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ORIGINAL RESEARCH ARTICLE

Older Adults' Use of Cannabis and Attitudes Around Disclosing Medical Cannabis Use to Their Healthcare Providers in California: A Mixed Methods Study

Dania Abu Baker[1,2] · Paola N. Cruz Rivera[3] · Rekha Narasimhan[4] · Nhi Nguyen[4] · Lize Tibiriçá[4] · Wayne E. Kepner[1,2] · Pearse O'Malley[5] · Annie L. Nguyen[1,4] · Alison A. Moore[4,6]

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Abstract

Background The rapidly changing policy climate related to cannabis legalization has led to drastic changes in cannabis use in the United States (US). Medical cannabis use is increasing overall, but at a faster rate among older adults compared to other age groups.

Objective The aim was to investigate older adults' cannabis use behaviors and attitudes around disclosing medical cannabis use to their primary healthcare providers (HCPs).

Methods Nineteen older adults (ages 65+ years) with self-reported medical cannabis use were recruited from flyers posted in ambulatory clinics in San Diego, CA. Surveys and semi-structured interviews on cannabis use were completed. A multi-methods approach was used to analyze data.

Results Participants' mean age was 75.3 years; 52.6% identified as women, and 89.5% as White. Cannabis was used by all participants to treat pain and by 75% for insomnia, with 25–33% reductions in use of prescription medications to treat these symptoms. Approximately 89% reported their primary HCPs were aware of their cannabis use, and 84.2% felt very comfortable/comfortable talking to HCPs about cannabis. Common themes from interviews included participants (1) being motivated to disclose cannabis use to their HCPs to seek medical advice on dosing, side effects, and benefits of cannabis, (2) feeling comfortable disclosing cannabis use as legalization has eased the stigma around cannabis use, and (3) perceiving mostly neutral attitudes from HCPs on their cannabis use.

Conclusion The study emphasizes the pivotal role of HCPs as educators in addressing patient inquiries about cannabis, underlining the need for equipping healthcare professionals with evidence-based knowledge through education and training initiatives.

Annie L. Nguyen and Alison A. Moore have contributed equally to supervising the study and writing of this manuscript.

✉ Alison A. Moore
alm123@health.ucsd.edu

1 Herbert Wertheim School of Public Health and Human Longevity Science, University of California, La Jolla, CA, USA

2 School of Social Sciences, San Diego State University, San Diego, CA, USA

3 School of Medicine, University of Puerto Rico, San Juan, PR, USA

4 University of California San Diego School of Medicine, La Jolla, CA, USA

5 Tulane University School of Medicine, Louisiana, USA

6 Stein Institute for Research on Aging, University of California San Diego, La Jolla, CA, USA

Key Points

With the increased use of cannabis for medical purposes among older adults, healthcare providers need to be ready to provide evidence-based advice and answer the questions of their patients.

1 Introduction

In the United States (US), adults aged 65 and older are increasingly using cannabis [1]. This increase in cannabis use can be partially explained by state-by-state legalization efforts making cannabis products more readily available [2]. Another

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possible explanation for the increase is the shift in generational attitudes as Baby Boomers, who were born between 1946 and 1964 and make up a large portion of older adults today, have shown more liberal attitudes toward substance use than previous generations [2, 3]. From 2015 to 2018, the US saw a 75% increase in past-year cannabis use among adults 65 years and older [4]. With the legalization of cannabis in many states for medical and recreational purposes, there is growing interest in using cannabis to treat a variety of health conditions and symptoms among older adults [5]. Although there is a trend toward greater access to cannabis products and higher usage among older adults [4], little is known about the behaviors and attitudes around disclosing medical cannabis use to healthcare providers (HCPs) in this demographic.

Recent research has consistently highlighted that older adults are using cannabis for health-related concerns such as chronic pain, sleep disorders, anxiety, and depression [6–11]. For example, in a study among a sample of 568 older adults at a geriatric clinic, Yang et al. (2021) found that 78% of older adults reported using cannabis for medical purposes, with pain/arthritis being the most frequently stated reason for use [8]. Studies have also highlighted that older adults are using cannabis to substitute for medications including opioids and benzodiazepines [12]. There are a limited number of published cross-sectional quantitative and qualitative studies evaluating medical cannabis use in older adults [12]. Even fewer studies have evaluated older cannabis users in California, a state where medical use has been legalized since 1996 and recreational use since 2016 [8, 13]. Due to California's unique legal landscape surrounding cannabis, users' attitudes and behaviors around disclosing cannabis use to their HCPs may be different from other states that may not have legalized cannabis.

