Knowledge, practices, and attitudes of certified medical marijuana consultants in Washington state

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Abstract

Background: Washington is the only U.S. state to recognize and certify the medical marijuana consultant role. Medical marijuana customers have the option to use the services of a consultant for advice on the selection of marijuana products that may benefit a qualifying terminal or debilitating medical condition, the risks and benefits of these products, and the risks and benefits of methods of administration of these products. The purpose of this study was to investigate of the knowledge, practices, and attitudes regarding medical marijuana among certified medical marijuana consultants in Washington State, and to identify sources of information used by medical marijuana consultants to advise patients regarding the use of marijuana for medical conditions.

Methods: A cross-sectional mixed-mode survey was administered to a random sample of 360 Washington State medical marijuana consultants selected from the state Department of Health's list of 740 consultants with active certification as of December 2017.

Results: Most respondents (84–100%) correctly identified conditions that qualify a patient to receive an authorization to use medical marijuana. Fewer respondents (8–31%) accurately identified conditions that do not qualify a patient to receive a medical marijuana authorization, such as depression and anxiety. Consultants heartily endorsed marijuana for medical conditions and believed it carries little risk. Many felt the required training for the consultant role did not sufficiently prepare them to understand scientific information regarding marijuana benefits and risks, although they expressed reliance on this course for counseling patients.

Conclusions: While consultants were generally knowledgeable regarding law and practice, additional training is advised to clarify both current evidence and current health implications of marijuana, especially for mental health conditions. State or national expansion of legal recognition of medical marijuana should include evidence-based training policies for those in positions to influence the public's purchase and use of marijuana for health conditions.

Introduction

Legalization of marijuana use is changing globally. In 2018, Canada joined Uruguay in legalizing recreational marijuana for adult use, 17 years after legalizing medical marijuana use.[1] In 2018, a constitutional court in South Africa ruled the private use of marijuana legal, while in the United States (U.S.), policies vary from state to state.[2] Medical cannabis use is partially or fully legal in a total of 21 countries worldwide including Australia, Chile, Israel, Mexico, and Turkey.[2] Policy shifts of this nature demand monitoring and evaluation to assure unintended consequences do not occur.

In the U.S., Washington State's original medical marijuana law was created by a ballot measure in 1998.[3] Recreational marijuana became legal in the state in 2012 through another ballot measure. However, retail marijuana stores did not open until July 2014.[4] The Washington State Legislature merged the medical and recreational marijuana systems in 2015 and concurrently created the medical marijuana consultant role.[5] Washington is the first and only state in the U.S. to recognize and authorize this role. A consultant is a non-medical provider certified by the state who may provide medical marijuana customers with information about marijuana use.[6] This article describes the knowledge, practices, and attitudes of Washington State's medical marijuana consultants.

Among the 34 states, the District of Columbia, Guam, and Puerto Rico that have laws allowing medical marijuana and cannabis programs, only Minnesota, New York, and Connecticut require a pharmacist to dispense medical cannabis products.[7] In Washington State, a medical marijuana patient has the option to obtain assistance from the medical marijuana consultant whose role is defined in state law. All medically endorsed marijuana retail stores are required to have a certified medical marijuana consultant available to provide services to patients.[8] The consultant may be the store owner, employee, or a volunteer.[9]

Certified consultants may assist a medical marijuana customer in a retail store with the selection of products that may benefit a qualifying terminal or debilitating medical condition, describe the risks and benefits of these products, and describe the risks and benefits of methods of administration of the products. Consultants may not provide medical advice, diagnose conditions, recommend changing current treatment(s) in place of marijuana, or open and

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use actual products to demonstrate their use.[6] The role of the medical marijuana consultant is delineated in state law and rule. A certified consultant must be age 21 years or older, complete a 20 hour Department of Health approved training program, and possess a cardio-pulmonary resuscitation certification.[9] The training program must include at least 6 topics such as information about the terminal or debilitating conditions that qualify a patient for a medical marijuana authorization, the short and long-term effects of cannabinoids, safe handling of marijuana products, and the medical marijuana law.[6]

