

# ‘The wild west of medicine’: A qualitative investigation of the factors influencing Australian health-care practitioners’ delivery of medicinal cannabis

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## Abstract

**Introduction:** Strong patient interest in the use of medicinal cannabis to treat various clinical indications has sparked global legislative changes. Practitioners are vital in implementing regulatory changes and facilitating patient access to medicinal cannabis, however, little is currently known about the factors influencing practitioners’ uptake. Recent rapid increases in practitioner applications to prescribe medicinal cannabis in Australia provides a unique backdrop to examine the current factors influencing prescribing behaviours. This qualitative study examined Australian practitioners’ perspectives on prescribing medicinal cannabis to provide a comprehensive exploration of the potential factors influencing uptake in clinical practice.

**Methods:** Seventeen semi-structured interviews were conducted with Australian health-care practitioners. Transcripts were analysed using the Framework approach to thematic analysis and cross-mapped to appropriate domains of the Theoretical Domains Framework.

**Results:** We identified four themes related to the barriers and facilitators to prescribing medicinal cannabis: (i) clinical capabilities needed to prescribe; (ii) prescribing an unapproved therapeutic good; (iii) negative attitudes towards prescribers in the medical community; and (iv) divergent beliefs about clinical utility.

**Discussion and Conclusions:** Practitioners face multiple pervasive barriers to prescribing medicinal cannabis. Beliefs about clinical utility appear to be highly influential in shaping prescribing behaviours. Moreover, our findings suggest that a medicinal cannabis ‘specialisation’ has emerged within the Australian medical community. Findings demonstrate that a range of complex and multifaceted factors influence practitioners’ medicinal cannabis prescribing behaviours. We highlight several considerations for policy and practice to support safe and appropriate patient access to medicinal cannabis in this emerging area of clinical practice.

Adrian Carter and Michael Savic contributed equally to senior authorship.

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**KEYWORDS**

barriers and facilitators, health-care practitioner perspective, medicinal cannabis, prescribing, qualitative interviews

**1 | INTRODUCTION**

Medicinal cannabis has garnered significant community interest as an emerging therapeutic modality in recent decades [1]. This interest has been attributed to the influence of patient advocacy groups, extensive media coverage about the benefits and safety of medicinal cannabis, and a burgeoning body of research examining treatment efficacy [2, 3]. However, the evidence base for medicinal cannabis remains controversial [4]. While emerging evidence suggests therapeutic effects for a range of conditions, findings are heterogeneous across studies [5]. Rigorous evaluation (e.g., randomised controlled trials) and comprehensive pharmacovigilance approaches are needed to better characterise efficacy and long-term safety [2, 6]. Nevertheless, real-world data sourced from patient registries, electronic medical records and social media suggests that patients prescribed medicinal cannabis report improvements in symptomatology across various indications, including pain, psychiatric and neurological conditions [7].

Strong patient demand for legal access to medicinal cannabis has sparked global legislative changes, allowing therapeutic use to circumvent the research and regulatory processes that are typically necessary before widespread integration into clinical practice [2, 8]. In 2016, the Australian Government legalised the prescription of medicinal cannabis. The majority of medicinal cannabis products are unapproved, necessitating that practitioners obtain approval to prescribe from the Therapeutic Goods Administration (TGA) via the Special Access Scheme or Authorised Prescriber Scheme [9]. Further details on these schemes have been described elsewhere [10]. Consistent with many jurisdictions worldwide, practitioners may be perceived as 'gatekeepers' to medicinal cannabis in Australia [11]. As such, understanding the factors influencing prescribing decisions is instrumental to ensuring patient access is safe, effective and appropriate [12].

Previous international and Australian research has explored practitioners' knowledge, beliefs and concerns regarding medicinal cannabis [12–20]. Findings have consistently identified that while practitioners receive frequent patient enquiries, the majority are uncomfortable or unwilling to prescribe medicinal cannabis. Barriers to prescribing include poor knowledge of clinical and pharmacological features, insufficient evidence to support use, and concerns that medicinal cannabis may lead to adverse effects and patient harm [13, 20]. Moreover, practitioners commonly report that prescribing medicinal

cannabis is highly burdensome in Australia and that products are prohibitively expensive for many patients [12, 14, 16, 17]. These pervasive barriers may have contributed to very low rates of medicinal cannabis prescription approvals in the first 3 years (2016–2018) following its legalisation in Australia [21], with a 2020 Senate Inquiry concluding that practitioner unwillingness to prescribe was a significant barrier to patient access [22]. Similar mismatches between patient demand and practitioner willingness to prescribe have been observed in other jurisdictions internationally [23].

Despite the observed hesitancy among practitioners, there has been an unprecedented surge in applications to prescribe in Australia since 2020 [21]. As of January 2024, there have been over 450,000 approved Special Access Scheme Category B applications [24]. Furthermore, there has been considerable practitioner interest in the Authorised Prescriber Scheme, with over 39,000 aggregate Authorised Prescriber approvals between 2016 and 2023 [25].

Given the rapidly changing landscape of this novel area of medicine, and to better understand what factors are driving the surge in Special Access Scheme and Authorised Prescriber applications since 2020, updated research is needed on the perspectives of experienced medicinal cannabis prescribers. Commentators have also called for a more comprehensive evaluation of the factors shaping medicinal cannabis prescribing behaviour, drawing on empirically established determinants of behaviour [13, 20].

