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Perceptions about the implementation of physiotherapist prescribing in Australia: a national survey of Australian physiotherapists

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Abstract

Objectives: To explore (1) the views of Australian physiotherapists regarding potential implementation of non-medical prescribing (NMP), (2) how the geographical location and health sector in which a clinician works may influence their perceptions, (3) the perceptions of Australian physiotherapists about how physiotherapist prescribing might impact the care that the profession can provide.

Design: A cross-sectional descriptive survey using open and closed questions

Setting: Participants completed an online questionnaire.

Participants: 883 Australian Health Professionals Registration Authority registered-physiotherapists, working across all states and territories.

Outcome Measures: An online questionnaire was developed by a panel of subject-experts and pre-tested (n=10) for internal consistency. A hyperlink to the questionnaire was emailed to all members of the Australian Physiotherapy Association. A reminder email was sent 4 weeks later. Quantitative data were analysed descriptively, with use of absolute risk reductions (ARR) and 95% Confidence Intervals to determine the likelihood that health sector or geographical location were associated with specific views. Thematic analysis enabled synthesis of the qualitative data.

Results: 79.0% participants felt that physiotherapist prescribing should be introduced in Australia, with 71.2% wanting to train as prescribers. Clinical governance, risk management, regulation of clinicians and the development of an education framework were identified as priorities for implementation. Participants working in the private sector were significantly more likely to train as prescribers than those in the public sector (ARR 9.9%; 95%CI [3.5, 16.4]) or educational/research institutions (ARR 23.3%; 95%CI [12.8, 33.8]), with city dwellers significantly more likely to train compared to physiotherapists in remote regions (ARR 19.8%; 95%CI [0.8, 39.2]). Physiotherapist prescribing was predicted to improve efficiency of healthcare delivery, access to medicines and reductions in healthcare costs.

Conclusions: AHPRA registered-physiotherapists perceive that the introduction of autonomous physiotherapist prescribing would be beneficial for the Australian population and should be introduced. Decision-makers should consider the results of this survey in conjunction with cost-benefit and risk analysis when planning the introduction of physiotherapist prescribing.

Strengths and Limitations

- First rigorous survey investigating the perceptions of Australian physiotherapists about the potential implementation of physiotherapist prescribing in Australia.
- Results provide the evidence required by the physiotherapy professional association, health departments and political leaders to inform clinically safe and economically sound decisions about redefining the scope of physiotherapy in Australia to include non-medical prescribing.
- Limitations are inherent with all survey-based research due to selection and response bias.
- It was not possible to determine why non-responders did not participate.

Background and Rationale

Non-medical prescribing (NMP) has been used in clinical practice by a variety of professions for over 20 years. [1] However, it was not until 2012 that in the United Kingdom (UK), physiotherapists were first granted independent prescribing responsibilities. In July 2015, the Australian Physiotherapy Association (APA) in collaboration with the Australia Physiotherapy Council (APC) and Council of Physiotherapy Deans Australia and New Zealand (CPDANZ) submitted a proposal for the endorsement of registered physiotherapists for autonomous prescribing to the Physiotherapy Board of Australia. [2] Difficulties in accessing medicines for Australians living in rural and remote areas alongside recognised health equities between minority groups such as Aboriginal and Torres Strait Islander peoples were cited as key drivers for reform. Benefits of the implementation of prescribing by physiotherapists in Australia, such as the potential to increase access to medicines for health service users across all communities, [2] are therefore anticipated.

The clinical and cost-effectiveness of NMP remains unclear, with a recent systematic review finding only limited evidence of unknown risk of bias [3], nonetheless its popularity in clinical practice continues to grow.[4] A contemporary and robust mixed-methods systematic review of 50 moderate to good quality studies, investigating the barriers to and facilitators of independent NMP, identified conflict within a profession as a key barrier to successful implementation. [4] A united professional position regarding the adoption of innovative clinical practice was highlighted as essential to ensure the development of safe and high-quality practice. Divided opinion between individual clinicians, academics and professional managers/leaders may lead to confusion across the healthcare community, resulting in unwarranted negative thoughts and perceptions about NMP roles and responsibilities. Acceptance and support for prescribing by the Australian physiotherapy profession will be required for successful implementation into local and national health systems.[2 5-7] It is therefore important that the views of Australian physiotherapists are understood in order to inform key stakeholders and decision-makers about redefining the scope of physiotherapy to include NMP in Australia. To date no evidence exists evaluating the Australian physiotherapy professions' views and perceptions about the potential use of NMP by physiotherapists in Australia.

Objectives

1. To explore the views of Australian physiotherapists about the potential implementation and use of NMP by physiotherapists in Australia.

2. To explore how the geographical location and health sector in which a clinician works may influence the perceptions of Australian physiotherapists about the potential implementation and application of NMP by physiotherapists in Australia.

3. To explore the perceptions of Australian physiotherapists about how physiotherapist prescribing might impact the care that the physiotherapy profession can provide.

METHODS

A detailed study protocol was published to ensure transparency and reproducibility. [8] The study is reported in line with an adapted version of the Standard Protocol Items: Recommendations for Interventional Trials (SPIRIT) statement, [9] recommended by the SUrvey Reporting GuidelinE (SURGE). [10] Ethical approval was granted by the Medical Sciences Human Research Ethics Committee (HREC), Macquarie University, Australia (Reference No: 5201600846), and verified by the Research Governance Officer at the University of Birmingham, UK (Reference No: ERN_16-1576) where the lead author is currently undertaking his PhD.

Survey design

A cross-sectional online descriptive survey design enabled the collection of empirical data across Australia. [11-13] An online questionnaire was developed using Qualtrics (Qualtrics, Provo, UT) thus enabling Australian-wide participation with no geographical or time-zone constraints. [11 14]

Participants

Participant inclusion criteria are described in Box 1. According to data published by the Physiotherapy Board of Australia, 30,004 physiotherapists were registered with the Australian Health Professionals Registration Authority (AHPRA) at the time of the survey.[15]

Box 1: Participant inclusion criteria

- Physiotherapists registered with AHPRA
- Ability to read and understand written English
- Provision of consent to participate in the survey independently

Procedure

AHPRA privacy policy [16] prohibits approaching AHPRA registered physiotherapists directly. Therefore, an advertisement containing a link to the online survey was emailed to all members of the APA, including all clinical and professional networks. A reminder advertisement was sent via email 4 weeks after the initial email to promote participation in the survey. [11 13 14] IP addresses were not saved to ensure participant anonymity. The APA membership was selected as the recruitment platform as it is representative of all physiotherapy specialties and levels of experience across Australia, with 23153 members at the time of survey.[17] Word of mouth referrals to the survey through professional networks were promoted in the email to facilitate capturing the views of non-APA members. [11 13 14] Data collection took place 1st March - 30th April 2017. Participants accessed the questionnaire via the online link. Completion of the survey was anonymous and entirely voluntary. [11 13 14] Participant consent was gained using an online information and consent form. [11-13] Researcher contact details were supplied to enable any questions or concerns to be answered prior to completing the online questionnaire. [11-13]

Questionnaire development

Data from a mixed methods systematic review examining the barriers and facilitators of NMP internationally informed the questionnaire design and specific question inclusion. [4] Questions were

optimised through consultation with experts in the fields of physiotherapy, NMP and Australian state/federal law and health policy. [11-13]

The questionnaire consisted of 4 sections:

1. Demographic information including participants' age/gender/ number of years qualified/ specialty/location.
2. Participants' perceptions of the positive and/or negative aspects of physiotherapist prescribing to the profession as a whole.
3. Participants' perceptions of the impact of physiotherapist prescribing to them as an individual.
4. Participants' perceptions regarding the potential wider impacts of physiotherapist prescribing.

Sections 1-3 used closed questions collecting quantitative data. Section 4 contained two open-ended questions to allow the participants to answer without limitation. [11 13] Inbuilt survey logic ensured that participants were shown questions that were pertinent to them based on their previous answers. Before completion, participants were encouraged to share any additional information that they deemed relevant, capturing useful insights not addressed elsewhere in the questionnaire. [11-13]

The questionnaire was piloted to test for internal consistency and optimise user experience. [12] Ten participants were purposely sampled to represent the physiotherapy profession in Australia. [11-13] Following the pilot, Anglo-Australian terminology was clarified, and small changes were made to the linguistics and survey logic. Pilot participants were not excluded from completing the final questionnaire. The final questionnaire can be found in supplementary file 1.

Data Storage

All electronic data were stored in password-protected computer files only accessible by study investigators. Participants who disclosed personal details were additionally protected via coding on data files. [11-13] The password-protected files will be retained for 10 years, satisfying ethical and university policies.

Data Analysis

Demographic data (section 1) were tabulated and primary descriptive analysis of the data was completed using IBM SPSS Statistics for Macintosh, Version 22.0. Comparisons of proportions from questions in sections 2 &3, addressing objectives 1 & 2, were conducted using the PEDro confidence interval calculator (www.pedro.org.au). [18] Calculations of absolute risk reductions (ARR) with 95% confidence intervals were used to determine the likelihood that health sector or geographical location were associated with specific views. Thematic analysis was used to ensure the transparent synthesis of data addressing objective 3, collected in section 4 of the online questionnaire. This analysis enabled the identification of key themes within a structured analytical framework. [19] Answers were coded line-by-line using NVivo 11 software (QSR International, Melbourne, Australia) by one researcher (TN) and were verified by a second researcher (TJ). Independently generated themes/sub-themes were then examined by a panel of experts for confirmation and agreement. [19]

Patient and Public Involvement

The development of this study was informed by the experiences of patients and the general public acknowledged in the literature. Due to the study's objectives, patients and the general public were

not utilised in design of the study or in participant recruitment. The results will be deiminated to all interested parties through publication and presentation at professional conferences.

RESULTS

Demographics

A total of 883 participants (3% of all AHPRA registered-physiotherapists) fully completed the questionnaire. Demographic data are presented in Table 1. Fifty eight percent of participants had been qualified for more than 10 years, with the majority of participants (88.4%) gaining their primary professional qualification in Australia. The largest proportion of participants (n=536, 61%) identified musculoskeletal physiotherapy as their specialty area of practice. Of those working clinically, 52% of participants worked in the private health sector. There were participants from every state and territory, with the majority practising in New South Wales (n=299, 34%), Victoria (n=234, 27%), Queensland (n=115, 13%) or Western Australia (n=130, 15%). Seventy eight percent of participants worked in a major city.

Table 1: Demographic Data

	AHPRA Registered Physiotherapists n (%)
Total Participants	883 (100)
Gender	
Male	366 (41.4)
Female	517 (58.6)
Age	
17-29	258 (29.2)
30-39	260(29.4)
40-49	173 (19.6)
50-59	124 (14.0)
60+	68 (7.7)
Number of years qualified as a physiotherapist	
0-4	191 (21.7)
5-9	177 (20.1)
10-14	109 (12.4)
15-19	101 (11.5)
20+	302 (34.3)
Country of Primary Qualification	
Australia	776 (88.4)
Overseas (Belgium, Canada, Germany, Hong Kong, India, Ireland, Italy, Mexico, Netherlands, New Zealand, Philippines, Portugal, Serbia, Singapore, South Africa, Taiwan, UK, USA)	102 (11.6)
Predominant Physiotherapy Practice Specialties: (max of 3 specialties identified per participant)	
Amputees	10 (1.1)
Burns/Plastics	9 (1.0)
Cardiorespiratory	132 (14.9)
Chronic disease management	100 (11.3)
Education	58 (6.6)
Emergency Department	65 (7.4)
Gerontology/Aged care	115 (13.0)
Health promotion/ Public health	10 (1.1)
Lymphoedema	11 (1.2)
Mental Health	4 (0.5)
Musculoskeletal/ Orthopaedics	536 (60.7)
Neurology	81 (9.2)
Occupational Health	21 (2.4)
Paediatrics	37 (4.2)
Pain	105 (11.9)
Palliative Care	6 (0.7)
Rheumatology	10 (1.1)
Rural generalist	39 (4.4)
Women's health/ continence	53 (6.0)
Veterinary	2 (0.2)
Health Sector	
Public Sector	325 (37.3)
Private Sector	449 (51.5)
Educational/research institute or university	49 (5.6)
Not-for-profit organisation (NFPO)	36 (4.1)
Other	13 (1.5)
Rural, Remote and Metropolitan Areas (RRMA) classification [20]	
Major Cities of Australia	679 (77.8)
Inner Regional Australia	113 (12.9)
Regional Australia	58 (6.6)
Remote Australia	20 (2.3)
Very Remote Australia	3 (0.3)
State or Territory	
Australian Capital Territory	19 (2.2)
New South Wales	299 (34.0)
Northern Territory	7 (0.8)
Queensland	115 (13.1)
South Australia	64 (7.3)
Tasmania	11 (1.3)
Victoria	234 (26.6)
Western Australia	130 (14.8)

Participants' perceptions about the impact of physiotherapist prescribing on the physiotherapy profession

Six hundred and eighty participants (79%) reported that they strongly agreed or agreed that autonomous prescribing responsibilities should be introduced for physiotherapists in Australia, with 144 participants (12%) against the introduction (Figure 1). Potential benefits and concerns were identified.

The participants reported that physiotherapist prescribing could have a range of benefits in the Australian healthcare system (Figure 1). The most commonly identified benefit was an improvement in the delivery of health services (80.1%; n=707). Reduced costs of healthcare delivery to the consumer, as well as a reduction in the overall cost of healthcare and an improved consumer experience were also identified as potential benefits of NMP in Australia. Participants' concerns about the prescription of medicines by physiotherapists centred on quality and safety issues. In particular, concerns about whether physiotherapists have the knowledge required to train as a prescriber (34.8%), and a potential increased safety risk to consumers (34.1%) were raised. One third of participants (33.1%) were concerned that the expected remuneration for this service would not reflect the increased professional risk.

Figure 2 illustrates participants' opinions about the number of years of experience a physiotherapist should have prior to being permitted to train as a Prescriber. The majority of participants felt that physiotherapists should have 3 years or more of experience (68.4%), with 34.6% believing this should be at least 6 years.

Participants' perceptions about the impact of physiotherapist prescribing to them as an individual

Six hundred and eight participants (71.2%) would be extremely likely (n=397, 47%) or somewhat likely (n=211, 25%) to train as a prescriber if this were permitted, whilst 174 participants (20.3%) would not. Figure 3 outlines the key motivators and deterrents among participants to train as a prescriber.

Key motivators cited included the ability to provide improved quality of care (n=646, 95.99%) and the improved professional reputation associated with NMP (n=416, 61.81%). Some participants included increased job satisfaction (n=303, 45.02%) and remuneration (n=125, 18.57%) as motivating factors. Additionally, some participants (n=72, 10.7%) reported being motivated by potential clinical and cost efficiencies for both for the consumer and healthcare provider through enhanced clinical pathways, improved access to medicines and optimisation of clinical knowledge.

The most common deterrent for training to be a prescriber was the belief that this will not change the care that the individual physiotherapist would provide to their patients (n=152, 61.79%). Concerns around an increased level of clinical responsibility were also highlighted as potential deterrents (n=108, 43.9%). Some participants felt that they did not have sufficient background knowledge to undertake the prescribing course (n=76, 30.89%). Additionally, participants reported that the cost of training or distance to travel to universities would be too great, or that they were nearing retirement and did not want the additional stress of training to become a prescriber. Further, it is noted that a small number of participants reported that they would not train as prescribers as they are employed in non-clinical roles (n=35, 14.23%).

Influence of Health Sector and Geographical Location

The percentage of participants from different health sectors and geographical locations, who agreed or strongly agreed with autonomous prescribing responsibilities being introduced for Australian physiotherapists, and those who stated that they were extremely likely or somewhat likely to want to train as a prescriber are summarised in Table 2.

Participants working in the private sector were significantly more likely to agree that autonomous prescribing responsibilities should be introduced for physiotherapist in Australia than those who work in education, not-for-profit organisations and the military (ARR 9.8%, 95%CI [0.8, 20.2]). No significant difference (ARR 1.7%; 95%CI [-4.0, 7.6]) was seen between participants who worked in the private or public healthcare sectors. Participants working in the private sector were significantly more likely to train as prescribers than those working in the public sector (ARR 9.9%; 95%CI [3.5, 16.4]) or other areas, such as within educational or research institutions (ARR 23.3%; 95%CI [12.8, 33.8]). A significantly higher proportion of participants in city regions expressed a wish to train as a prescriber compared to those in remote regions (ARR 19.8%; 95%CI [0.8, 39.2]). Those practising in cities (ARR 24.0%, 95%CI [5.8, 43.9]) and regional areas (ARR 19.5%, 95%CI [0.4, 40.1]) were significantly more likely to agree with the introduction of physiotherapist prescribing than those from remote regions. However, there was no significant difference (ARR 4.4%, 95%CI [-2.2, 12.0]) between participants who practise in major cities compared to regional areas.

Table 2: Percentage of participants from different health sectors and geographical locations, who agreed with the introduction of physiotherapist prescribing and are likely to train

	Location RRMA % [95% Confidence Interval]			Subgroup Comparisons ARR % [95% Confidence Interval]		
Survey item	City	Regional	Remote	City: Regional	City: remote	Regional: remote
Agreed or strongly agreed with autonomous prescribing	80.1 [77.3, 83.3]	76.1 [69.0, 81.9]	56.5 [36.8, 74.4]	4.4 [-2.2, 12.0]	24.0 [5.8, 43.9] *	19.5 [0.4, 40.1] *
Likely to Train as prescriber	71.9 [68.4, 75.2]	70.9 [63.4, 77.3]	52.2 [33.0-70.8]	1.0 [-6.3, 9.1]	19.8 [0.8, 39.2] *	18.7 [-1.3, 39]
	Health Sector % [95% Confidence Interval]			Subgroup Comparisons ARR % [95% Confidence Interval]		
Survey item	Private	Public	Other	Private: Public	Private: Other	Public: Other
Agreed or strongly agreed with autonomous prescribing	80.7 [76.8, 84.1)	79.0 [74.2, 83.1]	70.8 [61.1, 79.0]	1.7 [-4.0, 7.6]	9.8 [0.8, 20.2] *	8.2 [-1.3, 18.8]
Likely to Train	77.4 [73.3, 81.1]	67.5 [62.2, 72.5]	54.2 [44.2, 63.8]	9.9 [3.5, 16.4] *	23.3 [12.8, 33.8] *	13.4 [2.3, 24.5] *
*Significant at p<0.05						

Wider impacts of physiotherapist prescribing

Participants were asked to provide additional comments about how NMP may impact the overall level of care that the profession is able to provide. In total, 230 participants provided comments.

Four major themes were identified:

1. Clinical and cost-efficiency
2. Access to prescription medicines
3. Optimal therapeutics and clinical effectiveness
4. Time management

Table 3 lists the number of participants that reported or discussed each theme and provides Illustrative quotations.

Clinical and cost-efficiency

One hundred and eighteen participants commented that the introduction of autonomous physiotherapist prescribing would have positive effects on both clinical and cost-efficiencies for patients, clinicians and the health economy. Participants identified the positive impact on the overall patient journey as a potential benefit of NMP by reducing unnecessary appointments with General Practitioners (GPs), specialists and surgeons. Specifically, participants recognised the current frequency of referrals from physiotherapists to GPs for analgesic review, access to oxygen therapy, bronchodilators and antibiotics and on-going pharmacological spasticity management. A common sentiment was that if physiotherapists could provide these services themselves, patients could have more timely access to appropriate medicines, which in turn would complement physiotherapeutic interventions and accelerate patient improvement/recovery. Participants also anticipated that NMP could reduce acute injury recovery times and minimise the risk of chronicity, which in turn could reduce pressures on medical services and end costs to the consumer, Medicare and private health insurers. Further, the presence of physiotherapist prescribers in emergency departments and specialist multidisciplinary clinics was anticipated to reduce waiting times for patients, thus helping to meet performance measures set by governing bodies.

Access to prescription medicines

Seventy-one participants provided comments concerning potential improvements in accessing prescription medicines for all Australians regardless of geographic or other socio-economic factors. Specifically, it was suggested that physiotherapist prescribers in rural and remote regions could issue prescription medications to patients who might otherwise have limited access to medical professionals. However, no participants from rural/remote regions identified this theme within their responses. Participants from metropolitan and regional areas expressed concerns that patients in rural and remote regions may struggle to navigate an over-burdened and expensive healthcare system, frequently waiting for weeks and travelling great distances to see their GP for medications such as analgesics to supplement treatment from their physiotherapists. Participants from all locations identified potential benefits of NMP to healthcare consumers (regardless of location) whose principal healthcare practitioner is a physiotherapist, including persons with physical disabilities and those involved in sports where acute injuries are managed pitch-side by the team physiotherapist.

Optimal therapeutics and clinical effectiveness

Fifteen participants reported the potential for improved optimisation of medicines in-line with physical and psychosocial interventions and therefore enhanced clinical effectiveness. Participants stressed optimal and appropriate use of analgesics across all specialties, especially where adjustments (escalation or de-escalation) to prescriptions are required in-line with physiotherapeutic intervention. It was felt that that the multi-model skills and techniques utilised by physiotherapists would promote a more integrated use of medicines into the overall patient management, with medicines forming just one part of a more comprehensive and coordinated approach. Participants specialising in women's health echoed this statement highlighting the appropriate use of anticholinergics and vaginal oestrogens necessary to holistically treat many of their patients.

Participants agreed that the close working relationships between physiotherapists and their patients, due to the comprehensive time spent completing physiotherapeutic interventions may be used to promote patients' compliance to their prescribed medicines. Physiotherapist Prescribers with the appropriate knowledge and skills could legally reinforce the appropriate use of medicines; better recognising poor adherence, dependency, abuse or adverse side effects masquerading as conditions treated by physiotherapists.

Time management

Nine participants suggested that the time requirements needed to train as a physiotherapist prescriber and on-going time required for CPD may be prohibitive to introducing NMP in Australia. Likely time away from clinical work for education and development and NMP duties were seen to potentially interfere with tasks currently performed by clinicians. Further, participants felt that although greater efficiency and access to medicines may benefit heath consumers, time presently spent treating patients in the current scope of practice would be lost to procedures related to prescribing medicines. In other words, although NMP may decrease medical practitioners' workload, this would instead increase pressures on already understaffed physiotherapy departments and possibly even threaten clinical outcomes.

Table 3: Comments that Reported or Discussed Each Theme & Illustrative Quotations from Participants (quotations have been copied verbatim)

Theme	Number of comments (n)	Illustrative Quotations
Clinical and cost efficiency	118	……would benefit people financially if they do not have to go back to their GP for medication (Participant 41) Time and cost savings for busy workers, ie not having to go to 2 appointments (Participant 127) …. improve patient flow and decrease reliance on medical staff (Participant 490) Working in an Emergency Dept where access and flow is critical, enabling advanced musc [musculoskeletal] physios to prescribe would improve efficiency in the workplace and the patient experience (Participant 7) The ability to prescribe would enable more efficient service delivery to patients. A lot of time is wasted back and forth trying to get appropriate pain medication, antibiotics etc. in a timely fashion (Participant 32)
Access to prescription medicines	71	Working in a rural area where it is difficult for a patient to be able to make a GP appointment (typical 2-3week wait) I can see the benefit of streamlining the system by giving prescribing rights to physios who are also primary care professionals (Participant 630) Will reduce burden on overbooked GP's and ED's for people with pain problems, ie Severe Acute Low back [pain] or those with inflammatory injuries (Participant 873) Physiotherapists working in public health help people from different minority groups every day - indigenous, recent immigrants, people relying on disability pensions, etc. Greater access to simple medications would improve their quality of life and reduce unnecessary attendances at over- worked GP clinics (Participant 12) I work in a country setting where travel times are significant and it can be difficult to get a doctor's appointment and, when injured or without a licence, patients rely on friends, relatives or public transport to reach appointments. This means that a physiotherapy appointment with prescription would become a more efficient use of time and people are more likely to comply (Participant 654)
Optimal therapeutics and clinical effectiveness	15	Will allow physiotherapist to adjust medications particularly in management of chronic pain and LBP…." (Participant 333) "There is considerable potential for this to significantly improve adherence to medication regimes and to problem solve in a time appropriate manner (Participant 45)

		Physios tend to spend more time with patients and often are better skilled to recommend medications than even the registrars, especially in my urogynae advanced practice clinics, being able to prescribe anticholinergics and vaginal oestrogens would significantly increase the efficiency of the clinics as currently [patients] need two appointment times for this (Participant 276) ….'de-prescribing' could potentially be a very important role for Physios (Participant 790)
Time management	9	The time required to keep up to date with medications and well as physiotherapy skills to be safe and effective I feel would impact the time available to treat patients…. (Participant 246) Puts extra pressure on appointment time when we already have to deal with full assessment and treatment of the patient's physical and psycho-social needs (Participant 693)

Further Insights

The final question allowed participants to express any additional thoughts and views about physiotherapist prescribing that they deemed important and had not already been captured. Two hundred and sixty-six participants provided comments. Three major themes were identified:

1. Quality and safety: clinical governance, policies and procedures, and education
2. Professional issues
3. Physiotherapy professional priorities

Table 4 lists the number of comments that discussed each theme and subtheme, providing Illustrative quotations from participants.

Quality and Safety

Two hundred and seventeen comments were received regarding quality and safety concerns around NMP. These focussed on clinical governance, policies and procedures and educational requirements for Prescribers.

One hundred and forty-four participants proposed that adequate clinical governance, policies and procedures should be in place for physiotherapist NMP to be successful. Participants identified the need for a clear scope of practice linked to a physiotherapy-centric formulary that is endorsed and regulated promoting transparency and safety. Participants raised concerns that statutory processes and procedures defining a limited formulary could quickly become out-dated due to medical advances. Meanwhile, other participants identified that a limited formulary based around the profession's specialist areas of practice would be safest, protecting clinicians from pressures to prescribe out of scope. Participants were concerned that unless communication channels were maintained between physiotherapist Prescribers and GPs, there is a risk that patients could shop around for prescriptions, potentially aiding the abuse of prescription medication, and causing clinical incidents. Participants were also concerned that the increase in professional risk due to physiotherapist prescribing would lead to an increase in indemnity insurance premiums.

Seventy-three comments were received with regards to education. Participants recognised that the scope of practice must be absolutely clear, endorsed and underpinned by a robust clinical education framework. They felt that thought must be given to the process of assessment and selection of appropriately qualified assessors from outside the profession including medical doctors and pharmacists to ensure quality and safe practice among Prescribers.

Access to prescribing courses for physiotherapists living in regional and remote areas was highlighted as a potential issue due to the distance to the nearest university. Participants recommended that the regulatory body should dictate compulsory annual continuous professional development (CPD) hours and periodic reassessment of competency should be mandatory. Participants had varying opinions with regards to when physiotherapists should be able to train and qualify as Prescribers, however the participants agreed that current pre-registration physiotherapy programmes should be updated to include pharmacology and therapeutics on their syllabi in preparation for the future.

Professional Issues

Thirty-nine participants provided comments on important professional issues. Participants noted that the introduction of physiotherapist prescribing could change the 'physiotherapy brand', weakening the public's perception of physiotherapists as experts in manual therapy and exercise,

leading to potential loss of patients to other emerging healthcare professions. It was suggested that a marketing campaign may be necessary to manage public expectation and minimise consumer confusion.

Inter-professional relationships between physiotherapists, medical practitioners and pharmacists were highlighted as being fragile. Participants warned that members of the Australian Medical Association (AMA) would not support the introduction of physiotherapist prescribing, eluding that medical doctors might see the introduction as a direct challenge to their authority and private businesses, leading them to reduce referrals to physiotherapy. Participants specifically identified the impact this may have on practice revenues in the musculoskeletal and sport specialties. That said, other participants reported great support from medical colleagues and the greater multidisciplinary team, citing the streamlining of current clinical services and patient pathways, alongside improved access medicines as key reasons for positive inter-professional support. Participants warned that although these efficiencies would reduce service costs, establishing physiotherapist prescribing would require an initial co-ordinated investment to ensure appropriate governance, clinical education and safe/quality implementation across Australia.

Physiotherapy Professional Priorities

Forty participants commented on the profession's professional priorities. Participants described the risks of junior physiotherapists under-developing their traditional physiotherapy skills used to treat impairments, and instead depending on medicines. To mitigate these risks, a robust career progression framework would need to be introduced to ensure ongoing high-level professional development across all specialties. To safeguard the good reputation of the profession, participants focused on maintenance of quality and safety for patients and clinicians. Physiotherapist prescribing should be introduced in a structured and organised manner with all physiotherapists supporting each other, even if they do not which to prescribe themselves. Further, participants also commented that the ability for physiotherapists to directly refer to specialist medical or surgical practitioners [and ensuring appropriate patient rebates for imaging] would have a positive clinical impact.