Washington State law does not stipulate the Department of Health (DOH) or Liquor and Cannabis Board (LCB) evaluate or oversee the consultants.[6] Investigation of a consultant occurs only when a complaint is filed.[9] Consultants are the primary person interfacing with cannabis consumers who have received an authorization. The consumer may interact with the consultant on a regular basis and consistently more often than with the health care professional who provided the medical marijuana authorization. The aims of this study were to describe the knowledge, practices, and attitudes regarding medical marijuana among certified medical marijuana consultants in Washington State and to identify sources of information used by medical marijuana consultants to advise patients regarding the use of marijuana for medical conditions.

Methods

A cross-sectional mixed-mode survey was administered to a random sample of 360 Washington State medical marijuana consultants selected from the Department of Health's list of 740 consultants with active certification as of December 2017.

Questionnaire

The study's 16-item questionnaire based on Washington State law and prior well-validated survey instruments identified in the extant literature.[3,10,11] Staff from the Washington State Department of Health's medical marijuana program served as content experts to review the questionnaire. The revised instrument contained 15 closed-ended questions regarding knowledge of state law, attitudes about medical marijuana, and current practice as a medical marijuana consultant. For example, one question asked consultants to select from a list of conditions those that qualify an individual for a medical marijuana authorization. This required the respondent to distinguish qualified conditions from conditions not approved. Conditions not approved were selected based on a review of medical marijuana laws in other states with qualifying conditions other than those in Washington State law. In another question, the respondent was asked to use a Likert scale ranging from strongly agree to strongly disagree to express attitudes about medical marijuana use. One open-ended question invited respondents to share anything they believed was important for the researchers to know. The demographic data collected included the respondent's sex, age, race/ethnicity, and which training course was completed and in what year. The entire questionnaire is available at https://labs.wsu.edu/medicalmarijuanasurvey/.

Survey administration

The survey was administered between February 6, 2018 and March 30, 2018 with multiple contacts to non-responders through a university survey research center. The survey instrument was hosted online using the Qualtrics® survey software and was available in paper form for participants who preferred print medium. The researchers' Institutional Review Board deemed the study exempt from human subjects review.

Potential participants were mailed an introductory letter followed by an email message describing the study and inviting them to participate. Both invitations included a web link and access code unique to each participant to access the web version of the questionnaire. After 1 week, up to six additional contacts were made to non-respondents (two postcards, three emails, and one paper questionnaire with a prepaid return envelope). A crosswalk file developed to send reminders to non-respondents was destroyed at the conclusion of the survey. Participation in this study was anonymous and confidential. As an incentive, an external link was available to provide contact information for entry in a random drawing for a $50 gift card.

Analysis

We performed statistical analysis using Stata/MP version 14.2 to obtain descriptive statistics on the sample's demographics and to summarize the responses to the closed-ended survey questions using frequencies and percentages. Open-ended items were tabulated using content analysis to provide an understanding of the respondents' perspectives.[12] Words and phrases with common meanings were grouped into major categories to define concepts from participant perspectives using standard approaches for inter-coder reliability.

Results

From the random sample of 360 medical marijuana consultants invited to participate in the study, 101 fully completed and 17 partially completed the survey yielding an overall response rate of 32.8%. The sample was almost evenly divided between males and females (43% and 42%, respectively, with a 15% non-response rate for this question). The average age was 37.4 years (standard deviation (SD) 12.9 years) and the median was 33 years (interquartile range 27–45). All but 13 participants obtained their certification in 2016 and 2017. The majority (83%) identified as white and 78% of participants were working or volunteering in a Washington State retail store as a medical marijuana consultant. More than half (58%) indicated that their medical marijuana consultant training course prepared them well, very well, or extremely well for their work, although their open-ended comments revealed additional suggestions for the course improvement.

