

Patient priorities for research: A focus group study of UK medical cannabis patients

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ABSTRACT

Introduction: There has yet to be an evaluation of medical cannabis patient preferences with respect to future research. As such, prioritisation of research agendas has been largely driven by academia and industry. The primary aim of this study was to elicit priorities for research from medical cannabis patients in the United Kingdom (UK).

Methods: Patients undergoing active treatment for health conditions with medical cannabis in the UK were invited to take part in focus groups from December 2021 to February 2022. An inductive thematic analysis of responses was performed. Participants also completed a ranking exercise whereby they assigned ten counters (each equivalent to £1 million GBP) to competing research priorities.

Results: 30 medical cannabis patients participated across 3 focus groups. The following themes were identified as research priorities: adverse events, comparison between cannabis-based medicinal products, health conditions, pharmacology of cannabis, types of study, healthcare professionals' attitudes, social environment, agriculture and manufacturing, and the cannabis plant. Participants assigned the highest proportion of research funding to 'assessment of effect on specific symptoms' (26 counters; 8.7%).

Conclusions: This study highlighted specific themes within which to focus future research on medical cannabis. Clinically, there was a directive towards ensuring that research is condition- or symptom-specific. Participants also emphasised themes on the social impact of medical cannabis, such as knowledge of medical cannabis among healthcare professionals, stigma, and effects on driving and in the workplace. These findings can guide both research funders and researchers into effectively conducting research which fits within a more patient-centric model.

1. Introduction

In November 2018, the United Kingdom (UK) legalised the utilisation of cannabis-based medicinal products (CBMPs), otherwise known internationally as medical cannabis, for prescription under the guidance of a specialist physician [1]. This change in legislation is commensurate with changes in other jurisdictions globally [2–5]. However, despite changes in legislation there remains a paucity of high-quality evidence to determine the efficacy and safety of medical cannabis. One reason why there is a scarcity of high-quality evidence is due to regulatory barriers which designated cannabis as a Schedule I drug, meaning it was believed to have no medicinal properties and therefore primary research was strictly limited [6,7]. However, in

locations where scheduling changes have now taken place, there is more fertile ground for conducting research into medical cannabis to bridge the current evidence gap.

Despite these changes, there is still limited funding available for studying the medicinal properties of the plant [8]. It is therefore important to maximise the funding which is available. However, biomedical research is often wasteful, and it has been estimated that over 85% of the investments in research are lost due to inefficiencies [9]. A major contribution to waste is through choosing research questions which fail to match the priorities of patients or clinicians [9,10]. To overcome this issue, there is an increasing desire to involve patients and the public in research design and conduct [11]. Incorporating patient views can not only help increase the clinical relevance of a study, but

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also aid recruitment and retention [12]. There is also a moral directive to incorporate the views of patients into research that may affect their care, in particular those who often perceive themselves to be subject to stigma, such as medical cannabis patients [13–16].

There is limited published literature internationally on patients' priorities across biomedical research, however, there have been attempts to characterise these for a small number of chronic conditions [17–20]. Although, analysis of different stakeholder preferences reveals that they report similar priorities, investigation of grant proposals and published literature suggests that the priorities of patients are not consistently met within biomedical research [19,21]. With respect to medical cannabis-related research, there have not yet been any attempts to determine which topics are priorities for patients and consequently these are unknown. The aim of this study was to therefore ascertain which themes were important to medical cannabis patients in the UK to help inform a locoregional research agenda.

2. Methods

A qualitative focus group study was conducted remotely between December 2021 and February 2022. Participants were those undergoing active treatment for health conditions with medical cannabis in the UK. The focus groups were conducted according to local ethics and information governance practices. As a patient and public involvement study, institutional approval was judged to not be required by Imperial College London ethics review board. Participants provided written informed consent prior to enrolment. All research was conducted in line with the Declaration of Helsinki [22]. This study is reported according to GRIPP2 reporting standards [23].

2.1. Participant selection

Participants were recruited from Sapphire Medical Clinics, the first regulated medical cannabis clinic to treat patients across all four nations in the UK [24]. Recruitment was conducted via email invitation and focus groups were filled on a first-come, first-served basis. Participants were required to be current medical cannabis patients, having at least one prescription documented in their health records within the previous three months as verified by the research team. They were also required to be at least 18 years old. Participants were excluded if they did not have sufficient comprehension of conversational English to participate in oral discussions.