Table 4: Additional Comments Reported or Discussed by Participants & Illustrative Quotations from Participants

Theme/ Subtheme	Number of comments (n)	Illustrative Quotations (quotations have been copied verbatim)
Quality and Safety Clinical governance, policy, procedure Education	217	Prescribing medicines is a risk to the physiotherapy profession as there can be a lot of risks to the patient with medications. Prescribing and its scope needs to be carefully planned and managed with introduction to the physiotherapy profession (Participant 379) The physio who is going be a prescriber needs to undergo a certain number of hours of training…… going through an examination process. Continuous on-going training is also important as medications change fairly rapidly (Participant 14) …. professional indemnity is required to protect them in case of errors or mishaps (Participant 89) Risks of 'doctor shopping' of physiotherapists for opioid based drugs without centralised control (Participant 651) The challenge in prescribing is ensuring consumer safety through adequate training of the physiotherapists involved and improved communication across health professions (Participant 56)
Professional Issues	39	I believe that it would create confusion for the public if some physiotherapists could prescribe, while others could not (Participant 227) A cultural change is needed, namely adjusting the public's perception of what allied health professionals can do, in order to effectively utilise non-medical prescribing rights (Participant 380) …. the medical doctors may have their issues with this as it may be seen as a direct challenge to their authority and therefore reduce their use of referral pathways already established (Participant 4) I would be concerned that there may be a conflict that forms between doctors and physiotherapists if physios were given prescribing authority. I think there would have to be some very strict guidelines about managing a patient who may be seeking prescriptions from both a doctor and physiotherapist at the same time (Participant 879) I think the medical and pharmaceutical professions would have a negative view of physios prescribing and be less willing to work with us/refer patients to us (Participant 447)
Physiotherapy Professional	40	Physio profession needs to become more progressive with enhanced scope roles, career pathways are currently limited (Participant 412)

Priorities		I think that the physiotherapy profession should spend their resources and energies trying to improve the ability for Physiotherapists to order radiological investigations (scans etc) and referrals to specialists which would be far more beneficial in a cost and time saving way then being able to prescribe medications (Participant 78) Potential for increased reliance on pharmaceutical treatments of MSK conditions over traditional physiotherapy management strategies (i,e. manual therapy, exercise prescription) (Participant 701) May potentially de-value other interventions in the management plan (i.e. committing to taking medication as prescribed, but not to exercises prescribed in same session) (Participant 219)

DISCUSSION

This is the first study to explore the perceptions of Australian physiotherapists regarding NMP by physiotherapists in Australia. The majority of physiotherapists agreed that autonomous prescribing responsibilities should be introduced for physiotherapists in Australia. Improvements in the efficiency of healthcare delivery, access to medicines and reductions in costs across the health economy were predicted. Concerns regarding, clinical safety and management of clinical-risk were clearly identified throughout the quantitative and qualitative sections of the survey, supporting the results of an international multi-profession mixed-methods systematic review investigating the barriers and facilitators of the implementation and utilisation of NMP. [4] The systematic review identified the need to address governance, safety, educational and financial factors prior to training prescribers, to protect both patients and clinicians from poor practice, process and clinical pathways. [4] To safely and effectively introduce physiotherapist prescribing, politicians, regulatory bodies, healthcare managers, clinicians and the APA, in consultation with experts and health consumers, must develop robust legislation, regulation, clinical governance and safety policies as well as well-defined education and career frameworks.

To ensure that physiotherapists are equipped to prescribe safely within a multi-modal physiotherapeutic context, participants perceived that a contemporary, innovative and robust educational framework should be developed prior to the introduction of physiotherapist prescribing. This perception reflects contemporary educational literature that urges educators to carefully consider the ever-evolving healthcare system when designing curricula for physiotherapists. [21] Transforming healthcare needs will require the next generation of physiotherapists to be ready to adapt to changes in consumer complexity and expectation, working within new models of care that are organised, funded and delivered in innovative ways. It has been postulated in the literature that a more flexible, broader and deeper clinical expertise will be required by physiotherapists if the Australian physiotherapy profession wish to succeed as evidence-based and viable health providers in the integrated, value-driven health-industry of the future. [22]

To guarantee quality development of physiotherapists across the profession, participants called for the creation of a contemporary career-development framework into which prescribing would be integrated, to safeguard mastery of traditional skills, govern quality practice and maintain the 'physiotherapy brand'. This appeal concurs with literature reporting that career frameworks within healthcare help the public understand different clinicians' knowledge, skills and roles within one profession, as well as providing purpose and direction for professionals, promoting engagement and job satisfaction. [23 24] Further, academic qualifications and increased clinical responsibility should lead to enhanced remuneration if physiotherapists are to adopt prescribing into their clinical practice, as a lack of remuneration has been recognised as a barrier to NMP across other professions. [25-27] Improvements in recruitment and retention within the profession were anticipated due to improvements in job satisfaction for clinicians and greater recognition and professional reputation, echoing the findings of other NMP-professions reported in the literature. [25 28 29]

Physiotherapists working in cities and regional areas were consistent in observing that physiotherapist prescribing would improve access to medicines across all regions, but would be specifically helpful in rural/remote areas where access to medical-prescribers may be limited. However, physiotherapists from rural/remote areas although positive about the introduction of physiotherapist prescribing, were less likely to wish to train as prescribers, identifying potential increased risks when working in geographical isolation owing to a lack of clinical support. Due to a perceived lack of need in the present healthcare environment, participants felt that not all physiotherapists would benefit from undertaking a NMP course. Those working in close multidisciplinary teams with co-located prescribers, or those employed in non-clinical roles such as

healthcare managers or academic physiotherapists were found to be less likely to wish to become prescribers than clinicians working in the public and private sectors. There was debate as to when and who should undertake the training, with no consistency as to whether education should be included in foundation level courses or become a post-registration qualification for those with a specified clinical experience. Further, rural physiotherapists identified that the distance to universities may act as a barrier to training as a prescriber, highlighting the need for educators to consider flexible learning methods such as online education and video teleconferencing to fulfil the academic requirements of a NMP course. It is therefore imperative that a robust, fit for purpose, transparent and future proof education framework is developed to ensure unity within the Australian physiotherapy profession and assurance for all stakeholders that physiotherapists prescribers would be adequately prepared for practice.

Participants' perceptions that physiotherapist prescribing in Australia would reduce costs to their patients, healthcare services, and to the health economy as a whole, is supported by an economic review commissioned by the APA. The report predicts savings to the Australian health-economy of over $9.22million per year if physiotherapist prescribing was implemented, [30] however this is not currently reflected in the health economics literature. A robust low risk of bias systematic review investigating the clinical and cost-effectiveness of NMP found only 1 inadequately powered pilot randomised controlled trial investigating clinical effectiveness to date; concluding that the benefit of NMP to the health economy remains unclear [3]. This gap in the literature highlights the need for robust, adequately powered economic evaluation to investigate the cost-benefits perceived by physiotherapists across Australia.

Strengths and limitations

This is the first study investigating the perceptions of AHPRA registered-physiotherapists about the potential introduction of NMP among physiotherapists in Australia, and so provides an important overview of the current associated professional landscape. The data should be used to guide the APA, health departments and political leaders towards successful implementation of physiotherapist prescribing in Australia. As with all survey-based research, limitations are inherent due to selection and response bias. The survey was anonymous, so participants may have biased the results by completing the online questionnaire multiple times. Further, physiotherapists with strong views or vested interests may be more likely to complete the questionnaire, meaning that their answers may not reflect the views of the wider profession.

A representative survey response rate was achieved, reflecting that of a previous national evaluation of physiotherapists, [30] where similarly, it was not possible to contact all registered physiotherapists directly due to the AHPRA privacy policy. Physiotherapists who were not APA members at the time of the survey would have been unaware of the questionnaire unless they were provided with a link to the questionnaire through professional networks. It is impossible to determine why 97% of AHPRA registered physiotherapists did not participate; therefore, the risk of bias remains unknown and should be considered when interpreting the results. In-line with recent Australian regulatory data, [31] the sample was representative of all registered physiotherapists in Australia in terms of age, gender and state in which they practise. Unfortunately, no national demographic data exists demonstrating the geographic location or health sector of registered physiotherapists' employment. It is therefore likely that the comparable demographic profile of the study's sample to contemporary national evaluations enhances generalisability of the data to the greater physiotherapist population in Australia and reduces risk of bias.

CONCLUSION

AHPRA registered-physiotherapists perceive that the introduction of autonomous physiotherapist prescribing would be beneficial for the Australian population and should be introduced. Acceptance of physiotherapist prescribing and the likelihood of physiotherapists to train as prescribers vary dependent on location and the health sector in which a physiotherapist works. Legislation, regulation and governance around the use of physiotherapist prescribing all require careful consideration and consultation with experts and health consumers to ensure the safety and quality demanded by physiotherapy profession. Rigorous national educational frameworks should be developed within a transparent career development structure to ensure prescribing is used within a multimodal-physiotherapeutic context, safeguarding the professional reputation of physiotherapy.

It is recommended that the APA, health departments and political leaders use the results of this study in conjunction with cost-benefit analyses, risk analysis as well as assessment of the health-requirements and consultation with key stakeholders, to redefine the scope of Australian physiotherapy to include NMP. Future research is required to investigate the concerns raised by participants. It would be valuable to interview current physiotherapist prescribers to explore the benefits that the introduction of NMP has bought to health services, patients and the physiotherapy profession in the UK. Lessons learnt in the UK could thus be utilised to inform implementation internationally.

Figure 1: Physiotherapists' belief as to whether physiotherapist prescribing should be introduced in Australia; potential benefits and participants' concerns.

Figure 2: The number of years' experience a physiotherapist should have prior to being able to train as a physiotherapist prescriber.

Figure 3: Likeliness to train as a Prescriber: motivators and deterrents.

Contributors
TN is a clinical advanced practice physiotherapist and PhD candidate at the University of Birmingham (UK). AR is a Reader in musculoskeletal rehabilitation sciences and lead supervisor. JM is a professor of clinical pharmacy and co-supervisor. Both supervisors ensured the rigour of methods and analyses. CD is a professor of physiotherapy and TJ is an associate professor of physiotherapy at Macquarie University (Aus). All authors have contributed to the content of this article. TN wrote the first draft of this article and has worked with all authors to develop subsequent drafts. All authors prior to publication gave final approval. Patients and the general public were not involved in this study.

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Competing Interests
All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf and declare: no support from any organisation for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work.

Data Sharing Statement

Data from physiotherapists collected during the study will be submitted for publication in an open access peer reviewed journal for all to read. There is no unpublished data available.

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Figure 1: Physiotherapists' belief as to whether physiotherapist prescribing should be introduced in Australia; potential benefits and participants' concerns.

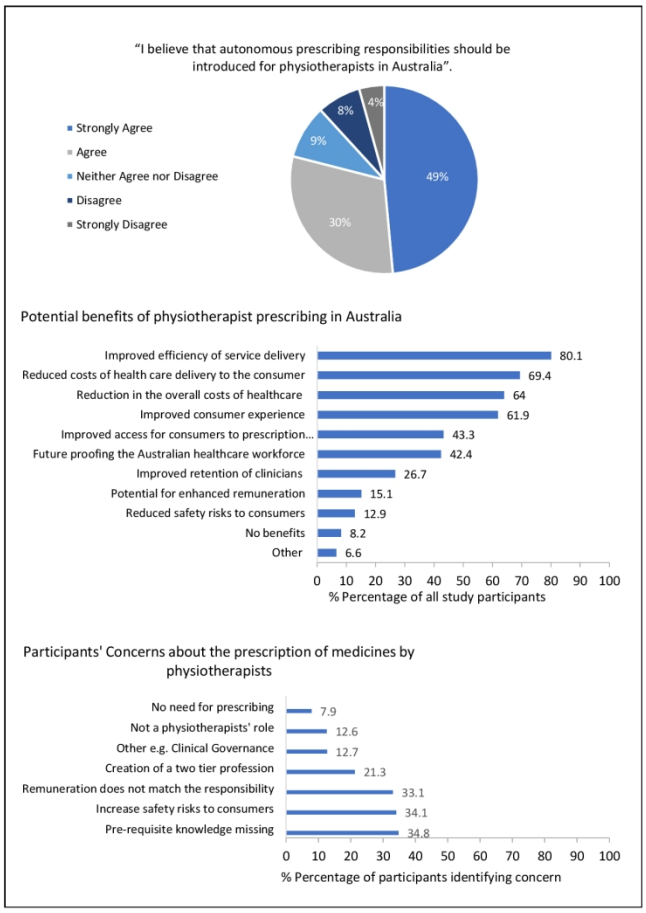

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Figure 2: The number of years' experience a physiotherapist should have prior to being able to train as a physiotherapist prescriber.

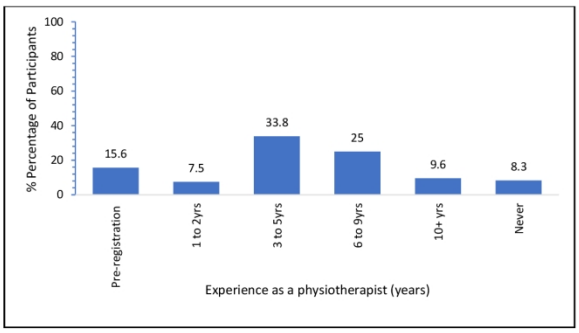

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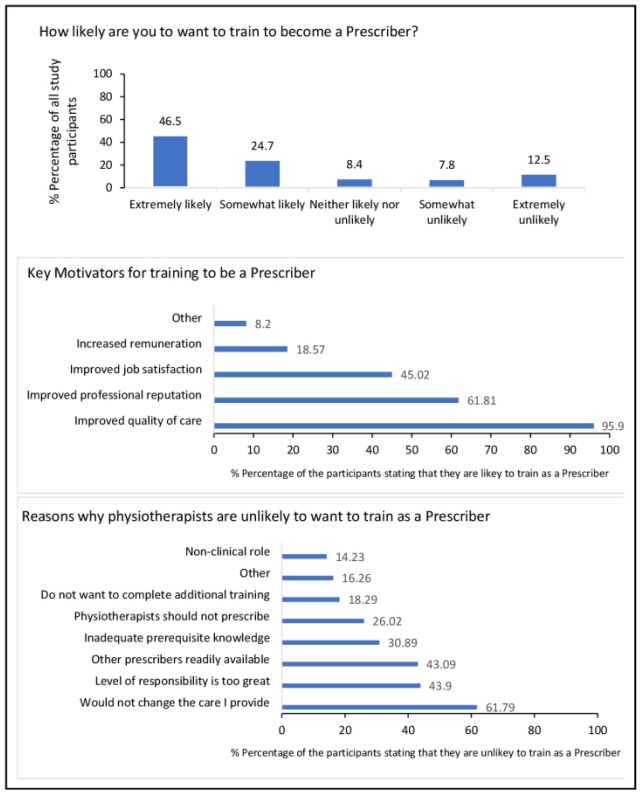
Figure 3: Likeliness to train as a Prescriber: motivators and deterrents



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Supplementary file 1: Online Questionnaire

Q1 What is your gender?
- ❍ Male (1)
- ❍ Female (2)
- ❍ Other (3)

Q2 What is your age?
- ❍ 17-29 (1)
- ❍ 30-39 (2)
- ❍ 40-49 (3)
- ❍ 50-59 (4)
- ❍ 60 or older (5)

Q3 Which of the following are you?
- ❍ AHPRA registered physiotherapist (1)
- ❍ Student physiotherapist enrolled in an Australian university (2)

If Student physiotherapist enr... Is Selected, Then Skip To Which state or territory do you curre...

Q4 How many years have you been a qualified physiotherapist?
- ❍ 0-4 (1)
- ❍ 5-9 (2)
- ❍ 10-14 (3)
- ❍ 15-19 (4)
- ❍ 20 or more (5)

Q5 Where did you obtain your primary physiotherapy qualification?
- ❍ Australia (1)
- ❍ Overseas (please specify) (2) _____

Q6 Which state or territory do you currently work? If multiple, select the state or territory that you spent the most time working in over the past 14 days.
- ❍ Australian Capital Territory (1)
- ❍ New South Wales (2)
- ❍ Northern Territory (3)
- ❍ Queensland (4)
- ❍ South Australia (5)
- ❍ Tasmania (6)
- ❍ Victoria (7)
- ❍ Western Australia (8)

Q7 Do you work in a metropolitan or rural area? Please choose the most appropriate option. If you work in multiple areas, select the area in which you spent the most hours working in the past 14 days. If you are unsure, you can check your areas classification

using the following website:
http://www.doctorconnect.gov.au/internet/otd/publishing.nsf/Content/locator

- ❍ RA1 - Major Cities of Australia (1)
- ❍ RA2 - Inner Regional Australia (2)
- ❍ RA3 - Outer Regional Australia (3)
- ❍ RA4 - Remote Australia (4)
- ❍ RA5 - Very Remote (5)

Q8 In which health sector do you spend most of your time working as a physiotherapist?

- ❍ Public sector (1)
- ❍ Private sector (2)
- ❍ Educational/research institute or university (3)
- ❍ Not-for-profit organisation (4)
- ❍ Other (please specify) (5) _____

Q9 What area/s of physiotherapy do you predominantly work in or identify with?Please select up to a maximum of three (3) areas.

- ❑ Amputees (1)
- ❑ Burns/plastics (2)
- ❑ Cardiorespiratory/acute medicine/surgery (3)
- ❑ Chronic disease management (4)
- ❑ Education (5)
- ❑ Emergency department (6)
- ❑ Gerontology/Aged care (7)
- ❑ Health promotion/Public health (8)
- ❑ Lymphoedema (9)
- ❑ Mental health (10)
- ❑ Musculoskeletal/orthopaedics (11)
- ❑ Neurology (12)
- ❑ Occupational health (13)
- ❑ Paediatrics (14)
- ❑ Pain (15)
- ❑ Palliative care (16)
- ❑ Rehabilitation (mixed) (22)
- ❑ Rheumatology (17)
- ❑ Rural generalist (18)
- ❑ Sports (21)
- ❑ Women's health/continence (19)
- ❑ Veterinary (20)

Display This Question:
If Which of the following are you? Student physiotherapist enrolled in an Australian university Is Selected

Q10 Which state or territory do you currently attend university?

- ❍ Australian Capital Territory (1)
- ❍ New South Wales (2)
- ❍ Northern Territory (3)
- ❍ Queensland (4)
- ❍ South Australia (5)
- ❍ Tasmania (6)
- ❍ Victoria (7)
- ❍ Western Australia (8)

Q11 Autonomous prescribing: "Prescribing occurs where a prescriber undertakes prescribing within their scope of practice without the approval or supervision of another health professional. The prescriber has been educated and authorised to autonomously prescribe in a specific area of clinical practice. Although the prescriber may prescribe autonomously, they recognise the role of all members of the health care team and ensure appropriate communication occurs between team members and the person taking medicine". The Health Professionals Prescribing Pathway (HPPP), p16 (2013) To what extent do you agree with the following statement: "I believe that autonomous prescribing responsibilities should be introduced for physiotherapists in Australia."

- ❍ Strongly agree (1)
- ❍ Agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Disagree (4)
- ❍ Strongly disagree (5)

Q12 What do you see the benefits of physiotherapists prescribing medicines to be?Select as many options as are appropriate to you.

- ❑ Improved efficiency of service delivery (1)
- ❑ Reduced costs of health care delivery to the consumer (2)
- ❑ Improved consumer experience (3)
- ❑ Reduction in the overall costs of healthcare to the Australian economy (4)
- ❑ Improved retention of clinicians within the physiotherapy profession (5)
- ❑ Potential for enhanced remuneration (6)
- ❑ Reduced safety risks to consumers (7)
- ❑ Improved access for consumers to prescription medications (8)
- ❑ Future proofing the Australian healthcare system with a flexible workforce (9)
- ❑ Other (please specify) (10) _____
- ❑ I do not believe there would be any benefits (11)

Q13 What are your concerns about the prescription of medicines by physiotherapists?Select as many options as are appropriate to you.

- ❑ Prescribing of medicines is not a physiotherapists' role (1)
- ❑ Physiotherapists do not have adequate pre-requisite knowledge to undertake a prescribing course (2)
- ❑ There is no need for physiotherapists to prescribe medicines (3)
- ❑ Physiotherapist prescribing will create a two (2) tier profession (4)
- ❑ Physiotherapist prescribing will increase safety risks to consumers (5)
- ❑ Remuneration does not match the responsibility associated with the prescribing of medicines (6)
- ❑ Other (please specify) (7) _____
- ❑ I do not have any concerns (8)

Q14 How many years experience do you think a physiotherapist should have prior to being able to train as a physiotherapist prescriber?

- ❍ 0 - Should be included in pre-registration physiotherapy qualification (1)
- ❍ 1-2 years (2)
- ❍ 3-5 years (3)
- ❍ 6-9 years (4)
- ❍ 10 or more years (5)
- ❍ Physiotherapists should not be able to train as prescribers (6)

Q15 If physiotherapists became able to autonomously prescribe medicines, how likely are you to want to train to become a prescriber?

- ❍ Extremely likely (1)
- ❍ Somewhat likely (2)
- ❍ Neither likely nor unlikely (3)
- ❍ Somewhat unlikely (4)
- ❍ Extremely unlikely (5)

Display This Question:

If If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Extremely likely Is Selected

Or If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Somewhat likely Is Selected

Or If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Neither likely nor unlikely Is Selected

Q16 What are your key motivations to becoming a prescriber?Select as many options as are appropriate to you.

- ❑ Improving the care I am able to provide (1)
- ❑ Improved job satisfaction (2)
- ❑ Increased remuneration (3)
- ❑ Improved professional reputation (4)
- ❑ Other (please specify) (5) _____

Display This Question:

If If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Extremely unlikely Is Selected

Or If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Somewhat unlikely Is Selected

Or If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Neither likely nor unlikely Is Selected

Q17 What makes you unlikely to want to train as a prescriber?Select as many options as are appropriate to you.

- ❑ I do not believe that physiotherapists should prescribe medicines (1)
- ❑ I do not think that I have the knowledge required to train as a prescriber (2)
- ❑ I do not wish to complete additional training (3)
- ❑ I am not prepared to take on the additional responsibility associated with prescribing medicines (4)
- ❑ In my current role, being able to prescribe would not change the care provided (5)
- ❑ A prescriber is readily available to the clients that I provide care for (6)
- ❑ I work in a non-clinical role (7)
- ❑ Other (please specify) (8) _____

Q18 Do you have any additional thoughts about how physiotherapist prescribing may impact the care that the profession is able to provide? For example a positive or negative impact on a specific group e.g. minority groups, immigrants, students, travellers.....

Q19 Is there any additional information you would like to share at this time?

BMJ Open

Perceptions about the implementation of physiotherapist prescribing in Australia: a national survey of Australian physiotherapists

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Primary Subject Heading:	Health services research
Secondary Subject Heading:	Health policy
Keywords:	Non-medical prescribing, Physiotherapy, Physiotherapist prescribing, autonomous prescribing

Perceptions about the implementation of physiotherapist prescribing in Australia: a national survey of Australian physiotherapists

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Word Count:

Keywords: Non-medical Prescribing, Physiotherapy, Australia, Views, Perceptions, Survey, Questionnaire

Abstract

Objectives: To explore (1) the views of Australian physiotherapists regarding potential implementation of non-medical prescribing (NMP), (2) how the geographical location and health sector in which a clinician works may influence their perceptions, (3) the perceptions of Australian physiotherapists about how physiotherapist prescribing might impact the care that the profession can provide.
Design: A cross-sectional descriptive survey using open and closed questions
Setting: Participants completed an online questionnaire.
Participants: 883 Australian Health Professionals Registration Authority (AHPRA) registered-physiotherapists, working across all states and territories.
Outcome Measures: An online questionnaire was developed by a panel of subject-experts and pre-tested (n=10) for internal consistency. A hyperlink to the questionnaire was emailed to all members of the Australian Physiotherapy Association. A reminder email was sent 4 weeks later. Quantitative data were analysed descriptively, with use of absolute risk reductions (ARR) and 95% Confidence Intervals to determine the likelihood that health sector or geographical location were associated with specific views. Thematic analysis enabled synthesis of the qualitative data.
Results: 79.0% participants felt that physiotherapist prescribing should be introduced in Australia, with 71.2% wanting to train as prescribers. Clinical governance, risk management, regulation of clinicians and the development of an education framework were identified as priorities for implementation. Participants working in the private sector were significantly more likely to train as prescribers than those in the public sector (ARR 9.9%; 95%CI [3.5, 16.4]) or educational/research institutions (ARR 23.3%; 95%CI [12.8, 33.8]), with city dwellers significantly more likely to train compared to physiotherapists in remote regions (ARR 19.8%; 95%CI [0.8, 39.2]). Physiotherapist prescribing was predicted to improve efficiency of healthcare delivery, access to medicines and reductions in healthcare costs.
Conclusions: AHPRA registered-physiotherapists perceive that the introduction of autonomous physiotherapist prescribing would be beneficial for the Australian population and should be introduced. Decision-makers should consider the results of this survey in conjunction with cost-benefit and risk analysis when planning the introduction of physiotherapist prescribing.

Strengths and Limitations

- First rigorous survey investigating the perceptions of Australian physiotherapists about the potential implementation of physiotherapist prescribing in Australia.
- Results provide the evidence required by the physiotherapy professional association, health departments and political leaders to inform clinically safe and economically sound decisions about redefining the scope of physiotherapy in Australia to include non-medical prescribing.
- Limitations are inherent with all survey-based research due to selection and response bias.
- It was not possible to determine why non-responders did not participate.

Background and Rationale

Non-medical prescribing (NMP) has been used in clinical practice by a variety of professions for over 20 years. [1] However, it was not until 2012 that in the United Kingdom (UK), physiotherapists were first granted independent prescribing responsibilities. In July 2015, the Australian Physiotherapy Association (APA) in collaboration with the Australia Physiotherapy Council (APC) and Council of Physiotherapy Deans Australia and New Zealand (CPDANZ) submitted a proposal for the endorsement of registered physiotherapists for autonomous prescribing to the Physiotherapy Board of Australia. [2] To autonomous prescribe medicines, a practitioner must be responsible for the assessment and diagnosis the patient, prescribing drugs from a specified formulary within their individual scope of practice. The clinician manages ongoing therapy without the requirement of protocols or supervision.[3] Difficulties in accessing medicines for Australians living in rural and remote areas alongside recognised health inequities between minority groups such as Aboriginal and Torres Strait Islander peoples were cited as key drivers for reform. Benefits of the implementation of prescribing by physiotherapists in Australia, such as the potential to increase access to medicines for health service users across all communities, [2] are therefore anticipated.

The clinical and cost-effectiveness of NMP remains unclear, with a recent systematic review finding only minimal empirical evidence with unknown risk of bias [4], nonetheless its popularity in clinical practice continues to grow.[5] A contemporary and robust mixed-methods systematic review of 50 moderate to good quality studies, investigating the barriers to and facilitators of independent NMP, identified conflict within a profession as a key barrier to successful implementation. [5] A united professional position regarding the adoption of innovative clinical practice was highlighted as essential to ensure the development of safe and high-quality practice. Divided opinion between individual clinicians, academics and professional managers/leaders may lead to confusion across the healthcare community, resulting in unwarranted negative thoughts and perceptions about NMP roles and responsibilities. Diverse perceptions regarding the implementation of physiotherapist prescribing and current physiotherapeutic pharmacological knowledge and practices have been reported in national evaluations in Nigeria, South Africa and the UK. [6-9] Data from these evaluations have been utilised to influence national policy and the political drive towards or against the adoption of NMP within the physiotherapy profession in these countries.[8 9] Acceptance and support for prescribing by the Australian physiotherapy profession will be required for successful implementation into local and national health systems.[2 10-12] It is therefore important that the views of Australian physiotherapists are understood in order to inform key stakeholders and decision-makers about redefining the scope of physiotherapy to include NMP in Australia. To date no evidence exists evaluating the Australian physiotherapy professions' views and perceptions about the potential use of NMP by physiotherapists in Australia.

Objectives

1. To explore the views of Australian physiotherapists about the potential implementation and use of NMP by physiotherapists in Australia.

2. To explore how the geographical location and health sector in which a clinician works may influence the perceptions of Australian physiotherapists about the potential implementation and application of NMP by physiotherapists in Australia.

3. To explore the perceptions of Australian physiotherapists about how physiotherapist prescribing might impact the care that the physiotherapy profession can provide.

