

Assessment of Israeli Physicians' Knowledge, Experience and Attitudes towards Medical Cannabis: A Pilot Study

Tanya Ebert MD^{1*}, Yuval Zolotov MHA¹, Shani Eliav RN^{1,3}, Orit Ginzburg RN^{1,4}, Irena Shapira RN^{1,5} and Racheli Magnezi PhD MBA¹

¹Public Health and Health Systems Management Program, Department of Management, Bar-Ilan University, Ramat Gan, Israel

²Department of Child and Adolescent Psychiatry, Hillel Yaffe Medical Center, Hadera, Israel

³Israel Defense Forces

⁴Pediatric Cardiac Intensive Care Unit and ⁵Pediatric Pulmonary Unit, Sheba Medical Center, Tel Hashomer, Israel

ABSTRACT: **Background:** Cannabis has been used throughout history for different purposes but was outlawed in the United States in 1937; many countries followed suit. Although recently reintroduced as a medical treatment in several countries, the use of cannabis in Israel is permitted for some medical purposes but is still controversial, eliciting heated public and professional debate. The few published studies on physicians' attitudes to medical cannabis found them to be generally unsupportive.

Objectives: To examine, for the first time, the experience, knowledge and attitudes of Israeli physicians towards medical cannabis (MC).

Methods: A 32 item questionnaire reflected physicians' demographics, knowledge of and experience with MC and their attitudes to this treatment.

Results: Seventy-two physicians participated in this study. Physicians generally agreed that MC treatment could be helpful for chronic and for terminally ill patients (n=61, 79.2%). Oncologists and pain specialists did not agree unanimously that MC can undermine mental health, whereas other physicians did ($P < 0.001$, $df = 4$). Physicians who recommended MC in the past (once or more) agreed, more than physicians who did not, with the statement "MC treatment in Israel is accessible to patients who need it" ($P < 0.05$, $df = 2$).

Conclusions: In contrast to other studies we found partial acceptance of MC as a therapeutic agent. Further in-depth studies are needed to address regulatory and educational needs.

IMAJ 2015; 17: 437–441

KEY WORDS: medical cannabis (MC), medical marijuana, attitudes, physicians' attitudes

The first evidence of cannabis use by humans dates back to 4000 BC in China. Rooted in the East and gradually introduced to Western medicine, cannabis was used as a therapeutic agent for different indications, including analgesia and sedation, and as an anti-emetic and anti-epileptic agent [1]. The use of cannabis was outlawed in the United States in 1937 and later on

in most countries around the world. The United Nations Single Convention on Narcotic Drugs (1961) ratified the legal status of cannabis as an illicit drug with no therapeutic potential, thereby eradicating the medical use of cannabis [2].

In recent years, however, medical cannabis (MC) was reintroduced as a legitimate treatment in several countries [3]. The Israeli Ministry of Health issues licenses to certain patients after approving a specialist physician's recommendation. Thus, physicians in Israel cannot directly prescribe MC to patients but can sign a medical recommendation that is then processed by the Health Ministry. The number of Israeli licensed patients has risen dramatically in the last few years. The approved medical indications currently include chronic pain, chemotherapy-induced symptoms, spasticity in multiple sclerosis (MS), inflammatory bowel diseases, and others [4].

The cannabis plant contains a large number of active ingredients, including about 60 cannabinoids of which the most studied are tetrahydrocannabinol (THC) and cannabidiol (CBD). In the human body as in other mammals, cannabinoids are endogenously produced and are called endocannabinoids, which, similar to the plant-derived cannabinoids, bind to specific receptors called the cannabinoid (CB) receptors [5]. CB1 receptors are located in the central nervous system, the lungs, liver and kidneys, and CB2 receptors are located in the immune system and in hematopoietic cells. The endocannabinoid system regulates a variety of physiological processes, such as pain and appetite, as well as mood and inflammation [6].

Several studies have examined the medical effects of cannabis on humans. Many of them focused on the effect of cannabis on chemotherapy-treated patients and AIDS patients. Cannabis was shown to alleviate different chemotherapy-induced symptoms, such as pain, vomiting and lack of appetite [7], and to stimulate appetite in AIDS patients [8].