Knowledge of qualified conditions

Most respondents (84–100%) correctly identified conditions that qualify a patient to receive a medical marijuana authorization (Figure 1). Comparatively fewer respondents (8–31%) accurately identified conditions that do not qualify a patient to receive a medical marijuana authorization, such as depression and anxiety. The proportion of respondents who indicated that they did not know whether a condition qualified for authorization ranged from 0–11% for qualified conditions, and 4–22% for non-qualified conditions.

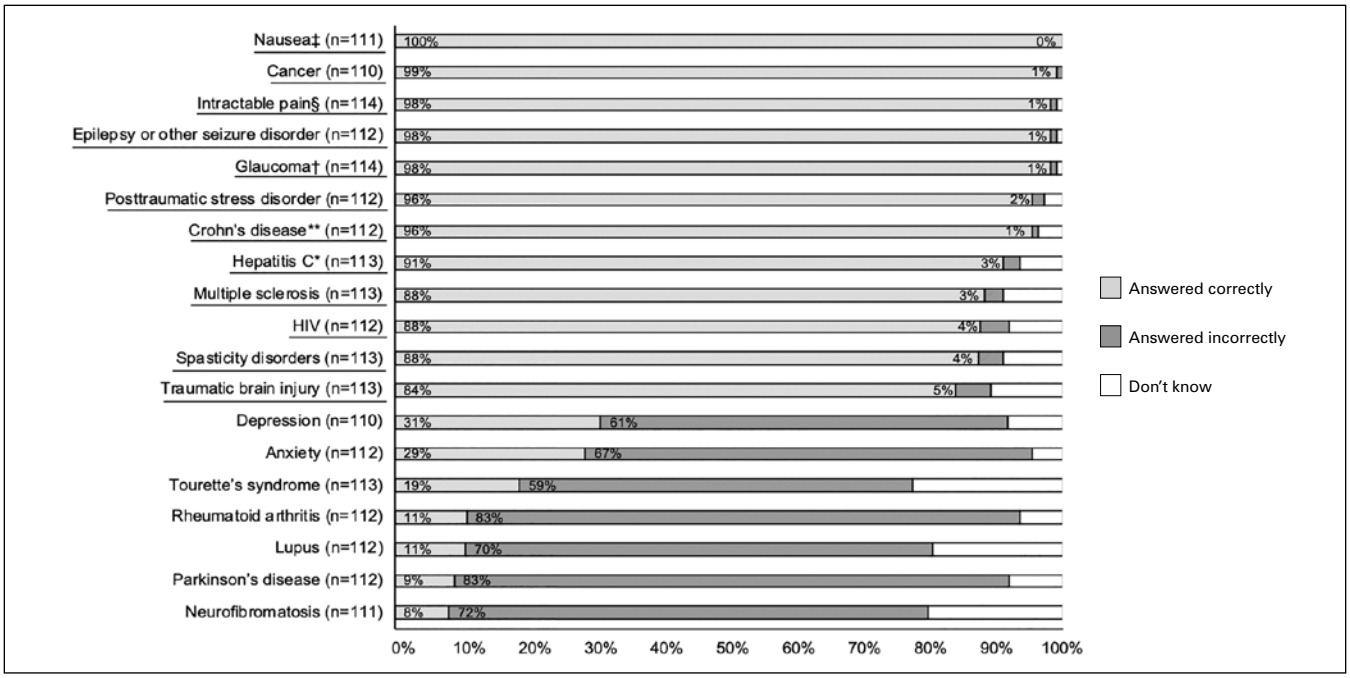

Figure 1. Medical marijuana consultant knowledge regarding qualified conditions for medical marijuana in Washington State, 2018. Note: Horizontal axis indicates the percent of all respondents for each question (sample size indicated). Legally qualifying conditions for medical marijuana in Washington State are indicated with underlined text. Symbols denote the following: *Hepatitis C with debilitating nausea or intractable pain unrelieved by standard treatments or medications; **Crohn's disease with debilitating symptoms unrelieved by standard treatments or medications; †glaucoma either acute or chronic, with increased intraocular pressure unrelieved by standard treatments and medications; ‡diseases, including anorexia, which result in nausea, vomiting, wasting, appetite loss, cramping, seizures, muscle spasms, or spasticity, when these symptoms are unrelieved by standard treatments or medications; §intractable pain unrelieved by standard medical treatments and medications.