METHODS

A detailed study protocol was published to ensure transparency and reproducibility. [13] The study is reported in line with an adapted version of the Standard Protocol Items: Recommendations for Interventional Trials (SPIRIT) statement, [14] recommended by the SUrvey Reporting GuidelinE (SURGE). [15] Ethical approval was granted by the Medical Sciences Human Research Ethics Committee (HREC), Macquarie University, Australia (Reference No: 5201600846), and verified by the Research Governance Officer at the University of Birmingham, UK (Reference No: ERN_16-1576) where the lead author is currently undertaking his PhD. This article reports the data collected from registered physiotherapists from a larger study evaluating both registered and student physiotherapists in Australia.[13] The data collected from the student physiotherapists is presented in the related article (bmjopen-2018-026327) published independently.[16]

Survey design

A cross-sectional online descriptive survey design enabled the collection of empirical data across Australia. [17-19] An online questionnaire was developed using Qualtrics (Qualtrics, Provo, UT) thus enabling Australian-wide participation with no geographical or time-zone constraints. [17 20]

Participants

Participant inclusion criteria are described in Box 1. According to data published by the Physiotherapy Board of Australia, 30,004 physiotherapists were registered with the Australian Health Professionals Registration Authority (AHPRA) at the time of the survey.[21]

Box 1: Participant inclusion criteria

- Physiotherapists registered with AHPRA
- Ability to read and understand written English
- Provision of consent to participate in the survey independently

Procedure

AHPRA privacy policy [22] prohibits approaching AHPRA registered physiotherapists directly. Therefore, an advertisement containing a link to the online survey was emailed to all members of the APA, including all clinical and professional networks. A reminder advertisement was sent via email 4 weeks after the initial email to promote participation in the survey. [17 19 20] IP addresses were not saved to ensure participant anonymity. The APA membership was selected as the recruitment platform as it is representative of all physiotherapy specialties and levels of experience (qualified and student physiotherapists) across Australia, with 23,153 members at the time of survey.[23] Word of mouth referrals to the survey through professional networks were promoted in the email to facilitate capturing the views of non-APA members. [17 19 20] Data collection took place 1st March - 30th April 2017. Participants accessed the questionnaire via the online link. Completion of the survey was anonymous and entirely voluntary. [17 19 20] Participant consent was gained using an online information and consent form. [17-19] Researcher contact details were supplied to enable any questions or concerns to be answered prior to completing the online questionnaire. [17-19]

Questionnaire development

Data from a mixed methods systematic review examining the barriers and facilitators of NMP internationally informed the questionnaire design and specific question inclusion. [5] Questions were optimised through consultation with experts in the fields of physiotherapy, NMP and Australian state/federal law and health policy. [17-19]

The questionnaire consisted of 4 sections:

1. Demographic information including participants' age/gender/ number of years qualified/ specialty/location.
2. Participants' perceptions of the positive and/or negative aspects of physiotherapist prescribing to the profession as a whole.
3. Participants' perceptions of the impact of physiotherapist prescribing to them as an individual.
4. Participants' perceptions regarding the potential wider impacts of physiotherapist prescribing.

Sections 1-3 used closed questions to collect quantitative data. Section 4 contained two open-ended questions to allow the participants to answer without limitation. [17 19] Inbuilt survey logic ensured that participants were shown questions that were pertinent to them based on their previous answers. Before completion, participants were encouraged to share any additional information that they deemed relevant, capturing useful insights not addressed elsewhere in the questionnaire. [17-19]

The questionnaire was piloted to test for internal consistency and optimise user experience. [18] Ten participants (n=7 registered physiotherapists, n=3 student physiotherapists) were purposely sampled to represent the physiotherapy profession in Australia. [17-19] Following the pilot, Anglo-Australian terminology was clarified, and small changes were made to the linguistics and survey logic. Pilot participants were not excluded from completing the final questionnaire. The final questionnaire can be found in supplementary file 1.

Data Storage

All electronic data were stored in password-protected computer files only accessible by study investigators. Participants who disclosed personal details were additionally protected via coding on data files. [17-19] The password-protected files will be retained for 10 years, satisfying ethical and university policies.

Data Analysis

Demographic data (section 1) were tabulated and primary descriptive analysis of the data was completed using IBM SPSS Statistics for Macintosh, Version 22.0. Comparisons of proportions from questions in sections 2 &3, addressing objectives 1 & 2, were conducted using the PEDro confidence interval calculator (www.pedro.org.au). [24 25] Calculations of absolute risk reductions (ARR) with 95% confidence intervals were used to determine the likelihood that health sector or geographical location were associated with specific views.[25] Thematic analysis was used to ensure the transparent synthesis of data addressing objective 3, collected in section 4 of the online questionnaire. This analysis enabled the identification of key themes within a structured analytical framework. [26] Answers were coded line-by-line using NVivo 11 software (QSR International, Melbourne, Australia) by one researcher (TN) and were verified by a second researcher (TJ). Independently generated themes/sub-themes were then examined by a panel of experts for confirmation and agreement. [26]

Patient and Public Involvement

The development of this study was informed by the experiences of patients and the general public acknowledged in the literature. Due to the study's objectives, patients and the general public were not utilised in design of the study or in participant recruitment. The results will be disseminated to all interested parties through publication and presentation at professional conferences.

RESULTS

Demographics

A total of 883 participants (3% of all AHPRA registered-physiotherapists) completed the questionnaire. Demographic data are presented in Table 1. Fifty eight percent of participants had been qualified for more than 10 years, with the majority of participants (88.4%) gaining their primary professional qualification in Australia. The largest proportion of participants (n=536, 61%) identified musculoskeletal physiotherapy as their specialty area of practice. Of those working clinically, 52% of participants worked in the private health sector. There were participants from every state and territory, with the majority practising in New South Wales (n=299, 34%), Victoria (n=234, 27%), Western Australia (n=130, 15%) or Queensland (n=115, 13%). Seventy eight percent of participants worked in a major city.

Table 1: Demographic Data

	AHPRA Registered Physiotherapists n (%)
Total Participants	883 (100)
Gender (n=883 answered)	
Male	366 (41.4)
Female	517 (58.6)
Age (n=883 answered)	
17-29	258 (29.2)
30-39	260 (29.4)
40-49	173 (19.6)
50-59	124 (14.0)
60+	68 (7.7)
Number of years qualified as a physiotherapist (n=883 answered)	
0-4	192 (21.7)
5-9	178 (20.1)
10-14	109 (12.4)
15-19	101 (11.5)
20+	303 (34.3)
Country of Primary Qualification (n=883 answered)	
Australia	781 (88.4)
Overseas (Belgium, Canada, Germany, Hong Kong, India, Ireland, Italy, Mexico, Netherlands, New Zealand, Philippines, Portugal, Serbia, Singapore, South Africa, Taiwan, UK, USA)	102 (11.6)
Predominant Physiotherapy Practice Specialties: (max of 3 specialties identified per participant, n=865 answered)	
Amputees	10 (1.1)
Burns/Plastics	9 (1.0)
Cardiorespiratory	132 (14.9)
Chronic disease management	100 (11.3)
Education	58 (6.6)
Emergency Department	65 (7.4)
Gerontology/Aged care	115 (13.0)
Health promotion/ Public health	10 (1.1)
Lymphoedema	11 (1.2)
Mental Health	4 (0.5)
Musculoskeletal/ Orthopaedics	536 (60.7)
Neurology	81 (9.2)
Occupational Health	21 (2.4)
Paediatrics	37 (4.2)
Pain	105 (11.9)
Palliative Care	6 (0.7)
Rheumatology	10 (1.1)
Rural generalist	39 (4.4)
Women's health/ continence	53 (6.0)
Veterinary	2 (0.2)
Health Sector (n=872 answered)	
Public Sector	325 (37.3)
Private Sector	449 (51.5)
Educational/research institute or university	49 (5.6)
Not-for-profit organisation (NFPO)	36 (4.1)
Other	13 (1.5)
Rural, Remote and Metropolitan Areas (RRMA) classification [27] (n=783 answered)	
Major Cities of Australia	679 (77.8)
Inner Regional Australia	113 (12.9)
Regional Australia	58 (6.6)
Remote Australia	20 (2.3)
Very Remote Australia	3 (0.3)
State or Territory (n=879 answered)	
Australian Capital Territory	19 (2.2)
New South Wales	299 (34.0)
Northern Territory	7 (0.8)
Queensland	115 (13.1)
South Australia	64 (7.3)
Tasmania	11 (1.3)
Victoria	234 (26.6)
Western Australia	130 (14.8)

Participants' perceptions about the impact of physiotherapist prescribing on the physiotherapy profession

Six hundred and eighty participants (79%) reported that they strongly agreed or agreed that autonomous prescribing responsibilities should be introduced for physiotherapists in Australia, with 144 participants (12%) against the introduction (Figure 1). Potential benefits and concerns were identified.

The participants reported that physiotherapist prescribing could have a range of benefits in the Australian healthcare system (Figure 1). The most commonly identified benefit was an improvement in the delivery of health services (80.1%; n=707). Reduced costs of healthcare delivery to the consumer, as well as a reduction in the overall cost of healthcare and an improved consumer experience were also identified as potential benefits of NMP in Australia. Participants' concerns about the prescription of medicines by physiotherapists centred on quality and safety issues. In particular, concerns about whether physiotherapists have the knowledge required to train as a prescriber (34.8%), and a potential increased safety risk to consumers (34.1%) were raised. One third of participants (33.1%) were concerned that the expected remuneration for this service would not reflect the increased professional risk.

Figure 2 illustrates participants' opinions about the number of years of experience a physiotherapist should have prior to being permitted to train as a Prescriber. The majority of participants felt that physiotherapists should have 3 years or more of experience (68.4%), with 34.6% believing this should be at least 6 years.

Participants' perceptions about the impact of physiotherapist prescribing to them as an individual

Six hundred and eight participants (71.2%) would be extremely likely (n=397, 47%) or somewhat likely (n=211, 25%) to train as a prescriber if this were permitted, whilst 174 participants (20.3%) would not. Figure 3 outlines the key motivators and deterrents among participants to train as a prescriber.

Key motivators cited included the ability to provide improved quality of care (n=646, 96.0%) and the improved professional reputation associated with NMP (n=416, 61.8%). Some participants included increased job satisfaction (n=303, 45.0%) and remuneration (n=125, 18.6%) as motivating factors. Additionally, some participants (n=72, 10.7%) reported being motivated by potential clinical and cost efficiencies for both for the consumer and healthcare provider through enhanced clinical pathways, improved access to medicines and optimisation of clinical knowledge.

The most common deterrent for training to be a prescriber was the belief that this will not change the care that the individual physiotherapist would provide to their patients (n=152, 61.8%). Concerns around an increased level of clinical responsibility were also highlighted as potential deterrents (n=108, 43.9%). Some participants felt that they did not have sufficient background knowledge to undertake the prescribing course (n=76, 30.9%). Additionally, participants reported that the cost of training or distance to travel to universities would be too great, or that they were nearing retirement and did not want the additional stress of training to become a prescriber. Further, it is noted that a small number of participants reported that they would not train as prescribers as they are employed in non-clinical roles (n=35, 14.2%).

Influence of Health Sector and Geographical Location

The percentage of participants from different health sectors and geographical locations, who agreed or strongly agreed with autonomous prescribing responsibilities being introduced for Australian physiotherapists, and those who stated that they were extremely likely or somewhat likely to want to train as a prescriber are summarised in Table 2.

Participants working in the private sector were significantly more likely to agree that autonomous prescribing responsibilities should be introduced for physiotherapist in Australia than those who work in education, not-for-profit organisations and the military (ARR 9.8%, 95%CI [0.8, 20.2]). No significant difference (ARR 1.7%; 95%CI [-4.0, 7.6]) was seen between participants who worked in the private or public healthcare sectors. Participants working in the private sector were significantly more likely to train as prescribers than those working in the public sector (ARR 9.9%; 95%CI [3.5, 16.4]) or other areas, such as within educational or research institutions (ARR 23.3%; 95%CI [12.8, 33.8]). A significantly higher proportion of participants in city regions expressed a wish to train as a prescriber compared to those in remote regions (ARR 19.8%; 95%CI [0.8, 39.2]). Those practising in cities (ARR 24.0%, 95%CI [5.8, 43.9]) and regional areas (ARR 19.5%, 95%CI [0.4, 40.1]) were significantly more likely to agree with the introduction of physiotherapist prescribing than those from remote regions. However, there was no significant difference (ARR 4.4%, 95%CI [-2.2, 12.0]) between participants who practise in major cities compared to regional areas.

Table 2: Percentage of participants from different health sectors and geographical locations, who agreed with the introduction of physiotherapist prescribing and are likely to train

	Location RRMA % [95% Confidence Interval]			Subgroup Comparisons ARR % [95% Confidence Interval]		
Survey item	City	Regional	Remote	City: Regional	City: remote	Regional: remote
Agreed or strongly agreed with autonomous prescribing	80.1 [77.3, 83.3]	76.1 [69.0, 81.9]	56.5 [36.8, 74.4]	4.4 [-2.2, 12.0]	24.0 [5.8, 43.2] *	19.5 [0.4, 40.1] *
Likely to Train as prescriber	71.9 [68.4, 75.2]	70.9 [63.4, 77.3]	52.2 [33.0-70.8]	1.0 [-6.3, 9.1]	19.8 [0.2, 39.2] *	18.7 [-1.3, 39]
	Health Sector % [95% Confidence Interval]			Subgroup Comparisons ARR % [95% Confidence Interval]		
Survey item	Private	Public	Other	Private: Public	Private: Other	Public: Other
Agreed or strongly agreed with autonomous prescribing	80.7 [76.8, 84.1)	79.0 [74.2, 83.1]	70.8 [61.1, 79.0]	1.7 [-4.0, 7.6]	9.8 [0.8, 20.2] *	8.2 [-1.3, 18.8]
Likely to Train	77.4 [73.3, 81.1]	67.5 [62.2, 72.5]	54.2 [44.2, 63.8]	9.9 [3.5, 16.4] *	23.3 [12.8, 33.8] *	13.4 [2.3, 24.5] *
*Significant at p<0.05						

Wider impacts of physiotherapist prescribing

Participants were asked to provide additional comments about how NMP may impact the overall level of care that the profession is able to provide. In total, 230 participants provided comments.

Four major themes were identified:

1. Clinical and cost-efficiency
2. Access to prescription medicines
3. Optimal therapeutics and clinical effectiveness
4. Time management

Table 3 lists the number of participants that reported or discussed each theme and provides Illustrative quotations.

Clinical and cost-efficiency

One hundred and eighteen participants commented that the introduction of autonomous physiotherapist prescribing would have positive effects on both clinical and cost-efficiencies for patients, clinicians and the health economy. Participants identified the positive impact on the overall patient journey as a potential benefit of NMP by reducing unnecessary appointments with General Practitioners (GPs), specialists and surgeons. Specifically, participants recognised the current frequency of referrals from physiotherapists to GPs for analgesic review, access to oxygen therapy, bronchodilators and antibiotics and on-going pharmacological spasticity management. A common sentiment was that if physiotherapists could provide these services themselves, patients could have more timely access to appropriate medicines, which in turn would complement physiotherapeutic interventions and accelerate patient improvement/recovery. Participants also anticipated that NMP could reduce acute injury recovery times and minimise the risk of chronicity, which in turn could reduce pressures on medical services and end costs to the consumer, Medicare and private health insurers. Further, the presence of physiotherapist prescribers in emergency departments and specialist multidisciplinary clinics was anticipated to reduce waiting times for patients, thus helping to meet performance measures set by governing bodies.

Access to prescription medicines

Seventy-one participants provided comments concerning potential improvements in accessing prescription medicines for all Australians regardless of geographic or other socio-economic factors. Specifically, it was suggested that physiotherapist prescribers in rural and remote regions could issue prescription medications to patients who might otherwise have limited access to medical professionals. However, no participants from rural/remote regions identified this theme within their responses. Participants from metropolitan and regional areas expressed concerns that patients in rural and remote regions may struggle to navigate an over-burdened and expensive healthcare system, frequently waiting for weeks and travelling great distances to see their GP for medications such as analgesics to supplement treatment from their physiotherapists. Participants from all locations identified potential benefits of NMP to healthcare consumers (regardless of location) whose principal healthcare practitioner is a physiotherapist, including persons with physical disabilities and those involved in sports where acute injuries are managed pitch-side by the team physiotherapist.

Optimal therapeutics and clinical effectiveness

Fifteen participants reported the potential for improved optimisation of medicines in-line with physical and psychosocial interventions and therefore enhanced clinical effectiveness. Participants stressed optimal and appropriate use of analgesics across all specialties, especially where adjustments (escalation or de-escalation) to prescriptions are required in-line with physiotherapeutic intervention. It was felt that that the multi-model skills and techniques utilised by physiotherapists would promote a more integrated use of medicines into the overall patient management, with medicines forming just one part of a more comprehensive and coordinated approach. Participants specialising in women's health echoed this statement highlighting the appropriate use of anticholinergics and vaginal oestrogens necessary to holistically treat many of their patients.

Participants agreed that the close working relationships between physiotherapists and their patients, due to the comprehensive time spent completing physiotherapeutic interventions may be used to promote patients' compliance to their prescribed medicines. Physiotherapist Prescribers with the appropriate knowledge and skills could legally reinforce the appropriate use of medicines; better recognising poor adherence, dependency, abuse or adverse side effects masquerading as conditions treated by physiotherapists.

Time management

Nine participants suggested that the time requirements needed to train as a physiotherapist prescriber and on-going time required for CPD may be prohibitive to introducing NMP in Australia. Likely time away from clinical work for education and development and NMP duties were seen to potentially interfere with tasks currently performed by clinicians. Further, participants felt that although greater efficiency and access to medicines may benefit heath consumers, time presently spent treating patients in the current scope of practice would be lost to procedures related to prescribing medicines. In other words, although NMP may decrease medical practitioners' workload, this would instead increase pressures on already understaffed physiotherapy departments and possibly even threaten clinical outcomes.

Table 3: Comments that Reported or Discussed Each Theme & Illustrative Quotations from Participants (quotations have been copied verbatim)

Theme	Number of comments (n)	Illustrative Quotations
Clinical and cost efficiency	118	……would benefit people financially if they do not have to go back to their GP for medication (Participant 41) Time and cost savings for busy workers, ie not having to go to 2 appointments (Participant 127) …. improve patient flow and decrease reliance on medical staff (Participant 490) Working in an Emergency Dept where access and flow is critical, enabling advanced musc [musculoskeletal] physios to prescribe would improve efficiency in the workplace and the patient experience (Participant 7) The ability to prescribe would enable more efficient service delivery to patients. A lot of time is wasted back and forth trying to get appropriate pain medication, antibiotics etc. in a timely fashion (Participant 32)
Access to prescription medicines	71	Working in a rural area where it is difficult for a patient to be able to make a GP appointment (typical 2-3week wait) I can see the benefit of streamlining the system by giving prescribing rights to physios who are also primary care professionals (Participant 630) Will reduce burden on overbooked GP's and ED's for people with pain problems, ie severe Acute Low back [pain] or those with inflammatory injuries (Participant 873) Physiotherapists working in public health help people from different minority groups every day - indigenous, recent immigrants, people relying on disability pensions, etc. Greater access to simple medications would improve their quality of life and reduce unnecessary attendances at over- worked GP clinics (Participant 12) I work in a country setting where travel times are significant and it can be difficult to get a doctor's appointment and, when injured or without a licence, patients rely on friends, relatives or public transport to get appointments. This means that a physiotherapy appointment with prescription would become a more efficient use of time and people are more likely to comply (Participant 654)
Optimal therapeutics and clinical effectiveness	15	Will allow physiotherapist to adjust medications particularly in management of chronic pain and LBP…." (Participant 333) "There is considerable potential for this to significantly improve adherence to medication regimes and to problem solve in a time appropriate manner (Participant 45)

		Physios tend to spend more time with patients and often are better skilled to recommend medications than even the registrars, especially in my urogynae advanced practice clinics, being able to prescribe anticholinergics and vaginal oestrogens would significantly increase the efficiency of the clinics as currently [patients] need two appointment times for this (Participant 276) ….'de-prescribing' could potentially be a very important role for Physios (Participant 790)
Time management	9	The time required to keep up to date with medications and well as physiotherapy skills to be safe and effective I feel would impact the time available to treat patients…. (Participant 246) Puts extra pressure on appointment time when we already have to deal with full assessment and treatment of the patient's physical and psycho-social needs (Participant 693)

Further Insights

The final question allowed participants to express any additional thoughts and views about physiotherapist prescribing that they deemed important and had not already been captured. Two hundred and sixty-six participants provided comments. Three major themes were identified:

1. Quality and safety: clinical governance, policies and procedures, and education
2. Professional issues
3. Physiotherapy professional priorities

Table 4 lists the number of comments that discussed each theme and subtheme, providing Illustrative quotations from participants.

Quality and Safety

Two hundred and seventeen comments were received regarding quality and safety concerns around NMP. These focussed on clinical governance, policies and procedures and educational requirements for Prescribers.

One hundred and forty-four participants proposed that adequate clinical governance, policies and procedures should be in place for physiotherapist NMP to be successful. Participants identified the need for a clear scope of practice linked to a physiotherapy-centric formulary that is endorsed and regulated promoting transparency and safety. Participants raised concerns that statutory processes and procedures defining a limited formulary could quickly become out-dated due to medical advances. Meanwhile, other participants identified that a limited formulary based around the profession's specialist areas of practice would be safest, protecting clinicians from pressures to prescribe out of scope. Participants were concerned that unless communication channels were maintained between physiotherapist Prescribers and GPs, there is a risk that patients could shop around for prescriptions, potentially aiding the abuse of prescription medication, and causing clinical incidents. Participants were also concerned that the increase in professional risk due to physiotherapist prescribing would lead to an increase in indemnity insurance premiums.

Seventy-three comments were received with regards to education. Participants recognised that the scope of practice must be absolutely clear, endorsed and underpinned by a robust clinical education framework. They felt that thought must be given to the process of assessment and selection of appropriately qualified assessors from outside the profession including medical doctors and pharmacists to ensure quality and safe practice among Prescribers.

Access to prescribing courses for physiotherapists living in regional and remote areas was highlighted as a potential issue due to the distance to the nearest university. Participants recommended that the regulatory body should dictate compulsory annual continuous professional development (CPD) hours and periodic reassessment of competency should be mandatory. Participants had varying opinions with regards to when physiotherapists should be able to train and qualify as Prescribers, however the participants agreed that current pre-registration physiotherapy programmes should be updated to include pharmacology and therapeutics on their syllabi in preparation for the future.

Professional Issues

Thirty-nine participants provided comments on important professional issues. Participants noted that the introduction of physiotherapist prescribing could change the 'physiotherapy brand', weakening the public's perception of physiotherapists as experts in manual therapy and exercise,

leading to potential loss of patients to other emerging healthcare professions. It was suggested that a marketing campaign may be necessary to manage public expectation and minimise consumer confusion.

Inter-professional relationships between physiotherapists, medical practitioners and pharmacists were highlighted as being fragile. Participants warned that members of the Australian Medical Association (AMA) would not support the introduction of physiotherapist prescribing, alluding to the possibility that medical doctors might see the introduction as a direct challenge to their authority and private businesses, leading them to reduce referrals to physiotherapy. Participants specifically identified the impact this may have on practice revenues in the musculoskeletal and sport specialties. That said, other participants reported great support from medical colleagues and the greater multidisciplinary team, citing the streamlining of current clinical services and patient pathways, alongside improved access medicines as key reasons for positive inter-professional support. Participants warned that although these efficiencies would reduce service costs, establishing physiotherapist prescribing would require an initial co-ordinated investment to ensure appropriate governance, clinical education and safe/quality implementation across Australia.

Physiotherapy Professional Priorities

Forty participants commented on the profession's professional priorities. Participants described the risks of junior physiotherapists under-developing their traditional physiotherapy skills used to treat impairments, and instead depending on medicines. To mitigate these risks, a robust career progression framework would need to be introduced to ensure ongoing high-level professional development across all specialties. To safeguard the good reputation of the profession, participants focused on maintenance of quality and safety for patients and clinicians. Physiotherapist prescribing should be introduced in a structured and organised manner with all physiotherapists supporting each other, even if they do not wish to prescribe themselves. Further, participants also commented that the ability for physiotherapists to directly refer to specialist medical or surgical practitioners and ensuring appropriate patient rebates for imaging would have a positive clinical impact.

Table 4: Additional Comments Reported or Discussed by Participants & Illustrative Quotations from Participants

Theme/ Subtheme	Number of comments (n)	Illustrative Quotations (quotations have been copied verbatim)
Quality and Safety Clinical governance, policy, procedure Education	217	Prescribing medicines is a risk to the physiotherapy profession as there can be a lot of risks to the patient with medications. Prescribing and its scope needs to be carefully planned and managed with introduction to the physiotherapy profession (Participant 379) The physio who is going be a prescriber needs to undergo a certain number of hours of training…… going through an examination process. Continuous on-going training is also important as medications change fairly rapidly (Participant 14) …. professional indemnity is required to protect them in case of errors or mishaps (Participant 89) Risks of 'doctor shopping' of physiotherapists for opioid based drugs without centralised control (Participant 651) The challenge in prescribing is ensuring consumer safety through adequate training of the physiotherapists involved and improved communication across health professions (Participant 56)
Professional Issues	39	I believe that it would create confusion for the public if some physiotherapists could prescribe, while others could not (Participant 227) A cultural change is needed, namely adjusting the public's perception of what allied health professionals can do, in order to effectively utilise non-medical prescribing rights (Participant 380) …. the medical doctors may have their issues with this as it may be seen as a direct challenge to their authority and therefore reduce their use of referral pathways already established (Participant 4) I would be concerned that there may be a conflict that forms between doctors and physiotherapists if physios were given prescribing authority. I think there would have to be some very strict guidelines about managing a patient who may be seeking prescriptions from both a doctor and physiotherapist at the same time (Participant 879) I think the medical and pharmaceutical professions would have a negative view of physios prescribing and be less willing to work with us/refer patients to us (Participant 447)

Physiotherapy Professional Priorities	40	Physio profession needs to become more progressive with enhanced scope roles, career pathways are currently limited (Participant 412) I think that the physiotherapy profession should spend their resources and energies trying to improve the ability for Physiotherapists to order radiological investigations (scans etc) and referrals to specialists which would be far more beneficial in a cost and time saving way then being able to prescribe medications (Participant 78) Potential for increased reliance on pharmaceutical treatments of MSK conditions over traditional physiotherapy management strategies (i,e. manual therapy, exercise prescription) (Participant 701) May potentially de-value other interventions in the management plan (i.e. commitment to taking medication as prescribed, but not to exercises prescribed in same session) (Participant 219)

DISCUSSION

This is the first study to explore the perceptions of Australian physiotherapists regarding NMP by physiotherapists in Australia. The majority of physiotherapists agreed that autonomous prescribing responsibilities should be introduced for physiotherapists in Australia. Improvements in the efficiency of healthcare delivery, access to medicines and reductions in costs across the health economy were suggested as potential benefits. These findings concur with those reported by student physiotherapists in Australia as detailed in a related article,[16] as well as reflecting an evaluation of physiotherapist and podiatrist independent prescribers in the UK,[28] strengthening the external validity and transferability of the results. Concerns regarding, clinical safety and management of clinical-risk were clearly identified throughout the quantitative and qualitative sections of the survey, supporting the results of an international multi-profession mixed-methods systematic review investigating the barriers and facilitators of the implementation and utilisation of NMP. [5] The systematic review identified the need to address governance, safety, educational and financial factors prior to training prescribers, to protect both patients and clinicians from poor practice, process and clinical pathways. [5] To safely and effectively introduce physiotherapist prescribing, politicians, regulatory bodies, healthcare managers, clinicians and the APA, in consultation with experts and health consumers, must develop robust legislation, regulation, clinical governance and safety policies as well as well-defined education and career frameworks.

To ensure that physiotherapists are equipped to prescribe safely within a multi-modal physiotherapeutic context, participants perceived that a contemporary, innovative and robust educational framework should be developed prior to the introduction of physiotherapist prescribing. This perception reflects contemporary educational literature that urges educators to carefully consider the ever-evolving healthcare system when designing curricula for physiotherapists. [29] Transforming healthcare needs will require the next generation of physiotherapists to be ready to adapt to changes in consumer complexity and expectation, working within new models of care that are organised, funded and delivered in innovative ways. It has been postulated in the literature that a more flexible, broader and deeper clinical expertise will be required by physiotherapists if the Australian physiotherapy profession wish to succeed as evidence-based and viable health providers in the integrated, value-driven health-industry of the future. [30]

To guarantee quality development of physiotherapists across the profession, participants called for the creation of a contemporary career-development framework into which prescribing would be integrated, to safeguard mastery of traditional skills, govern quality practice and maintain the 'physiotherapy brand'. This appeal concurs with literature reporting that career frameworks within healthcare help the public understand different clinicians' knowledge, skills and roles within one profession, as well as providing purpose and direction for professionals, promoting engagement and job satisfaction. [31 32] Further, academic qualifications and increased clinical responsibility should lead to enhanced remuneration if physiotherapists are to adopt prescribing into their clinical practice, as a lack of remuneration has been recognised as a barrier to NMP across other professions. [33-35] Improvements in recruitment and retention within the profession were anticipated due to improvements in job satisfaction for clinicians and greater recognition and professional reputation, echoing the findings of other NMP-professions reported in the literature. [33 36 37]

Physiotherapists working in cities and regional areas were consistent in observing that physiotherapist prescribing would improve access to medicines across all regions, but would be specifically helpful in rural/remote areas where access to medical-prescribers may be limited. However, physiotherapists from rural/remote areas although positive about the introduction of physiotherapist prescribing, were less likely to wish to train as prescribers, identifying potential increased risks when working in geographical isolation owing to a lack of clinical support. Due to a

perceived lack of need in the present healthcare environment, participants felt that not all physiotherapists would benefit from undertaking a NMP course. Those working in close multidisciplinary teams with co-located prescribers, or those employed in non-clinical roles such as healthcare managers or academic physiotherapists were found to be less likely to wish to become prescribers than clinicians working in the public and private sectors. There was debate as to when and who should undertake the training, with no consistency as to whether education should be included in foundation level courses or become a post-registration qualification for those with a specified clinical experience. Further, rural physiotherapists identified that the distance to universities may act as a barrier to training as a prescriber, highlighting the need for educators to consider flexible learning methods such as online education and video teleconferencing to fulfil the academic requirements of a NMP course. It is therefore imperative that a robust, fit for purpose, transparent and future proof education framework is developed to ensure unity within the Australian physiotherapy profession and assurance for all stakeholders that physiotherapists prescribers would be adequately prepared for practice.