Behaviour science theories offer insights into the multitude of individual, social and organisational factors influencing health-care providers' behaviour [26]. Only a few of these determinants have been examined in the context of medicinal cannabis prescribing, with most studies focusing primarily on the role of knowledge [20]. This is a significant gap in the literature, as there are complex socio-environmental factors surrounding medicinal cannabis prescribing, including lack of endorsement from professional colleges, passionate consumer beliefs about the effectiveness of medicinal cannabis for treating illness, and social stigma associated with the recreational use of cannabis [3, 27]. To address this gap, the present study used the Theoretical Domains Framework (TDF) (Table 1) to explore the cognitive, affective, social and environmental influences on medicinal cannabis prescribing behaviours [28]. The TDF is a validated framework designed to systematically

**TABLE 1** The Theoretical Domains Framework.

Domain	Domain definition
Beliefs about consequences	Acceptance of the truth, reality, or validity about outcomes of a behaviour in a given situation
Social/professional role and identity	A coherent set of behaviours and displayed personal qualities of an individual in a social or work setting
Optimism	The confidence that things will happen for the best or that desired goals will be attained
Beliefs about capabilities	Acceptance of the truth, reality or validity about an ability, talent or facility that a person can put to constructive use
Intentions	A conscious decision to perform a behaviour or a resolve to act in a certain way
Goals	Mental representations of outcomes or end states that an individual wants to achieve
Reinforcement	Increasing the probability of a response by arranging a dependent relationship, or contingency, between the response and a given stimulus
Emotion	A complex reaction pattern, involving experiential, behavioural and physiological elements, by which the individual attempts to deal with a personally significant matter or event
Knowledge	An awareness of the existence of something
Skills	An ability or proficiency acquired through practice
Memory, attention and decision processes	The ability to retain information, focus selectively on aspects of the environment and choose between two or more alternatives
Behavioural regulation	Anything aimed at managing or changing objectively observed or measured actions
Environmental context and resources	Any circumstance of a person's situation or environment that discourages or encourages the development of skills and abilities, independence, social competence and adaptive behaviour
Social influences	Those interpersonal processes that can cause individuals to change their thoughts, feelings or behaviours

Note: Adapted under a CC BY 4.0 licence from Cane et al [29].

examine barriers and facilitators to behaviour change among health-care professionals, synthesising 33 theories into 14 domains [29].

Patient demand for medicinal cannabis is growing in Australia, with significant investments in the medicinal cannabis market expected to drive further increases in the coming decade [30, 31]. With recent rapid increases in applications to prescribe, the Australian context provides a unique backdrop to examine current factors influencing practitioners' prescribing behaviours in this novel and contested area of medicine, in which patient demand has outpaced scientific evidence. This study used in-depth, semi-structured interviews with Australian practitioners, informed by the TDF, to examine practitioners' perspectives on prescribing medicinal cannabis. In doing this, we provide a comprehensive exploration of the potential factors influencing the uptake of medicinal cannabis in clinical practice.

## 2 | METHOD

We conducted semi-structured interviews with 17 Australian practitioners to identify factors that influence practitioners' delivery of medicinal cannabis. Participants were recruited Australia-wide using a purposive sampling approach to select practitioners who could best illuminate the research questions [32], including participants from various demographics (e.g., gender, age, geographic location), clinical practice areas and experience with prescribing medicinal cannabis. Eligible practitioners were currently registered with the Australian Health Practitioner Regulation Agency and able to prescribe medicinal cannabis in their respective state or territory.

Potential participants were identified and recruited via public social media profiles and advertisements in the newsletters of relevant professional departments, associations and societies, and snowball sampling [33]. Sample size was evaluated based on the information power needed to effectively answer the research questions [34]. The final sample of 17 participants (Table 2) was deemed sufficient for analysis due to the study's narrow aim, high sample specificity, purposive sampling approach and use of an established theoretical framework.

Interviews followed a semi-structured schedule informed by the TDF [29]. Initial broad, open-ended questions (e.g., 'what influences your decisions to prescribe medicinal cannabis for a patient?') were asked to explore the most salient barriers and facilitators to prescribing medicinal cannabis. Each domain was then explored using an open-ended question (e.g., 'how confident are you in prescribing medicinal cannabis?') followed by prompts to encourage deeper exploration (e.g., 'what makes you feel confident/unconfident?'). All domains were covered where practicable but interview

**TABLE 2** Sample characteristics.

Characteristics	<i>n</i> (total = 17)	% of sample
Gender		
Male	13	76
Female	4	24
Age, years		
20–34	3	18
35–44	3	18
45–54	4	23
55+	7	41
Profession		
Cannabis specialist <sup>a</sup>	4	23
General practitioner	4	23
Junior medical officer	1	6
Medical specialist <sup>b</sup>	3	18
Nurse practitioner	2	12
Psychiatrist	3	18
Health-care sector		
Public	3	17
Private	12	71
Both	2	12
Location		
Victoria	8	47
Western Australia	3	18
Queensland	4	23
New South Wales	2	12
Remoteness		
Major city	11	65
Inner regional	2	12
Outer regional	4	23
Reported medicinal cannabis prescriptions (previous 12-months)		
0	5	29
<10	1	6
10–100	1	6
100–500	4	24
500+	6	35

<sup>a</sup>Although not a formally recognised medical speciality, cannabis specialist is anecdotally defined as a practitioner who works in a private practice dedicated to medicinal cannabis treatments (e.g., a cannabis clinic).