Knowledge of laws about marijuana authorization terms and consultant services

Most respondents correctly identified statements regarding regulations related to possession of or growing marijuana (74–89%) and health plan coverage for medical marijuana (84%) (Table 1). Regulations relating to criminal sanctions appeared to be less well known. For example, 37% correctly indicated that healthcare professionals who can provide authorizations for medical marijuana cannot be arrested or prosecuted under state law for advising patients about medical use of marijuana. Eighty-seven percent of respondents knew that the statement "Employers are required to provide an accommodation in the workplace for medical use of marijuana," was inaccurate. The majority of respondents exhibited accurate knowledge regarding authorized medical marijuana consultant services (Table 1).

Practices

Almost all respondents correctly identified the legally authorized functions of the consultant role (Table 1). One exception is the 23% of respondents who did not know they may provide instruction and demonstrate to customers the proper use of marijuana products. A little more than half (58%) of respondents stated they use the knowledge gained from their training outside of the retail setting, which is not allowed by law. Also notable was that 89% correctly selected the quantity a medical marijuana patient could possess, and 87% knew that a healthcare professional could authorize more than the standard amount allowed for possession under Washington law. Over two-thirds (80%) correctly identified that patients in the state's database could possess more marijuana than those not in the database.

Respondents reported that they obtained information about medical marijuana risks and benefits from training courses (85%), other consultants (72%), patients (68%), and websites (55%). A similar pattern was observed for sources of information about which type of marijuana product a customer should select (Figure 2). Scientific journals were identified as sources of information for marijuana risks and benefits by only 14% of respondents and as sources of information about which type of marijuana product a consumer should select by 19% of respondents. Licensed healthcare professionals served as sources of information for the risks and benefits of medical marijuana and product selection by 34% and 50% of respondents, respectively.

Attitudes toward medical marijuana

Respondents strongly endorsed statements that were supportive of medical marijuana such as, "The FDA should reclassify marijuana so it is no longer a schedule I drug." with which 97% strongly agreed (Figure 3). Attitudes regarding the potential deleterious health impacts of marijuana were supported less frequently. For example, few respondents (9% and 10%, respectively) strongly or somewhat agreed that using marijuana poses serious mental or physical health risks. Twenty-eight percent agreed that marijuana can be addictive.

Open-ended responses

One open-ended survey item allowed participants to write in anything they believed was important for the researchers to know

Table 1. Medical marijuana consultant knowledge about authorizing the use of medical marijuana and services a medical marijuana consultant is permitted to provide at the retail outlet in Washington State, 2018

