrne S. Role of the pharmacist in reducing healthcare costs: current insights. *Integr Pharm Res Pract* 2017; 6: 37–46. doi:10.2147/IPRP.S108047

Data availability. The data that support the findings of this study are available on request from the corresponding author (MG). The data are not publicly available due to containing information that could compromise the privacy of research participants.

Conflicts of interest. The authors declare no potential conflicts of interest in regards to the research, authorship, and publication of this article.

Declaration of funding. Mariam Ghabour was funded by a University of Otago PhD scholarship.

Author affiliations
[A]School of Pharmacy, University of Otago, Dunedin, New Zealand.
[B]Department of Primary Health Care and General Practice, University of Otago, Wellington, New Zealand.
[C]College of Pharmacy, Faculty of Health, Dalhousie University, Halifax, Canada.