<sup>b</sup>Medical specialist areas represented in this sample include gynaecology, neurology and sleep medicine.

progression was guided by participants' responses to harness the natural flow of the conversation [28].

All interviews were conducted solely by Olivia Dobson, a female psychology student researcher, via

telephone or videoconferencing software (Zoom) between July and September 2022. Interviews were audio recorded for verbatim transcription, and participants were informed of their right to view transcripts for corrections. Duration of interviews averaged 37 min (range 19–85). The Consolidated Criteria for Reporting Qualitative Research checklist was employed to support transparent reporting of findings [35].

## 2.1 | Data analysis

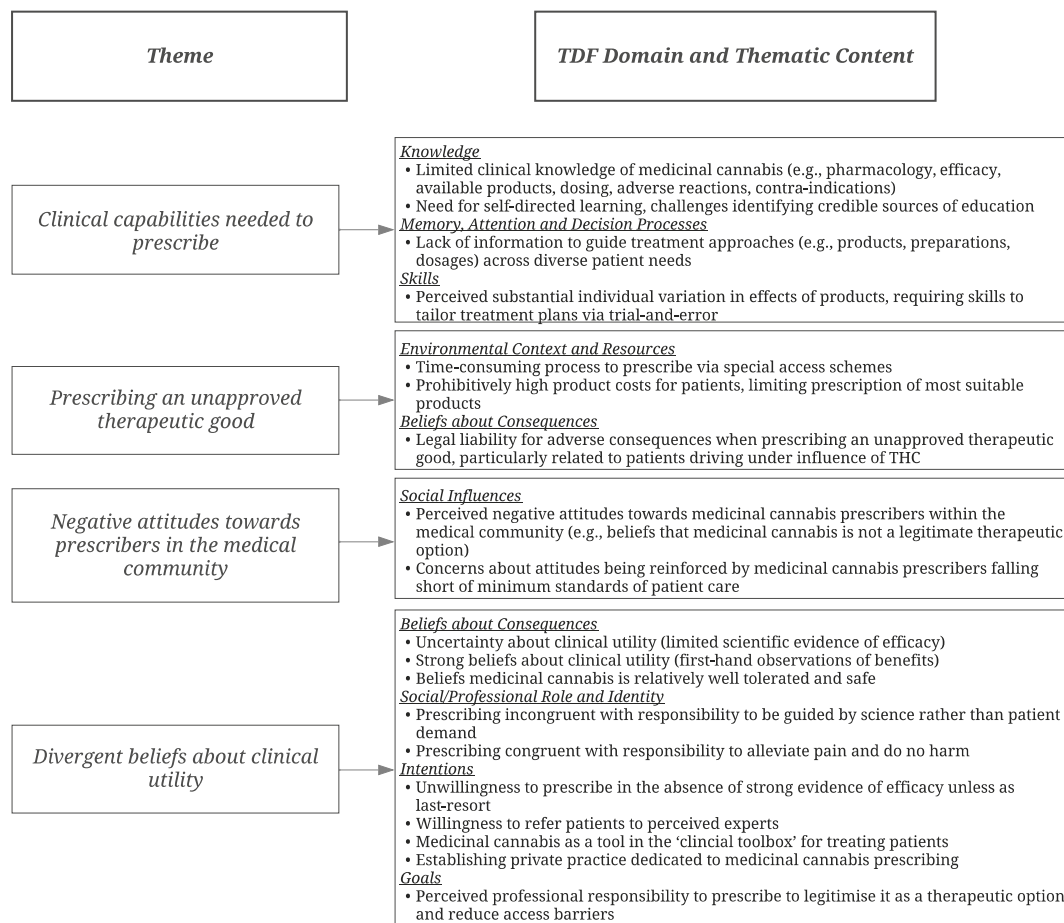
Transcripts were analysed using the Framework approach to thematic analysis [36], as this approach enables themes to be generated both inductively from what emerges from the data and deductively based on existing theory, literature and frameworks. Analysis included six steps: (i) familiarisation through reading and re-reading interview transcripts; (ii) coding of several transcripts to develop an initial thematic framework; (iii) indexing and sorting data through the application of the thematic framework to all subsequent transcripts, allowing for the continual development of the framework as more themes were constructed from the data; (iv) reviewing data extracts to ensure accuracy of indexing and sorting and completeness of the framework; (v) summarising and displaying data into a framework matrix by participant and theme; and (vi) a process of abstraction and interpretation in which the data is interpreted considering what they intimate about the factors influencing medicinal cannabis prescribing decisions.

All coding was completed by OD. To enhance the confirmability of findings and bring different perspectives to the data, we employed investigator triangulation [37]. An initial coding meeting with OD, MB, AC and MS was convened to establish the initial thematic framework, and all further analysis decisions were discussed in weekly meetings. A high level of agreement on coding decisions and thematic content was reached among all authors.

Following this, each theme's content was cross-mapped to the appropriate TDF domains. This approach aligns with past TDF research and enables themes to be constructed inductively from the data and then compared to the deductive, pre-established TDF domains to address the research questions [38].