Participants' perceptions that physiotherapist prescribing in Australia would reduce costs to their patients, healthcare services, and to the health economy as a whole, is supported by an economic review commissioned by the APA. The report predicts savings to the Australian health-economy of over $9.22million per year if physiotherapist prescribing was implemented, [38] however this is not currently reflected in the health economics literature. A robust low risk of bias systematic review investigating the clinical and cost-effectiveness of NMP found only 1 inadequately powered pilot randomised controlled trial investigating clinical effectiveness to date; concluding that the benefit of NMP to the health economy remains unclear [4]. This gap in the literature highlights the need for robust, adequately powered economic evaluation to investigate the cost-benefits perceived by physiotherapists across Australia.

Strengths and limitations

This is the first study investigating the perceptions of AHPRA registered-physiotherapists about the potential introduction of NMP among physiotherapists in Australia, and so, alongside the data from student physiotherapists presented in the related article, provides an important overview of the current associated professional landscape. The data should be used to guide the APA, health departments and political leaders towards successful implementation of physiotherapist prescribing in Australia. As with all survey-based research, limitations are inherent due to selection and response bias. The survey was anonymous, so participants may have biased the results by completing the online questionnaire multiple times. Further, physiotherapists with strong views or vested interests may be more likely to complete the questionnaire, meaning that their answers may not reflect the views of the wider profession.

A representative survey response rate (as per precursory power calculations) was achieved.[13] Although only 3% of AHPRA responded, this reflected the response rate of a previous national evaluation of physiotherapists, [38] where similarly, it was not possible to contact all registered physiotherapists directly due to the AHPRA privacy policy. Physiotherapists who were not APA members at the time of the survey would have been unaware of the questionnaire unless they were provided with a link to the questionnaire through professional networks. It is impossible to determine why 97% of AHPRA registered physiotherapists did not participate; therefore, the risk of bias remains unknown and should be considered when interpreting the results. In-line with recent Australian regulatory data, [39] the sample was representative of all registered physiotherapists in Australia in terms of age, gender and state in which they practise. Unfortunately, no national demographic data exists demonstrating the geographic location or health sector of registered physiotherapists' employment. It is therefore likely that the comparable demographic profile of the

study's sample to contemporary national evaluations enhances generalisability of the data to the greater physiotherapist population in Australia and reduces risk of bias.

CONCLUSION

AHPRA registered-physiotherapists perceive that the introduction of autonomous physiotherapist prescribing would be beneficial for the Australian population and should be introduced. Acceptance of physiotherapist prescribing and the likelihood of physiotherapists to train as prescribers vary dependent on location and the health sector in which a physiotherapist works. Legislation, regulation and governance around the use of physiotherapist prescribing all require careful consideration and consultation with experts and health consumers to ensure the safety and quality demanded by physiotherapy profession. Rigorous national educational frameworks should be developed within a transparent career development structure to ensure prescribing is used within a multimodal-physiotherapeutic context, safeguarding the professional reputation of physiotherapy.

It is recommended that the APA, health departments and political leaders use the results of this study in conjunction with cost-benefit analyses, risk analysis as well as assessment of the health-requirements and consultation with key stakeholders, to redefine the scope of Australian physiotherapy to include NMP. Future research is required to investigate the concerns raised by participants. It would be valuable to interview current physiotherapist prescribers to interrogate the perceived benefits and concerns about physiotherapy prescribing identified by the Australian physiotherapists. Lessons learnt in the UK could thus be utilised to inform implementation internationally.

Figure 1: Physiotherapists' belief as to whether physiotherapist prescribing should be introduced in Australia; potential benefits and participants' concerns.

Figure 2: The number of years' experience a physiotherapist should have prior to being able to train as a physiotherapist prescriber.

Figure 3: Likeliness to train as a Prescriber: motivators and deterrents.

Contributors
TN is a clinical advanced practice physiotherapist and PhD candidate at the University of Birmingham (UK). AR is a Reader in musculoskeletal rehabilitation sciences and lead supervisor. JM is a professor of clinical pharmacy and co-supervisor. Both supervisors ensured the rigour of methods and analyses. CD is a professor of physiotherapy and TJ is an associate professor of physiotherapy at Macquarie University (Aus). All authors have contributed to the content of this article. TN wrote the first draft of this article and has worked with all authors to develop subsequent drafts. All authors prior to publication gave final approval. Patients and the general public were not involved in this study.

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Competing Interests

All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf and declare: no support from any organisation for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work.

Data Sharing Statement

Data from physiotherapists collected during the study will be submitted for publication in an open access peer reviewed journal for all to read. There is no unpublished data available.

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Figure 1: Physiotherapists' belief as to whether physiotherapist prescribing should be introduced in Australia; potential benefits and participants' concerns.

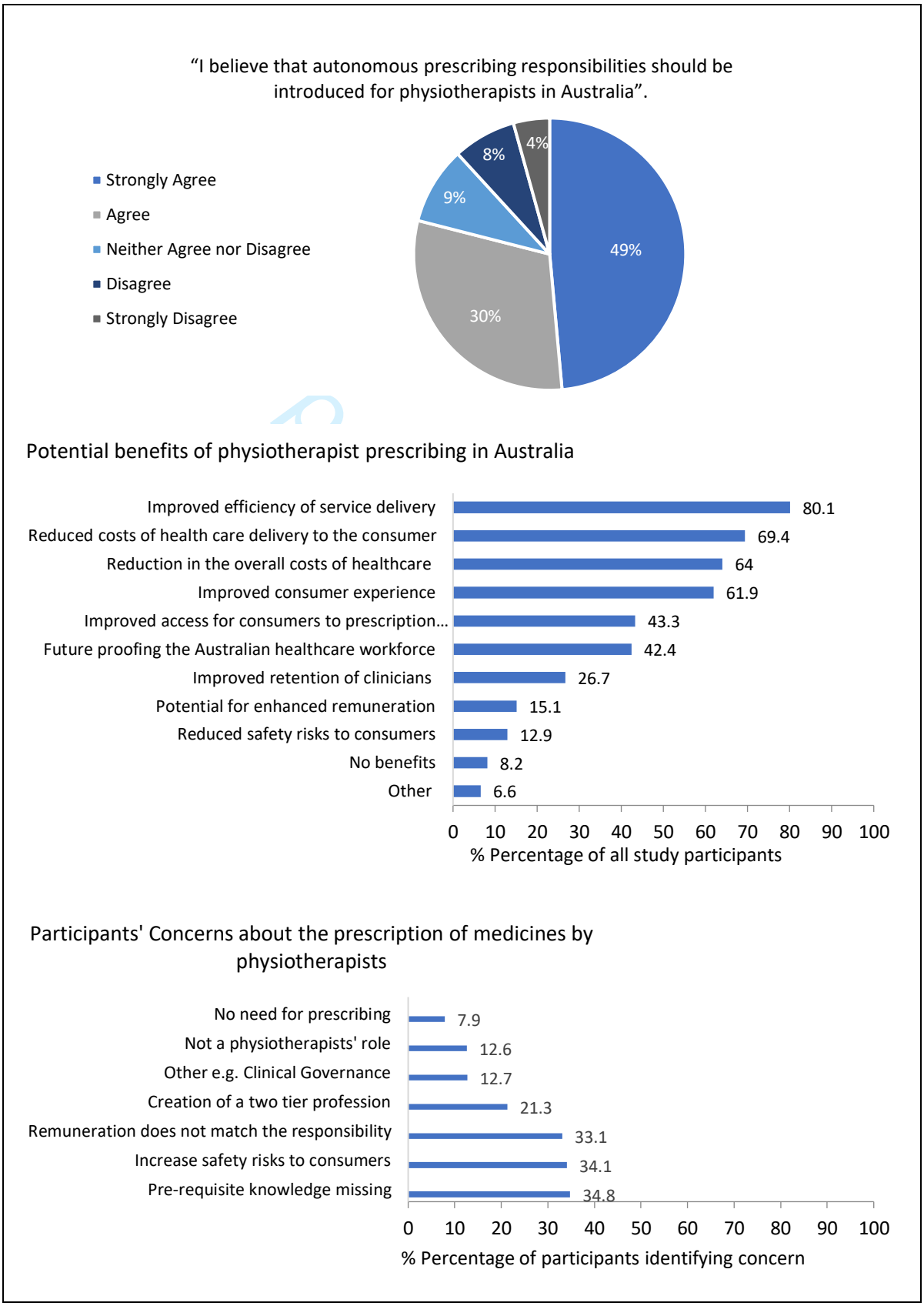


Figure 2: The number of years' experience a physiotherapist should have prior to being able to train as a physiotherapist prescriber.

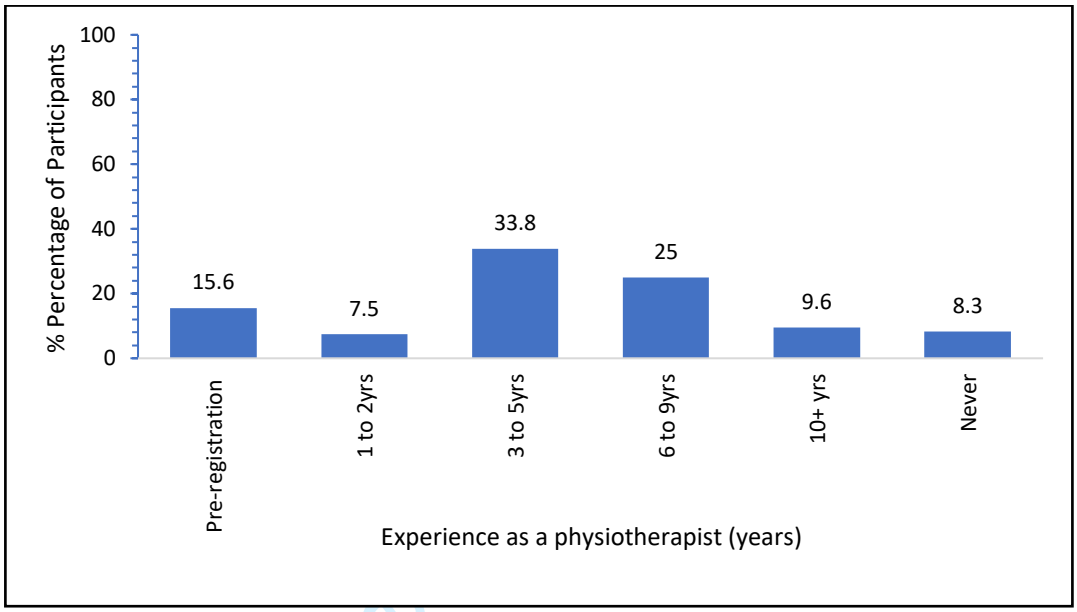
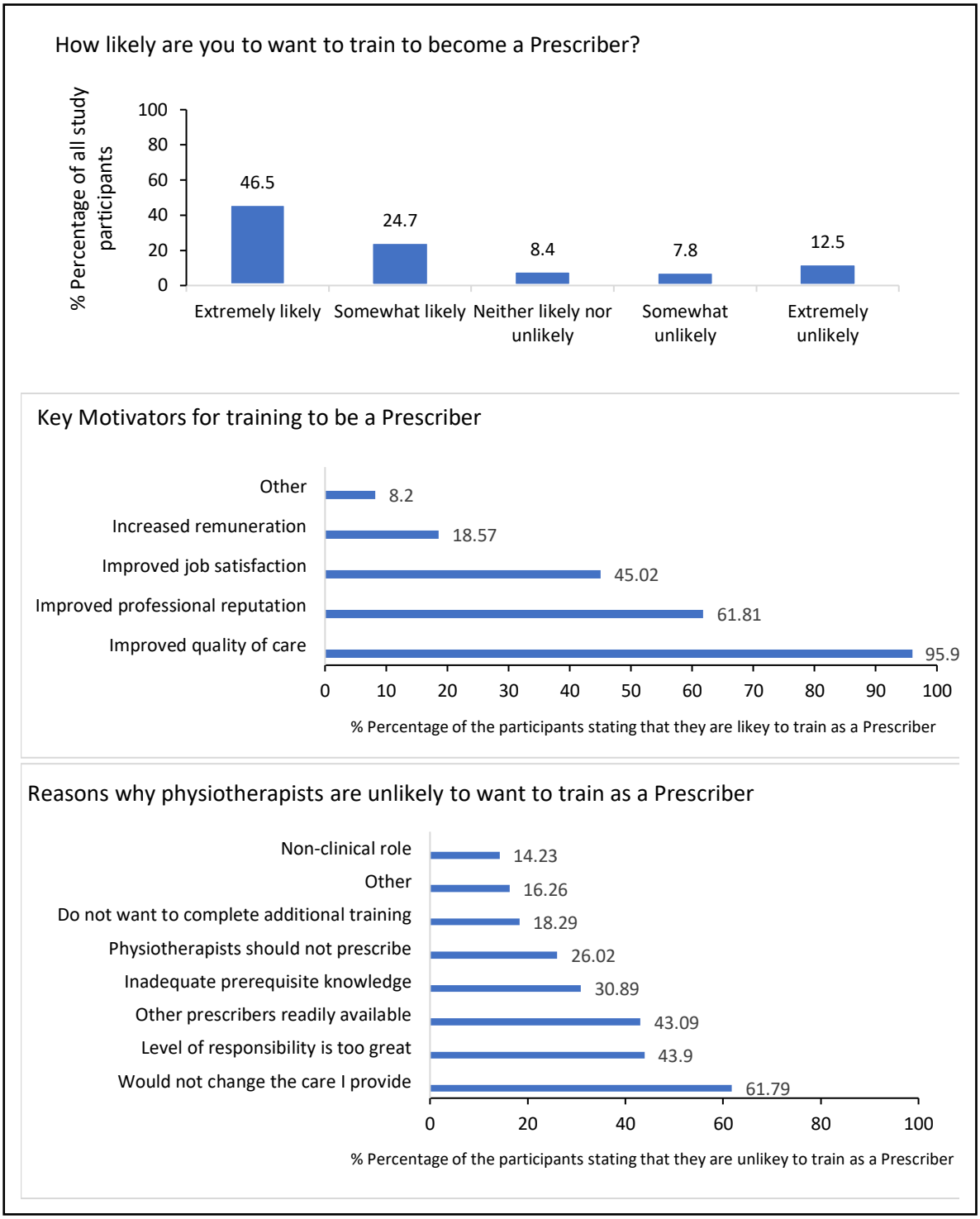


Figure 3: Likeliness to train as a Prescriber: motivators and deterrents



Supplementary file 1: Online Questionnaire

Q1 What is your gender?
- ❍ Male (1)
- ❍ Female (2)
- ❍ Other (3)

Q2 What is your age?
- ❍ 17-29 (1)
- ❍ 30-39 (2)
- ❍ 40-49 (3)
- ❍ 50-59 (4)
- ❍ 60 or older (5)

Q3 Which of the following are you?
- ❍ AHPRA registered physiotherapist (1)
- ❍ Student physiotherapist enrolled in an Australian university (2)

If Student physiotherapist enr... Is Selected, Then Skip To Which state or territory do you curre...

Q4 How many years have you been a qualified physiotherapist?
- ❍ 0-4 (1)
- ❍ 5-9 (2)
- ❍ 10-14 (3)
- ❍ 15-19 (4)
- ❍ 20 or more (5)

Q5 Where did you obtain your primary physiotherapy qualification?
- ❍ Australia (1)
- ❍ Overseas (please specify) (2) _____

Q6 Which state or territory do you currently work? If multiple, select the state or territory that you spent the most time working in over the past 14 days.
- ❍ Australian Capital Territory (1)
- ❍ New South Wales (2)
- ❍ Northern Territory (3)
- ❍ Queensland (4)
- ❍ South Australia (5)
- ❍ Tasmania (6)
- ❍ Victoria (7)
- ❍ Western Australia (8)

Q7 Do you work in a metropolitan or rural area? Please choose the most appropriate option. If you work in multiple areas, select the area in which you spent the most hours working in the past 14 days. If you are unsure, you can check your areas classification

using the following website:
http://www.doctorconnect.gov.au/internet/otd/publishing.nsf/Content/locator

- ❍ RA1 - Major Cities of Australia (1)
- ❍ RA2 - Inner Regional Australia (2)
- ❍ RA3 - Outer Regional Australia (3)
- ❍ RA4 - Remote Australia (4)
- ❍ RA5 - Very Remote (5)

Q8 In which health sector do you spend most of your time working as a physiotherapist?

- ❍ Public sector (1)
- ❍ Private sector (2)
- ❍ Educational/research institute or university (3)
- ❍ Not-for-profit organisation (4)
- ❍ Other (please specify) (5) _____

Q9 What area/s of physiotherapy do you predominantly work in or identify with?Please select up to a maximum of three (3) areas.

- ❑ Amputees (1)
- ❑ Burns/plastics (2)
- ❑ Cardiorespiratory/acute medicine/surgery (3)
- ❑ Chronic disease management (4)
- ❑ Education (5)
- ❑ Emergency department (6)
- ❑ Gerontology/Aged care (7)
- ❑ Health promotion/Public health (8)
- ❑ Lymphoedema (9)
- ❑ Mental health (10)
- ❑ Musculoskeletal/orthopaedics (11)
- ❑ Neurology (12)
- ❑ Occupational health (13)
- ❑ Paediatrics (14)
- ❑ Pain (15)
- ❑ Palliative care (16)
- ❑ Rehabilitation (mixed) (22)
- ❑ Rheumatology (17)
- ❑ Rural generalist (18)
- ❑ Sports (21)
- ❑ Women's health/continence (19)
- ❑ Veterinary (20)

Display This Question:
If Which of the following are you? Student physiotherapist enrolled in an Australian university Is Selected

Q10 Which state or territory do you currently attend university?

- ❍ Australian Capital Territory (1)
- ❍ New South Wales (2)
- ❍ Northern Territory (3)
- ❍ Queensland (4)
- ❍ South Australia (5)
- ❍ Tasmania (6)
- ❍ Victoria (7)
- ❍ Western Australia (8)

Q11 Autonomous prescribing: "Prescribing occurs where a prescriber undertakes prescribing within their scope of practice without the approval or supervision of another health professional. The prescriber has been educated and authorised to autonomously prescribe in a specific area of clinical practice. Although the prescriber may prescribe autonomously, they recognise the role of all members of the health care team and ensure appropriate communication occurs between team members and the person taking medicine". The Health Professionals Prescribing Pathway (HPPP), p16 (2013) To what extent do you agree with the following statement: "I believe that autonomous prescribing responsibilities should be introduced for physiotherapists in Australia."

- ❍ Strongly agree (1)
- ❍ Agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Disagree (4)
- ❍ Strongly disagree (5)

Q12 What do you see the benefits of physiotherapists prescribing medicines to be?Select as many options as are appropriate to you.

- ❑ Improved efficiency of service delivery (1)
- ❑ Reduced costs of health care delivery to the consumer (2)
- ❑ Improved consumer experience (3)
- ❑ Reduction in the overall costs of healthcare to the Australian economy (4)
- ❑ Improved retention of clinicians within the physiotherapy profession (5)
- ❑ Potential for enhanced remuneration (6)
- ❑ Reduced safety risks to consumers (7)
- ❑ Improved access for consumers to prescription medications (8)
- ❑ Future proofing the Australian healthcare system with a flexible workforce (9)
- ❑ Other (please specify) (10) _____
- ❑ I do not believe there would be any benefits (11)

Q13 What are your concerns about the prescription of medicines by physiotherapists?Select as many options as are appropriate to you.

- ❑ Prescribing of medicines is not a physiotherapists' role (1)
- ❑ Physiotherapists do not have adequate pre-requisite knowledge to undertake a prescribing course (2)
- ❑ There is no need for physiotherapists to prescribe medicines (3)
- ❑ Physiotherapist prescribing will create a two (2) tier profession (4)
- ❑ Physiotherapist prescribing will increase safety risks to consumers (5)
- ❑ Remuneration does not match the responsibility associated with the prescribing of medicines (6)
- ❑ Other (please specify) (7) _____
- ❑ I do not have any concerns (8)

Q14 How many years experience do you think a physiotherapist should have prior to being able to train as a physiotherapist prescriber?

- ❍ 0 - Should be included in pre-registration physiotherapy qualification (1)
- ❍ 1-2 years (2)
- ❍ 3-5 years (3)
- ❍ 6-9 years (4)
- ❍ 10 or more years (5)
- ❍ Physiotherapists should not be able to train as prescribers (6)

Q15 If physiotherapists became able to autonomously prescribe medicines, how likely are you to want to train to become a prescriber?

- ❍ Extremely likely (1)
- ❍ Somewhat likely (2)
- ❍ Neither likely nor unlikely (3)
- ❍ Somewhat unlikely (4)
- ❍ Extremely unlikely (5)

Display This Question:

If If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Extremely likely Is Selected

Or If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Somewhat likely Is Selected

Or If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Neither likely nor unlikely Is Selected

Q16 What are your key motivations to becoming a prescriber?Select as many options as are appropriate to you.

- ❑ Improving the care I am able to provide (1)
- ❑ Improved job satisfaction (2)
- ❑ Increased remuneration (3)
- ❑ Improved professional reputation (4)
- ❑ Other (please specify) (5) _____

Display This Question:

If If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Extremely unlikely Is Selected

Or If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Somewhat unlikely Is Selected

Or If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Neither likely nor unlikely Is Selected

Q17 What makes you unlikely to want to train as a prescriber?Select as many options as are appropriate to you.

- ❑ I do not believe that physiotherapists should prescribe medicines (1)
- ❑ I do not think that I have the knowledge required to train as a prescriber (2)
- ❑ I do not wish to complete additional training (3)
- ❑ I am not prepared to take on the additional responsibility associated with prescribing medicines (4)
- ❑ In my current role, being able to prescribe would not change the care provided (5)
- ❑ A prescriber is readily available to the clients that I provide care for (6)
- ❑ I work in a non-clinical role (7)
- ❑ Other (please specify) (8) _____

Q18 Do you have any additional thoughts about how physiotherapist prescribing may impact the care that the profession is able to provide? For example a positive or negative impact on a specific group e.g. minority groups, immigrants, students, travellers.....

Q19 Is there any additional information you would like to share at this time?

Standards for Reporting Qualitative Research (SRQR)*

http://www.equator-network.org/reporting-guidelines/srqr/

	Page.
Title and abstract	
Title - Concise description of the nature and topic of the study Identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended	1
Abstract - Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results, and conclusions	2
Introduction	
Problem formulation - Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement	3
Purpose or research question - Purpose of the study and specific objectives or questions	3
Methods	
Qualitative approach and research paradigm - Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., postpositivist, constructivist/ interpretivist) is also recommended; rationale	4

Researcher characteristics and reflexivity - Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, and/or transferability	1
Context - Setting/site and salient contextual factors; rationale	4
Sampling strategy - How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale	4
Ethical issues pertaining to human subjects - Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	4
Data collection methods - Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale	4
Data collection instruments and technologies - Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study	4-5
Units of study - Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	4
Data processing - Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/de-identification of excerpts	5
Data analysis - Process by which inferences, themes, etc., were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale	5
Techniques to enhance trustworthiness - Techniques to enhance trustworthiness and credibility of data analysis (e.g. member checking, audit trail, triangulation); rationale	5

Results/findings

Synthesis and interpretation - Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	7-19
Links to empirical data - Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings	14-15, 18-19

Discussion

Integration with prior work, implications, transferability, and contribution(s) to the field - Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field	20-21
Limitations - Trustworthiness and limitations of findings	21-22

Other

Conflicts of interest - Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed	23
Funding - Sources of funding and other support; role of funders in data collection, interpretation, and reporting	22

Reference:
O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. **Standards for reporting qualitative research: a synthesis of recommendations.** *Academic Medicine*, Vol. 89, No. 9 / Sept 2014
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Perceptions about the implementation of physiotherapist prescribing in Australia: a national survey of Australian physiotherapists

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Perceptions about the implementation of physiotherapist prescribing in Australia: a national survey of Australian physiotherapists

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Abstract

Objectives: To explore (1) the views of Australian physiotherapists regarding potential implementation of non-medical prescribing (NMP) in Australia, (2) how the geographical location and health sector in which a clinician works may influence their perceptions, (3) the perceptions of Australian physiotherapists about how physiotherapist prescribing might impact the care that the profession can provide.
Design: A cross-sectional descriptive survey using open and closed questions
Setting: Participants completed an online questionnaire.
Participants: 883 Australian Health Professionals Registration Authority (AHPRA) registered-physiotherapists, working across all states and territories.
Outcome Measures: An online questionnaire was developed by a panel of subject-experts and pre-tested (n=10) for internal consistency. A hyperlink to the questionnaire was emailed to all members of the Australian Physiotherapy Association. A reminder email was sent 4 weeks later. Quantitative data were analysed descriptively, with use of absolute risk reductions (ARR) and 95% Confidence Intervals to determine the likelihood that health sector or geographical location were associated with specific views. Thematic analysis enabled synthesis of the qualitative data.
Results: 79.0% participants felt that physiotherapist prescribing should be introduced in Australia, with 71.2% wanting to train as prescribers. Clinical governance, risk management, regulation of clinicians and the development of an education framework were identified as priorities for implementation. Participants working in the private sector were significantly more likely to train as prescribers than those in the public sector (ARR 9.9%; 95%CI [3.5, 16.4]) or educational/research institutions (ARR 23.3%; 95%CI [12.8, 33.8]), with city dwellers significantly more likely to train compared to physiotherapists in remote regions (ARR 19.8%; 95%CI [0.8, 39.2]). Physiotherapist prescribing was predicted to improve efficiency of healthcare delivery, access to medicines and reductions in healthcare costs.
Conclusions: AHPRA registered-physiotherapists perceive that the introduction of autonomous physiotherapist prescribing would be beneficial for the Australian population and should be introduced. Decision-makers should consider the results of this survey in conjunction with cost-benefit and risk analysis when planning the introduction of physiotherapist prescribing.

Strengths and Limitations

- First rigorous survey investigating the perceptions of Australian physiotherapists about the potential implementation of physiotherapist prescribing in Australia.
- Results provide the evidence required by the physiotherapy professional association, health departments and political leaders to inform clinically safe and economically sound decisions about redefining the scope of physiotherapy in Australia to include non-medical prescribing.
- Limitations are inherent with all survey-based research due to selection and response bias.
- It was not possible to determine why non-responders did not participate.

Background and Rationale

Non-medical prescribing (NMP) has been used in clinical practice by a variety of professions for over 20 years. [1] However, it was not until 2012 that in the United Kingdom (UK), physiotherapists were first granted independent prescribing responsibilities. In July 2015, the Australian Physiotherapy Association (APA) in collaboration with the Australia Physiotherapy Council (APC) and Council of Physiotherapy Deans Australia and New Zealand (CPDANZ) submitted a proposal for the endorsement of registered physiotherapists for autonomous prescribing to the Physiotherapy Board of Australia. [2] To prescribe medicines autonomously, a practitioner must be responsible for the assessment and diagnosis of the patient, prescribing drugs from a specified formulary within their individual scope of practice. The clinician manages ongoing therapy without the requirement of protocols or supervision.[3] Difficulties in accessing medicines for Australians living in rural and remote areas alongside recognised health inequities between minority groups such as Aboriginal and Torres Strait Islander peoples were cited as key drivers for reform. Benefits of the implementation of prescribing by physiotherapists in Australia, such as the potential to increase access to medicines for health service users across all communities, [2] are therefore anticipated.