Given the recent, rapid changes to legalize cannabis use around the country, and limited clinical research regarding medical cannabis use among older adults, HCPs are left with an incomplete understanding of how their patients may be using cannabis [14, 15]. As such, there is a need to better understand the attitudes and behaviors around disclosing medical cannabis use to HCPs among older adults so that HCPs and their patients can have informed discussions regarding cannabis use and make better treatment decisions that respect patient interest and autonomy to use cannabis. Thus, this study seeks to address these gaps through a mixed-methods study to elucidate the motivations, behaviors, and purposes of disclosing medical cannabis use to HCPs among adults aged 65 years and older in San Diego, California, a state in which cannabis is legal for medical and adult recreational use. The results of this study will help to fill the gap in knowledge on the attitudes and behaviors of older adults around disclosing medical cannabis use, which will also be the foundation for developing interventions to support healthcare systems and HCPs to respond to cannabis use among older adults.

2 Methods

2.1 Study Design

We used a parallel convergent mixed-methods approach in which quantitative and qualitative data were collected concurrently, with integration at the completion of data collection. The rationale for this approach was to use both quantitative and qualitative data to develop a rich and nuanced understanding of older individuals' experiences with cannabis use that is not possible with either method alone. The data collected for the purpose of this study cannot be shared publicly in order to protect the confidentiality of the participants.

2.2 Recruitment and Study Procedures

Participants were recruited through the Geriatric Medicine Clinic at UC San Diego. Patients who saw study flyers in the clinic and were interested in the study contacted study staff via email or phone ($n = 43$). Study staff then screened the potential participants (34 responded, with nine non-responders) to ascertain if they met the study inclusion criteria. Inclusion criteria were (1) age 65 years or older; (2) able to read and speak English; (3) had used cannabis for medical purposes in the past 6 months; and (4) current resident of San Diego County. Eligible participants ($n = 32$, with two not having used cannabis in the past 6 months) were identified, but eight refused to participate and another five were not able to be reached for further study procedures. Nineteen participants were scheduled to meet with a research associate either in person or via videoconference to complete informed consent and data collection. In the same session, lasting approximately 60 min, a quantitative survey was administered followed by a semi-structured, qualitative interview. All data were collected between August 2022 and February 2023. Participants were provided a $30 gift card as a study incentive. The study was approved by the UC San Diego Health Institutional Review Board with application approval number Protocol #801087.

2.3 Measures and Data Collection

2.3.1 Quantitative Survey

The survey was developed based on questions asked in prior research studies, by reviewing the relevant literature and discussions with content experts. The intent of the survey was to capture descriptive data about participants' use of cannabis. It included questions about participants' demographic information (i.e., age, gender, race/ethnicity, relationship status, educational level, family income, living situation),

reasons for cannabis use (medical purposes, recreational purposes, both medical and recreational purposes), selected conditions and symptoms for which cannabis is used and perceived helpfulness, impact of cannabis use on medication use, and comfort level disclosing cannabis use to HCPs and others (see the supplementary quantitative survey in the electronic supplementary material).

2.3.2 Qualitative Interview Guide

An interview guide addressing topics linked to the questions addressed in the quantitative survey was developed. For example, if participants reported their level of comfort in discussing cannabis with their HCP was very high, the interviewer structured the interview question as follows: "I see you feel very comfortable speaking with your main healthcare provider about cannabis. Tell me more about that. What makes you feel that way?" Topics addressed included in the interview guide were as follows: discussions patients had with HCPs regarding cannabis use; their HCP's attitude toward cannabis; the participant's comfort level having such discussions; patients' motivations for using cannabis; how cannabis is used alongside other medications (see the supplementary qualitative interview guide in the electronic supplementary material).

2.3.3 Modifications to Study Materials

The initial interview guide and survey was initially pretested with an older adult volunteer and modified to improve phrasing, flow, and relevance. After completion of the first three study interviews, some questions were rearranged and wording further modified to improve overall flow. This responsive and iterative manner of modifying the interview guide is consistent with reflective approaches to qualitative inquiry [16].

2.3.4 Transcription of Qualitative Data

All interviews were audio recorded using an external recording device and transcribed using the NVivo transcription module [17], and transcripts were manually verified against the audio file by research associates. All personally identifying information was removed from the transcripts prior to analysis.

2.4 Data Analysis

Quantitative data were analyzed using RStudio. Descriptive analyses were obtained for means, standard deviations (SDs), and percentages.

Transcripts were coded consistent with thematic analyses [18] and managed with NVivo qualitative analysis software. The development of the initial, preliminary codebook was led by an experienced qualitative researcher (ALN) by reviewing three transcripts. The preliminary codebook was reviewed by the project leads (ALN, AAM) and interviewers to ensure that it correctly captured the concepts and content of the interviews. Using the preliminary codebook, three members of the research team independently coded the first three interviews and noted areas where new codes emerged or were refined. They then met and discussed coding, coming to a consensus on data interpretation and developing a uniform codebook. Subsequent transcripts were divided among four team members to double-code in pairs. Within pairs, each team member coded the transcripts independently using the codebook and then met to review the coding and resolve discordance through verbal agreements. This consensus strategy ensures 100% concordance between each pair of coders. Throughout this process, codes were arranged under emerging categories and themes as driven by the data in an iterative process. Major themes were summarized, and we employed the use of pseudonyms to protect participants' identities.