2.2. Setting

The focus groups were conducted consecutively on Microsoft Teams (Microsoft, Redmond, WA). Each focus group lasted for approximately 2 h and was convened on each occasion by the same author (S.E.) who had prior training and experience in running research focus groups. Participants were provided with a written information sheet in advance of the focus group. At the beginning of each session ground rules for the discussion were outlined. To improve the flow of discussion participants were asked to keep their cameras on throughout the session, if possible, to help individuals to respond to visual cues [25]. Moreover, participants were encouraged to utilise the hand-raising function to indicate they would like to speak to enable more efficient moderation [25]. Participants did not receive any incentives for participation in the focus groups.

2.3. Data collection

Basic demographic details were captured on each participant utilising an online survey tool (Microsoft Forms, Microsoft, Redmond, WA). The first portion of the focus group aimed to facilitate discussion about research priorities with an open question asking participants 'What are the most important research priorities to you?'. If not naturally

answered during the discussion the facilitator also asked participants, through a semi-structured approach, to consider the biochemistry of the plant, medical applications, research design, pharmacology, and socio-economic impact of medical cannabis.

In addition, after a 15-min break, participants were asked to complete a financial allocation task based upon that previously developed by Tong et al. [26]. Participants were provided with a list of potential research priorities against which they would decide how to divide their resources (Supplementary Table 1). They were each allocated ten counters, each equivalent to £1 million GBP. They were asked to allocate each of these counters to areas they believed were research priorities. Participants were allowed to allocate more than one counter to each priority; however, they were not allowed to divide their counters into smaller denominations. This was to help replicate the challenge of multiple competing demands for research funding to elicit which themes were most important to them. In addition to the pre-selected list of potential priorities participants were told this list was not exhaustive and were encouraged to add topics if necessary. Participants were then asked to share their decisions with the group and the reasoning for these decisions. After all participants had shared their responses and reasoning, participants were allowed to change the distribution of their finances for final recording.

2.4. Analysis

Audio and video recordings were made with the provision of informed consent. Each focus group was transcribed utilising the integrated transcription function of Microsoft Teams (Microsoft, Redmond, WA). These transcriptions were subsequently cross matched to the recordings and edited verbatim by a single author (S.E.) to ensure accuracy of transcription. The transcriptions were de-identified, with each participant receiving an identification number prior to thematic analysis.

These transcriptions were analysed through an inductive thematic approach. Each transcript was read and coded independently by two authors (S.E. and F.O.) according to themes derived from participant responses. These were compared and discussed with a third senior author (M.H.S.) to develop a final coding framework in which to code the responses in an organisational matrix. As inductive thematic saturation is dependent upon analysis [27], each focus group discussion was only conducted after integration of the prior focus group into the analysis. Saturation of themes was determined via a consensus approach between all study authors. Analysis was performed in Microsoft Excel (Microsoft, Redmond, WA).

3. Results

A total of three focus groups ($n = 11$; $n = 8$; $n = 11$) were conducted including 30 participants, after which it was concluded that thematic saturation had been reached. The mean length of each focus group was 122.7 ± 11.0 min. The mean age was 44.7 ± 10.5 years. There were 12 (40.0%) female and 18 (60.0%) male participants. Most participants ($n = 24$; 80.0%) were White British, whilst other participant ethnicities were Mixed or Multiple ethnic groups - White and Black African ($n = 2$; 6.7%), Black (including Black British) - Any other Black, African or Caribbean background ($n = 2$; 6.7%) and White Other ($n = 2$; 6.7%).

A total of nine themes and 39 sub-themes were identified which were attributed to three domains: Clinical, Barriers, and Development (Fig. 1). Table 1 details the definitions of each theme and subtopics covered within these.

3.1. Clinical

Table 2 outlines illustrative quotations provided by the focus groups with respect to each identified theme.