The clinical and cost-effectiveness of NMP remains unclear, with a recent systematic review finding only minimal empirical evidence with unknown risk of bias [4], nonetheless its popularity in clinical practice continues to grow.[5] A contemporary and robust mixed-methods systematic review of 50 moderate to good quality studies, investigating the barriers to and facilitators of independent NMP, identified conflict within a profession as a key barrier to successful implementation. [5] A united professional position regarding the adoption of innovative clinical practice was highlighted as essential to ensure the development of safe and high-quality practice. Divided opinion between individual clinicians, academics and professional managers/leaders may lead to confusion across the healthcare community, resulting in unwarranted negative thoughts and perceptions about NMP roles and responsibilities. Diverse perceptions regarding the implementation of physiotherapist prescribing and current physiotherapeutic pharmacological knowledge and practices have been reported in national evaluations in Nigeria, South Africa and the UK. [6-9] Data from these evaluations have been utilised to influence national policy and the political drive towards or against the adoption of NMP within the physiotherapy profession in these countries.[8 9] Acceptance and support for prescribing by the Australian physiotherapy profession will be required for successful implementation into local and national health systems.[2 10-12] It is therefore important that the views of Australian physiotherapists are understood in order to inform key stakeholders and decision-makers about redefining the scope of physiotherapy to include NMP in Australia. To date no evidence exists evaluating the Australian physiotherapy professions' views and perceptions about the potential use of NMP by physiotherapists in Australia.

Objectives

1. To explore the views of Australian physiotherapists about the potential implementation and use of NMP by physiotherapists in Australia.

2. To explore how the geographical location and health sector in which a clinician works may influence the perceptions of Australian physiotherapists about the potential implementation and application of NMP by physiotherapists in Australia.

3. To explore the perceptions of Australian physiotherapists about how physiotherapist prescribing might impact the care that the physiotherapy profession can provide.

METHODS

A detailed study protocol was published to ensure transparency and reproducibility. [13] The study is reported in line with an adapted version of the Standard Protocol Items: Recommendations for Interventional Trials (SPIRIT) statement, [14] recommended by the SUrvey Reporting GuidelinE (SURGE). [15] Ethical approval was granted by the Medical Sciences Human Research Ethics Committee (HREC), Macquarie University, Australia (Reference No: 5201600846), and verified by the Research Governance Officer at the University of Birmingham, UK (Reference No: ERN_16-1576) where the lead author is currently undertaking his PhD. This article reports the data collected from registered physiotherapists from a larger study evaluating both registered and student physiotherapists in Australia.[13] The data collected evaluating the views and perceptions of student physiotherapists about the implementation of physiotherapist prescribing in Australia is presented in the related article (bmjopen-2018-026327) published independently.[16]

Survey design

A cross-sectional online descriptive survey design enabled the collection of empirical data across Australia. [17-19] An online questionnaire was developed using Qualtrics (Qualtrics, Provo, UT) thus enabling Australian-wide participation with no geographical or time-zone constraints. [17 20]

Participants

Participant inclusion criteria are described in Box 1. According to data published by the Physiotherapy Board of Australia, 30,004 physiotherapists were registered with the Australian Health Professionals Registration Authority (AHPRA) at the time of the survey.[21]

Box 1: Participant inclusion criteria

- Physiotherapists registered with AHPRA
- Ability to read and understand written English
- Provision of consent to participate in the survey independently

Procedure

AHPRA privacy policy [22] prohibits approaching AHPRA registered physiotherapists directly. Therefore, an advertisement containing a link to the online survey was emailed to all members of the APA, including all clinical and professional networks. A reminder advertisement was sent via email 4 weeks after the initial email to promote participation in the survey. [17 19 20] IP addresses were not saved to ensure participant anonymity. The APA membership was selected as the recruitment platform as it is representative of all physiotherapy specialties and levels of experience (qualified and student physiotherapists) across Australia, with 23,153 members at the time of survey.[23] Word of mouth referrals to the survey through professional networks were promoted in the email to facilitate capturing the views of non-APA members. [17 19 20] Data collection took place 1st March - 30th April 2017. Participants accessed the questionnaire via the online link. Completion of the survey was anonymous and entirely voluntary. [17 19 20] Participant consent was gained using an online information and consent form. [17-19] Researcher contact details were supplied to enable any questions or concerns to be answered prior to completing the online questionnaire. [17-19]

Questionnaire development

Data from a mixed methods systematic review examining the barriers to and facilitators of NMP internationally informed the questionnaire design and specific question inclusion. [5] Questions were optimised through consultation with experts in the fields of physiotherapy, NMP and Australian state/federal law and health policy. [17-19]

The questionnaire consisted of 4 sections:

1. Demographic information including participants' age/gender/ number of years qualified/ specialty/location.
2. Participants' perceptions of the positive and/or negative aspects of physiotherapist prescribing to the profession as a whole.
3. Participants' perceptions of the impact of physiotherapist prescribing to them as an individual.
4. Participants' perceptions regarding the potential wider impacts of physiotherapist prescribing.

Sections 1-3 used closed questions to collect quantitative data. Section 4 contained two open-ended questions to allow the participants to answer without limitation. [17 19] Inbuilt survey logic ensured that participants were shown questions that were pertinent to them based on their previous answers. Before completion, participants were encouraged to share any additional information that they deemed relevant, capturing useful insights not addressed elsewhere in the questionnaire. [17-19]

The questionnaire was piloted to test for internal consistency and optimise user experience. [18] Ten participants (n=7 registered physiotherapists, n=3 student physiotherapists) were purposely sampled to represent the physiotherapy profession in Australia. [17-19] Following the pilot, Anglo-Australian terminology was clarified, and small changes were made to the linguistics and survey logic. Pilot participants were not excluded from completing the final questionnaire. The final questionnaire can be found in supplementary file 1.

Data Storage

All electronic data were stored in password-protected computer files only accessible by study investigators. Participants who disclosed personal details were additionally protected via coding on data files. [17-19] The password-protected files will be retained for 10 years, satisfying ethical and university policies.

Data Analysis

Demographic data (section 1) were tabulated and primary descriptive analysis of the data was completed using IBM SPSS Statistics for Macintosh, Version 22.0. Comparisons of proportions from questions in sections 2 &3, addressing objectives 1 & 2, were conducted using the PEDro confidence interval calculator (www.pedro.org.au). [24 25] Calculations of absolute risk reductions (ARR) with 95% confidence intervals were used to determine the likelihood that health sector or geographical location were associated with specific views.[25] Thematic analysis was used to ensure the transparent synthesis of data addressing objective 3, collected in section 4 of the online questionnaire. This analysis enabled the identification of key themes within a structured analytical framework. [26] Answers were coded line-by-line using NVivo 11 software (QSR International, Melbourne, Australia) by one researcher (TN) and were verified by a second researcher (TJ). Independently generated themes/sub-themes were then examined by a panel of experts for confirmation and agreement. [26]

Patient and Public Involvement

The development of this study was informed by the experiences of patients and the general public acknowledged in the literature. Due to the study's objectives, patients and the general public were not utilised in design of the study or in participant recruitment. The results will be disseminated to all interested parties through publication and presentation at professional conferences.

RESULTS

Demographics

A total of 883 participants (3% of all AHPRA registered-physiotherapists) completed the questionnaire. Demographic data are presented in Table 1. Fifty eight percent of participants had been qualified for more than 10 years, with the majority of participants (88.4%) gaining their primary professional qualification in Australia. The largest proportion of participants (n=536, 61%) identified musculoskeletal physiotherapy as their specialty area of practice. Of those working clinically, 52% of participants worked in the private health sector. There were participants from every state and territory, with the majority practising in New South Wales (n=299, 34%), Victoria (n=234, 27%), Western Australia (n=130, 15%) or Queensland (n=115, 13%). Seventy eight percent of participants worked in a major city.

Table 1: Demographic Data

	AHPRA Registered Physiotherapists n (%)
Total Participants	883 (100)
Gender (n=883 answered)	
Male	366 (41.4)
Female	517 (58.6)
Age (n=883 answered)	
17-29	258 (29.2)
30-39	260 (29.4)
40-49	173 (19.6)
50-59	124 (14.0)
60+	68 (7.7)
Number of years qualified as a physiotherapist (n=883 answered)	
0-4	192 (21.7)
5-9	178 (20.1)
10-14	109 (12.4)
15-19	101 (11.5)
20+	303 (34.3)
Country of Primary Qualification (n=883 answered)	
Australia	781 (88.4)
Overseas (Belgium, Canada, Germany, Hong Kong, India, Ireland, Italy, Mexico, Netherlands, New Zealand, Philippines, Portugal, Serbia, Singapore, South Africa, Taiwan, UK, USA)	102 (11.6)
Predominant Physiotherapy Practice Specialties: (max of 3 specialties identified per participant, n=865 answered)	
Amputees	10 (1.1)
Burns/Plastics	9 (1.0)
Cardiorespiratory	132 (14.9)
Chronic disease management	100 (11.3)
Education	58 (6.6)
Emergency Department	65 (7.4)
Gerontology/Aged care	115 (13.0)
Health promotion/ Public health	10 (1.1)
Lymphoedema	11 (1.2)
Mental Health	4 (0.5)
Musculoskeletal/ Orthopaedics	536 (60.7)
Neurology	81 (9.2)
Occupational Health	21 (2.4)
Paediatrics	37 (4.2)
Pain	105 (11.9)
Palliative Care	6 (0.7)
Rheumatology	10 (1.1)
Rural generalist	39 (4.4)
Women's health/ continence	53 (6.0)
Veterinary	2 (0.2)
Health Sector (n=872 answered)	
Public Sector	325 (37.3)
Private Sector	449 (51.5)
Educational/research institute or university	49 (5.6)
Not-for-profit organisation (NFPO)	36 (4.1)
Other	13 (1.5)
Rural, Remote and Metropolitan Areas (RRMA) classification [27] (n=783 answered)	
Major Cities of Australia	679 (77.8)
Inner Regional Australia	113 (12.9)
Regional Australia	58 (6.6)
Remote Australia	20 (2.3)
Very Remote Australia	3 (0.3)
State or Territory (n=879 answered)	
Australian Capital Territory	19 (2.2)
New South Wales	299 (34.0)
Northern Territory	7 (0.8)
Queensland	115 (13.1)
South Australia	64 (7.3)
Tasmania	11 (1.3)
Victoria	234 (26.6)
Western Australia	130 (14.8)

Participants' perceptions about the impact of physiotherapist prescribing on the physiotherapy profession

Six hundred and eighty participants (79%) reported that they strongly agreed or agreed that autonomous prescribing responsibilities should be introduced for physiotherapists in Australia, with 144 participants (12%) against the introduction (Figure 1). Potential benefits and concerns were identified.

The participants reported that physiotherapist prescribing could have a range of benefits in the Australian healthcare system (Figure 1). The most commonly identified benefit was an improvement in the delivery of health services (80.1%; n=707). Reduced costs of healthcare delivery to the consumer, as well as a reduction in the overall cost of healthcare and an improved consumer experience were also identified as potential benefits of NMP in Australia. Participants' concerns about the prescription of medicines by physiotherapists centred on quality and safety issues. In particular, concerns about whether physiotherapists have the knowledge required to train as a prescriber (34.8%), and a potential increased safety risk to consumers (34.1%) were raised. One third of participants (33.1%) were concerned that the expected remuneration for this service would not reflect the increased professional risk.

Figure 2 illustrates participants' opinions about the number of years of experience a physiotherapist should have prior to being permitted to train as a Prescriber. The majority of participants felt that physiotherapists should have 3 years or more of experience (68.4%), with 34.6% believing this should be at least 6 years.

Participants' perceptions about the impact of physiotherapist prescribing to them as an individual

Six hundred and eight participants (71.2%) would be extremely likely (n=397, 47%) or somewhat likely (n=211, 25%) to train as a prescriber if this were permitted, whilst 174 participants (20.3%) would not. Figure 3 outlines the key motivators and deterrents among participants to train as a prescriber.

Key motivators cited included the ability to provide improved quality of care (n=646, 96.0%) and the improved professional reputation associated with NMP (n=416, 61.8%). Some participants included increased job satisfaction (n=303, 45.0%) and remuneration (n=125, 18.6%) as motivating factors. Additionally, some participants (n=72, 10.7%) reported being motivated by potential clinical and cost efficiencies for both for the consumer and healthcare provider through enhanced clinical pathways, improved access to medicines and optimisation of clinical knowledge.

The most common deterrent for training to be a prescriber was the belief that this will not change the care that the individual physiotherapist would provide to their patients (n=152, 61.8%). Concerns around an increased level of clinical responsibility were also highlighted as potential deterrents (n=108, 43.9%). Some participants felt that they did not have sufficient background knowledge to undertake the prescribing course (n=76, 30.9%). Additionally, participants reported that the cost of training or distance to travel to universities would be too great, or that they were nearing retirement and did not want the additional stress of training to become a prescriber. Further, it is noted that a small number of participants reported that they would not train as prescribers as they are employed in non-clinical roles (n=35, 14.2%).

Influence of Health Sector and Geographical Location

The percentage of participants from different health sectors and geographical locations, who agreed or strongly agreed with autonomous prescribing responsibilities being introduced for Australian physiotherapists, and those who stated that they were extremely likely or somewhat likely to want to train as a prescriber are summarised in Table 2.

Participants working in the private sector were significantly more likely to agree that autonomous prescribing responsibilities should be introduced for physiotherapist in Australia than those who work in education, not-for-profit organisations and the military (ARR 9.8%, 95%CI [0.8, 20.2]). No significant difference (ARR 1.7%; 95%CI [-4.0, 7.6]) was seen between participants who worked in the private or public healthcare sectors. Participants working in the private sector were significantly more likely to train as prescribers than those working in the public sector (ARR 9.9%; 95%CI [3.5, 16.4]) or other areas, such as within educational or research institutions (ARR 23.3%; 95%CI [12.8, 33.8]). A significantly higher proportion of participants in city regions expressed a wish to train as a prescriber compared to those in remote regions (ARR 19.8%; 95%CI [0.8, 39.2]). Those practising in cities (ARR 24.0%, 95%CI [5.8, 43.9]) and regional areas (ARR 19.5%, 95%CI [0.4, 40.1]) were significantly more likely to agree with the introduction of physiotherapist prescribing than those from remote regions. However, there was no significant difference (ARR 4.4%, 95%CI [-2.2, 12.0]) between participants who practise in major cities compared to regional areas.

Table 2: Percentage of participants from different health sectors and geographical locations, who agreed with the introduction of physiotherapist prescribing and are likely to train

	Location RRMA % [95% Confidence Interval]			Subgroup Comparisons ARR % [95% Confidence Interval]		
Survey item	City	Regional	Remote	City: Regional	City: remote	Regional: remote
Agreed or strongly agreed with autonomous prescribing	80.1 [77.3, 83.3]	76.1 [69.0, 81.9]	56.5 [36.8, 74.4]	4.4 [-2.2, 12.0]	24.0 [5.8, 43.2] *	19.5 [0.4, 40.1] *
Likely to Train as prescriber	71.9 [68.4, 75.2]	70.9 [63.4, 77.3]	52.2 [33.0-70.8]	1.0 [-6.3, 9.1]	19.8 [0.2, 39.2] *	18.7 [-1.3, 39]
	Health Sector % [95% Confidence Interval]			Subgroup Comparisons ARR % [95% Confidence Interval]		
Survey item	Private	Public	Other	Private: Public	Private: Other	Public: Other
Agreed or strongly agreed with autonomous prescribing	80.7 [76.8, 84.1)	79.0 [74.2, 83.1]	70.8 [61.1, 79.0]	1.7 [-4.0, 7.6]	9.8 [0.8, 20.2] *	8.2 [-1.3, 18.8]
Likely to Train	77.4 [73.3, 81.1]	67.5 [62.2, 72.5]	54.2 [44.2, 63.8]	9.9 [3.5, 16.4] *	23.3 [12.8, 33.8] *	13.4 [2.3, 24.5] *
*Significant at p<0.05						

Wider impacts of physiotherapist prescribing

Participants were asked to provide additional comments about how NMP may impact the overall level of care that the profession is able to provide. In total, 230 participants provided comments.

Four major themes were identified:

1. Clinical and cost-efficiency
2. Access to prescription medicines
3. Optimal therapeutics and clinical effectiveness
4. Time management

Table 3 lists the number of participants that reported or discussed each theme and provides Illustrative quotations.

Clinical and cost-efficiency

One hundred and eighteen participants commented that the introduction of autonomous physiotherapist prescribing would have positive effects on both clinical and cost-efficiencies for patients, clinicians and the health economy. Participants identified the positive impact on the overall patient journey as a potential benefit of NMP by reducing unnecessary appointments with General Practitioners (GPs), specialists and surgeons. Specifically, participants recognised the current frequency of referrals from physiotherapists to GPs for analgesic review, access to oxygen therapy, bronchodilators and antibiotics and on-going pharmacological spasticity management. A common sentiment was that if physiotherapists could provide these services themselves, patients could have more timely access to appropriate medicines, which in turn would complement physiotherapeutic interventions and accelerate patient improvement/recovery. Participants also anticipated that NMP could reduce acute injury recovery times and minimise the risk of chronicity, which in turn could reduce pressures on medical services and end costs to the consumer, Medicare and private health insurers. Further, the presence of physiotherapist prescribers in emergency departments and specialist multidisciplinary clinics was anticipated to reduce waiting times for patients, thus helping to meet performance measures set by governing bodies.

Access to prescription medicines

Seventy-one participants provided comments concerning potential improvements in accessing prescription medicines for all Australians regardless of geographic or other socio-economic factors. Specifically, it was suggested that physiotherapist prescribers in rural and remote regions could issue prescription medications to patients who might otherwise have limited access to medical professionals. However, no participants from rural/remote regions identified this theme within their responses. Participants from metropolitan and regional areas expressed concerns that patients in rural and remote regions may struggle to navigate an over-burdened and expensive healthcare system, frequently waiting for weeks and travelling great distances to see their GP for medications such as analgesics to supplement treatment from their physiotherapists. Participants from all locations identified potential benefits of NMP to healthcare consumers (regardless of location) whose principal healthcare practitioner is a physiotherapist, including persons with physical disabilities and those involved in sports where acute injuries are managed pitch-side by the team physiotherapist.

Optimal therapeutics and clinical effectiveness

Fifteen participants reported the potential for improved optimisation of medicines in-line with physical and psychosocial interventions and therefore enhanced clinical effectiveness. Participants stressed optimal and appropriate use of analgesics across all specialties, especially where adjustments (escalation or de-escalation) to prescriptions are required in-line with physiotherapeutic intervention. It was felt that that the multimodal skills and techniques utilised by physiotherapists would promote a more integrated use of medicines into the overall patient management, with medicines forming just one part of a more comprehensive and coordinated approach. Participants specialising in women's health echoed this statement highlighting the appropriate use of anticholinergics and vaginal oestrogens necessary to holistically treat many of their patients.

Participants agreed that the close working relationships between physiotherapists and their patients, due to the comprehensive time spent completing physiotherapeutic interventions may be used to promote patients' compliance to their prescribed medicines. Physiotherapist prescribers with the appropriate knowledge and skills could legally reinforce the appropriate use of medicines; better recognising poor adherence, dependency, abuse or adverse side effects masquerading as conditions treated by physiotherapists.

Time management

Nine participants suggested that the time requirements needed to train as a physiotherapist prescriber and on-going time required for continuous professional development (CPD) may be prohibitive to introducing NMP in Australia.
Likely time away from clinical work for education and development and NMP duties were seen to potentially interfere with tasks currently performed by clinicians. Further, participants felt that although greater efficiency and access to medicines may benefit heath consumers, time presently spent treating patients in the current scope of practice would be lost to procedures related to prescribing medicines. In other words, although NMP may decrease medical practitioners' workload, this would instead increase pressures on already understaffed physiotherapy departments and possibly even threaten clinical outcomes.

Table 3: Comments that Reported or Discussed Each Theme & Illustrative Quotations from Participants (quotations have been copied verbatim)

Theme	Number of comments (n)	Illustrative Quotations
Clinical and cost efficiency	118	……would benefit people financially if they do not have to go back to their GP for medication (Participant 41) Time and cost savings for busy workers, ie not having to go to 2 appointments (Participant 127) …. improve patient flow and decrease reliance on medical staff (Participant 490) Working in an Emergency Dept where access and flow is critical, enabling advanced musc [musculoskeletal] physios to prescribe would improve efficiency in the workplace and the patient experience (Participant 7) The ability to prescribe would enable more efficient service delivery to patients. A lot of time is wasted back and forth trying to get appropriate pain medication, antibiotics etc. in a timely fashion (Participant 32)
Access to prescription medicines	71	Working in a rural area where it is difficult for a patient to be able to make a GP appointment (typical 2-3week wait) I can see the benefit of streamlining the system by giving prescribing rights to physios who are also primary care professionals (Participant 630) Will reduce burden on overbooked GP's and ED's for people with pain problems, ie severe Acute Low back [pain] or those with inflammatory injuries (Participant 873) Physiotherapists working in public health help people from different minority groups every day - indigenous, recent immigrants, people relying on disability pensions, etc. Greater access to simple medications would improve their quality of life and reduce unnecessary attendances at over- worked GP clinics (Participant 12) I work in a country setting where travel times are significant and it can be difficult to get a doctor's appointment and, when injured or without a licence, patients rely on friends, relatives or public transport to get appointments. This means that a physiotherapy appointment with prescription would become a more efficient use of time and people are more likely to comply (Participant 654)
Optimal therapeutics and clinical effectiveness	15	Will allow physiotherapist to adjust medications particularly in management of chronic pain and LBP…." (Participant 333) "There is considerable potential for this to significantly improve adherence to medication regimes and to problem solve in a time appropriate manner (Participant 45)

		Physios tend to spend more time with patients and often are better skilled to recommend medications than even the registrars, especially in my urogynae advanced practice clinics, being able to prescribe anticholinergics and vaginal oestrogens would significantly increase the efficiency of the clinics as currently [patients] need two appointment times for this (Participant 276) ….'de-prescribing' could potentially be a very important role for Physios (Participant 790)
Time management	9	The time required to keep up to date with medications and well as physiotherapy skills to be safe and effective I feel would impact the time available to treat patients…. (Participant 246) Puts extra pressure on appointment time when we already have to deal with full assessment and treatment of the patient's physical and psycho-social needs (Participant 693)

Further Insights

The final question allowed participants to express any additional thoughts and views about physiotherapist prescribing that they deemed important and had not already been captured. Two hundred and sixty-six participants provided comments. Three major themes were identified:

1. Quality and safety: clinical governance, policies and procedures, and education
2. Professional issues
3. Physiotherapy professional priorities

Table 4 lists the number of comments that discussed each theme and subtheme, providing Illustrative quotations from participants.

Quality and Safety

Two hundred and seventeen comments were received regarding quality and safety concerns around NMP. These focussed on clinical governance, policies and procedures and educational requirements for Prescribers.

One hundred and forty-four participants proposed that adequate clinical governance, policies and procedures should be in place for physiotherapist NMP to be successful. Participants identified the need for a clear scope of practice linked to a physiotherapy-centric formulary that is endorsed and regulated promoting transparency and safety. Participants raised concerns that statutory processes and procedures defining a limited formulary could quickly become out-dated due to medical advances. Meanwhile, other participants identified that a limited formulary based around the profession's specialist areas of practice would be safest, protecting clinicians from pressures to prescribe out of scope. Participants were concerned that unless communication channels were maintained between physiotherapist Prescribers and GPs, there is a risk that patients could shop around for prescriptions, potentially aiding the abuse of prescription medication, and causing clinical incidents. Participants were also concerned that the increase in professional risk due to physiotherapist prescribing would lead to an increase in indemnity insurance premiums.

Seventy-three comments were received with regards to education. Participants recognised that the scope of practice must be absolutely clear, endorsed and underpinned by a robust clinical education framework. They felt that thought must be given to the process of assessment and selection of appropriately qualified assessors from outside the profession including medical doctors and pharmacists to ensure quality and safe practice among Prescribers.

Access to prescribing courses for physiotherapists living in regional and remote areas was highlighted as a potential issue due to the distance to the nearest university. Participants recommended that the regulatory body should dictate compulsory annual continuous professional development (CPD) hours and periodic reassessment of competency should be mandatory. Participants had varying opinions with regards to when physiotherapists should be able to train and qualify as Prescribers, however the participants agreed that current pre-registration physiotherapy programmes should be updated to include pharmacology and therapeutics on their syllabi in preparation for the future.

Professional Issues

Thirty-nine participants provided comments on important professional issues. Participants noted that the introduction of physiotherapist prescribing could change the 'physiotherapy brand', weakening the public's perception of physiotherapists as experts in manual therapy and exercise,

leading to potential loss of patients to other emerging healthcare professions. It was suggested that a marketing campaign may be necessary to manage public expectation and minimise consumer confusion.

Inter-professional relationships between physiotherapists, medical practitioners and pharmacists were highlighted as being fragile. Participants warned that members of the Australian Medical Association (AMA) would not support the introduction of physiotherapist prescribing, alluding to the possibility that medical doctors might see the introduction as a direct challenge to their authority and private businesses, leading them to reduce referrals to physiotherapy. Participants specifically identified the impact this may have on practice revenues in the musculoskeletal and sport specialties. That said, other participants reported great support from medical colleagues and the greater multidisciplinary team, citing the streamlining of current clinical services and patient pathways, alongside improved access medicines as key reasons for positive inter-professional support. Participants warned that although these efficiencies would reduce service costs, establishing physiotherapist prescribing would require an initial co-ordinated investment to ensure appropriate governance, clinical education and safe/quality implementation across Australia.

Physiotherapy Professional Priorities

Forty participants commented on the profession's professional priorities. Participants described the risks of junior physiotherapists under-developing their traditional physiotherapy skills used to treat impairments, and instead depending on medicines. To mitigate these risks, a robust career progression framework would need to be introduced to ensure ongoing high-level professional development across all specialties. To safeguard the good reputation of the profession, participants focused on maintenance of quality and safety for patients and clinicians. Physiotherapist prescribing should be introduced in a structured and organised manner with all physiotherapists supporting each other, even if they do not wish to prescribe themselves. Further, participants also commented that the ability for physiotherapists to directly refer to specialist medical or surgical practitioners and ensuring appropriate patient rebates for imaging would have a positive clinical impact.

Table 4: Additional Comments Reported or Discussed by Participants & Illustrative Quotations from Participants

Theme/ Subtheme	Number of comments (n)	Illustrative Quotations (quotations have been copied verbatim)
Quality and Safety Clinical governance, policy, procedure Education	217	Prescribing medicines is a risk to the physiotherapy profession as there can be a lot of risks to the patient with medications. Prescribing and its scope needs to be carefully planned and managed with introduction to the physiotherapy profession (Participant 379) The physio who is going be a prescriber needs to undergo a certain number of hours of training…… going through an examination process. Continuous on-going training is also important as medications change fairly rapidly (Participant 14) …. professional indemnity is required to protect them in case of errors or mishaps (Participant 89) Risks of 'doctor shopping' of physiotherapists for opioid based drugs without centralised control (Participant 651) The challenge in prescribing is ensuring consumer safety through adequate training of the physiotherapists involved and improved communication across health professions (Participant 56)
Professional Issues	39	I believe that it would create confusion for the public if some physiotherapists could prescribe, while others could not (Participant 227) A cultural change is needed, namely adjusting the public's perception of what allied health professionals can do, in order to effectively utilise non-medical prescribing rights (Participant 380) …. the medical doctors may have their issues with this as it may be seen as a direct challenge to their authority and therefore reduce their use of referral pathways already established (Participant 4) I would be concerned that there may be a conflict that forms between doctors and physiotherapists if physios were given prescribing authority. I think there would have to be some very strict guidelines about managing a patient who may be seeking prescriptions from both a doctor and physiotherapist at the same time (Participant 879) I think the medical and pharmaceutical professions would have a negative view of physios prescribing and be less willing to work with us/refer patients to us (Participant 447)

Physiotherapy Professional Priorities	40	Physio profession needs to become more progressive with enhanced scope roles, career pathways are currently limited (Participant 412) I think that the physiotherapy profession should spend their resources and energies trying to improve the ability for Physiotherapists to order radiological investigations (scans etc) and referrals to specialists which would be far more beneficial in a cost and time saving way then being able to prescribe medications (Participant 78) Potential for increased reliance on pharmaceutical treatments of MSK conditions over traditional physiotherapy management strategies (i,e. manual therapy, exercise prescription) (Participant 701) May potentially de-value other interventions in the management plan (i.e. commitment to taking medication as prescribed, but not to exercises prescribed in same session) (Participant 219)

DISCUSSION

This is the first study to explore the perceptions of Australian physiotherapists regarding NMP by physiotherapists in Australia. The majority of physiotherapists agreed that autonomous prescribing responsibilities should be introduced for physiotherapists in Australia. Improvements in the efficiency of healthcare delivery, access to medicines and reductions in costs across the health economy were suggested as potential benefits. These findings concur with those reported by student physiotherapists in Australia as detailed in a related article,[16] as well as reflecting an evaluation of physiotherapist and podiatrist independent prescribers in the UK,[28] strengthening the external validity and transferability of the results. Concerns regarding, clinical safety and management of clinical-risk were clearly identified throughout the quantitative and qualitative sections of the survey, supporting the results of an international multi-profession mixed-methods systematic review investigating the barriers and facilitators of the implementation and utilisation of NMP. [5] The systematic review identified the need to address governance, safety, educational and financial factors prior to training prescribers, to protect both patients and clinicians from poor practice, process and clinical pathways. [5] To safely and effectively introduce physiotherapist prescribing, politicians, regulatory bodies, healthcare managers, clinicians and the APA, in consultation with experts and health consumers, must develop robust legislation, regulation, clinical governance and safety policies as well as well-defined education and career frameworks.