Integration of qualitative and quantitative data through the merging of data in joint displays was achieved after separate analysis. We used a convergent design in which collection of qualitative and quantitative data was done in parallel, followed by a separate analysis of the two forms of data. Finally, both qualitative and quantitative data were considered side by side in analyses and synthesized to determine the fit of data integration: confirmation (the results of qualitative and quantitative data confirm each other), expansion (the results of qualitative and quantitative data complement each other and expand insights of the phenomenon of interest), and discordance (the results of qualitative and qualitative data are conflicting) [19].

3 Results

3.1 Quantitative Results

Participants ($N = 19$) had a mean age of 75.3 years (SD 6.5), with 52.6% identifying as female, and 89.5% identifying as White (Table 1). Most participants were married or had a long-term partner (68.4%), and most lived in a household with other people (63.2%). There was variability in educational level: 47.4% had obtained a graduate or advanced degree, 21.2% had obtained a bachelor's degree, and 31.6% had completed some college or an associate degree. Most (73.7%) reported a family annual income of at least $75,000. The majority of patients in our sample reported cannabis use solely for medical purposes (57.9%), while a few reported both medical and recreational use of cannabis (36.8%).

3.1.1 Cannabis Use for Medical Conditions and Symptoms

Participants in our sample used cannabis to treat 18 different medical conditions and symptoms, with a mean number of 5.4 (SD 5.2) of these being reported by participants. All participants reported using cannabis to treat pain symptoms. Fourteen participants reported the use of cannabis for insomnia or sleep difficulty. Between four and six participants reported using cannabis to address anxiety, osteoarthritis, muscle spasm, depression, sadness, and/or neuropathy. A complete list and the number of participants reporting the medical conditions and symptoms are presented in Supplementary Table 1 (see the electronic supplementary material).

3.1.2 Cannabis Use as an Alternative to Prescription and Over the Counter Medications

Of the four participants reporting using prescribed opioids in the past 12 months, one reported reducing use (25%) due to their use of cannabis. Five of the seventeen participants (29.4%) who used other medications to treat pain (e.g., gabapentin, acetaminophen, and ibuprofen) reported reducing or stopping use of these medications. One of the three participants (33%) using prescribed medications for insomnia reduced use, and one of the six participants (16.7%) using over the counter insomnia medications reported a reduction in use due to their use of cannabis.

Table 1 Demographic, health and cannabis-related characteristics of patient participants ($N = 19$)

Demographic information	N (%)[a]
Age in years, mean (SD)	75.3 (6.5)
Age range (years)	65–89
Gender	
Female	10 (52.6)
Male	9 (47.4)
Race/ethnicity	
White/Caucasian	17 (89.5)
Asian	1 (5.3)
More than one race/ethnicity	1 (5.3)
Relationship status	
Married or long-term partner	13 (68.4)
Divorced/separated	1 (5.3)
Widowed	5 (26.3)
Educational level	
Some college or associate degree	6 (31.6)
Bachelor's degree	4 (21.1)
Graduate and/or advanced degree	9 (47.4)
Family income	
< $75,000	5 (26.3)
≥ $75,000	14 (73.7)
Living situation	
Live alone in my own home (house, apartment, condo, trailer, etc.); may have a pet	5 (26.3)
Live in a household with other people	12 (63.2)
Live in a residential facility where meals and household help are routinely provided by paid staff (or could be if requested)	2 (10.5)
Self-rated health	
Very good	10 (52.6)
Good	7 (36.8)
Fair	2 (10.5)
Primary type of cannabis use	
Medical purposes	11 (57.9)
Recreational purposes	1 (5.3)
Both medical and recreational purposes	7 (36.8)

[a] N (%) unless otherwise stated

3.1.3 Disclosing Medical Cannabis Use

Most participants reported that their HCPs were aware of their cannabis use (89.5%), as were significant others (78.9%), other family members (89.5%) and friends (84.2%). In terms of comfort level discussing cannabis use, 84.2% felt comfortable or very comfortable talking to their HCPs about cannabis, while 5.3% felt neutral and 10.5% felt uncomfortable. Participants reported feeling most comfortable talking about cannabis with their spouse/significant other (42.1%) followed by friends (21.1%), other family members (15.8%), and HCPs or dispensary workers equally (10.5%).