Authorization terms for medical marijuana use	Correct response	Answered correctly	Answered incorrectly	Don't know
Amount of marijuana a qualifying patient entered into the state's database may possess (n = 103)	Yes	92 (89.3)	7 (6.8)	4 (3.9)
Additional amount a health care professional may recommend a qualifying patient be allowed to grow and possess (n = 103)	Yes	90 (87.4)	5 (4.9)	8 (7.8)
Employers must provide workplace accommodation (n = 104)	Yes	90 (86.5)	8 (7.7)	6 (5.8)
Health plans are liable for reimbursement (n = 104)	No	87 (83.7)	6 (5.8)	11 (10.6)
All qualifying patients may possess the same amounts of marijuana products (n = 103)	No	82 (79.6)	17 (16.5)	4 (3.9)
Amount a qualifying patient or designated provider entered into the state's database may grow or possess (n = 103)	Yes	76 (73.8)	23 (22.3)	4 (3.9)
All children under age 18 must be in the database (n = 102)	Yes	72 (70.6)	22 (21.6)	8 (7.8)
All adults must be in the database (n = 103)	No	54 (52.4)	48 (46.6)	1 (1.0)
A person supervised for a criminal conviction may never be a qualifying patient (n = 103)	No	48 (46.6)	18 (17.5)	37 (35.9)
All health care professionals are not subject to criminal sanctions or civil consequences for advising a patient about medical marijuana (n = 103)	No	38 (36.9)	47 (45.6)	18 (17.5)
Selling or donating topical products with a THC concentration < 0.3% to qualifying patients (n = 103)	Yes	36 (35.0)	35 (34.0)	32 (31.1)
ICU Length of Stay[b]	2.03 ± 2.04	2.36 ± 2.47	5.33 ± 7.45	12.82 ±14.97
Allowed medical marijuana consultant services	**Correct response**	**Answered correctly**	**Answered incorrectly**	**Don't know**
Offer to diagnose or cure any disease, injury, pain, or health problem physical or mental by the use of marijuana (n = 101)	No	101 (100.0)	0 (-)	0 (-)
Advise a customer about the safe handling and storage of marijuana (n = 100)	Yes	100 (100.0)	0 (-)	0 (-)
Modify or eliminate treatment not involving medical marijuana (n = 99)	No	98 (98.0)	1 (1.0)	1 (1.0)
Assist with the selection of products (n = 100)	Yes	97 (97.0)	2 (2.0)	1 (1.0)
Describe risks and benefits of product administration (n = 98)	Yes	94 (95.9)	2 (2.0)	2 (2.0)
Describe risks and benefits of products (n = 101)	Yes	94 (93.1)	4 (4.0)	3 (3.0)
Instruct on and demonstrate proper use of marijuana (n = 100)	Yes	73 (73.0)	23 (23.0)	4 (4.0)

Note: Values in columns indicate n (%).

about their experience as a marijuana consultant. Responses centered around the following four general categories with supporting comments: 1) the need for more marijuana research, 2) the need for improved marijuana education for health professionals and consultants, 3) systematic barriers in patient access to marijuana products, and 4) endorsement of the benefits of marijuana.

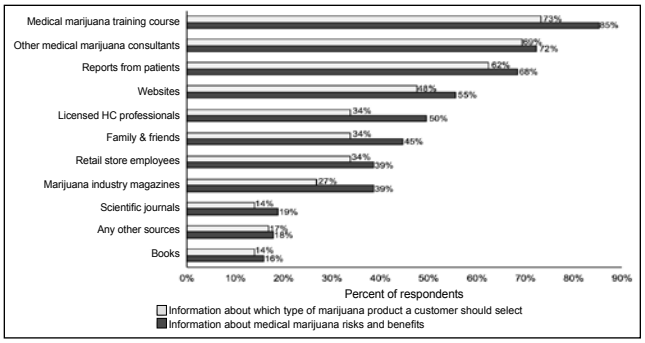

Figure 2. Information sources used by medical marijuana consultants in Washington State, 2018. N = 101. HC, health care professionals.

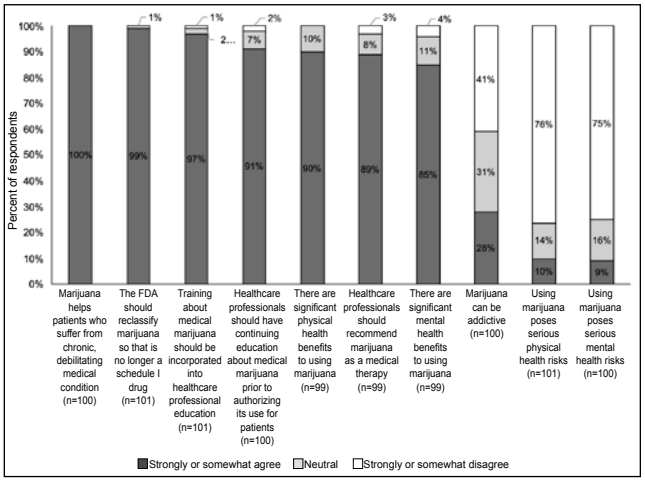

Figure 3. Medical marijuana consultant attitudes towards marijuana and medical marijuana, Washington State, 2018. Note: Respondents were asked to report their level of agreement for each of the listed questions.