To ensure that physiotherapists are equipped to prescribe safely within a multi-modal physiotherapeutic context, participants perceived that a contemporary, innovative and robust educational framework should be developed prior to the introduction of physiotherapist prescribing. This perception reflects contemporary educational literature that urges educators to carefully consider the ever-evolving healthcare system when designing curricula for physiotherapists. [29] Transforming healthcare needs will require the next generation of physiotherapists to be ready to adapt to changes in consumer complexity and expectation, working within new models of care that are organised, funded and delivered in innovative ways. It has been postulated in the literature that a more flexible, broader and deeper clinical expertise will be required by physiotherapists if the Australian physiotherapy profession wish to succeed as evidence-based and viable health providers in the integrated, value-driven health-industry of the future. [30]

To guarantee quality development of physiotherapists across the profession, participants called for the creation of a contemporary career-development framework into which prescribing would be integrated, to safeguard mastery of traditional skills, govern quality practice and maintain the 'physiotherapy brand'. This appeal concurs with literature reporting that career frameworks within healthcare help the public understand different clinicians' knowledge, skills and roles within one profession, as well as providing purpose and direction for professionals, promoting engagement and job satisfaction. [31 32] Further, academic qualifications and increased clinical responsibility should lead to enhanced remuneration if physiotherapists are to adopt prescribing into their clinical practice, as a lack of remuneration has been recognised as a barrier to NMP across other professions. [33-35] Improvements in recruitment and retention within the profession were anticipated due to improvements in job satisfaction for clinicians and greater recognition and professional reputation, echoing the findings of other NMP-professions reported in the literature. [33 36 37]

Physiotherapists working in cities and regional areas were consistent in observing that physiotherapist prescribing would improve access to medicines across all regions, but would be specifically helpful in rural/remote areas where access to medical-prescribers may be limited. However, physiotherapists from rural/remote areas although positive about the introduction of physiotherapist prescribing, were less likely to wish to train as prescribers, identifying potential increased risks when working in geographical isolation owing to a lack of clinical support. Due to a

perceived lack of need in the present healthcare environment, participants felt that not all physiotherapists would benefit from undertaking a NMP course. Those working in close multidisciplinary teams with co-located prescribers, or those employed in non-clinical roles such as healthcare managers or academic physiotherapists were found to be less likely to wish to become prescribers than clinicians working in the public and private sectors. There was debate as to when and who should undertake the training, with no consistency as to whether education should be included in foundation level courses or become a post-registration qualification for those with a specified clinical experience. Further, rural physiotherapists identified that the distance to universities may act as a barrier to training as a prescriber, highlighting the need for educators to consider flexible learning methods such as online education and video teleconferencing to fulfil the academic requirements of a NMP course. It is therefore imperative that a robust, fit for purpose, transparent and future proof education framework is developed to ensure unity within the Australian physiotherapy profession and assurance for all stakeholders that physiotherapists prescribers would be adequately prepared for practice.

Participants' perceptions that physiotherapist prescribing in Australia would reduce costs to their patients, healthcare services, and to the health economy as a whole, is supported by an economic review commissioned by the APA. The report predicts savings to the Australian health-economy of over $9.22million per year if physiotherapist prescribing was implemented, [38] however this is not currently reflected in the health economics literature. A robust low risk of bias systematic review investigating the clinical and cost-effectiveness of NMP found only 1 inadequately powered pilot randomised controlled trial investigating clinical effectiveness to date; concluding that the benefit of NMP to the health economy remains unclear [4]. This gap in the literature highlights the need for robust, adequately powered economic evaluation to investigate the cost-benefits perceived by physiotherapists across Australia.

Strengths and limitations

This is the first study investigating the perceptions of AHPRA registered-physiotherapists about the potential introduction of NMP among physiotherapists in Australia, and so, alongside the data from student physiotherapists presented in the related article, provides an important overview of the current associated professional landscape. The data should be used to guide the APA, health departments and political leaders towards successful implementation of physiotherapist prescribing in Australia. As with all survey-based research, limitations are inherent due to selection and response bias. The survey was anonymous, so participants may have biased the results by completing the online questionnaire multiple times. Further, physiotherapists with strong views or vested interests may be more likely to complete the questionnaire, meaning that their answers may not reflect the views of the wider profession.

A representative survey response rate (as per precursory power calculations) was achieved.[13] Although only 3% of AHPRA responded, this reflected the response rate of a previous national evaluation of physiotherapists, [38] where similarly, it was not possible to contact all registered physiotherapists directly due to the AHPRA privacy policy. Physiotherapists who were not APA members at the time of the survey would have been unaware of the questionnaire unless they were provided with a link to the questionnaire through professional networks. It is impossible to determine why 97% of AHPRA registered physiotherapists did not participate; therefore, the risk of bias remains unknown and should be considered when interpreting the results. In-line with recent Australian regulatory data, [39] the sample was representative of all registered physiotherapists in Australia in terms of age, gender and state in which they practise. Unfortunately, no national demographic data exists demonstrating the geographic location or health sector of registered physiotherapists' employment. It is therefore likely that the comparable demographic profile of the

study's sample to contemporary national evaluations enhances generalisability of the data to the greater physiotherapist population in Australia and reduces risk of bias.

CONCLUSION

AHPRA registered-physiotherapists perceive that the introduction of autonomous physiotherapist prescribing would be beneficial for the Australian population and should be introduced. Acceptance of physiotherapist prescribing and the likelihood of physiotherapists to train as prescribers vary dependent on location and the health sector in which a physiotherapist works. Legislation, regulation and governance around the use of physiotherapist prescribing all require careful consideration and consultation with experts and health consumers to ensure the safety and quality demanded by physiotherapy profession. Rigorous national educational frameworks should be developed within a transparent career development structure to ensure prescribing is used within a multimodal-physiotherapeutic context, safeguarding the professional reputation of physiotherapy.

It is recommended that the APA, health departments and political leaders use the results of this study in conjunction with cost-benefit analyses, risk analysis as well as assessment of the health-requirements and consultation with key stakeholders, to redefine the scope of Australian physiotherapy to include NMP. Future research is required to investigate the concerns raised by participants. It would be valuable to interview current physiotherapist prescribers to interrogate the perceived benefits and concerns about physiotherapy prescribing identified by the Australian physiotherapists. Lessons learnt in the UK could thus be utilised to inform implementation internationally.

Figure 1: Physiotherapists' belief as to whether physiotherapist prescribing should be introduced in Australia; potential benefits and participants' concerns.

Figure 2: The number of years' experience a physiotherapist should have prior to being able to train as a physiotherapist prescriber.

Figure 3: Likeliness to train as a Prescriber: motivators and deterrents.

Contributors
TN is a clinical advanced practice physiotherapist and PhD candidate at the University of Birmingham (UK). AR is a Reader in musculoskeletal rehabilitation sciences and lead supervisor. JM is a professor of clinical pharmacy and co-supervisor. Both supervisors ensured the rigour of methods and analyses. CD is a professor of physiotherapy and TJ is an associate professor of physiotherapy at Macquarie University (Aus). All authors have contributed to the content of this article. TN wrote the first draft of this article and has worked with all authors to develop subsequent drafts. All authors prior to publication gave final approval. Patients and the general public were not involved in this study.

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Competing Interests

All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf and declare: no support from any organisation for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work.

Data Sharing Statement

Data from physiotherapists collected during the study will be submitted for publication in an open access peer reviewed journal for all to read. There is no unpublished data available.

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Figure 1: Physiotherapists' belief as to whether physiotherapist prescribing should be introduced in Australia; potential benefits and participants' concerns.

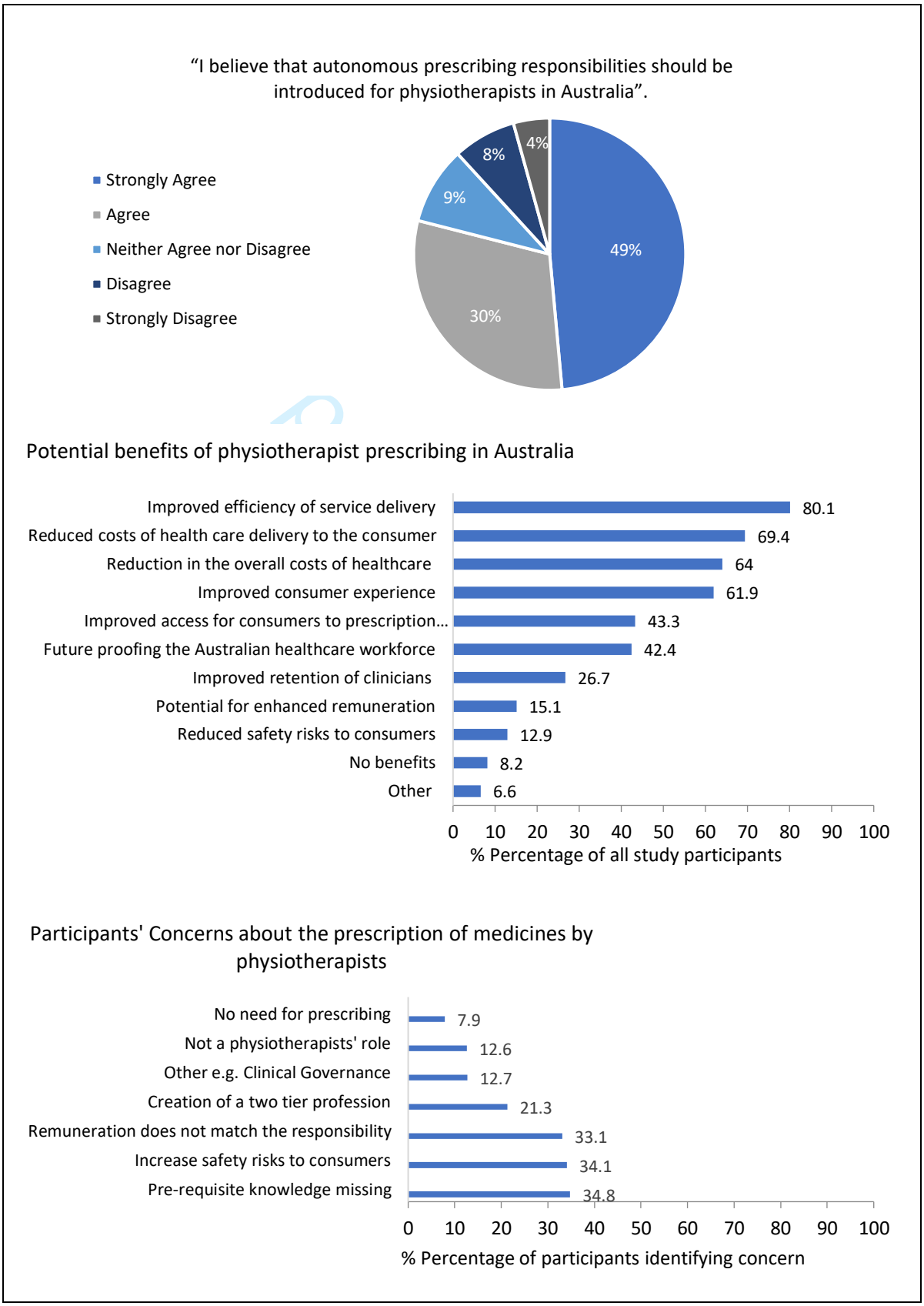


Figure 2: The number of years' experience a physiotherapist should have prior to being able to train as a physiotherapist prescriber.

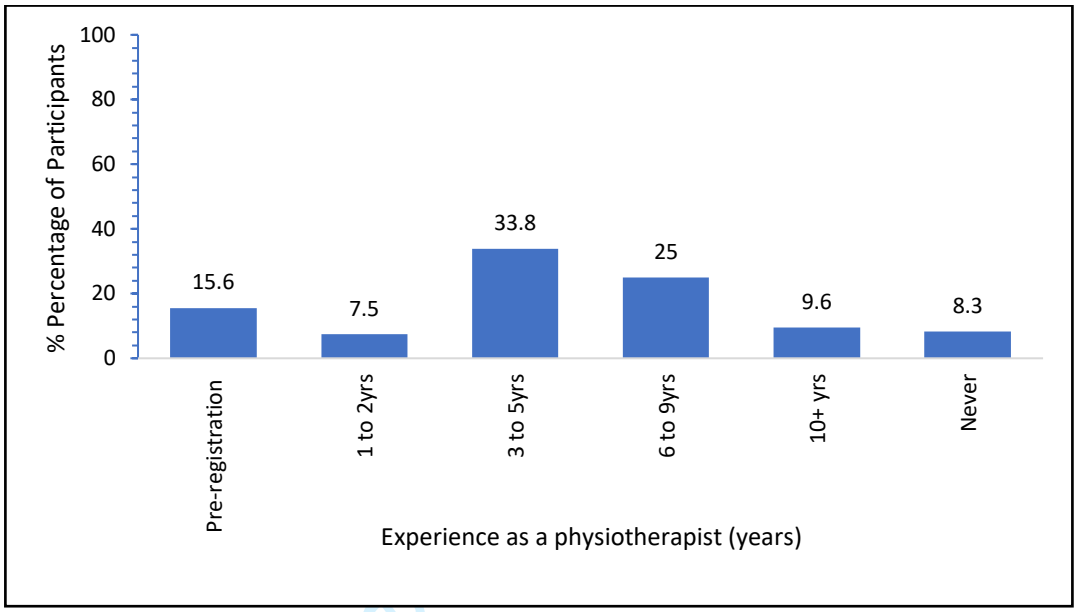
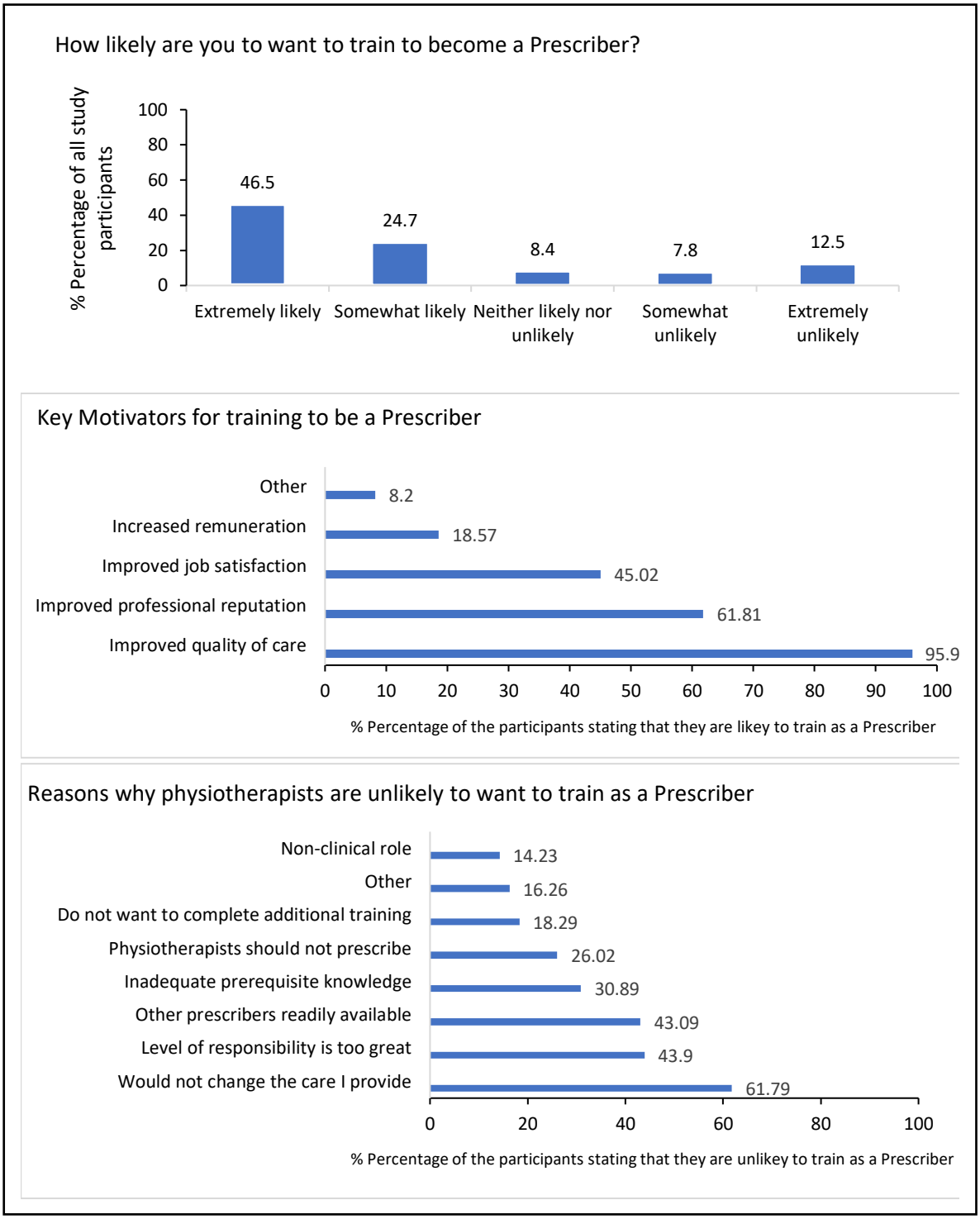


Figure 3: Likeliness to train as a Prescriber: motivators and deterrents



Supplementary file 1: Online Questionnaire

Q1 What is your gender?
- ❍ Male (1)
- ❍ Female (2)
- ❍ Other (3)

Q2 What is your age?
- ❍ 17-29 (1)
- ❍ 30-39 (2)
- ❍ 40-49 (3)
- ❍ 50-59 (4)
- ❍ 60 or older (5)

Q3 Which of the following are you?
- ❍ AHPRA registered physiotherapist (1)
- ❍ Student physiotherapist enrolled in an Australian university (2)

If Student physiotherapist enr... Is Selected, Then Skip To Which state or territory do you curre...

Q4 How many years have you been a qualified physiotherapist?
- ❍ 0-4 (1)
- ❍ 5-9 (2)
- ❍ 10-14 (3)
- ❍ 15-19 (4)
- ❍ 20 or more (5)

Q5 Where did you obtain your primary physiotherapy qualification?
- ❍ Australia (1)
- ❍ Overseas (please specify) (2) _____

Q6 Which state or territory do you currently work? If multiple, select the state or territory that you spent the most time working in over the past 14 days.
- ❍ Australian Capital Territory (1)
- ❍ New South Wales (2)
- ❍ Northern Territory (3)
- ❍ Queensland (4)
- ❍ South Australia (5)
- ❍ Tasmania (6)
- ❍ Victoria (7)
- ❍ Western Australia (8)

Q7 Do you work in a metropolitan or rural area? Please choose the most appropriate option. If you work in multiple areas, select the area in which you spent the most hours working in the past 14 days. If you are unsure, you can check your areas classification

using the following website:
http://www.doctorconnect.gov.au/internet/otd/publishing.nsf/Content/locator

- ❍ RA1 - Major Cities of Australia (1)
- ❍ RA2 - Inner Regional Australia (2)
- ❍ RA3 - Outer Regional Australia (3)
- ❍ RA4 - Remote Australia (4)
- ❍ RA5 - Very Remote (5)

Q8 In which health sector do you spend most of your time working as a physiotherapist?

- ❍ Public sector (1)
- ❍ Private sector (2)
- ❍ Educational/research institute or university (3)
- ❍ Not-for-profit organisation (4)
- ❍ Other (please specify) (5) _____

Q9 What area/s of physiotherapy do you predominantly work in or identify with?Please select up to a maximum of three (3) areas.

- ❑ Amputees (1)
- ❑ Burns/plastics (2)
- ❑ Cardiorespiratory/acute medicine/surgery (3)
- ❑ Chronic disease management (4)
- ❑ Education (5)
- ❑ Emergency department (6)
- ❑ Gerontology/Aged care (7)
- ❑ Health promotion/Public health (8)
- ❑ Lymphoedema (9)
- ❑ Mental health (10)
- ❑ Musculoskeletal/orthopaedics (11)
- ❑ Neurology (12)
- ❑ Occupational health (13)
- ❑ Paediatrics (14)
- ❑ Pain (15)
- ❑ Palliative care (16)
- ❑ Rehabilitation (mixed) (22)
- ❑ Rheumatology (17)
- ❑ Rural generalist (18)
- ❑ Sports (21)
- ❑ Women's health/continence (19)
- ❑ Veterinary (20)

Display This Question:
If Which of the following are you? Student physiotherapist enrolled in an Australian university Is Selected

Q10 Which state or territory do you currently attend university?

- ❍ Australian Capital Territory (1)
- ❍ New South Wales (2)
- ❍ Northern Territory (3)
- ❍ Queensland (4)
- ❍ South Australia (5)
- ❍ Tasmania (6)
- ❍ Victoria (7)
- ❍ Western Australia (8)

Q11 Autonomous prescribing: "Prescribing occurs where a prescriber undertakes prescribing within their scope of practice without the approval or supervision of another health professional. The prescriber has been educated and authorised to autonomously prescribe in a specific area of clinical practice. Although the prescriber may prescribe autonomously, they recognise the role of all members of the health care team and ensure appropriate communication occurs between team members and the person taking medicine". The Health Professionals Prescribing Pathway (HPPP), p16 (2013) To what extent do you agree with the following statement: "I believe that autonomous prescribing responsibilities should be introduced for physiotherapists in Australia."

- ❍ Strongly agree (1)
- ❍ Agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Disagree (4)
- ❍ Strongly disagree (5)

Q12 What do you see the benefits of physiotherapists prescribing medicines to be?Select as many options as are appropriate to you.

- ❑ Improved efficiency of service delivery (1)
- ❑ Reduced costs of health care delivery to the consumer (2)
- ❑ Improved consumer experience (3)
- ❑ Reduction in the overall costs of healthcare to the Australian economy (4)
- ❑ Improved retention of clinicians within the physiotherapy profession (5)
- ❑ Potential for enhanced remuneration (6)
- ❑ Reduced safety risks to consumers (7)
- ❑ Improved access for consumers to prescription medications (8)
- ❑ Future proofing the Australian healthcare system with a flexible workforce (9)
- ❑ Other (please specify) (10) _____
- ❑ I do not believe there would be any benefits (11)

Q13 What are your concerns about the prescription of medicines by physiotherapists?Select as many options as are appropriate to you.

- ❑ Prescribing of medicines is not a physiotherapists' role (1)
- ❑ Physiotherapists do not have adequate pre-requisite knowledge to undertake a prescribing course (2)
- ❑ There is no need for physiotherapists to prescribe medicines (3)
- ❑ Physiotherapist prescribing will create a two (2) tier profession (4)
- ❑ Physiotherapist prescribing will increase safety risks to consumers (5)
- ❑ Remuneration does not match the responsibility associated with the prescribing of medicines (6)
- ❑ Other (please specify) (7) _____
- ❑ I do not have any concerns (8)

Q14 How many years experience do you think a physiotherapist should have prior to being able to train as a physiotherapist prescriber?

- ❍ 0 - Should be included in pre-registration physiotherapy qualification (1)
- ❍ 1-2 years (2)
- ❍ 3-5 years (3)
- ❍ 6-9 years (4)
- ❍ 10 or more years (5)
- ❍ Physiotherapists should not be able to train as prescribers (6)

Q15 If physiotherapists became able to autonomously prescribe medicines, how likely are you to want to train to become a prescriber?

- ❍ Extremely likely (1)
- ❍ Somewhat likely (2)
- ❍ Neither likely nor unlikely (3)
- ❍ Somewhat unlikely (4)
- ❍ Extremely unlikely (5)

Display This Question:

If If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Extremely likely Is Selected

Or If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Somewhat likely Is Selected

Or If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Neither likely nor unlikely Is Selected

Q16 What are your key motivations to becoming a prescriber?Select as many options as are appropriate to you.

- ❑ Improving the care I am able to provide (1)
- ❑ Improved job satisfaction (2)
- ❑ Increased remuneration (3)
- ❑ Improved professional reputation (4)
- ❑ Other (please specify) (5) _____

Display This Question:

If If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Extremely unlikely Is Selected

Or If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Somewhat unlikely Is Selected

Or If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Neither likely nor unlikely Is Selected

Q17 What makes you unlikely to want to train as a prescriber?Select as many options as are appropriate to you.

- ❑ I do not believe that physiotherapists should prescribe medicines (1)
- ❑ I do not think that I have the knowledge required to train as a prescriber (2)
- ❑ I do not wish to complete additional training (3)
- ❑ I am not prepared to take on the additional responsibility associated with prescribing medicines (4)
- ❑ In my current role, being able to prescribe would not change the care provided (5)
- ❑ A prescriber is readily available to the clients that I provide care for (6)
- ❑ I work in a non-clinical role (7)
- ❑ Other (please specify) (8) _____

Q18 Do you have any additional thoughts about how physiotherapist prescribing may impact the care that the profession is able to provide? For example a positive or negative impact on a specific group e.g. minority groups, immigrants, students, travellers.....

Q19 Is there any additional information you would like to share at this time?

Standards for Reporting Qualitative Research (SRQR)*

http://www.equator-network.org/reporting-guidelines/srqr/

	Page.
Title and abstract	
Title - Concise description of the nature and topic of the study Identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended	1
Abstract - Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results, and conclusions	2
Introduction	
Problem formulation - Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement	3
Purpose or research question - Purpose of the study and specific objectives or questions	3
Methods	
Qualitative approach and research paradigm - Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., postpositivist, constructivist/ interpretivist) is also recommended; rationale	4

Researcher characteristics and reflexivity - Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, and/or transferability	1
Context - Setting/site and salient contextual factors; rationale	4
Sampling strategy - How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale	4
Ethical issues pertaining to human subjects - Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	4
Data collection methods - Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale	4
Data collection instruments and technologies - Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study	4-5
Units of study - Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	4
Data processing - Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/de-identification of excerpts	5
Data analysis - Process by which inferences, themes, etc., were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale	5
Techniques to enhance trustworthiness - Techniques to enhance trustworthiness and credibility of data analysis (e.g. member checking, audit trail, triangulation); rationale	5

Results/findings

Synthesis and interpretation - Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	7-19
Links to empirical data - Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings	14-15, 18-19

Discussion

Integration with prior work, implications, transferability, and contribution(s) to the field - Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field	20-21
Limitations - Trustworthiness and limitations of findings	21-22

Other

Conflicts of interest - Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed	23
Funding - Sources of funding and other support; role of funders in data collection, interpretation, and reporting	22

Reference:
O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. **Standards for reporting qualitative research: a synthesis of recommendations.** *Academic Medicine*, Vol. 89, No. 9 / Sept 2014
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Perceptions about the implementation of physiotherapist prescribing in Australia: a national survey of Australian physiotherapists

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Perceptions about the implementation of physiotherapist prescribing in Australia: a national survey of Australian physiotherapists

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Word Count:

Keywords: Non-medical Prescribing, Physiotherapy, Australia, Views, Perceptions, Survey, Questionnaire

Abstract

Objectives: To explore (1) the views of Australian physiotherapists regarding potential implementation of non-medical prescribing (NMP) in Australia, (2) how the geographical location and health sector in which a clinician works may influence their perceptions, (3) the perceptions of Australian physiotherapists about how physiotherapist prescribing might impact the care that the profession can provide.
Design: A cross-sectional descriptive survey using open and closed questions
Setting: Participants completed an online questionnaire.
Participants: 883 Australian Health Professionals Registration Authority (AHPRA) registered-physiotherapists, working across all states and territories.
Outcome Measures: An online questionnaire was developed by a panel of subject-experts and pre-tested (n=10) for internal consistency. A hyperlink to the questionnaire was emailed to all members of the Australian Physiotherapy Association. A reminder email was sent 4 weeks later. Quantitative data were analysed descriptively, with use of absolute risk reductions (ARR) and 95% Confidence Intervals to determine the likelihood that health sector or geographical location were associated with specific views. Thematic analysis enabled synthesis of the qualitative data.
Results: 79.0% participants felt that physiotherapist prescribing should be introduced in Australia, with 71.2% wanting to train as prescribers. Clinical governance, risk management, regulation of clinicians and the development of an education framework were identified as priorities for implementation. Participants working in the private sector were significantly more likely to train as prescribers than those in the public sector (ARR 9.9%; 95%CI [3.5, 16.4]) or educational/research institutions (ARR 23.3%; 95%CI [12.8, 33.8]), with city dwellers significantly more likely to train compared to physiotherapists in remote regions (ARR 19.8%; 95%CI [0.8, 39.2]). Physiotherapist prescribing was predicted to improve efficiency of healthcare delivery, access to medicines and reductions in healthcare costs.
Conclusions: AHPRA registered-physiotherapists perceive that the introduction of autonomous physiotherapist prescribing would be beneficial for the Australian population and should be introduced. Decision-makers should consider the results of this survey in conjunction with cost-benefit and risk analysis when planning the introduction of physiotherapist prescribing.