3.1.4 Source of Information on Medical Cannabis Use

Most participants reported getting information on cannabis from the internet (57.9%) or from family/friends (57.9%), followed by cannabis dispensary workers (42.1%), print media such as magazines or newspaper articles (31.6%), and HCPs (15.8%).

3.2 Qualitative Results

3.2.1 Theme: Reasons for Disclosing Use to HCP

Initiation of Conversations About Cannabis

Most participants stated that they—rather than their HCPs—typically initiated conversations around medical cannabis use during clinic visits:

> "I don't find too many physicians actually asking...like they kind of look at the meds and that's about it. I think maybe I might have, you know, brought it up to ask them, do you think this would [work]? Is it all right, if I try it?" – participant 20 -P20

Reasons for initiating these conversations included seeking medical advice on how cannabis use might alleviate symptoms like pain and insomnia. Patients were also concerned about the interaction of cannabis with other medications and the impact it might have on their health condition:

> "If she thought there was any effect of having these for me, taking these kinds of gummy bears on a regular basis, does it affect anything with anything with any health condition I have in a negative way and any medication that I take? So, I wanted to make sure she was aware of, not only supplements, but also the pot that I'm using." – P16

Reasons for Feeling Comfortable with Disclosing Use to HCP

The legalization of medical cannabis was an important driver for patients to disclose their use to HCPs. They described how cannabis became recognized for its medicinal uses and potential to manage symptoms following legalization, thus legitimizing their choice to use cannabis ("Now I don't have to be afraid to talk to her about it because it's legal, right? And it makes a big difference." – P20). Other reasons for feeling comfortable with disclosing medical cannabis use included the desire to be truthful with their HCPs and an overall openness to talking about medical cannabis use ("If I'm talking to a doctor and you ask me something, I would certainly be truthful with them." – P07). Patients also noted personal qualities in their HCPs that made them feel comfortable disclosing their medical cannabis use. These included being responsive, sensitive, and non-judgmental ("He [HCP] is a nice guy who seems receptive and not judging...I mean, he's very young. But in the 15 minutes you get to be with him, he seems interested in you personally." – P25). These qualities cultivated trust between patients and HCPs.

Reasons for Hesitation in Disclosing Use to HCP

Some participants explained that the lingering stigma around cannabis use due to a long history of criminalization led to hesitation in disclosing use to their HCPs. They described the switch from hiding their use to openly discussing it with their HCPs as one that is not easy to make ("It's probably years of not talking about health care providers because not wanting it to be on my chart. And now that we're in a different environment, I haven't really flipped on that attitude. So, it's probably more by prior experience and years of it." – P25). Even following the legalization of cannabis for medical purposes, patients feared negative judgement by their HCPs, which contributed to hesitation in disclosing use. Participant 21 elaborated:

> "So now I'm talking about it, as you know, a comparable substance to alcohol, really in terms of availability and legality. So I understand that. But making that switch from, you know, a mindset of a long time having to kind of keep it under wraps, not wanting it in my chart, now being in a situation where it's legal, but not quite being quite sure of how the health care provider would view that." – P21

Aside from fear of negative judgment, some patients were hesitant to disclose use as they did not view their HCPs as experts in cannabis. Due to their long experience with different types of cannabis, some patients viewed themselves

as more knowledgeable and had doubts that their HCPs will be able to provide additional information on medical cannabis use especially with the limited scientific evidence on cannabis for medical purposes. This sentiment is illustrated in this quote:

> "I know as much of experience of 55 years of using this stuff uh as you can read about and find out about, pretty much. It's finally changing now where people are allowed to research this without getting in trouble with the federal government and which I think is a great thing um but there's been no discussion... And there's very little information that is peer reviewed that is done with, studies that are broad enough with enough subjects in the study, with pool of participants." – P34

3.2.2 Theme: Desired Discussions with HCP

Cannabis as Alternative to Prescription Medications

Participants expressed the desire to discuss the use of cannabis as an alternative to prescription medications. Specifically, they were interested in how cannabis might replace medications for insomnia and pain. This desire was mainly a result of wanting to reduce the side effects of prescription medications. Patients in our sample described how perceived medication side effects such as difficulty concentrating, forgetfulness, and dizziness were impairing their daily functioning, thus they wanted to explore options that may have fewer side effects:

> "I don't like taking any drugs, so I want something that I'm going to be staying control with, with my mind that I'm not going to be totally, you know, like, Flexeril®, I'm in La La Land." – P20
>
> "To be on Ambien® for, for the rest of my life is not an option. I mean, I don't really want to do that because they say it can lead to Alzheimer's and dementia and things like that. So, um, I would prefer to have less quality sleep by using THC [tetrahydrocannabinol] than using Ambien® every night." – P14

Importantly, they were concerned about developing a dependence on prescription medications and later experiencing withdrawal symptoms. Some patients believed cannabis to be a safer alternative:

> "I don't take any of that—the over-the-counter pain meds—I just don't want to become reliant on that sort of thing, and I'm not sure they're that effective. And I can certainly manage a small amount of pain without having to look for help. But, the idea of cannabis, being able to take something that I say is that innocuous, and that, uh, is something that doesn't concern me to the same degree as people I know who have gotten to the point where they take too much over-the-counter." – P24

Advice on Dosing and Forms of Cannabis

Participants described uncertainty about which cannabis type and form of administration would be most suitable for them. As a result, patients desired more information from their primary HCPs on the potency and effects of different cannabis products/strains and what dosage would be appropriate for them to take. In the face of limited information, patients reported relying on trial-and-error approaches to determine what cannabis products and dosage work best for them:

> "There were challenges in the beginning if I didn't take enough or if I took too much. If I didn't take enough, then you know, I had a harder time falling asleep. Um, I had to figure out how soon in advance I was going to bed to take it. I had to figure out how long it would kind of take to take effect. And then I knew right away when I had taken too much. So yes, there was definitely trial and error over a couple of months to figure it out." – P14

Advice on Benefits, Side Effects, and Safety of Cannabis

Patients in our sample expressed the desire to learn more from their HCPs about the effectiveness of cannabis in treating various symptoms. Specifically, they wanted information on the scientific evidence surrounding the benefits of cannabis and information on specific products and their effectiveness.

Patients also shared the desire for understanding the side effects of cannabis use. This included information on side effects of long-term use, interaction with other medications, and any changes to daily habits they needed to make as a result of cannabis use:

> "[I want to know about] ill effects or unwanted side effects, contraindications, all the crap that you get in 16 pages of tiny print when you get a prescription. All the warnings, all of this, all of that. And so, I mean, I would want to know. So, I would keep I could keep an eye out for. Well, is this affecting me that way. And do I need to back off? Do I need to change my habits? You know, it works like any medicine." – P34

Despite wanting such information, patients in our study acknowledged that there is limited research on cannabis for medical purposes and, as a result, their HCPs might not have the knowledge required to address their questions.

3.2.3 Theme: Perception of HCPs Attitudes Toward Use

Most patients in our sample described their HCPs as having a neutral attitude following disclosure of their medical cannabis use ('Most of them will just say "oh okay" and let it go.' – P05). HCPs would often hear about medical cannabis use and not encourage or discourage their patients from using it ('She [HCP] doesn't judge it, she's neutral. She doesn't say "oh good take it. Why don't you take it" She doesn't encourage or discourage. She's pretty neutral, and listens.' – P16). Patients rationalized this lack of endorsement by their HCPs as a result of the lack of clear medical guidelines around prescribing cannabis for medical purposes:

> "If there is you know, if the policy doesn't say hey go out and get yourself some pot you know. If the policy doesn't say or encourage our doctors to do that. Because listen, it's not part of the medical machine which is all about profit, alright." – P34

On the other hand, other patients in our sample perceived an accepting attitude by their HCPs towards medical cannabis use, especially if it helps alleviate their symptoms:

> "She was open and not any inhibiting what my choice was about it. Her response was that if you if it provides relief then you should continue what you're doing." – P17

A small number of our participants described receiving a more concerned reaction from their HCPs regarding their medical cannabis use. This concern was especially around the THC concentration:

> 'The cardiologist was the one who really started saying, "You know, you really need to be careful with the THC" and I think he was the one who said, you know, "you need to know exactly how much you're taking." So, my primary care [doctor] said the same thing that you can't, you know, like when your friend makes a brownie, don't eat it. Don't eat your friend's brownies [laughter]...because you don't know how much is in it.' – P23

3.3 Mixed Methods Results

In synthesizing the quantitative and qualitative data together using a joint display Table 2, we observed that the quantitative data underscored the qualitative findings. The primary motive for cannabis use among patients remains the management of pain symptoms, despite the absence of the desired medical guidance from their HCPs regarding the type, dosage, and potential side effects of cannabis (expansion). Qualitative insights highlighted patients' expressed desire for informative discussions with their HCPs concerning the potential use of cannabis as an alternative to prescribed medications for pain management. Despite this expressed interest, quantitative analysis revealed that patients did not modify their utilization of prescribed and over-the-counter medications (discordance). Most patients felt comfortable disclosing their medical cannabis use with their HCPs, seemingly due to the legalization of medical cannabis use (expansion). Despite this increased comfort, patients reported feeling most comfortable talking about medical cannabis use with their spouses/significant others. This preference was reinforced by qualitative findings, which indicated that patients perceived their HCPs to have neutral or dismissive reactions when the topic of medical cannabis use was broached. Moreover, patients commonly viewed their HCPs as lacking sufficient knowledge about medical cannabis, which contributed to their reluctance to engage in such discussions with them (expansion).