## 3 | RESULTS

We identified four themes that explore factors influencing medicinal cannabis prescribing behaviours: (i) clinical capabilities required for prescribing; (ii) prescribing



**FIGURE 1** Identified themes and corresponding theoretical domains framework domains.

unapproved therapeutic goods; (iii) negative attitudes towards prescribers in the medical community; and (iv) divergent beliefs about clinical utility. The content of these themes was cross-mapped to nine distinct TDF domains, presented in Figure 1. Quotes have been included for illustrative purposes and are anonymously attributed to participants in the following format: (participant number, profession, self-reported number of medicinal cannabis prescriptions in the previous 12 months).

### 3.1 | Clinical capabilities needed to prescribe

Participants unanimously agreed that developing the necessary clinical capabilities was a significant barrier to prescribing, citing a widespread lack of knowledge of medicinal cannabis in the medical community and limited resources to guide effective prescribing.

Participants described that, in order to prescribe, practitioners must possess basic clinical knowledge of medicinal cannabis, including pharmacology, evidence, available products, dosing, adverse reactions and contra-

indications. They noted that many peers in their practice areas had low or no baseline knowledge of medicinal cannabis. Participants attributed this to medicinal cannabis being '*outside of the mainstream of medicine*' (P16, psychiatrist, 30–40 prescriptions), explaining that practitioners typically did not gain knowledge through traditional avenues such as tertiary education, accredited professional development courses or tacit knowledge gained from observing supervisors or colleagues:

'We don't see [medicinal cannabis] being used in hospitals when we're training ... You develop that familiarity and comfort in prescribing through seeing other people do it. We don't have that with cannabis'.

(P5, general practitioner (GP),  
0 prescriptions)

A recently graduated junior medical officer observed that the practitioners under whom they trained demonstrated a limited understanding of medicinal cannabis or how to prescribe it, recounting an incident where their team had refrained from prescribing:

'We had a chat within our team in terms of ... maybe we should try medicinal cannabis on this patient ... But none of us had literally any idea how to prescribe it, so we just didn't follow up on it'.

(P10, junior medical officer, 0 prescriptions)

All participants who frequently prescribed (i.e., 10–1000+ prescriptions) stated they had acquired their knowledge of medicinal cannabis through self-directed learning outside of work hours. They noted that while there were copious resources for medicinal cannabis education and training available online, identifying which sources were unbiased and credible was challenging. Furthermore, these participants perceived the information provided by peak-industry bodies and regulatory agencies to be insufficient to inform prescribing decisions for conditions commonly inquired about by patients, such as depression and anxiety:

'The TGA provided information booklets to prescribers and it just covers a very limited range of uses of medicinal cannabis ... it almost puts you off wanting to prescribe cannabis for the other, I guess non-approved indications'.

(P5, GP, 0 prescriptions)

All participants reported concern about the lack of guidelines for identifying the most suitable treatment approach for individual patients. Some participants, who had no or limited prescribing experience, attributed this to the complexity of the cannabis plant and the paucity of data on which products, preparations, and dosages were most effective across indications:

'I literally just see it as another medication but just one that has less certainty about how you can use it to the best degree for individuals and that's the harder thing ... there just isn't the research evidence there of what dose I should be going for and then I'm even less confident about the ratio of CBD [cannabidiol] to THC [tetrahydrocannabinol] and then even less confident about which brand to go for, because there's really not a model of it'.

(P16, psychiatrist, 30–40 prescriptions)

In contrast, participants with more extensive prescribing experience attributed the complexity of prescribing to significant individual variations in the effects of medicinal cannabis. For these participants, this variability was

viewed as prohibiting the adoption of a 'one size fits all' approach to prescribing, requiring tailored treatment approaches for individual patients through trial-and-error testing of products, dosages and dosing schedules.

### 3.2 | Prescribing an unapproved therapeutic good

Participants consistently identified three barriers to prescribing medicinal cannabis related to its status as an unapproved therapeutic good: the time-intensive prescribing process, high product costs and the legal liability of prescribers.

Medicinal cannabis prescribing was seen as highly time-consuming due to the need to either apply for approval for individual patients through the Special Access Scheme or become an Authorised Prescriber:

'I never prescribe it ... all the forms and bureaucracy, it's too much of a hassle'.

(P15, psychiatrist, 0 prescriptions)

One GP described establishing a separate private practice dedicated to prescribing medicinal cannabis, as it was not feasible to prescribe for their patients in their primary workplace due to short consultation times and limited administrative capacity to handle application and reporting processes.

All participants highlighted the prohibitive cost of medicinal cannabis products in Australia as a barrier to prescribing, describing that patients were required to pay hundreds of dollars per month for products. This made it difficult to recommend medicinal cannabis when other pharmaceutical options were comparatively affordable (e.g., subsidised under the Pharmaceutical Benefits Scheme), with several participants noting the product costs prohibited them from recommending it to patients from lower socio-economic backgrounds:

'I haven't even bothered to try and prescribe in my current practice because I know how much the products will be costing patients a month and the vast, vast majority of my patients would not be able to afford that'.

(P5, GP, 0 prescriptions)

Finally, numerous participants from diverse professional backgrounds and experiences prescribing medicinal cannabis expressed concerns about potential legal liability for adverse consequences as a result of prescribing medicinal cannabis to patients. Some participants cited the potential lack of support from medical insurers

due to the novelty of the drug and stigma surrounding medicinal cannabis. The most common concern across the sample regarding liability was patients driving under the influence of THC and claiming they were not being properly informed of the risks.