Strengths and Limitations

- First rigorous survey investigating the perceptions of Australian physiotherapists about the potential implementation of physiotherapist prescribing in Australia.
- Results provide the evidence required by the physiotherapy professional association, health departments and political leaders to inform clinically safe and economically sound decisions about redefining the scope of physiotherapy in Australia to include non-medical prescribing.
- Limitations are inherent with all survey-based research due to selection and response bias.
- It was not possible to determine why non-responders did not participate.

Background and Rationale

Non-medical prescribing (NMP) has been used in clinical practice by a variety of professions for over 20 years. [1] However, it was not until 2012 that in the United Kingdom (UK), physiotherapists were first granted independent prescribing responsibilities. In July 2015, the Australian Physiotherapy Association (APA) in collaboration with the Australia Physiotherapy Council (APC) and Council of Physiotherapy Deans Australia and New Zealand (CPDANZ) submitted a proposal for the endorsement of registered physiotherapists for autonomous prescribing to the Physiotherapy Board of Australia. [2] To prescribe medicines autonomously, a practitioner must be responsible for the assessment and diagnosis of the patient, prescribing drugs from a specified formulary within their individual scope of practice. The clinician manages ongoing therapy without the requirement of protocols or supervision.[3] Difficulties in accessing medicines for Australians living in rural and remote areas alongside recognised health inequities between minority groups such as Aboriginal and Torres Strait Islander peoples were cited as key drivers for reform. Benefits of the implementation of prescribing by physiotherapists in Australia, such as the potential to increase access to medicines for health service users across all communities, [2] are therefore anticipated.

The clinical and cost-effectiveness of NMP remains unclear, with a recent systematic review finding only minimal empirical evidence with unknown risk of bias [4], nonetheless its popularity in clinical practice continues to grow.[5] A contemporary and robust mixed-methods systematic review of 50 moderate to good quality studies, investigating the barriers to and facilitators of independent NMP, identified conflict within a profession as a key barrier to successful implementation. [5] A united professional position regarding the adoption of innovative clinical practice was highlighted as essential to ensure the development of safe and high-quality practice. Divided opinion between individual clinicians, academics and professional managers/leaders may lead to confusion across the healthcare community, resulting in unwarranted negative thoughts and perceptions about NMP roles and responsibilities. Diverse perceptions regarding the implementation of physiotherapist prescribing and current physiotherapeutic pharmacological knowledge and practices have been reported in national evaluations in Nigeria, South Africa and the UK. [6-9] Data from these evaluations have been utilised to influence national policy and the political drive towards or against the adoption of NMP within the physiotherapy profession in these countries.[8 9] Acceptance and support for prescribing by the Australian physiotherapy profession will be required for successful implementation into local and national health systems.[2 10-12] It is therefore important that the views of Australian physiotherapists are understood in order to inform key stakeholders and decision-makers about redefining the scope of physiotherapy to include NMP in Australia. To date no evidence exists evaluating the Australian physiotherapy professions' views and perceptions about the potential use of NMP by physiotherapists in Australia.

Objectives

1. To explore the views of Australian physiotherapists about the potential implementation and use of NMP by physiotherapists in Australia.

2. To explore how the geographical location and health sector in which a clinician works may influence the perceptions of Australian physiotherapists about the potential implementation and application of NMP by physiotherapists in Australia.

3. To explore the perceptions of Australian physiotherapists about how physiotherapist prescribing might impact the care that the physiotherapy profession can provide.

METHODS

A detailed study protocol was published to ensure transparency and reproducibility. [13] The study is reported in line with an adapted version of the Standard Protocol Items: Recommendations for Interventional Trials (SPIRIT) statement, [14] recommended by the SUrvey Reporting GuidelinE (SURGE). [15] Ethical approval was granted by the Medical Sciences Human Research Ethics Committee (HREC), Macquarie University, Australia (Reference No: 5201600846), and verified by the Research Governance Officer at the University of Birmingham, UK (Reference No: ERN_16-1576) where the lead author is currently undertaking his PhD. This article reports the data collected from registered physiotherapists from a larger study evaluating both registered and student physiotherapists in Australia.[13] The data collected evaluating the views and perceptions of student physiotherapists about the implementation of physiotherapist prescribing in Australia is presented in the related article published independently.[16]

Survey design

A cross-sectional online descriptive survey design enabled the collection of empirical data across Australia. [17-19] An online questionnaire was developed using Qualtrics (Qualtrics, Provo, UT) thus enabling Australian-wide participation with no geographical or time-zone constraints. [17 20]

Participants

Participant inclusion criteria are described in Box 1. According to data published by the Physiotherapy Board of Australia, 30,004 physiotherapists were registered with the Australian Health Professionals Registration Authority (AHPRA) at the time of the survey.[21]

Box 1: Participant inclusion criteria

- Physiotherapists registered with AHPRA
- Ability to read and understand written English
- Provision of consent to participate in the survey independently

Procedure

AHPRA privacy policy [22] prohibits approaching AHPRA registered physiotherapists directly. Therefore, an advertisement containing a link to the online survey was emailed to all members of the APA, including all clinical and professional networks. A reminder advertisement was sent via email 4 weeks after the initial email to promote participation in the survey. [17 19 20] IP addresses were not saved to ensure participant anonymity. The APA membership was selected as the recruitment platform as it is representative of all physiotherapy specialties and levels of experience (qualified and student physiotherapists) across Australia, with 23,153 members at the time of survey.[23] Word of mouth referrals to the survey through professional networks were promoted in the email to facilitate capturing the views of non-APA members. [17 19 20] Data collection took place 1st March - 30th April 2017. Participants accessed the questionnaire via the online link. Completion of the survey was anonymous and entirely voluntary. [17 19 20] Participant consent was gained using an online information and consent form. [17-19] Researcher contact details were supplied to enable any questions or concerns to be answered prior to completing the online questionnaire. [17-19]

Questionnaire development

Data from a mixed methods systematic review examining the barriers to and facilitators of NMP internationally informed the questionnaire design and specific question inclusion. [5] Questions were optimised through consultation with experts in the fields of physiotherapy, NMP and Australian state/federal law and health policy. [17-19]

The questionnaire consisted of 4 sections:

1. Demographic information including participants' age/gender/ number of years qualified/ specialty/location.
2. Participants' perceptions of the positive and/or negative aspects of physiotherapist prescribing to the profession as a whole.
3. Participants' perceptions of the impact of physiotherapist prescribing to them as an individual.
4. Participants' perceptions regarding the potential wider impacts of physiotherapist prescribing.

Sections 1-3 used closed questions to collect quantitative data. Section 4 contained two open-ended questions to allow the participants to answer without limitation. [17 19] Inbuilt survey logic ensured that participants were shown questions that were pertinent to them based on their previous answers. Before completion, participants were encouraged to share any additional information that they deemed relevant, capturing useful insights not addressed elsewhere in the questionnaire. [17-19]

The questionnaire was piloted to test for internal consistency and optimise user experience. [18] Ten participants (n=7 registered physiotherapists, n=3 student physiotherapists) were purposely sampled to represent the physiotherapy profession in Australia. [17-19] Following the pilot, Anglo-Australian terminology was clarified, and small changes were made to the linguistics and survey logic. Pilot participants were not excluded from completing the final questionnaire. The final questionnaire can be found in supplementary file 1.

Data Storage

All electronic data were stored in password-protected computer files only accessible by study investigators. Participants who disclosed personal details were additionally protected via coding on data files. [17-19] The password-protected files will be retained for 10 years, satisfying ethical and university policies.

Data Analysis

Demographic data (section 1) were tabulated and primary descriptive analysis of the data was completed using IBM SPSS Statistics for Macintosh, Version 22.0. Comparisons of proportions from questions in sections 2 &3, addressing objectives 1 & 2, were conducted using the PEDro confidence interval calculator (www.pedro.org.au). [24 25] Calculations of absolute risk reductions (ARR) with 95% confidence intervals were used to determine the likelihood that health sector or geographical location were associated with specific views.[25] Thematic analysis was used to ensure the transparent synthesis of data addressing objective 3, collected in section 4 of the online questionnaire. This analysis enabled the identification of key themes within a structured analytical framework. [26] Answers were coded line-by-line using NVivo 11 software (QSR International, Melbourne, Australia) by one researcher (TN) and were verified by a second researcher (TJ). Independently generated themes/sub-themes were then examined by a panel of experts for confirmation and agreement. [26]

Patient and Public Involvement

The development of this study was informed by the experiences of patients and the general public acknowledged in the literature. Due to the study's objectives, patients and the general public were not utilised in design of the study or in participant recruitment. The results will be disseminated to all interested parties through publication and presentation at professional conferences.

RESULTS

Demographics

A total of 883 participants (3% of all AHPRA registered-physiotherapists) completed the questionnaire. Demographic data are presented in Table 1. Fifty eight percent of participants had been qualified for more than 10 years, with the majority of participants (88.4%) gaining their primary professional qualification in Australia. The largest proportion of participants (n=536, 61%) identified musculoskeletal physiotherapy as their specialty area of practice. Of those working clinically, 52% of participants worked in the private health sector. There were participants from every state and territory, with the majority practising in New South Wales (n=299, 34%), Victoria (n=234, 27%), Western Australia (n=130, 15%) or Queensland (n=115, 13%). Seventy eight percent of participants worked in a major city.

Table 1: Demographic Data

	AHPRA Registered Physiotherapists n (%)
Total Participants	883 (100)
Gender (n=883 answered)	
Male	366 (41.4)
Female	517 (58.6)
Age (n=883 answered)	
17-29	258 (29.2)
30-39	260 (29.4)
40-49	173 (19.6)
50-59	124 (14.0)
60+	68 (7.7)
Number of years qualified as a physiotherapist (n=883 answered)	
0-4	192 (21.7)
5-9	178 (20.1)
10-14	109 (12.4)
15-19	101 (11.5)
20+	303 (34.3)
Country of Primary Qualification (n=883 answered)	
Australia	781 (88.4)
Overseas (Belgium, Canada, Germany, Hong Kong, India, Ireland, Italy, Mexico, Netherlands, New Zealand, Philippines, Portugal, Serbia, Singapore, South Africa, Taiwan, UK, USA)	102 (11.6)
Predominant Physiotherapy Practice Specialties: (max of 3 specialties identified per participant, n=865 answered)	
Amputees	10 (1.1)
Burns/Plastics	9 (1.0)
Cardiorespiratory	132 (14.9)
Chronic disease management	100 (11.3)
Education	58 (6.6)
Emergency Department	65 (7.4)
Gerontology/Aged care	115 (13.0)
Health promotion/ Public health	10 (1.1)
Lymphoedema	11 (1.2)
Mental Health	4 (0.5)
Musculoskeletal/ Orthopaedics	536 (60.7)
Neurology	81 (9.2)
Occupational Health	21 (2.4)
Paediatrics	37 (4.2)
Pain	105 (11.9)
Palliative Care	6 (0.7)
Rheumatology	10 (1.1)
Rural generalist	39 (4.4)
Women's health/ continence	53 (6.0)
Veterinary	2 (0.2)
Health Sector (n=872 answered)	
Public Sector	325 (37.3)
Private Sector	449 (51.5)
Educational/research institute or university	49 (5.6)
Not-for-profit organisation (NFPO)	36 (4.1)
Other	13 (1.5)
Rural, Remote and Metropolitan Areas (RRMA) classification [27] (n=783 answered)	
Major Cities of Australia	679 (77.8)
Inner Regional Australia	113 (12.9)
Regional Australia	58 (6.6)
Remote Australia	20 (2.3)
Very Remote Australia	3 (0.3)
State or Territory (n=879 answered)	
Australian Capital Territory	19 (2.2)
New South Wales	299 (34.0)
Northern Territory	7 (0.8)
Queensland	115 (13.1)
South Australia	64 (7.3)
Tasmania	11 (1.3)
Victoria	234 (26.6)
Western Australia	130 (14.8)

Participants' perceptions about the impact of physiotherapist prescribing on the physiotherapy profession

Six hundred and eighty participants (79%) reported that they strongly agreed or agreed that autonomous prescribing responsibilities should be introduced for physiotherapists in Australia, with 144 participants (12%) against the introduction (Figure 1). Potential benefits and concerns were identified.

The participants reported that physiotherapist prescribing could have a range of benefits in the Australian healthcare system (Figure 1). The most commonly identified benefit was an improvement in the delivery of health services (80.1%; n=707). Reduced costs of healthcare delivery to the consumer, as well as a reduction in the overall cost of healthcare and an improved consumer experience were also identified as potential benefits of NMP in Australia. Participants' concerns about the prescription of medicines by physiotherapists centred on quality and safety issues. In particular, concerns about whether physiotherapists have the knowledge required to train as a prescriber (34.8%), and a potential increased safety risk to consumers (34.1%) were raised. One third of participants (33.1%) were concerned that the expected remuneration for this service would not reflect the increased professional risk.

Figure 2 illustrates participants' opinions about the number of years of experience a physiotherapist should have prior to being permitted to train as a Prescriber. The majority of participants felt that physiotherapists should have 3 years or more of experience (68.4%), with 34.6% believing this should be at least 6 years.

Participants' perceptions about the impact of physiotherapist prescribing to them as an individual

Six hundred and eight participants (71.2%) would be extremely likely (n=397, 47%) or somewhat likely (n=211, 25%) to train as a prescriber if this were permitted, whilst 174 participants (20.3%) would not. Figure 3 outlines the key motivators and deterrents among participants to train as a prescriber.

Key motivators cited included the ability to provide improved quality of care (n=646, 96.0%) and the improved professional reputation associated with NMP (n=416, 61.8%). Some participants included increased job satisfaction (n=303, 45.0%) and remuneration (n=125, 18.6%) as motivating factors. Additionally, some participants (n=72, 10.7%) reported being motivated by potential clinical and cost efficiencies for both for the consumer and healthcare provider through enhanced clinical pathways, improved access to medicines and optimisation of clinical knowledge.

The most common deterrent for training to be a prescriber was the belief that this will not change the care that the individual physiotherapist would provide to their patients (n=152, 61.8%). Concerns around an increased level of clinical responsibility were also highlighted as potential deterrents (n=108, 43.9%). Some participants felt that they did not have sufficient background knowledge to undertake the prescribing course (n=76, 30.9%). Additionally, participants reported that the cost of training or distance to travel to universities would be too great, or that they were nearing retirement and did not want the additional stress of training to become a prescriber. Further, it is noted that a small number of participants reported that they would not train as prescribers as they are employed in non-clinical roles (n=35, 14.2%).

Influence of Health Sector and Geographical Location

The percentage of participants from different health sectors and geographical locations, who agreed or strongly agreed with autonomous prescribing responsibilities being introduced for Australian physiotherapists, and those who stated that they were extremely likely or somewhat likely to want to train as a prescriber are summarised in Table 2.

Participants working in the private sector were significantly more likely to agree that autonomous prescribing responsibilities should be introduced for physiotherapist in Australia than those who work in education, not-for-profit organisations and the military (ARR 9.8%, 95%CI [0.8, 20.2]). No significant difference (ARR 1.7%; 95%CI [-4.0, 7.6]) was seen between participants who worked in the private or public healthcare sectors. Participants working in the private sector were significantly more likely to train as prescribers than those working in the public sector (ARR 9.9%; 95%CI [3.5, 16.4]) or other areas, such as within educational or research institutions (ARR 23.3%; 95%CI [12.8, 33.8]). A significantly higher proportion of participants in city regions expressed a wish to train as a prescriber compared to those in remote regions (ARR 19.8%; 95%CI [0.8, 39.2]). Those practising in cities (ARR 24.0%, 95%CI [5.8, 43.9]) and regional areas (ARR 19.5%, 95%CI [0.4, 40.1]) were significantly more likely to agree with the introduction of physiotherapist prescribing than those from remote regions. However, there was no significant difference (ARR 4.4%, 95%CI [-2.2, 12.0]) between participants who practise in major cities compared to regional areas.

Table 2: Percentage of participants from different health sectors and geographical locations, who agreed with the introduction of physiotherapist prescribing and are likely to train

	Location RRMA % [95% Confidence Interval]			Subgroup Comparisons ARR % [95% Confidence Interval]		
Survey item	City	Regional	Remote	City: Regional	City: remote	Regional: remote
Agreed or strongly agreed with autonomous prescribing	80.1 [77.3, 83.3]	76.1 [69.0, 81.9]	56.5 [36.8, 74.4]	4.4 [-2.2, 12.0]	24.0 [5.8, 43.2] *	19.5 [0.4, 40.1] *
Likely to Train as prescriber	71.9 [68.4, 75.2]	70.9 [63.4, 77.3]	52.2 [33.0-70.8]	1.0 [-6.3, 9.1]	19.8 [0.2, 39.2] *	18.7 [-1.3, 39]
	Health Sector % [95% Confidence Interval]			Subgroup Comparisons ARR % [95% Confidence Interval]		
Survey item	Private	Public	Other	Private: Public	Private: Other	Public: Other
Agreed or strongly agreed with autonomous prescribing	80.7 [76.8, 84.1)	79.0 [74.2, 83.1]	70.8 [61.1, 79.0]	1.7 [-4.0, 7.6]	9.8 [0.8, 20.2] *	8.2 [-1.3, 18.8]
Likely to Train	77.4 [73.3, 81.1]	67.5 [62.2, 72.5]	54.2 [44.2, 63.8]	9.9 [3.5, 16.4] *	23.3 [12.8, 33.8] *	13.4 [2.3, 24.5] *
*Significant at p<0.05						

Wider impacts of physiotherapist prescribing

Participants were asked to provide additional comments about how NMP may impact the overall level of care that the profession is able to provide. In total, 230 participants provided comments.

Four major themes were identified:

1. Clinical and cost-efficiency
2. Access to prescription medicines
3. Optimal therapeutics and clinical effectiveness
4. Time management

Table 3 lists the number of participants that reported or discussed each theme and provides Illustrative quotations.

Clinical and cost-efficiency

One hundred and eighteen participants commented that the introduction of autonomous physiotherapist prescribing would have positive effects on both clinical and cost-efficiencies for patients, clinicians and the health economy. Participants identified the positive impact on the overall patient journey as a potential benefit of NMP by reducing unnecessary appointments with General Practitioners (GPs), specialists and surgeons. Specifically, participants recognised the current frequency of referrals from physiotherapists to GPs for analgesic review, access to oxygen therapy, bronchodilators and antibiotics and on-going pharmacological spasticity management. A common sentiment was that if physiotherapists could provide these services themselves, patients could have more timely access to appropriate medicines, which in turn would complement physiotherapeutic interventions and accelerate patient improvement/recovery. Participants also anticipated that NMP could reduce acute injury recovery times and minimise the risk of chronicity, which in turn could reduce pressures on medical services and end costs to the consumer, Medicare and private health insurers. Further, the presence of physiotherapist prescribers in emergency departments and specialist multidisciplinary clinics was anticipated to reduce waiting times for patients, thus helping to meet performance measures set by governing bodies.

Access to prescription medicines

Seventy-one participants provided comments concerning potential improvements in accessing prescription medicines for all Australians regardless of geographic or other socio-economic factors. Specifically, it was suggested that physiotherapist prescribers in rural and remote regions could issue prescription medications to patients who might otherwise have limited access to medical professionals. However, no participants from rural/remote regions identified this theme within their responses. Participants from metropolitan and regional areas expressed concerns that patients in rural and remote regions may struggle to navigate an over-burdened and expensive healthcare system, frequently waiting for weeks and travelling great distances to see their GP for medications such as analgesics to supplement treatment from their physiotherapists. Participants from all locations identified potential benefits of NMP to healthcare consumers (regardless of location) whose principal healthcare practitioner is a physiotherapist, including persons with physical disabilities and those involved in sports where acute injuries are managed pitch-side by the team physiotherapist.

Optimal therapeutics and clinical effectiveness

Fifteen participants reported the potential for improved optimisation of medicines in-line with physical and psychosocial interventions and therefore enhanced clinical effectiveness. Participants stressed optimal and appropriate use of analgesics across all specialties, especially where adjustments (escalation or de-escalation) to prescriptions are required in-line with physiotherapeutic intervention. It was felt that that the multimodal skills and techniques utilised by physiotherapists would promote a more integrated use of medicines into the overall patient management, with medicines forming just one part of a more comprehensive and coordinated approach. Participants specialising in women's health echoed this statement highlighting the appropriate use of anticholinergics and vaginal oestrogens necessary to holistically treat many of their patients.

Participants agreed that the close working relationships between physiotherapists and their patients, due to the comprehensive time spent completing physiotherapeutic interventions may be used to promote patients' compliance to their prescribed medicines. Physiotherapist prescribers with the appropriate knowledge and skills could legally reinforce the appropriate use of medicines; better recognising poor adherence, dependency, abuse or adverse side effects masquerading as conditions treated by physiotherapists.

Time management

Nine participants suggested that the time requirements needed to train as a physiotherapist prescriber and on-going time required for continuous professional development (CPD) may be prohibitive to introducing NMP in Australia.
Likely time away from clinical work for education and development and NMP duties were seen to potentially interfere with tasks currently performed by clinicians. Further, participants felt that although greater efficiency and access to medicines may benefit heath consumers, time presently spent treating patients in the current scope of practice would be lost to procedures related to prescribing medicines. In other words, although NMP may decrease medical practitioners' workload, this would instead increase pressures on already understaffed physiotherapy departments and possibly even threaten clinical outcomes.

Table 3: Comments that Reported or Discussed Each Theme & Illustrative Quotations from Participants (quotations have been copied verbatim)

Theme	Number of comments (n)	Illustrative Quotations
Clinical and cost efficiency	118	……would benefit people financially if they do not have to go back to their GP for medication (Participant 41) Time and cost savings for busy workers, ie not having to go to 2 appointments (Participant 127) …. improve patient flow and decrease reliance on medical staff (Participant 490) Working in an Emergency Dept where access and flow is critical, enabling advanced musc [musculoskeletal] physios to prescribe would improve efficiency in the workplace and the patient experience (Participant 7) The ability to prescribe would enable more efficient service delivery to patients. A lot of time is wasted back and forth trying to get appropriate pain medication, antibiotics etc. in a timely fashion (Participant 32)
Access to prescription medicines	71	Working in a rural area where it is difficult for a patient to be able to make a GP appointment (typical 2-3week wait) I can see the benefit of streamlining the system by giving prescribing rights to physios who are also primary care professionals (Participant 630) Will reduce burden on overbooked GP's and ED's for people with pain problems, ie severe Acute Low back [pain] or those with inflammatory injuries (Participant 873) Physiotherapists working in public health help people from different minority groups every day - indigenous, recent immigrants, people relying on disability pensions, etc. Greater access to simple medications would improve their quality of life and reduce unnecessary attendances at over- worked GP clinics (Participant 12) I work in a country setting where travel times are significant and it can be difficult to get a doctor's appointment and, when injured or without a licence, patients rely on friends, relatives or public transport to get appointments. This means that a physiotherapy appointment with prescription would become a more efficient use of time and people are more likely to comply (Participant 654)
Optimal therapeutics and clinical effectiveness	15	Will allow physiotherapist to adjust medications particularly in management of chronic pain and LBP…." (Participant 333) "There is considerable potential for this to significantly improve adherence to medication regimes and to problem solve in a time appropriate manner (Participant 45)

		Physios tend to spend more time with patients and often are better skilled to recommend medications than even the registrars, especially in my urogynae advanced practice clinics, being able to prescribe anticholinergics and vaginal oestrogens would significantly increase the efficiency of the clinics as currently [patients] need two appointment times for this (Participant 276) ….'de-prescribing' could potentially be a very important role for Physios (Participant 790)
Time management	9	The time required to keep up to date with medications and well as physiotherapy skills to be safe and effective I feel would impact the time available to treat patients…. (Participant 246) Puts extra pressure on appointment time when we already have to deal with full assessment and treatment of the patient's physical and psycho-social needs (Participant 693)

Further Insights

The final question allowed participants to express any additional thoughts and views about physiotherapist prescribing that they deemed important and had not already been captured. Two hundred and sixty-six participants provided comments. Three major themes were identified:

1. Quality and safety: clinical governance, policies and procedures, and education
2. Professional issues
3. Physiotherapy professional priorities

Table 4 lists the number of comments that discussed each theme and subtheme, providing Illustrative quotations from participants.

Quality and Safety

Two hundred and seventeen comments were received regarding quality and safety concerns around NMP. These focussed on clinical governance, policies and procedures and educational requirements for Prescribers.

One hundred and forty-four participants proposed that adequate clinical governance, policies and procedures should be in place for physiotherapist NMP to be successful. Participants identified the need for a clear scope of practice linked to a physiotherapy-centric formulary that is endorsed and regulated promoting transparency and safety. Participants raised concerns that statutory processes and procedures defining a limited formulary could quickly become out-dated due to medical advances. Meanwhile, other participants identified that a limited formulary based around the profession's specialist areas of practice would be safest, protecting clinicians from pressures to prescribe out of scope. Participants were concerned that unless communication channels were maintained between physiotherapist Prescribers and GPs, there is a risk that patients could shop around for prescriptions, potentially aiding the abuse of prescription medication, and causing clinical incidents. Participants were also concerned that the increase in professional risk due to physiotherapist prescribing would lead to an increase in indemnity insurance premiums.

Seventy-three comments were received with regards to education. Participants recognised that the scope of practice must be absolutely clear, endorsed and underpinned by a robust clinical education framework. They felt that thought must be given to the process of assessment and selection of appropriately qualified assessors from outside the profession including medical doctors and pharmacists to ensure quality and safe practice among Prescribers.

Access to prescribing courses for physiotherapists living in regional and remote areas was highlighted as a potential issue due to the distance to the nearest university. Participants recommended that the regulatory body should dictate compulsory annual continuous professional development (CPD) hours and periodic reassessment of competency should be mandatory. Participants had varying opinions with regards to when physiotherapists should be able to train and qualify as Prescribers, however the participants agreed that current pre-registration physiotherapy programmes should be updated to include pharmacology and therapeutics on their syllabi in preparation for the future.

Professional Issues

Thirty-nine participants provided comments on important professional issues. Participants noted that the introduction of physiotherapist prescribing could change the 'physiotherapy brand', weakening the public's perception of physiotherapists as experts in manual therapy and exercise,

leading to potential loss of patients to other emerging healthcare professions. It was suggested that a marketing campaign may be necessary to manage public expectation and minimise consumer confusion.

Inter-professional relationships between physiotherapists, medical practitioners and pharmacists were highlighted as being fragile. Participants warned that members of the Australian Medical Association (AMA) would not support the introduction of physiotherapist prescribing, alluding to the possibility that medical doctors might see the introduction as a direct challenge to their authority and private businesses, leading them to reduce referrals to physiotherapy. Participants specifically identified the impact this may have on practice revenues in the musculoskeletal and sport specialties. That said, other participants reported great support from medical colleagues and the greater multidisciplinary team, citing the streamlining of current clinical services and patient pathways, alongside improved access medicines as key reasons for positive inter-professional support. Participants warned that although these efficiencies would reduce service costs, establishing physiotherapist prescribing would require an initial co-ordinated investment to ensure appropriate governance, clinical education and safe/quality implementation across Australia.

Physiotherapy Professional Priorities

Forty participants commented on the profession's professional priorities. Participants described the risks of junior physiotherapists under-developing their traditional physiotherapy skills used to treat impairments, and instead depending on medicines. To mitigate these risks, a robust career progression framework would need to be introduced to ensure ongoing high-level professional development across all specialties. To safeguard the good reputation of the profession, participants focused on maintenance of quality and safety for patients and clinicians. Physiotherapist prescribing should be introduced in a structured and organised manner with all physiotherapists supporting each other, even if they do not wish to prescribe themselves. Further, participants also commented that the ability for physiotherapists to directly refer to specialist medical or surgical practitioners and ensuring appropriate patient rebates for imaging would have a positive clinical impact.