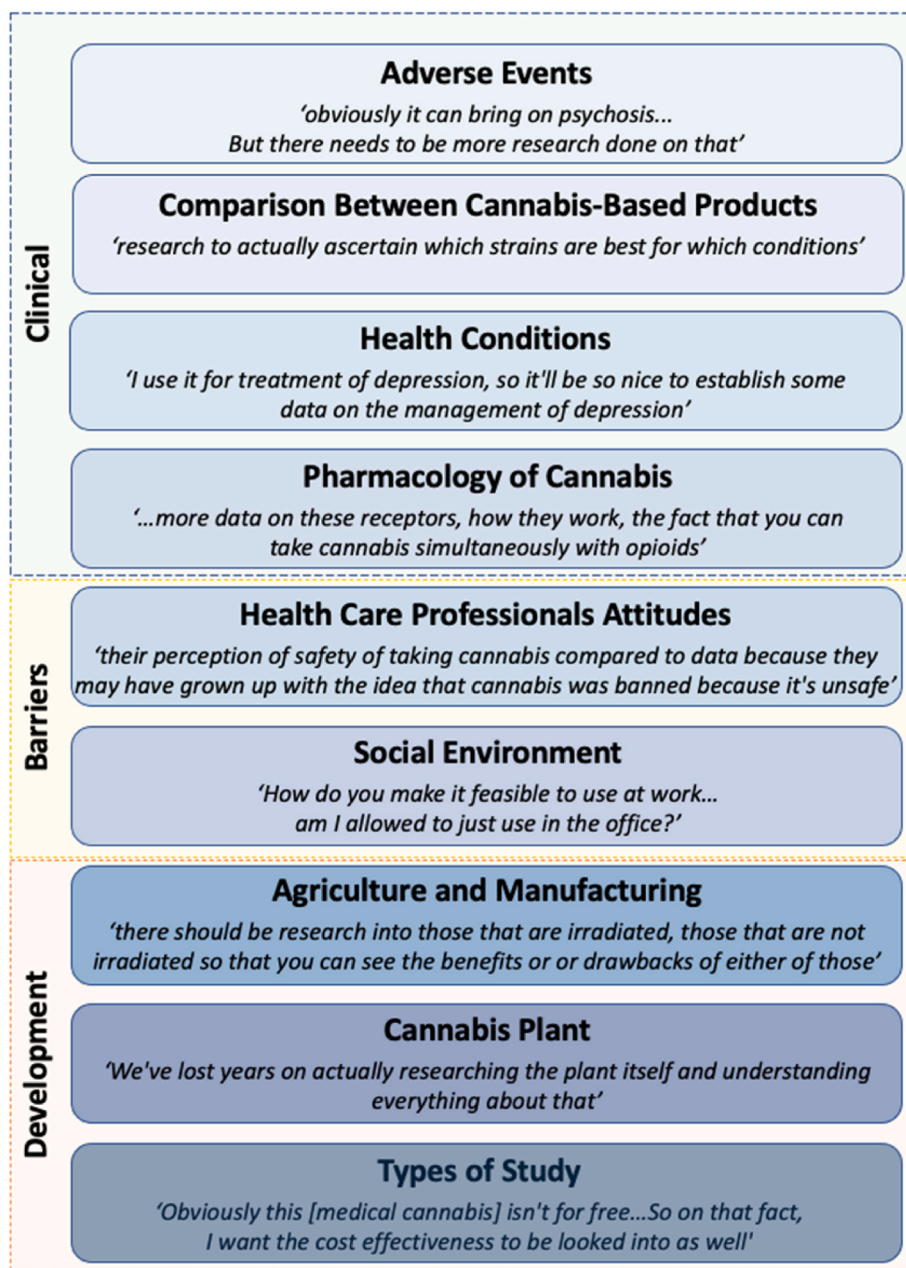


Fig. 1. Domains and themes of research priorities for medical cannabis patients.

3.1.1. Adverse events

There was an appreciation that the side effects of medical cannabis still require further determination. In particular, participants identified that more work is necessary to understand the effects of long-term administration, in addition to the effects on the developing brain. Finally, the groups believed more research was required to elucidate if there is a link between cannabis consumption and psychosis, and how strong any association is.

3.1.2. Comparison between cannabis-based products

Moving beyond differences at a pharmacological level, there was a perception that different chemovars or strains of cannabis flower may provide distinctive effects. However, participants also acknowledged that there is a paucity of evidence to provide guidance on this. Moreover, participants believed further research is required on different effects according to mode of administration. This also extended to over-the-counter cannabidiol (CBD) products, with participants suggesting

more evidence is needed on these to identify their effects.

3.1.3. Health conditions/symptoms

The effects of medical cannabis on a variety of conditions were continually identified as a research priority, with several sub-themes also brought out during the thematic analysis (Table 1). The participant responses reflected a range of conditions and/or symptoms where there is already existing clinical or pre-clinical evidence which requires further assessment, whilst others drew upon either personal or other anecdotal experience to reason specific conditions or symptoms for further assessment.