4 Discussion

To our knowledge, this is the first study to examine the attitudes and behaviors of older adults around disclosing medical cannabis use to their HCPs. Results revealed that older adults were comfortable sharing their medical cannabis use with their HCPs and sought medical advice with regard to their use. They mostly use cannabis to manage symptoms of pain and sleep problems, despite their concern about side effects or interactions with other medications. Even though older adults in our sample wanted to discuss cannabis as an alternative to prescribed medications, their use of prescribed medications did not change as a result of cannabis use.

The main reason for disclosing medical cannabis use among older adults in our sample was to obtain medical advice from their HCPs. Specifically, they desired more information on how cannabis can be used to alleviate symptoms of pain, and how it might interact with other medications they are using. Furthermore, patients needed more information on appropriate dosing and the differences in THC and cannabidiol (CBD) ratios. This is similar to findings of previous research highlighting the importance of understanding drug interactions, purity, and side effects of medical cannabis use among older adults [20]. Furthermore, older adults wanted to obtain this information from their HCPs [15]. Specifically, they expected HCPs to take on the role of educators and provide information on the benefits and risks of cannabis [15]. This was also echoed in another qualitative study in which patients felt their physicians needed more education on how to guide them to utilize different cannabis products as treatment options [14]. Nevertheless, all older adults in our sample continued to use cannabis to manage symptoms of pain. Therefore, there is a need to

Table 2 Integration table of qualitative and quantitative results

Qualitative themes	Quantitative results	Synthesis
Theme: Reasons for disclosure to HCP		
Initiation of conversations about cannabis: • Need for medical advice on managing pain and sleep problems o 'I've only done it just one time, just this last visit last week… I said, you know, because I can't sleep. And so she changed me to sleeping medication, if needed. And I told her that sometimes I used edibles when I can't sleep at night. And she said "that's fine."' • Concern about the interaction of cannabis with other medications and potential side effects o "If she thought there was any effect of having these for me, taking these kind of gummy bears on a regular basis, does it affect anything with anything with any health condition I have in a negative way and any medication that I take? So, I wanted to make sure she was aware of not only supplements, but also the pot that I'm using." *Reasons for feeling comfortable with disclosing use to HCP:* • Cannabis is legal o "Now I don't have to be afraid to talk to her about it because it's legal, right? And it makes a big difference." • Desire to be truthful with HCP o "If I'm talking to a doctor and you ask me something, I would certainly be truthful with them." • Personal qualities of HCP o "He [HCP] is a nice guy who seems receptive and not judging...I mean, he's very young. But in the 15 minutes you get to be with him, he seems interested in you personally." *Reasons for hesitation in disclosing use to HCP:* • Lingering stigma from times of prohibition o "It's probably years of not talking about health care providers because not wanting it to be on my chart. And now that we're in a different environment, I haven't really flipped on that attitude. So it's probably more by prior experience and years of it." • HCP not viewed as an expert on cannabis use o "First of all because of the laws there isn't enough research today that was done scientifically, peer reviewed and all that. [S]o they don't have enough information to bring to me right? I know as much of experience of 55 years of using this stuff uh as you can read about and find out about, pretty much."	Percentage of participants who found cannabis helpful for specific medical conditions or symptoms: • Pain (100%) • Insomnia (73.7%) • Osteoarthritis (31.6%) • Anxiety (31.6%) • Depression (21.1%) How comfortable do you feel talking to your main HCP about cannabis? • Very/comfortable (84.2%) • Neutral (5.3%) • Uncomfortable (10.5%) With whom do you feel MOST comfortable talking about cannabis? • Spouse/significant other (42.1%) • Friends (21.1%) • Other family members (15.8%) • HCPs (10.5%) • Dispensary workers (10.5%)	*Expanded:* Even though participants seek medical advice from their HCP and are concerned about side effects/interactions of cannabis with other medications, the majority of participants use cannabis to treat symptoms of pain, insomnia, and anxiety, while a few used it for conditions such as osteoarthritis

Table 2 (continued)