Discussion

Medical marijuana consultants serve a legislatively determined role in the dispensing of marijuana to qualified medical patients in Washington State. Respondents in our sample were best informed about aspects of the law related to their work functions. However, gaps were evident regarding consultants' knowledge about the relationship between Washington State's medical marijuana law and available scientific evidence. Consultants expressed overwhelming support for medical marijuana and its legalization. They frequently relied upon information about medical marijuana obtained in the 20-hour certification course. Open-ended comments indicated that some questioned the quality and rigor of the course. One stated that "Much of the course I took seemed more geared toward business owners/managers...not necessarily geared toward the medical benefits/risks and how to be a medical marijuana consultant."

Knowledge

Consultant knowledge varied regarding qualifying conditions, their certified role, and aspects of the law relevant to sales in the retail stores where they work. Almost all respondents correctly identified health conditions that qualify an individual for a medical marijuana authorization. In contrast, two-thirds or more incorrectly

identified or did not know the health conditions that do not qualify an individual for an authorization, including anxiety, depression, Parkinson's disease, and rheumatoid arthritis. Knowledge on qualifying conditions is important because consultants assist medical marijuana patients with selection of products and advise on their use. They also may interact with retail customers who do not have an authorization card. However, several participants commented in the open-ended item that advice on the medical benefits of marijuana is something they discuss frequently with friends and family despite the law authorizing their services only when acting as an owner, employee, or volunteer of a licensed retail outlet and only for medical marijuana patients.

While no comparable surveys of consultants exist, knowledge of surveyed consultants can be compared to a study of Minnesota pharmacists. Although the two roles are not professionally equivalent, in Minnesota, New York, and Connecticut, pharmacists are the only authorized personnel who may dispense marijuana to patients. Minnesota pharmacists were surveyed in 2015 prior to implementation of the state's medical marijuana program. Pharmacists had variable knowledge of qualifying conditions and appeared to have an incomplete understanding about their role, the pharmacotherapy of marijuana, and many of the state's regulations.[13] In our study, as with the Minnesota pharmacists' study, knowledge gaps have the potential to affect decisions of patients legally seeking medical marijuana. Pharmacists in the Minnesota study expressed concerns regarding their knowledge of marijuana pharmacology, pharmacokinetics, and pharmacodynamics as compared to their knowledge for other medications.[13] For Washington's consultants, it is important to consider if the consultant certification course adequately prepared them for their job. Almost half (42%) of respondents indicated their certification course "not at all" or only "somewhat well" prepared them for their practice with patients. As one respondent stated, "The course wasn't about patient safety, patient care - it was strictly about getting products off the shelf and making sure you followed all of the laws and processed authorizations into the databank correctly."

Knowledge of the law is essential for proper implementation. Findings from this study suggest a potential need for improvements to the medical marijuana consultant course and/or that required continuing education should be designed to correct the identified deficits. It may be useful to involve practicing consultants in educational development decisions to target the knowledge domains most critical to their interactions with medical marijuana patients.

Practices

State certification is required to practice in the consultant role, and by law consultants may only use their knowledge to assist qualifying patients even though recreational marijuana users purchase products in the same retail store.[6] Within the retail setting, the law specifies limitations to practice. One of the most explicit is the consultant may not "offer to diagnose or cure any disease, injury, pain, or health problem physical or mental by the use of marijuana." Consultants were generally knowledgeable regarding the constraints of their certified practice, as evidenced by more than 90% correct responses on the items regarding allowable services. Nonetheless, with almost one-third not informed about the quantity that can be sold to medical marijuana patients based on registration in the database, it is possible some consultants may sell more or less product than state law allows.

While 58% of respondents endorsed the required consultant certificate course as preparing them well for their role, the majority (73%) chose the course as their primary source of knowledge for product selection and practices with medical marijuana patients. For most (85%), the information on marijuana risks and benefits came from the course and secondarily came from other consultants and patients. Very little information was gleaned from scientific journals or books. This may be related to a lack of access to academic journals and books or a lack of familiarity with scientific studies. One recommendation to strengthen the foundation of the consultant role would be adding course content that explains how to evaluate the strength and quality of marijuana research and evidence. This could influence consultants' attitudes regarding health risks. For example, adults using marijuana for medical purposes have reported adverse effects including nausea and vomiting, confusion, and hallucinations.[14] It is possible that patients experiencing negative effects from marijuana do not recognize, attribute, and/or report them. They may simply stop purchasing marijuana products thereby skewing the information consultants receive from patients regarding health effects.