### 3.3 | Negative attitudes towards prescribers in the medical community

While all participants identified that there was an overall positive and accepting shift in attitudes towards medicinal cannabis in the medical community, the majority of participants noted that a degree of stigma against medicinal cannabis was still present and acted as a barrier to prescribing. Participants with extensive prescribing experience (i.e., 100+ prescriptions) observed that many in the medical community did not consider medicinal cannabis as a legitimate therapeutic option and viewed prescribers as engaging in pseudo-recreational or unsound medical practices:

'I'm a bit quiet about it ... People look at me like I've got about three or four heads, and go, "you don't prescribe that, do you?" Oh, really. Well, there's no scientific evidence for that'.

(P9, medical specialist, 1000+ prescriptions)

These practitioners reported encountering these negative attitudes predominantly during interactions with other health-care providers responsible for the care of their patients. Notably, two participants, including one GP and one cannabis specialist, recalled receiving verbal abuse from other treating clinicians for prescribing medicinal cannabis to a patient:

'I got a call from a [practitioner] who basically berated me for using CBD in one of the patients that he was reviewing ... yelling and screaming at me, saying that I had no business telling a patient that they were okay to work the next day if they were using cannabis at night to help them sleep ... it was an extremely eye-opening conversation for me, because I go from extremely confident ... to feeling knocked off my feet'.

(P7, GP, 1000+ prescriptions)

Multiple participants who actively prescribe medicinal cannabis raised concerns that negative attitudes were being reinforced by the actions of some medicinal cannabis prescribers who were failing to prescribe with

necessary caution and falling short of the minimum standards of patient care. Participants described concerns about large medicinal cannabis clinics prescribing to patients without taking an adequate medical history to establish whether medicinal cannabis would be an appropriate treatment, charging exorbitant prices for consultations, and having financial ties with medicinal cannabis dispensaries:

'I think the industry has a serious conflict of interest problem with clinics being owned by suppliers, which is rampant, and zero transparency about that ... Similarly, there are numerous dodgy deals in relation to pharmacies, so patients being forced to use a particular pharmacy ... There's all sorts of weird stuff going on because it's the wild west of medicine at the moment in some regards'.

(P1, cannabis specialist, 1000+ prescriptions)

Participants contrasted the approach of such prescribers to the high standards of care they upheld in their own practice. However, they were worried about a lack of differentiation between 'good' and 'bad' medicinal cannabis prescribers by the broader medical community.

### 3.4 | Divergent beliefs about clinical utility

Participants expressed divergent beliefs about the clinical utility of medicinal cannabis for their patients, ranging from uncertainty to strong conviction. These beliefs appeared to be highly influential in shaping prescribing decisions.

A minority of participants in this study expressed uncertainty about the clinical utility of medicinal cannabis for their patient populations, citing limited evidence for only a small number of clinical indications (e.g., intractable childhood epilepsy, chronic pain, nausea and vomiting). The five participants who expressed these beliefs were males working in major metropolitan cities, primarily from specialist areas of medicine, and over 45 years of age, except for one junior medical officer. These participants did not dismiss the possibility that medicinal cannabis could have clinical utility, and some noted that they had observed benefits of medicinal cannabis in their practice for patients who self-medicated or sourced prescriptions from other practitioners (e.g., for sleep disorders, anxiety or adult epilepsy). However, they emphasised the need for scientific evidence to confirm these benefits, citing potential biases that could influence patient-reported benefits:

‘My impression, this is clearly just from all the collective anecdotes and a few observations, is that it probably does have an effect ... we’re getting some feedback that patients do feel it’s a bit easier to get off to sleep ... but there are a lot of other things that will feed into that. There’s all kinds of selection biases that come into that and placebo effects potentially. So it’s a fairly guarded judgement at this stage’.

(P17, medical specialist, 0 prescriptions)

All participants who expressed uncertainty about the clinical utility of medicinal cannabis indicated that, in the absence of strong evidence of efficacy, they would not prescribe or would only recommend medicinal cannabis as a last-resort treatment option. In line with this, these participants had no or limited (<10) experience prescribing medicinal cannabis. Participants perceived this attitude to be congruent with their professional identity and values as practitioners, emphasising that science rather than patient demand or emotions should guide clinical decision-making:

‘Some people think if you take medicinal cannabis it’s going to fix the problem forever. Why if such a miraculous drug is available, why aren’t you prescribing it? ... I think as a doctor, I’m not going to be driven by emotions; I’m driven by science. So, when they come to me, my job is to explain to them and do the right thing’.

(P11, medical specialist, 1–5 prescriptions)

Those hesitant about medicinal cannabis expressed low motivation to engage in education and training before evidence-based guidelines to inform prescribing decisions had been established, or to undergo the perceived burdensome processes of prescribing an unapproved therapeutic good. However, most participants were comfortable referring their patients to other prescribers with perceived expertise in medicinal cannabis:

‘I’m sure we’ll be more comfortable when it becomes clearer the exact way we should use it ... at this stage I don’t mind it being where I give a degree of advice, but it’s essentially handled by the specialists in the arena’.

(P15, psychiatrist, 0 prescriptions)

This willingness to refer patients may be related to the general belief expressed by these participants that medicinal cannabis was a relatively tolerable and safe

therapeutic option. This perspective aligned with the experiences of more frequent prescribers in this study, who described commonly receiving referrals from other practitioners who did not wish to prescribe.