Qualitative themes	Quantitative results	Synthesis
Theme: Desired discussions with HCP		
Cannabis as alternative to prescription medications: • Replacing sleep and pain management medications o "I would like to know more about the actual medical use of cannabis, and how I could use it to help my ailments, whatever they are, rather than using prescription drugs which have so many side effects, I don't find that the cannabis has the side effect." • Replacing side effects of prescribed medications o "I don't like taking any drugs, so I want something that I'm going to be staying control with, with my mind that I'm not going to be totally, you know, like, Flexeril, I'm in La La Land." *Advice on dosing and forms of cannabis:* • Trial-and-error approaches to find adequate form and dose o "I think the primary thing [required from HCP] would be information on specific products, the strength of those products and any research results indicating level of responsiveness to these." o "There were challenges in the beginning if I didn't take enough or if I took too much. If I didn't take enough, then you know, I had a harder time falling asleep. Um, I had to figure out how soon in advance I was going to bed to take it. I had to figure out how long it would kind of take to take effect. And then I knew right away when I had taken too much. So yes, there was definitely trial and error over a couple of months to figure it out." *Advice on benefits, side effects, and safety of cannabis:* • Desiring evidence-based knowledge on cannabis use, yet acknowledging limitations in availability of medical cannabis research o "I wonder sometimes what the long-term effects of long-term users. I mean, I've been using it for years, um, but I don't think that anybody really knows that much yet. And so, you know, it would be nice to know that."	Percentage of participants whose use of cannabis did not affect use of selected prescription and over the counter medications in the past 12 months • Opioids (75.0%) • Other pain medications (70.6%) • Medications for insomnia (66.7%) • Over the counter medications for insomnia (83.3%)	*Discordant:* Participants' use of prescribed medications did not change even though they desired to discuss the possibility of cannabis as an alternative to prescribed medications. Probably because they wanted to ensure the safety of cannabis use

Table 2 (continued)

Qualitative themes	Quantitative results	Synthesis
Theme: Perception of HCPs' attitudes toward use		
• Neutral o "She [HCP] doesn't judge it, she's neutral. She doesn't say "oh good take it. Why don't you take it" She doesn't encourage or discourage. She's pretty neutral, and listens." • Accepting o "She was open and not any inhibiting what my choice was about it. Her response was that if you if it provides relief then you should continue what you're doing." • Concerned o "The cardiologist was the one who really started saying, "You know, you really need to be careful with the THC" and I think he was the one who said, you know, "you need to know exactly how much you're taking." So, so, my primary care [doctor] said the same thing that you can't, you know, like when your friend makes a brownie, don't eat it. Don't eat your friend's brownies [laughter]...because you don't know how much is in it.'	Comfort talking to main HCP about cannabis: • Very/comfortable (84.2%) • Uncomfortable (10.5%) • Neutral (5.3%) With whom do you feel MOST comfortable talking about cannabis? • Spouse/significant other (42.1%) • Friends(21.1%) • Other family members (15.8%) • HCPs (10.5%) • Dispensary workers (10.5%)	*Expanded:* Participants felt most comfortable talking about cannabis use with their spouse, followed by friends and family members, then HCPs. This might be attributed to the overall neutral or disinterested perception of HCPs' attitudes

HCP healthcare provider, *THC* tetrahydrocannabinol

equip HCPs with evidence-based scientific information on medical cannabis use, potentially through health professionals' curricular and ongoing educational training to help them address the questions and concerns of their patients.

Most of the participants in our sample felt comfortable disclosing medical cannabis use to their HCPs. In interviews, older adults ascribed this comfort mainly to the legalization of cannabis use. This is in line with findings of a previous qualitative study in which legalization was found to be an important factor for destigmatizing personal medical cannabis use among older adults in Canada [12]. This is also reflected in another study demonstrating that 87% of older adults believed that legalization of cannabis will make its medical use more acceptable among older adults [20]. At the same time, cannabis was not legal for many decades during the lives of the older adults in our study, and that lingering stigma contributed to their hesitation to disclose use to their HCPs. They felt more comfortable disclosing use if it was mainly for medical and not recreational purposes, a sentiment that was echoed by older adults in Canada [12]. This highlights how legalization is a step towards destigmatizing cannabis use, yet perceived or internalized stigma remains a barrier to disclosure and open conversations with HCPs.

It is also important for HCPs to gain knowledge of medical cannabis use as older adult patients desire to have conversations about this topic with them. Specifically, patients in our sample desired to discuss the use of cannabis as an alternative to prescribed medications. However, when it came to pain management, most of the patients who reported the use of pain medications did not change their use following cannabis use. This is contradictory to previous research findings showing decreased opioid and over-the-counter analgesics use among adults who use cannabis [12]. The limited decrease in the use of pain management medications among patients in our sample might be explained by their need to understand the benefits of cannabis especially in light of the limited research evidence and HCPs' recommendations/medical advice.