3.1.4. Pharmacology of cannabis

In addition, participants were also interested in the pharmacology of medical cannabis. In particular, they were interested in the interactions between compounds from medical cannabis and biological systems, such as the nervous system or the endocannabinoid system more

Table 1

Research priorities identified by patients who are prescribed medical cannabis [Note to copy editor to please position on same page/opposite section 3.1 to improve readability].

Domain	Theme	Definition	Sub-Theme (if relevant)
Clinical	Adverse Events	Improve understanding of adverse events and complications of treatment with medical cannabis and strategies to reduce complications.	<ul style="list-style-type: none"> • Long-term effects • Psychosis
	Comparison between Cannabis-Based Products	Understand the different impacts of cannabis-based products which contain differing proportions of active pharmaceutical ingredients and are manufactured to different standards.	<ul style="list-style-type: none"> • Medicinal • Wellness
	Health Conditions/Symptoms	Understand the health conditions and specific symptoms where medical cannabis may be effective.	<ul style="list-style-type: none"> • Acute pain • Attention deficit hyperactivity disorder • Autistic Spectrum Disorder • Autoimmune conditions • Cancer • Chronic fatigue syndrome • Chronic pain • Depression • Dermatology • Eating disorders • Epilepsy • Post-traumatic stress disorder • Rheumatology conditions • Sleep disorders • Thyroid conditions • Schizophrenia • Women's health
	Pharmacology of cannabis	Improve understanding of the interaction between products from the cannabis plant and humans.	<ul style="list-style-type: none"> • Effects on the cardiovascular system • Effects on the nervous system • Endocannabinoid system • Entourage effect • Individual active pharmaceutical ingredients (cannabinoids, terpenes, flavonoids etc.) • Interactions with other medications
Barriers	Healthcare Professionals' Attitudes	Understand the perceptions of medical cannabis by healthcare professionals.	<ul style="list-style-type: none"> • Knowledge • Stigma
	Social Environment	Understand how the integration of medical cannabis may affect other	<ul style="list-style-type: none"> • Driving • Medicating outside of the house • Work

Table 1 (continued)

Domain	Theme	Definition	Sub-Theme (if relevant)
Development	Agriculture and Manufacturing	aspects of daily living. Advance the development of manufacturing and agriculture, alongside identifying novel strategies to improve availability of medical cannabis.	<ul style="list-style-type: none"> • Home growing • Irradiation • Manufacturing • Reducing waste
	Cannabis Plant	Improve understanding about the cannabis plant itself, including its constitutive structures (leaves, root, flower) and the compounds they contain.	• N/A
	Types of Study	Evaluation of medical cannabis utilising different research techniques.	<ul style="list-style-type: none"> • Economic Analysis • Pre-clinical • Randomised controlled trials • Real-world evidence

specifically.

Moreover, other participants were interested in the other potential active pharmaceutical ingredients able to be extracted from the cannabis plant beyond CBD and (–)-trans-Δ [9]-tetrahydrocannabinol (THC) and how these produce clinical effects. Beyond this there was an interest on how these compounds may interact with one another and with other prescribed medications.

3.2. Barriers

3.2.1. Healthcare professionals' attitudes

Understanding healthcare professionals' attitudes towards medical cannabis was thought by participants to be an important aspect in addressing barriers to accessing appropriate care. Participants believed that there was likely to be a mismatch between the knowledge of healthcare professionals and the safety and efficacy of medical cannabis reported in the literature. Beyond understanding the knowledge gap of healthcare professionals, participants also believed it was more important to understand the stigma held by the medical community towards medical cannabis and patients for whom it is prescribed.

3.2.2. Social environment

Participants wanted to see further research on how the wider introduction of medical cannabis into a health system may have effects on different aspects beyond health, including ability to drive, travel, and work. Not only did patients believe that research to determine the effects of medical cannabis on the ability to conduct these tasks was necessary, but that there was a need to design and evaluate frameworks to overcome any potential challenges that may arise.

3.3. Development

3.3.1. Agriculture and manufacturing

Some patients believed that further understanding of how medical cannabis is grown and processed was a priority. Identifying techniques to produce medical cannabis faster, cheaper, and to a higher quality were particularly desired. In addition, there was an eagerness to assess the effects of irradiation on both the safety and chemical profile of

Table 2
Illustrative quotations of each identified theme.