In contrast, the majority of participants in this study believed strongly in the clinical utility of medicinal cannabis for their patient populations. The 12 participants who expressed these views were diverse in age, professional background, workplace remoteness areas and gender, although most worked in the private sector. Rather than a curative treatment, they viewed medicinal cannabis as providing symptomatic relief and improving quality of life by enabling patients to engage in occupational, social and recreational activities. In this way, medicinal cannabis was considered extremely valuable in helping patients with chronic, long-term conditions manage and live with their illnesses. Additionally, participants perceived medicinal cannabis to be a safer alternative to conventional medicines, citing a perceived lower potential for overdose and addiction and more tolerable side effects:

‘The real value was getting those first few patients off of their opiates, their Lyrica [pregabalin, an anticonvulsant, analgesic and anxiolytic medication], their benzodiazepines. I think that’s really invaluable for people; they get really excited to come off of those type of medications because they have lots of side effects, the dependency – the toxicity is high ... medicinal cannabis fills that role really well, with less dependency, less toxicity, less risk to be honest, and it’s successful’.

(P7, GP, 1000+ prescriptions)

Participants held differing opinions on whether the perceived benefits of medicinal cannabis were supported by empirical evidence. Most noted that there was limited ‘gold-standard’ evidence (i.e., randomised placebo-controlled trials and meta-analyses) for many of the conditions in which they had observed the benefits of medicinal cannabis. However, the participants who endorsed positive views on the clinical utility of medicinal cannabis described the persuasiveness of first-hand observations in the clinic:

‘If I’ve seen 500, or 1000, or 2000 cannabis patients, I know what works because I’m seeing it. If someone says to me, and I consistently hear the same story that this works, you can argue whether that’s written in a journal ... but I know what is being said’.

(P3, cannabis specialist, 1000+ prescriptions)



Having a positive view of the clinical utility of medicinal cannabis, and feeling that prescribing was congruent with their role, values and ethical responsibilities as a practitioner, influenced participants' prescribing behaviours:

'You do as best you can within the constraints of the system to assist people, and use of medicinal cannabis is consistent with that'.

(P6, GP, 300–400 prescriptions)

All participants who expressed these beliefs described medicinal cannabis as an important tool in their 'clinical toolbox' for treating patients, with many choosing to open private practices dedicated to the prescription of medicinal cannabis (i.e., 'cannabis clinics'). Despite the barriers to prescribing, their conviction about the benefits of medicinal cannabis motivated them to continue. Some described feeling a professional responsibility to prescribe:

'I am not going to deny my patients access to something that's very, very helpful for them and has less side effects ... I think we have a responsibility to be a little bit more forward ... I think if we continue prescribing as we are we can be that, you know, push that's needed to start regulating things'.

(P8, GP, 200–300 prescriptions)

These participants hoped that prescribing would not only allow their patients to access medicinal cannabis legally and with professional guidance, but also legitimise it as a therapeutic option and reduce access barriers for practitioners and patients.

## 4 | DISCUSSION

This study provided insight into the factors influencing practitioners' delivery of medicinal cannabis, in the context of a recent rapid increase in approvals to prescribe in Australia [21]. Application of the TDF facilitated the most comprehensive examination of the factors influencing prescribing decisions to date [20]. We identified nine distinct TDF domains that act as barriers and facilitators to prescribing, underscoring the interplay of multifaceted factors influencing practitioners' capability, opportunity and motivation to prescribe medicinal cannabis [29].

### 4.1 | Multiple barriers to prescribing medicinal cannabis

Significant barriers to prescribing medicinal cannabis remain in Australia, limiting practitioners' capability and

opportunity to prescribe. Consistent with previous international and Australian research [13], participants reported limited baseline knowledge of the clinical or pharmaceutical aspects of medicinal cannabis, attributing this to the lack of medicinal cannabis content in tertiary education, training or professional development opportunities. Practitioners reported challenges identifying reliable and unbiased sources of information, which may lead prescribers to rely on unverified and potentially misleading sources. Participants also noted challenges in determining the appropriate treatment approach for patients across clinical indications, given the lack of guidelines or data to inform decisions on formulations and dosages across the over 400 cannabis-based products available in Australia [39], which have diverse pharmacological and biological effects depending on composition [40].

In line with previous research [12, 16, 17], practitioners viewed applying for approval to prescribe medicinal cannabis under the Australian Special Access Scheme as highly burdensome and noted that product costs were prohibitively high for some patients. This raises important concerns regarding equitable patient access, as this may disproportionately impact patients in lower socioeconomic areas who may be unable to afford the medication [41].

Participants additionally raised concerns about the legal liability associated with prescribing medicinal cannabis, as practitioners assume medico-legal liability for any adverse events when prescribing unapproved products not evaluated for safety by the TGA [42]. Practitioners in New Zealand have previously identified the need for clear prescribing guidelines to mitigate this medico-legal liability [43]. Our analysis indicates that practitioners' apprehension is not limited to potential adverse events and concerns extend to potential legal consequences of patients driving with detectable levels of THC in their systems, an offence in the majority of states in Australia [44]. The application of presence-based cannabis drug driving offences to medicinal cannabis patients is widely cited as a key barrier to patients seeking treatment due to mobility reduction and potential for prosecution [22], however, our findings additionally suggest that current drug-driving policies may also act as a barrier to patient access by impeding practitioner willingness to prescribe.

Negative attitudes towards medicinal cannabis prescribers within the medical community was a novel barrier to prescribing identified in this study, demonstrating how social factors influence prescribing behaviours [45]. While some recent research has shown that practitioners from New Zealand are concerned about damaging their professional reputation by prescribing medicinal cannabis [43, 46], the present study is the first to document prescribing practitioners' experiences of judgement and disesteem within the profession.