The majority of older adults in our sample reported feeling most comfortable talking about cannabis with their spouse/significant other, but a fewer number felt most comfortable sharing this with their HCPs. This might be attributed to the neutral or dismissive response of HCPs to their patients' disclosure of medical cannabis use. Similarly, older adult patients in Canada reported negative or ambivalent reactions of their family physicians to medical cannabis use [12]. Such absence of support for use by family physicians was conflicting to patients, especially since they come from a generation who value their physician's medical opinion and guidance [12]. Most participants in our study reported initiating the conversations on medical cannabis use, rather than their HCPs initiating these

conversations. This was quantified in previous studies [20, 21]. One of these reported that only 23% of older adults who use medical cannabis reported being asked about it by their HCPs, in comparison to 57% and 55% being asked about their alcohol and tobacco use, respectively [21]. The limited discussions of medical cannabis use between HCPs and their patients was also reflected in our finding that only 15.79% of our participants obtain information on medical cannabis use from their HCPs, as compared to other sources such as family/friends or the internet (57.89%). This reliance on the internet as the main source of information on medical cannabis use is evident in the literature among older adults [21]. Therefore, there is a need for improving HCPs' knowledge to enable them to discuss medical cannabis use with their patients and provide recommendations on type, dosage, and route of administration based on the patient's medical case. Such conversations are especially needed considering the increase in medical cannabis use among this age group. A recent scoping review of the literature on medical cannabis education among healthcare professionals worldwide highlighted the lack of formal education on medical cannabis use. Healthcare professionals expressed feelings of unpreparedness to counsel patients on medical cannabis use as they reported low levels of knowledge on this topic [22]. Such findings further highlight the need to include medical cannabis use in educational curricula. As modern healthcare education is based on competencies, a set of competencies related to medical cannabis should be established to guide the formation of educational materials.

This study has several strengths. Our study sheds light on the experiences of a growing group of individuals who use cannabis for medical purposes. The focus on disclosing medical cannabis use to HCPs informs our understanding of this topic and highlights the need for HCPs to have knowledge about medical cannabis use. Furthermore, the use of a multi-methods approach, combining surveys and semi-structured interviews, enriches the data collection process and provides a comprehensive understanding of older adults' behaviors and attitudes. However, this study also has limitations. As participants were recruited from one clinic in San Diego, it is not possible to generalize findings to other older adults in different geographic regions with different cannabis policies and/or social acceptability of medical cannabis use. Though most older adults who use cannabis are White, as was our study sample, our sample was more educated than population-based studies of cannabis, which is not generalizable to the wider population of older adults who use cannabis for medical purposes [23]. However, one aim of this study was to explore the attitudes of older adults around disclosing medical cannabis use to their HCPs and identify areas for future research. Future studies should build on our results and examine the attitudes of older adults from diverse backgrounds in order to capture a more comprehensive understanding of medical cannabis use among this age group. As this study was cross-sectional, it captured attitudes of participants at the time of data collection, future longitudinal studies can examine how legislating new bills such as California SB 1264, which reinforces the existing law that prohibits employers from discriminating against employees for off-the-job cannabis use, impacts the attitudes of older adults around medical cannabis use. Another limitation of the study is relying on self-reports from participants. While this data collection method is accessible, it introduces recall bias in which participants cannot accurately report the frequency/quantity of cannabis use and its effects on their various medical conditions. Furthermore, self-report introduces social desirability bias, especially that participants discussed the lingering stigma around cannabis use among this generation.

5 Conclusion

In conclusion, our study sheds light on the attitudes and behaviors of older adults regarding the disclosure of medical cannabis use to HCPs. The findings highlight that older adults are generally comfortable sharing their medical cannabis use with HCPs, driven by the desire for medical advice and information, especially regarding pain and insomnia management. Despite their comfort in disclosure, concerns persist, and our study identifies lingering stigma, even post-legalization, contributing to hesitation among older adults. The study emphasizes the pivotal role of HCPs as educators in addressing patient inquiries about cannabis, underlining the need for equipping healthcare professionals with evidence-based knowledge through education and training initiatives.

To foster more informative and clear conversations between older adults and HCPs, it is important to implement strategies addressing stigma, enhancing HCPs' knowledge, and providing clear guidance on cannabis. Future interventions should also explore HCPs' attitudes toward medical cannabis use in order to design interventions that promote an informed and respectful healthcare response to older adults' medical cannabis use.

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Declarations

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Conflicts of Interest The authors declare no potential conflicts of interest that might be relevant to the contents of this article.

Ethics Approval The study protocol was approved by the UC San Diego Health Institutional Review Board with application approval number Protocol #801087 on February 16th, 2022. The study was performed in accordance with the standards of ethics outlined in the Declaration of Helsinki.

Consent to Participate Written informed consent was obtained from all study participants before enrollment.

Consent for Publication Not applicable.

Availability of Data and Material The data that support the findings of this study are not openly available because of reasons of sensitivity and are available from the corresponding author upon reasonable request.

Authors' Contributions DAB, ALN, and AAM were involved in the conception and design of the study. DAB, PNCR, RN, NN, and PO'M contributed to patient recruitment and data acquisition. All authors were involved in the conduct of the study as well as the analysis and interpretation of the results. DAB wrote the first draft of the manuscript. All authors edited, reviewed, and approved the final version of the manuscript and share collective responsibility for the manuscript.

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