Domain	Theme	Quotations
Clinical	Adverse Events	‘Obviously it can bring on psychosis in people who are prone to it. But you know, there needs to be actual research done on that. It’s not just, oh, cannabis makes you go crazy if you take it too much.’ (Focus group 2 – participant 8)
	Comparison between Cannabis-Based Products	‘There should be research into different strains, but also those that are irradiated, those that are not irradiated so that you can see the benefits or drawbacks of either of those.’ (Focus Group 3- participant 3)
	Health Conditions/Symptoms	‘The effects that it has on cancer cells is fascinating and really needs to be researched and brought into the more into the public eye as well.’ (Focus Group 1 – participant 5) ‘I still don’t feel like we really scratched the surface on how cannabis can help with insomnia. Like obviously some people say how cannabis can knock them out. And I know it helps a number of people, which it definitely does for me. But I don’t feel like it helps me fall asleep and stay asleep.’ (Focus Group 1 – participant 4)
	Pharmacology of cannabis	‘We can see maybe get studies on the actual brain chemistry or why these strains are actually doing what we’re doing and why maybe they affect other people completely different [sic]?’ (Focus Group 3 – participant 3) ‘It’s not all about THC and CBD. That’s all that we ever seem to hear about, and it’s so much more than that. That kinda [sic] needs looking at more because that’s the focus of finding out what really works and we don’t get any of that information unfortunately at the minute.’ (Focus Group 1 – participant 2) ‘I’ve reduced the amount of opiates and benzos [sic] I’ve been taking over the last few years that the effects of THC is probably just very minimal in comparison. I mean one of the things that I would be really interested in is looking into this.’ (Focus Group 1 – participant 1)
Barriers	Healthcare Professionals’ Attitudes	‘... their [general practitioners and hospital consultants] perception of the safety and risks of taking cannabis compared to what the data says because they may have grown up with the idea that cannabis was banned because it’s unsafe. And that’s not quite necessarily why it was banned. So there’s that their perception of safety against the what the evidence base says so far.’ (Focus Group 1 – participant 4)
	Social Environment	‘What are the effects of medical cannabis on driving and on their ability to perform certain jobs. And I think by looking at that, we can kill two birds with one stone. Here we can help and clear any stigma against cannabis’ (Focus Group 2 – participant 6)
Development	Agriculture and Manufacturing	‘There should be research into different strains, but also those that are irradiated, those that are not a

Table 2 (continued)

Domain	Theme	Quotations
	Cannabis Plant	radiated so that you can see the benefits or drawbacks of either of those.’ (Focus Group 3 – participant 10) ‘We’ve lost years on actually researching the plant itself and understanding everything about that’ (Focus Group 1 – participant 2)
	Types of Study	‘Randomised controlled trials, they’re sort of the gold standard there. What needs to happen? That’s the only thing that’s really going to be accepted by the MHRA [Medicines and Healthcare products Regulatory Agency] ... ’ (Focus Group 3 – participant 9) ‘Real-world based evidence shows a selection of patients who are using their plan or using the medication in such a way that it’s actually improving their lives, which then gains better data and better results, which we can submit to hopefully improve legislation and medication access.’ (Focus Group 2 – participant 7)

cannabis flower.

3.3.2. Cannabis plant

Participants believed there was still a need to further understanding of the cannabis plant itself as a component of improving research for medical cannabis. There was a perception that the knowledge of plant biology and compounds that exist not only in the flower, but other plant structures, would be useful for studying its medical properties. Participants thought that this was necessary due to years lost on studying the plant due to prohibition.

3.3.3. Types of study

Participants throughout emphasised the need for different types of study to progress the clinical translation of medical cannabis. In addition to the role of pre-clinical studies, participants broadly emphasised the importance of data from randomised controlled trials, in addition to real-world evidence. Some participants clearly thought that randomised controlled trials were more important due to being the gold-standard method of assessing the efficacy and safety of a medications. However, some people believed that collecting data on patients being prescribed at present would ensure that current medical cannabis patients are not excluded from ongoing research and would help build a picture of its use on a population basis outside of a trial setting. Furthermore, some participants believed the complexities of studying the breadth of preparations of medical cannabis were more amenable to real-world evidence approaches.