These barriers illustrate inherent challenges of legalising a therapeutic before establishing robust evidence of efficacy and safety, emphasising the need for ongoing government investment in well-designed clinical and pharmacological studies [11]. In the interim, as new evidence emerges, rapid translation into educational resources is needed to support care decisions [47]. National and international government and regulatory agencies have produced guidance documents that disseminate evidence-based information about the use of medicinal cannabis for certain conditions [48]. However, as noted by participants in this study, these resources are limited by the dearth of specific data to guide decision-making, such as dosing or administration across the many different clinical indications and available products. In the context of limited high-quality research, prescribers may need to cautiously leverage other forms of knowledge, including data from real-world sources of evidence, such as practitioner-driven spontaneous reporting systems [2].

Another challenge for practitioners was navigating the large quantity of virtual and digital educational and professional development resources on medicinal cannabis. Consistent with previous research [49], many practitioners drew on online resources for self-education. As online information on medicinal cannabis may not always be evidence-based [50], there is a need for further research to understand practitioners' experiences navigating potential bias among medicinal cannabis reporting and information sources.

#### 4.2 | Professional identities are highly influential in shaping prescribing decisions

This study found that practitioners held divergent beliefs about the clinical utility of medicinal cannabis. While some participants expressed uncertainty, others strongly believed in its effectiveness.

These beliefs were closely linked to ideas of professional identity and beliefs about ethical practice. This aligns with a previous qualitative study from Israel [51], which highlighted that medicinal cannabis challenges two competing professional identities for practitioners: adherence to biomedical standards and established professional norms versus the desire to alleviate pain and suffering in patients. The conflict between these professional identities is also reflected in wider debates surrounding medicinal cannabis, including discussions on what constitutes 'valid' evidence and how policy and practice frameworks can be designed to ensure safe and equitable treatment access [3].

A minority of participants expressed uncertainty about the clinical utility of medicinal cannabis, citing a lack of

rigorous studies confirming the efficacy of medicinal cannabis for their patient populations. As such, these participants chose not to prescribe medicinal cannabis in their practice. This may indicate an epistemological position of mechanical objectivity, which underlies the principles of evidence-based medicine and emphasises the need for standardisation and quantification over human subjectivity [52]. As there is limited gold-standard evidence to support the use of medicinal cannabis, prescribing may be viewed as incompatible with the standards of evidence-based medicine [53]. While this represented the minority perspective within our study sample, previous studies have consistently found that the majority of practitioners desired more robust evidence of efficacy before prescribing [12, 13, 15, 16]. This discrepancy may be attributed to our study sample, with many participants having extensive experience prescribing (100+ prescriptions in the past 12-months).

Participants who held strong beliefs about the clinical utility of medicinal cannabis acknowledged a lack of gold-standard evidence, relying rather on experience-based knowledge. This is reflective of an experienced-based approach to prescription wherein practitioners test clinical utility and interpret the evidence base in light of these experiences [54]. From this perspective, clinical observations and patient-reported outcomes are valid forms of evidence; therefore, prescribing medicinal cannabis can be seen as fulfilling a clinician's obligation to provide patients with beneficial treatments and alleviate suffering [51]. These participants' beliefs about the clinical utility of medicinal cannabis and its compatibility with their professional identity appeared to be highly influential in their uptake of medicinal cannabis within their practice. Furthermore, they noted that these beliefs motivated them to take action to address the significant barriers to prescribing, such as through self-education or obtaining Authorised Prescriber status.

Positive views towards the clinical utility of medicinal cannabis have been previously documented among nurse leaders in the United States [55] and cannabis clinicians in New Zealand [56], and reflect patient reports on the benefits of medicinal cannabis across a wide range of health conditions [57]. This study captures this perspective among Australian practitioners, providing insight into the facilitators behind recent exponential increases in applications to prescribe medicinal cannabis, despite pervasive barriers such as cost of products and time [21].

#### 4.3 | The emergence of a medicinal cannabis 'specialisation'

Our findings indicate that prescribing practices are not uniform among Australian practitioners. The majority of

participants with strong beliefs about the clinical utility of medicinal cannabis had extensive recent experience prescribing, often in a private practice dedicated to medicinal cannabis. These participants identified themselves as possessing unique clinical skills related to medicinal cannabis and reported receiving frequent patient referrals from other practitioners who were unwilling to prescribe. Interestingly, even participants who expressed uncertainty about the clinical utility of medicinal cannabis were willing to refer patients to perceived experts in the field. This may be related to the perception expressed by all participants in this study that medicinal cannabis appeared to be a relatively safe and well-tolerated treatment option, which contrasts previous research indicating significant practitioner concerns about its adverse effects [13]. While tentative, these findings suggest the emergence of a new 'specialisation' within the Australian healthcare system, where patients seeking medicinal cannabis prescriptions are likely to contact or be referred to practitioners who solely provide medicinal cannabis therapies. Recent Australian survey evidence supports this, showing that over 60% of participants with a medicinal cannabis prescription ( $n = 601$ ) obtained it from a dedicated medicinal cannabis clinic [57].