Attitudes

Knowledge gaps have the potential to influence attitudes, which may help explain consultants' attitudes about marijuana's mental health benefits, physical risks, and risks of addiction. Many consultants did not endorse the belief that marijuana has addictive qualities or risk for serious physical or mental side effects. Of note, two of the top conditions medical marijuana patients report using marijuana to manage are anxiety and depression.[15] Findings from animal studies indicate that activating the endocannabinoid system may help minimize stress and depression,[16] yet the conclusions from the National Academies of Sciences, Engineering, and Medicine [NAS][17] suggest that the strength of the evidence is variable regarding the benefits of marijuana use for mental health symptoms.

In their comprehensive review, the NAS determined "substantial evidence" links marijuana use and the development of schizophrenia or other psychoses, and "moderate evidence" links marijuana use to increased symptoms of mania and hypomania in individuals diagnosed with bipolar disorders.[17,18] Marijuana use is also linked to a small increased risk for the development of depressive disorders, and major depressive disorder is a risk factor for the development of problem marijuana use.[17,19] Cannabis use has more recently been linked to the development of opioid use disorder[20] and other substance use disorders, including cannabis use disorder.[21] Moderate evidence finds an increased incidence of suicidal ideation, suicide attempts, and suicide completion among heavier marijuana users.[17,22] Yet, 85% of our surveyed consultants reported that there are significant mental health benefits to using marijuana, while only 9% indicated mental health risks exists, suggesting an under-appreciation for potential adverse mental health effects. More than half of the consultants responded incorrectly that depression or anxiety are qualifying conditions for legal use of medical marijuana and fewer than one-third of respondents believed marijuana could be addictive. In 2010, the

Washington State Medical Quality Commission denied a patient petition to include bipolar disorder, severe depression, and social anxiety as qualifying conditions for medical marijuana due to lack of scientific evidence supporting use as compared to available therapies.[23]

A large majority (90%) of respondents endorsed significant physical health benefits to using marijuana, while 76% strongly or somewhat disagreed that its use poses serious physical health risks. Studies linking marijuana use to cancer are limited by methodological challenges. However, there is some evidence linking marijuana smoking to testicular cancer.[17,24] Substantial evidence has found a statistical association between marijuana smoking and worse respiratory symptoms and more frequent chronic bronchitis episodes.[17,25] More high-quality research is needed regarding marijuana's relationship to other types of cancer and lung diseases, along with more studies to specify other physical effects including heart attacks, strokes, and diabetes.[17]

Attitudes regarding legality and use of marijuana

Attitudes about the use of marijuana held by consultants most strongly supported the removal of marijuana as a schedule I drug as well as its beneficial use for chronic and debilitating physical or mental conditions. As stated by one respondent in the open comments: "There is a huge demographic of senior citizens who are discontinuing their opiate prescriptions and opting for CBD heavy medical marijuana." Strong positive endorsement of the benefits of marijuana aligned with the weak agreement regarding statements about its addictive qualities or its risk for serious physical or mental side effects. Combined with a belief in its beneficial use, these attitudes endorse less restrictive regulation for access to medical marijuana. Complicating matters, there is current discordance in the existing Washington law that authorizes the use of medical marijuana for posttraumatic stress disorder, a mental health condition, but does not authorize it for anxiety or depression. These disorders can overlap in symptomatology and commonly occur in patients who have chronic and debilitating physical conditions.[26-28] Post-traumatic stress disorder was added as a qualifying condition by the Washington State legislature in 2015 when it also added traumatic brain injury.