3.4. Ranking of priorities

Table 3 outlines the collective allocation of £300 million GBP worth of funding across all three focus groups according to research priorities in the simulated allocation exercise. Research that was related to medical conditions received the highest proportion of funding (59 counters; 19.7%). Within this group the conditions with the highest proportion of funding were chronic pain (12 counters; 4.0%), anxiety (10 counters; 3.3%) and post-traumatic stress disorder (10 counters; 3.3%). Participants assigned the next largest allocations to assessment of effect on specific symptoms (26 counters; 8.7%), understanding the effects on quality of life (20 counters, 6.7%), evaluating the knowledge of medical cannabis among healthcare professionals (20 counters, 6.7%), understanding the stigma of medical cannabis patients (20 counters, 6.7%), and assessment of the effects of medical cannabis on driving and/or job

Table 3
Allocation of counters according to research priorities by focus group participants.

Priorities	Total (n)	Proportion of funding (%)
Research about		
The Cannabis Plant	17	5.7
The Endocannabinoid system	16	5.3
Specific Cannabinoids	6	2.0
Specific Terpenes	5	1.7
Specific Flavonoids	3	1.0
Whole plant extract/flower	2	0.7
Over the counter CBD oils/edibles	5	1.7
Targeted research on strains	1	0.3
Growing techniques and production	2	0.7
Research about medical cannabis and specific conditions		
Chronic Pain	12	4.0
Fibromyalgia	4	1.3
Anxiety	10	3.3
Epilepsy	1	0.3
Post-traumatic stress disorder	10	3.3
Menopause	3	1.0
Sleep disorders and insomnia	2	0.7
Hypertension	1	0.3
Addiction Disorders	1	0.3
Autistic Spectrum Disorder	4	1.3
Schizophrenia	3	1.0
Myalgic Encephalomyelitis	2	0.7
Attention Deficit Hyperactivity Disorder	4	1.3
Migraine	1	0.3
Cancer	1	0.3
Research that uses the following methods		
Randomised controlled trials	16	5.3
Real-world evidence	15	5.0
Research that aims to:		
Understand how chemicals from the cannabis plant work in the body	8	2.7
Discover other chemicals from the cannabis plant	1	0.3
Understand the effect of medical cannabis on specific symptoms	26	8.7
Understand the effect of medical cannabis on quality of life	20	6.7
Understand the cost-effectiveness of medical cannabis as a treatment option	13	4.3
Understand the adverse effects of medical cannabis	4	1.3
Interactions with different medications	1	0.3
How to use the medication/dose control	1	0.3
Delivery methods	1	0.3
Research that aims to:		
Understand the barriers to accessing medical cannabis	16	5.3
Understand the knowledge of medical cannabis amongst healthcare professionals	20	6.7
Understand the stigma in society of medical cannabis patients	20	6.7
The effects of medical cannabis on driving and on ability to perform certain jobs	20	6.7
Understand the knowledge of medical cannabis amongst the criminal justice system	2	0.7
The understanding of medical cannabis by the press	1	0.3

CBD – cannabidiol. Each counter was assigned an equivalent monetary value of £1 million GBP. Each participant held a total of ten counters. Each participant assigned all their counters during this task. Participants could not divide their counters into smaller proportions but could allocate more than one counter to each priority.

performance (20 counters, 6.7%).

4. Discussion

This study has highlighted nine themes for prioritisation in medical cannabis research across three domains: clinical, barriers, and development. Clinically, there was a directive towards ensuring that research

is either condition- or symptom-specific. The conditions which were determined as being as highest priority according to division of simulated research funding were chronic pain, anxiety, and post-traumatic stress disorder. In addition, participants highlighted the importance of research on the social impact of medical cannabis, such as knowledge of medical cannabis among healthcare professionals, stigma, and effects on driving and in the workplace.

The most prominent priorities for medical cannabis patients were clinical effects on specific conditions, symptoms, or health-related quality of life. This is complementary to prior analysis in other domains which also identified a desire to focus on clinical research [17–20]. However, an analysis of cannabis research funding in the UK, United States, and Canada found that the highest proportion of funding was provided towards assessing the adverse effects of cannabis and potential for misuse [8]. Whilst the assessment of adverse events was identified as a research priority during thematic analysis, the analysis of adverse events received 1.3% in the simulated funding allocation, compared to 19.7% for condition-specific research, 8.7% according to specific symptoms, or even 6.7% towards assessment of health-related quality of life. Participants equally emphasised the importance of both randomised controlled trials and real-world evidence with respect to clinical research. They were considerate of the hierarchy of evidence and that randomised controlled trials will be necessary to enable licensing and increased access. However, real-world evidence was seen as a resource efficient way of assessing the impact of medical cannabis in patients at present considering the challenges of conducting randomised controlled trials for medical cannabis [28].