Specialist medicinal cannabis clinics have become common internationally due to general practitioners' reluctance to prescribe [56, 58]. The trend is relatively atypical, as practitioners typically specialise in treating specific conditions (e.g., pain, addiction) or bodily systems, rather than in using a particular pharmaceutical. The role of medicinal cannabis specialists in the Australian healthcare system remains largely unexplored. Participants in this study emphasised that effectively prescribing medicinal cannabis required a specific and collaborative approach to tailor treatments to individual patient needs, aligning with the perspective of New Zealand cannabis clinicians who perceive themselves as uniquely positioned to provide personalised, comprehensive and effective treatment services [56]. Additionally, such specialists can provide a safe, non-judgmental space for patients to discuss medicinal cannabis, which is important considering the documented stigmatisation from practitioners of patients who request or take medicinal cannabis [59, 60]. Increased accessibility to medicinal cannabis products via prescription may also reduce the need for patients to seek cannabis for medicinal purposes via non-legal pathways with unknown composition and potential contaminants [61].

However, there are risks to an emerging 'specialisation' of medicinal cannabis prescribers. This includes the fragmentation of care for patients with potentially complex clinical conditions [11, 47] and costly consultation and monitoring fees not reimbursed through usual

channels such as the public health care system [3]. Additionally, there is the potential for dual roles to emerge when cannabis clinicians or the medical centre that employs them have commercial stakes in the products they prescribe [62]. Participants in this study reported that the medicinal cannabis industry in Australia was rampant with 'bad actors', including practitioners who held conflicts of interest due to financial interests in medicinal cannabis products or were perceived to not adhere to minimum standards for patient care. This included a perceived failure of some practitioners to take adequate patient histories to ensure medicinal cannabis is a suitable treatment option, or not providing appropriate monitoring and continuity of care. This was also viewed as potentially perpetuating stigma towards medicinal cannabis and negative attitudes towards those who prescribe it, which may entrench polarised professional identities and discourage prescribing among practitioners outside this niche.

At a policy level, our findings indicate that consideration should be given to how an emerging 'specialisation' of medicinal cannabis prescribers may influence patient healthcare outcomes, both in Australia and internationally. Implementing systems to ensure comprehensive monitoring of safety-related and therapeutic outcomes with medicinal cannabis prescriptions may be necessary, as well as ensuring standards of care are being upheld. Furthermore, it would be pertinent for further research to explore Australian patients' experiences being referred to or receiving care at specialist medicinal cannabis clinics.

#### 4.4 | Strengths and limitations

This study was strengthened by using qualitative research methods to facilitate an in-depth examination of practitioners' perspectives [63], and use of the TDF as a theoretical framework [28]. Several factors limit the generalisability of this exploratory study to the broader population of Australian practitioners. As an exploratory, qualitative study, findings may not represent the views of the broader practitioner population. While we sought sample diversity, the final sample contained an over-representation of experienced practitioners with positive views on medicinal cannabis, potentially due to their greater motivation to participate. However, this is also a strength of the study, as it provided new insights into the factors driving the recent surge in cannabis prescriptions in Australia. Additionally, further research is needed to explore the perspectives of other relevant professionals, such as oncologists and pain specialists.

## 5 | CONCLUSION

Our findings illuminate the multifaceted factors influencing practitioners' delivery of medicinal cannabis and provide insight into the recent trend of increased applications to prescribe in Australia [21]. This information can inform future policy and practice in this emerging area of clinical practice. In addition, these findings provide broad insights into the factors that influence the successful implementation of innovative medicines into practice, including clinical capabilities, challenges associated with the regulatory status of the therapeutic, perception of the therapeutic within the medical community, and differing beliefs about clinical utility and how this links to ethical and professional responsibilities. These factors provide a framework of both the drivers and barriers that impact practitioners' uptake of innovative medicines, of particular relevance for other therapeutics where strong patient demand precedes robust evidence of safety and efficacy, such as the use of e-cigarettes as nicotine replacement therapy [64], and other drugs that have both illicit and medicinal uses, like psychedelics for the treatment of anxiety and addiction [65]. Attention to the factors identified in this study is urgently needed to improve safe, appropriate and effective patient access to innovative and potentially contested medicines, including medicinal cannabis.

### AUTHOR CONTRIBUTIONS

Each author certifies that their contribution to this work meets the standards of the International Committee of Medical Journal Editors.

### ACKNOWLEDGEMENTS

The authors acknowledge and thank the participants for their generosity in donating their time and sharing their experiences. This work was conducted on the traditional lands of the Australian Aboriginal Kulin Nations. The authors acknowledge the Australian Aboriginal and Torres Strait Islander peoples of this nation. The authors acknowledge the traditional custodians of the unceded lands on which our University is located and where we conduct our work. The authors pay our respects to Elders, past and present. Olivia Dobson did not receive any specific grant from funding agencies to complete this research. Michaela Barber is supported by an Australian Government Research and Training Program Scholarship. Myfanwy Graham is supported by an NHMRC Postgraduate Scholarship and Monash Graduate Excellence Scholarship. Adrian Carter is supported by an Australian Research Council Future Fellowship (ID: FT220100509).

### CONFLICT OF INTEREST STATEMENT

The authors have no interests to declare.

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**How to cite this article:** Dobson O, Barber M, Graham M, Carter A, Savic M. 'The wild west of medicine': A qualitative investigation of the factors influencing Australian health-care practitioners' delivery of medicinal cannabis. *Drug Alcohol Rev.* 2024;43(5):1280–93. <https://doi.org/10.1111/dar.13847>