Similar to the attitudes of the consultants, a majority of the general public in the U.S. also supported the legality of marijuana and state distribution for some medical use. When asked if marijuana should be legal without questions regarding patient access and distribution, there is a general trend upward which is bipartisan towards favoring legality. In 2017, 61% of surveyed American adults were in support of legalization.[29] The Brookings Institute reported that more than 75% of Americans believe marijuana has legitimate medical use.[29] It is also clear that the public recognizes the incongruity between state and federal laws on marijuana, with 60% of Americans agreeing that in states where marijuana is legal, federal marijuana laws should not be enforced.[29]

Eleven states and the District of Columbia have legalized recreational marijuana for adults, all with variable laws regarding medical conditions and use.[30] The current environment of state based (U.S.) versus national legalization (Canada) of marijuana for medical use offers an opportunity to analyze and compare how important public health messages are conveyed regarding use, misuse, and harm reduction and whether such messages are more effective at a local or national level. Communication regarding use of marijuana for medical or non-medical purposes impacts public attitudes regarding harm reduction.[31] A nationalized context may be more effective in communicating risk reduction in terms of consistency of message and delivery than the use of a role such as the consultant. Canadian legalization of marijuana was promoted as a strategy to protect public health and safety by preventing access to youth and increasing public awareness of health risks.[32] The Canadian Medical Association (CMA), however, considers the law an uncontrolled experiment that poses the potential to put industry profits and tax revenues ahead of the health of Canadians. The CMA has called for monitoring of marijuana use and an amendment to the law if use increases whether among adults or youth.[33]

Limitations

Our study had several limitations. First, although we used a randomized sample of all marijuana consultants in Washington State, the representativeness of our findings may be limited by self-selection bias. It is possible those consultants who did not choose to complete the survey had differing views from those who participated in our research. The survey did not request identifying or sensitive information, so non-respondents were unlikely to opt out based on a strong opinion about the topic or questions asked. Second, while all potential participants were recently licensed marijuana consultants, it is possible that respondents were more enthusiastic about marijuana, resulting in response bias. The demographic characteristics of non-respondents and marijuana consultants outside of the study sample are unknown. Therefore, it is not possible to compare respondents to non-respondents or the underlying marijuana consultant population. Third, this study relied upon self-reported attitudes, knowledge, and practices. While this approach was appropriate given our goal of presenting marijuana consultants' perspectives, self-reported information might be inaccurate or misleading and is subject to reporting bias. For example, attitudes about marijuana harms could be misreported by respondents if they fear of additional regulations that could interfere with one's livelihood as a consultant. Finally, not all survey questions have been tested for reliability and validity. Therefore, understanding of the items may have differed among respondents and resulted in some inaccuracies from misinterpretations.

Conclusion

The mission of the Washington State Department of Health (DOH) is to protect and improve the health of all people in the state.[34] The attitudes and knowledge reported by certified medical marijuana consultants in this study support the recommendation to the DOH to revise the current curriculum required for consultant certification. Consultants rely heavily on their required courses, along with other consultants and patients for information. Including the most current research-based evidence in coursework as well as guidance on how to interpret research quality and sources of information might increase consultants' ability to provide current, factual information to medical marijuana customers.

The medical marijuana consultant role is new and has population health implications. Consequently, evaluation of the role should occur. Regulators should appraise whether the role fulfills its intended purpose, if revisions to regulations are needed,

and if the role has an effect on patient outcomes. Additionally, it is important to determine consultant and customer satisfaction with the role. As the first and only U.S. state with medical marijuana consultants, Washington has a responsibility to decide if the role provides a value and if it should be replicated by other states. The efficacy of state/local based versus national messaging strategies could also be examined in conjunction with the implementation of Canada's national marijuana law. Evaluation of the effectiveness of prevention strategies and harm reduction guidelines such as the Lower-Risk Cannabis Use Guidelines developed in Canada is imperative.[35] Legalization of marijuana around the world for medical and recreational use serves as a tacit endorsement of its use despite limited evidence of risks and benefits.

Acknowledgement

This investigation was supported in part by funds provided by the State of Washington Initiative Measure No. 502.

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