In addition, medical cannabis patients identified healthcare professional attitudes and the associated effects of its introduction on society as important research priorities. This is likely commensurate with data which suggests that medical cannabis patients, both in the UK and internationally, perceive themselves to be subject to stigma [14–16,29]. With respect to the effects on driving and attempting to validate roadside measures of intoxication, the Lambert Institute has initiated a body of work in attempt to answer this challenging question [30–32]. The Swiss government has outlined a research agenda to assess the societal impacts of non-medical cannabis consumption [33]. However, research on how introducing medical cannabis as a pharmaceutical for a range of conditions may impact other social domains is awaited. Whilst there may be some lessons which can be extrapolated from research on non-medical cannabis consumption to medical cannabis patients, the differences between motivations for consumption, quality of cannabis-based products, and dosages of THC and CBD mean that bespoke analysis of the societal impact of medical cannabis is also required.

In contrast to other therapeutic areas [17–20], participants identify aspects of agriculture and manufacturing of medical cannabis as being research priorities. This extends to a desire for further understanding of the cannabis plant itself, over-the-counter products, home-growing, and the effects of irradiation. These findings are likely reflective of the status of medical cannabis in the UK and may be less transferrable to other jurisdictions. Whilst the UK has a single-payer healthcare system there is limited access to medical cannabis therapy through the National Health Service [1]. Therefore, prioritisation of assessing the health effects of home-grown or over-the-counter cannabis-based products represent alternative healthcare models which may facilitate increased access to medical cannabis. With respect to assessment of irradiation, all medical cannabis in the UK must meet Good Manufacturing Practice guidance, including ensuring that all products meet safety standards on contaminants, such as yeast and aerobic microbes [1]. Subsequently most products prescribed for vaporisation are irradiated to meet this requirement. There is evidence to suggest this may reduce the concentration of some terpenes in medical cannabis flower, however the overall terpene profile and concentration of major cannabinoids are unaffected by irradiation [34]. Any assessment of the differences between irradiated and non-irradiated products should be conducted cautiously,

however, as there is evidence of opportunistic fungal infections in immunocompromised individuals associated with inhalation of non-irradiated products [35,36].

Whilst this is the first study which attempts to assess the research priorities of medical cannabis patients it is subject to inherent limitations. These findings are likely to only be transferrable to patients from the UK and may not necessarily reflect the priorities of patients from other countries. In addition, whilst this study assesses the priorities of active patients there is no assessment of the priorities of patients with similar health conditions who are not treated with medical cannabis who may have alternative research priorities with respect to medical cannabis or indeed patients who have previously received a prescription for medical cannabis. Moreover, this study did not collect the conditions for which they were prescribed, or the length of time a participant had been prescribed medical cannabis limiting comparison with any future studies. Finally, this study may be subject to the generalisable limitations of focus groups, such as an enhanced social desirability bias compared to anonymous qualitative studies. To limit this effect as best possible, we utilised a member of the authorship group who has received training in moderating focus groups.

In conclusion, this priority setting study highlighted specific themes for focusing future research on medical cannabis and is the first of its kind to do so. Clinically, there was a directive towards ensuring that research is either condition- or symptom-specific. This contrasts with the current funding patterns in the UK which award a higher proportion of funding towards studies that assess the associated harms of cannabis. Participants also emphasised themes related to the social impact of medical cannabis, such as knowledge of medical cannabis among healthcare professionals, stigma, and effects on driving and in the workplace. Moreover, there was a desire to further assess the manufacturing and development of medical cannabis. These findings can help guide both research funders and researchers alike into effectively implementing research which fits within a more patient-centric model.

Author statement

All authors have contributed to and approved the final manuscript.

Dr Simon Erridge: Conceptualization; Data curation; Formal analysis; Methodology; Project administration; Visualization; Writing - original draft; Writing - review & editing. Mr Fabian Olsson: Conceptualization; Data curation; Formal analysis; Methodology; Project administration; Writing - original draft; Writing - review & editing. Dr Mikael H Sodergren: Conceptualization; Data curation; Formal analysis; Methodology; Resources; Supervision; Validation; Writing - original draft; Writing - review & editing.

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Appendix A. Supplementary data

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