Table 4: Additional Comments Reported or Discussed by Participants & Illustrative Quotations from Participants

Theme/ Subtheme	Number of comments (n)	Illustrative Quotations (quotations have been copied verbatim)
Quality and Safety Clinical governance, policy, procedure Education	217	Prescribing medicines is a risk to the physiotherapy profession as there can be a lot of risks to the patient with medications. Prescribing and its scope needs to be carefully planned and managed with introduction to the physiotherapy profession (Participant 379) The physio who is going be a prescriber needs to undergo a certain number of hours of training…… going through an examination process. Continuous on-going training is also important as medications change fairly rapidly (Participant 14) …. professional indemnity is required to protect them in case of errors or mishaps (Participant 89) Risks of 'doctor shopping' of physiotherapists for opioid based drugs without centralised control (Participant 651) The challenge in prescribing is ensuring consumer safety through adequate training of the physiotherapists involved and improved communication across health professions (Participant 56)
Professional Issues	39	I believe that it would create confusion for the public if some physiotherapists could prescribe, while others could not (Participant 227) A cultural change is needed, namely adjusting the public's perception of what allied health professionals can do, in order to effectively utilise non-medical prescribing rights (Participant 380) …. the medical doctors may have their issues with this as it may be seen as a direct challenge to their authority and therefore reduce their use of referral pathways already established (Participant 4) I would be concerned that there may be a conflict that forms between doctors and physiotherapists if physios were given prescribing authority. I think there would have to be some very strict guidelines about managing a patient who may be seeking prescriptions from both a doctor and physiotherapist at the same time (Participant 879) I think the medical and pharmaceutical professions would have a negative view of physios prescribing and be less willing to work with us/refer patients to us (Participant 447)

Physiotherapy Professional Priorities	40	Physio profession needs to become more progressive with enhanced scope roles, career pathways are currently limited (Participant 412) I think that the physiotherapy profession should spend their resources and energies trying to improve the ability for Physiotherapists to order radiological investigations (scans etc) and referrals to specialists which would be far more beneficial in a cost and time saving way then being able to prescribe medications (Participant 78) Potential for increased reliance on pharmaceutical treatments of MSK conditions over traditional physiotherapy management strategies (i,e. manual therapy, exercise prescription) (Participant 701) May potentially de-value other interventions in the management plan (i.e. commitment to taking medication as prescribed, but not to exercises prescribed in same session) (Participant 219)

DISCUSSION

This is the first study to explore the perceptions of Australian physiotherapists regarding NMP by physiotherapists in Australia. The majority of physiotherapists agreed that autonomous prescribing responsibilities should be introduced for physiotherapists in Australia. Improvements in the efficiency of healthcare delivery, access to medicines and reductions in costs across the health economy were suggested as potential benefits. These findings concur with those reported by student physiotherapists in Australia as detailed in a related article,[16] as well as reflecting an evaluation of physiotherapist and podiatrist independent prescribers in the UK,[28] strengthening the external validity and transferability of the results. Concerns regarding, clinical safety and management of clinical-risk were clearly identified throughout the quantitative and qualitative sections of the survey, supporting the results of an international multi-profession mixed-methods systematic review investigating the barriers and facilitators of the implementation and utilisation of NMP. [5] The systematic review identified the need to address governance, safety, educational and financial factors prior to training prescribers, to protect both patients and clinicians from poor practice, process and clinical pathways. [5] To safely and effectively introduce physiotherapist prescribing, politicians, regulatory bodies, healthcare managers, clinicians and the APA, in consultation with experts and health consumers, must develop robust legislation, regulation, clinical governance and safety policies as well as well-defined education and career frameworks.

To ensure that physiotherapists are equipped to prescribe safely within a multi-modal physiotherapeutic context, participants perceived that a contemporary, innovative and robust educational framework should be developed prior to the introduction of physiotherapist prescribing. This perception reflects contemporary educational literature that urges educators to carefully consider the ever-evolving healthcare system when designing curricula for physiotherapists. [29] Transforming healthcare needs will require the next generation of physiotherapists to be ready to adapt to changes in consumer complexity and expectation, working within new models of care that are organised, funded and delivered in innovative ways. It has been postulated in the literature that a more flexible, broader and deeper clinical expertise will be required by physiotherapists if the Australian physiotherapy profession wish to succeed as evidence-based and viable health providers in the integrated, value-driven health-industry of the future. [30]

To guarantee quality development of physiotherapists across the profession, participants called for the creation of a contemporary career-development framework into which prescribing would be integrated, to safeguard mastery of traditional skills, govern quality practice and maintain the 'physiotherapy brand'. This appeal concurs with literature reporting that career frameworks within healthcare help the public understand different clinicians' knowledge, skills and roles within one profession, as well as providing purpose and direction for professionals, promoting engagement and job satisfaction. [31 32] Further, academic qualifications and increased clinical responsibility should lead to enhanced remuneration if physiotherapists are to adopt prescribing into their clinical practice, as a lack of remuneration has been recognised as a barrier to NMP across other professions. [33-35] Improvements in recruitment and retention within the profession were anticipated due to improvements in job satisfaction for clinicians and greater recognition and professional reputation, echoing the findings of other NMP-professions reported in the literature. [33 36 37]

Physiotherapists working in cities and regional areas were consistent in observing that physiotherapist prescribing would improve access to medicines across all regions, but would be specifically helpful in rural/remote areas where access to medical-prescribers may be limited. However, physiotherapists from rural/remote areas although positive about the introduction of physiotherapist prescribing, were less likely to wish to train as prescribers, identifying potential increased risks when working in geographical isolation owing to a lack of clinical support. Due to a

perceived lack of need in the present healthcare environment, participants felt that not all physiotherapists would benefit from undertaking a NMP course. Those working in close multidisciplinary teams with co-located prescribers, or those employed in non-clinical roles such as healthcare managers or academic physiotherapists were found to be less likely to wish to become prescribers than clinicians working in the public and private sectors. There was debate as to when and who should undertake the training, with no consistency as to whether education should be included in foundation level courses or become a post-registration qualification for those with a specified clinical experience. Further, rural physiotherapists identified that the distance to universities may act as a barrier to training as a prescriber, highlighting the need for educators to consider flexible learning methods such as online education and video teleconferencing to fulfil the academic requirements of a NMP course. It is therefore imperative that a robust, fit for purpose, transparent and future proof education framework is developed to ensure unity within the Australian physiotherapy profession and assurance for all stakeholders that physiotherapists prescribers would be adequately prepared for practice.

Participants' perceptions that physiotherapist prescribing in Australia would reduce costs to their patients, healthcare services, and to the health economy as a whole, is supported by an economic review commissioned by the APA. The report predicts savings to the Australian health-economy of over $9.22million per year if physiotherapist prescribing was implemented, [38] however this is not currently reflected in the health economics literature. A robust low risk of bias systematic review investigating the clinical and cost-effectiveness of NMP found only 1 inadequately powered pilot randomised controlled trial investigating clinical effectiveness to date; concluding that the benefit of NMP to the health economy remains unclear [4]. This gap in the literature highlights the need for robust, adequately powered economic evaluation to investigate the cost-benefits perceived by physiotherapists across Australia.

Strengths and limitations

This is the first study investigating the perceptions of AHPRA registered-physiotherapists about the potential introduction of NMP among physiotherapists in Australia, and so, alongside the data from student physiotherapists presented in the related article, provides an important overview of the current associated professional landscape. The data should be used to guide the APA, health departments and political leaders towards successful implementation of physiotherapist prescribing in Australia. As with all survey-based research, limitations are inherent due to selection and response bias. The survey was anonymous, so participants may have biased the results by completing the online questionnaire multiple times. Further, physiotherapists with strong views or vested interests may be more likely to complete the questionnaire, meaning that their answers may not reflect the views of the wider profession.

A representative survey response rate (as per precursory power calculations) was achieved.[13] Although only 3% of AHPRA responded, this reflected the response rate of a previous national evaluation of physiotherapists, [38] where similarly, it was not possible to contact all registered physiotherapists directly due to the AHPRA privacy policy. Physiotherapists who were not APA members at the time of the survey would have been unaware of the questionnaire unless they were provided with a link to the questionnaire through professional networks. It is impossible to determine why 97% of AHPRA registered physiotherapists did not participate; therefore, the risk of bias remains unknown and should be considered when interpreting the results. In-line with recent Australian regulatory data, [39] the sample was representative of all registered physiotherapists in Australia in terms of age, gender and state in which they practise. Unfortunately, no national demographic data exists demonstrating the geographic location or health sector of registered physiotherapists' employment. It is therefore likely that the comparable demographic profile of the

study's sample to contemporary national evaluations enhances generalisability of the data to the greater physiotherapist population in Australia and reduces risk of bias.

CONCLUSION

AHPRA registered-physiotherapists perceive that the introduction of autonomous physiotherapist prescribing would be beneficial for the Australian population and should be introduced. Acceptance of physiotherapist prescribing and the likelihood of physiotherapists to train as prescribers vary dependent on location and the health sector in which a physiotherapist works. Legislation, regulation and governance around the use of physiotherapist prescribing all require careful consideration and consultation with experts and health consumers to ensure the safety and quality demanded by physiotherapy profession. Rigorous national educational frameworks should be developed within a transparent career development structure to ensure prescribing is used within a multimodal-physiotherapeutic context, safeguarding the professional reputation of physiotherapy.

It is recommended that the APA, health departments and political leaders use the results of this study in conjunction with cost-benefit analyses, risk analysis as well as assessment of the health-requirements and consultation with key stakeholders, to redefine the scope of Australian physiotherapy to include NMP. Future research is required to investigate the concerns raised by participants. It would be valuable to interview current physiotherapist prescribers to interrogate the perceived benefits and concerns about physiotherapy prescribing identified by the Australian physiotherapists. Lessons learnt in the UK could thus be utilised to inform implementation internationally.

Figure 1: Physiotherapists' belief as to whether physiotherapist prescribing should be introduced in Australia; potential benefits and participants' concerns.

Figure 2: The number of years' experience a physiotherapist should have prior to being able to train as a physiotherapist prescriber.

Figure 3: Likeliness to train as a Prescriber: motivators and deterrents.

Contributors
TN is a clinical advanced practice physiotherapist and PhD candidate at the University of Birmingham (UK). AR is a Reader in musculoskeletal rehabilitation sciences and lead supervisor. JM is a professor of clinical pharmacy and co-supervisor. Both supervisors ensured the rigour of methods and analyses. CD is a professor of physiotherapy and TJ is an associate professor of physiotherapy at Macquarie University (Aus). All authors have contributed to the content of this article. TN wrote the first draft of this article and has worked with all authors to develop subsequent drafts. All authors prior to publication gave final approval. Patients and the general public were not involved in this study.

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Competing Interests

All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf and declare: no support from any organisation for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work.

Data Sharing Statement

Raw survey data from the study are available on request for up to 10years post publication. Please contact CPR Spine at the University of Birmingham, Birmingham, UK, Tel: .

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Figure 1: Physiotherapists' belief as to whether physiotherapist prescribing should be introduced in Australia; potential benefits and participants' concerns.

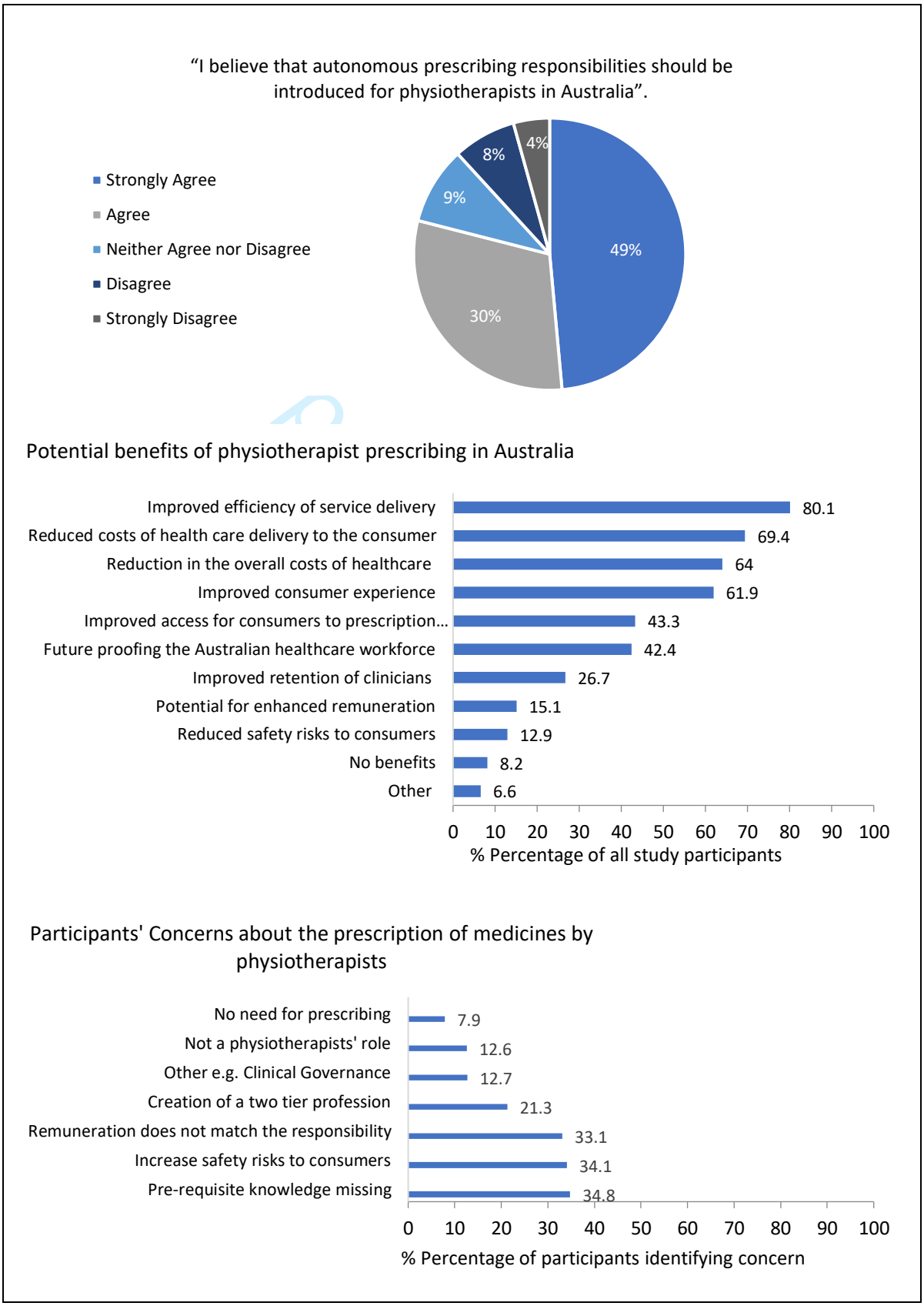


Figure 2: The number of years' experience a physiotherapist should have prior to being able to train as a physiotherapist prescriber.

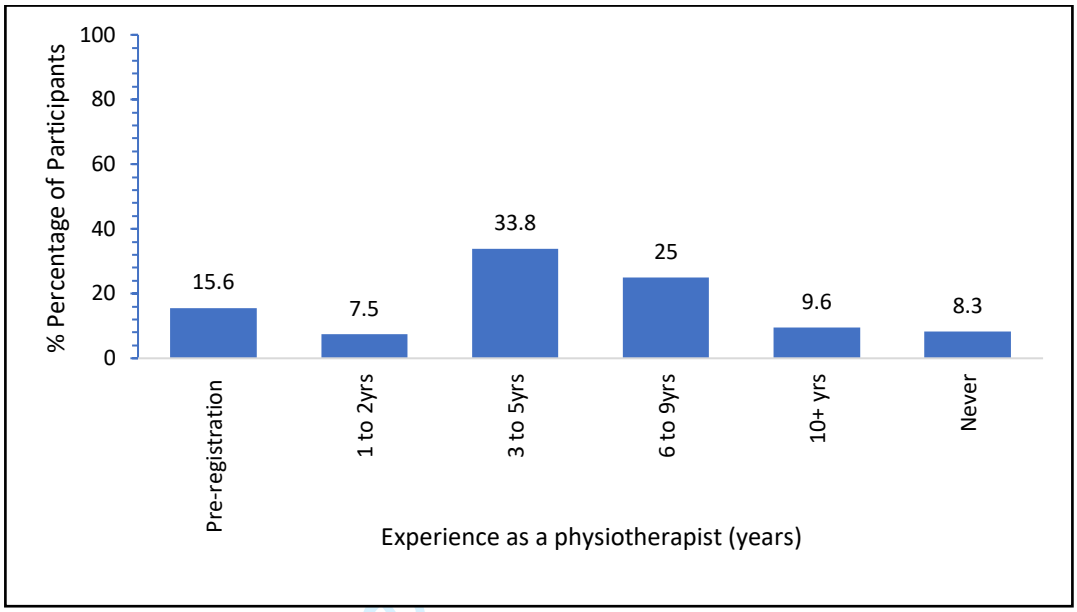
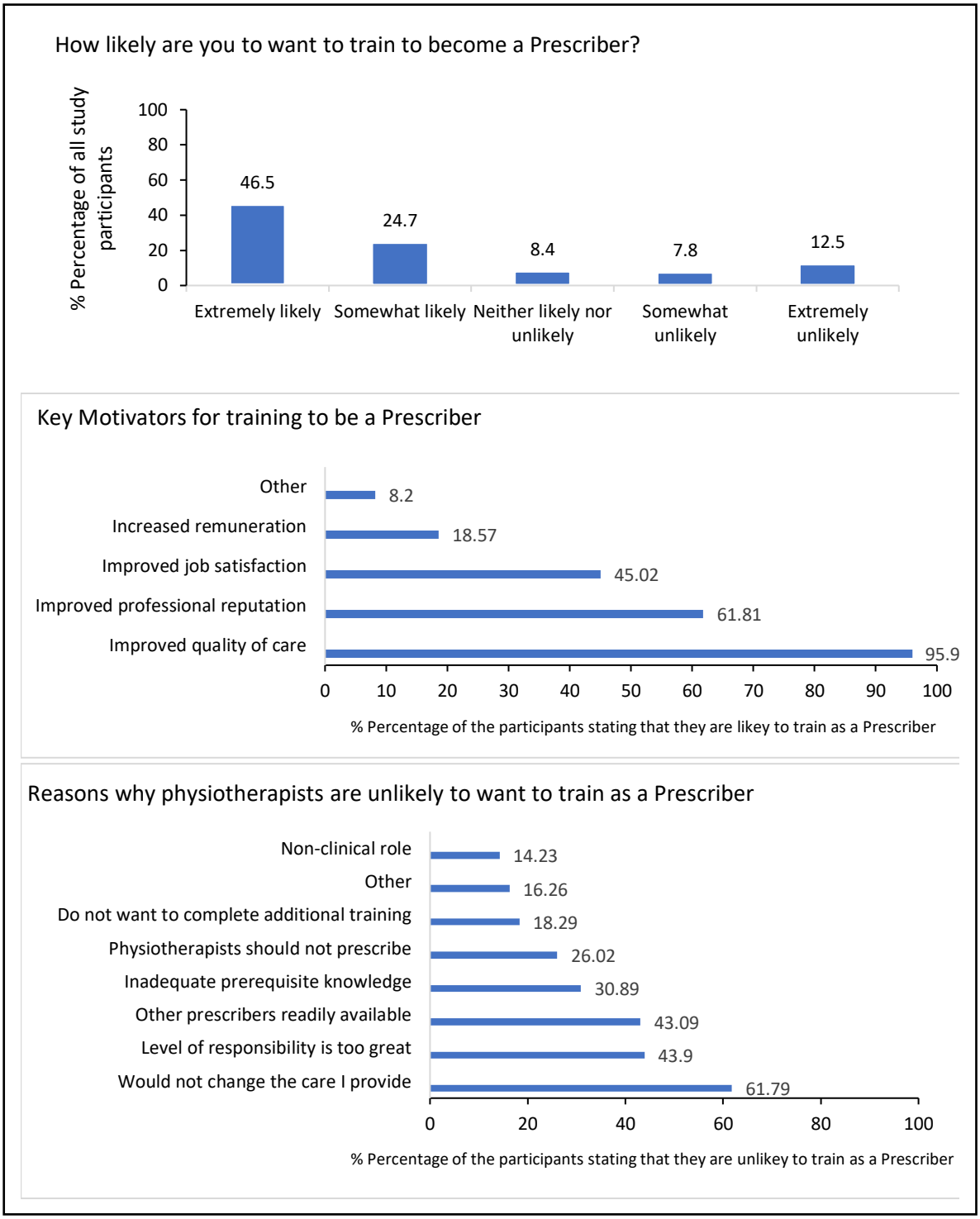


Figure 3: Likeliness to train as a Prescriber: motivators and deterrents



Supplementary file 1: Online Questionnaire

Q1 What is your gender?
- ❍ Male (1)
- ❍ Female (2)
- ❍ Other (3)

Q2 What is your age?
- ❍ 17-29 (1)
- ❍ 30-39 (2)
- ❍ 40-49 (3)
- ❍ 50-59 (4)
- ❍ 60 or older (5)

Q3 Which of the following are you?
- ❍ AHPRA registered physiotherapist (1)
- ❍ Student physiotherapist enrolled in an Australian university (2)

If Student physiotherapist enr... Is Selected, Then Skip To Which state or territory do you curre...

Q4 How many years have you been a qualified physiotherapist?
- ❍ 0-4 (1)
- ❍ 5-9 (2)
- ❍ 10-14 (3)
- ❍ 15-19 (4)
- ❍ 20 or more (5)

Q5 Where did you obtain your primary physiotherapy qualification?
- ❍ Australia (1)
- ❍ Overseas (please specify) (2) _____

Q6 Which state or territory do you currently work? If multiple, select the state or territory that you spent the most time working in over the past 14 days.
- ❍ Australian Capital Territory (1)
- ❍ New South Wales (2)
- ❍ Northern Territory (3)
- ❍ Queensland (4)
- ❍ South Australia (5)
- ❍ Tasmania (6)
- ❍ Victoria (7)
- ❍ Western Australia (8)

Q7 Do you work in a metropolitan or rural area? Please choose the most appropriate option. If you work in multiple areas, select the area in which you spent the most hours working in the past 14 days. If you are unsure, you can check your areas classification

using the following website:
http://www.doctorconnect.gov.au/internet/otd/publishing.nsf/Content/locator

- ❍ RA1 - Major Cities of Australia (1)
- ❍ RA2 - Inner Regional Australia (2)
- ❍ RA3 - Outer Regional Australia (3)
- ❍ RA4 - Remote Australia (4)
- ❍ RA5 - Very Remote (5)

Q8 In which health sector do you spend most of your time working as a physiotherapist?

- ❍ Public sector (1)
- ❍ Private sector (2)
- ❍ Educational/research institute or university (3)
- ❍ Not-for-profit organisation (4)
- ❍ Other (please specify) (5) _____

Q9 What area/s of physiotherapy do you predominantly work in or identify with?Please select up to a maximum of three (3) areas.

- ❑ Amputees (1)
- ❑ Burns/plastics (2)
- ❑ Cardiorespiratory/acute medicine/surgery (3)
- ❑ Chronic disease management (4)
- ❑ Education (5)
- ❑ Emergency department (6)
- ❑ Gerontology/Aged care (7)
- ❑ Health promotion/Public health (8)
- ❑ Lymphoedema (9)
- ❑ Mental health (10)
- ❑ Musculoskeletal/orthopaedics (11)
- ❑ Neurology (12)
- ❑ Occupational health (13)
- ❑ Paediatrics (14)
- ❑ Pain (15)
- ❑ Palliative care (16)
- ❑ Rehabilitation (mixed) (22)
- ❑ Rheumatology (17)
- ❑ Rural generalist (18)
- ❑ Sports (21)
- ❑ Women's health/continence (19)
- ❑ Veterinary (20)

Display This Question:
If Which of the following are you? Student physiotherapist enrolled in an Australian university Is Selected

Q10 Which state or territory do you currently attend university?

- ❍ Australian Capital Territory (1)
- ❍ New South Wales (2)
- ❍ Northern Territory (3)
- ❍ Queensland (4)
- ❍ South Australia (5)
- ❍ Tasmania (6)
- ❍ Victoria (7)
- ❍ Western Australia (8)

Q11 Autonomous prescribing: "Prescribing occurs where a prescriber undertakes prescribing within their scope of practice without the approval or supervision of another health professional. The prescriber has been educated and authorised to autonomously prescribe in a specific area of clinical practice. Although the prescriber may prescribe autonomously, they recognise the role of all members of the health care team and ensure appropriate communication occurs between team members and the person taking medicine". The Health Professionals Prescribing Pathway (HPPP), p16 (2013) To what extent do you agree with the following statement: "I believe that autonomous prescribing responsibilities should be introduced for physiotherapists in Australia."

- ❍ Strongly agree (1)
- ❍ Agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Disagree (4)
- ❍ Strongly disagree (5)

Q12 What do you see the benefits of physiotherapists prescribing medicines to be?Select as many options as are appropriate to you.

- ❑ Improved efficiency of service delivery (1)
- ❑ Reduced costs of health care delivery to the consumer (2)
- ❑ Improved consumer experience (3)
- ❑ Reduction in the overall costs of healthcare to the Australian economy (4)
- ❑ Improved retention of clinicians within the physiotherapy profession (5)
- ❑ Potential for enhanced remuneration (6)
- ❑ Reduced safety risks to consumers (7)
- ❑ Improved access for consumers to prescription medications (8)
- ❑ Future proofing the Australian healthcare system with a flexible workforce (9)
- ❑ Other (please specify) (10) _____
- ❑ I do not believe there would be any benefits (11)

Q13 What are your concerns about the prescription of medicines by physiotherapists?Select as many options as are appropriate to you.

- ❑ Prescribing of medicines is not a physiotherapists' role (1)
- ❑ Physiotherapists do not have adequate pre-requisite knowledge to undertake a prescribing course (2)
- ❑ There is no need for physiotherapists to prescribe medicines (3)
- ❑ Physiotherapist prescribing will create a two (2) tier profession (4)
- ❑ Physiotherapist prescribing will increase safety risks to consumers (5)
- ❑ Remuneration does not match the responsibility associated with the prescribing of medicines (6)
- ❑ Other (please specify) (7) _____
- ❑ I do not have any concerns (8)

Q14 How many years experience do you think a physiotherapist should have prior to being able to train as a physiotherapist prescriber?

- ❍ 0 - Should be included in pre-registration physiotherapy qualification (1)
- ❍ 1-2 years (2)
- ❍ 3-5 years (3)
- ❍ 6-9 years (4)
- ❍ 10 or more years (5)
- ❍ Physiotherapists should not be able to train as prescribers (6)

Q15 If physiotherapists became able to autonomously prescribe medicines, how likely are you to want to train to become a prescriber?

- ❍ Extremely likely (1)
- ❍ Somewhat likely (2)
- ❍ Neither likely nor unlikely (3)
- ❍ Somewhat unlikely (4)
- ❍ Extremely unlikely (5)

Display This Question:

If If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Extremely likely Is Selected

Or If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Somewhat likely Is Selected

Or If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Neither likely nor unlikely Is Selected

Q16 What are your key motivations to becoming a prescriber?Select as many options as are appropriate to you.

- ❑ Improving the care I am able to provide (1)
- ❑ Improved job satisfaction (2)
- ❑ Increased remuneration (3)
- ❑ Improved professional reputation (4)
- ❑ Other (please specify) (5) _____

Display This Question:

If If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Extremely unlikely Is Selected

Or If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Somewhat unlikely Is Selected

Or If physiotherapists became able to autonomously prescribe medicines, how likely are you to want t... Neither likely nor unlikely Is Selected

Q17 What makes you unlikely to want to train as a prescriber?Select as many options as are appropriate to you.

- ❑ I do not believe that physiotherapists should prescribe medicines (1)
- ❑ I do not think that I have the knowledge required to train as a prescriber (2)
- ❑ I do not wish to complete additional training (3)
- ❑ I am not prepared to take on the additional responsibility associated with prescribing medicines (4)
- ❑ In my current role, being able to prescribe would not change the care provided (5)
- ❑ A prescriber is readily available to the clients that I provide care for (6)
- ❑ I work in a non-clinical role (7)
- ❑ Other (please specify) (8) _____

Q18 Do you have any additional thoughts about how physiotherapist prescribing may impact the care that the profession is able to provide? For example a positive or negative impact on a specific group e.g. minority groups, immigrants, students, travellers.....

Q19 Is there any additional information you would like to share at this time?

Standards for Reporting Qualitative Research (SRQR)*

http://www.equator-network.org/reporting-guidelines/srqr/

	Page.
Title and abstract	
Title - Concise description of the nature and topic of the study Identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended	1
Abstract - Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results, and conclusions	2
Introduction	
Problem formulation - Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement	3
Purpose or research question - Purpose of the study and specific objectives or questions	3
Methods	
Qualitative approach and research paradigm - Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., postpositivist, constructivist/ interpretivist) is also recommended; rationale	4

Researcher characteristics and reflexivity - Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, and/or transferability	1
Context - Setting/site and salient contextual factors; rationale	4
Sampling strategy - How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale	4
Ethical issues pertaining to human subjects - Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	4
Data collection methods - Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale	4
Data collection instruments and technologies - Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study	4-5
Units of study - Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	4
Data processing - Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/de-identification of excerpts	5
Data analysis - Process by which inferences, themes, etc., were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale	5
Techniques to enhance trustworthiness - Techniques to enhance trustworthiness and credibility of data analysis (e.g. member checking, audit trail, triangulation); rationale	5

Results/findings

Synthesis and interpretation - Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	7-19
Links to empirical data - Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings	14-15, 18-19

Discussion

Integration with prior work, implications, transferability, and contribution(s) to the field - Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field	20-21
Limitations - Trustworthiness and limitations of findings	21-22

Other

Conflicts of interest - Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed	23
Funding - Sources of funding and other support; role of funders in data collection, interpretation, and reporting	22

Reference:
O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. **Standards for reporting qualitative research: a synthesis of recommendations.** *Academic Medicine*, Vol. 89, No. 9 / Sept 2014
DOI: 10.1097/ACM.0000000000000388