Pain relief has been demonstrated in different patient populations [9,10]. The mechanism is assumed to be activation of CB1 in the brain, spinal cord and peripheral nervous system, while CB2 is commonly involved in inflammatory pain [11]. Patients with Crohn's disease reported an improvement in their condition after smoking MC as compared to placebo [12]. In dystonic disorders and Tourette syndrome,

*The first two authors contributed equally to this study

two neurological conditions accompanied by chronic pain, MC treatment led to relief in symptoms [13]. In patients with multiple sclerosis, treatment with MC relieved tremor, pain and muscle contraction [14].

Alongside the desired clinical effects, cannabis use could have a number of adverse effects, such as dizziness, anxiety, paranoia, memory loss and concentration difficulties, as well as other physical symptoms like dry mouth, ataxia, blurry vision and lack of coordination, especially when the cannabis is consumed for a long period [15]. There is also concern that some patients treated with MC could become addicted, with a dependence rate among users that could reach 9% [16]. Indeed, cannabis addiction is considered a substantial and disconcerting phenomenon with different medical symptoms [17]. It is important to note, however, that participants in these studies were not patients and did not use cannabis for medical purposes.

The use of MC in Western medicine is controversial. Among other dilemmas, only a minority of studies show a significant advantage for MC, it is hard to establish the appropriate quality control for this substance, and it is complicated to regulate the MC market [18]. On the other hand, a significant number of patients could potentially benefit from the therapeutic effects of MC, which has lately been reintroduced as a medical treatment in several countries [19].

Few studies have examined physicians' attitudes to the use of MC. Two studies examined the position of oncologists, only a third of whom were found to be supportive [20,21]. Another study by Charuvastra et al. [22] examined attitudes to MC among American physicians of different specialties (family physicians, internists, gynecologists, psychiatrists and addiction specialists). Of the 960 physicians who responded, representing a 66% response rate, 36.1% believed that physicians should be able to prescribe MC legally, 26% were neutral, and 37.8% opposed. Most supporters were gynecologists and internists [22].

Kondrad and Reid [23] recently surveyed family physicians in Colorado, U.S., on their attitudes toward MC. Of the 520 physicians who responded, representing 30% of the family physician population, only 19% supported physicians prescribing MC as a treatment, while 46% opposed. The majority of physicians believed that MC use could carry mental and physical hazards [23].

Contrasting results were found by Uritsky and co-authors [24] who assessed the knowledge, views and experience with MC of health professionals in an American national chain of hospices. The sample (n=194) consisted primarily of nurses (n=131, 68.6%), with physicians representing only a small proportion of the respondents (n=13, 6.8%). Approximately 90% were supportive of cannabis legalization for palliative symptoms, and the majority (86.1%) agreed that cannabis has medical benefits. Non-physician respondents were strongly in agreement

with this statement, whereas physicians were more likely to "somewhat agree" (76.9%). Respondents were equally divided as to whether smoking marijuana is addictive or not [24].

Recently, the *New England Journal of Medicine* conducted a web-based poll on medical cannabis, which provides the most recent information on physicians' views on MC. A total of 1446 respondents were presented with a case vignette of a cancer patient followed by opposing viewpoints of experts, and were asked to vote on whether MC should be prescribed for this patient; 76% voted in favor of medicinal use of cannabis and a considerable number of voters from both camps commented online [25].

The objective of the present cross-sectional study was to examine the knowledge, experience and attitudes of Israeli physicians of different specialties regarding MC use. Furthermore, we aimed to assess whether physicians with more knowledge and/or experience have different attitudes than those less knowledgeable and experienced.

SUBJECTS AND METHODS

During 2 weeks in October 2013 we surveyed a convenience sample of 100 physicians of different specialties, including oncology, pain medicine, rehabilitation, psychiatry and neurology. Seventy-two physicians (72%) responded.

MEASURES

The questionnaire included 32 questions divided into 4 sections. The first section comprised questions relating to demographics: age, gender, specialty and seniority. The second section queried physicians on their experience with MC: how many MC users they encountered ex-officio, how many patients they directly recommended MC and for which indications, how many patients had asked for a MC recommendation, classification of factors that affected their decision to recommend MC, and from what sources they obtained their information on MC. In the third section, in order to audit physicians' knowledge on the subject, participants were asked to self-evaluate their knowledge (on a 0–5 scale) in three areas of MC treatment: pharmacology and medical indications, ways of administration and dosage, and risks and side effects. In the fourth section, physicians' attitudes were examined and participants were asked to state their level of agreement (on a scale of 1–5) on 14 statements relating to MC in general and to the current MC situation in Israel in particular. This section included statements about the therapeutic potential of MC, possible harms, the means of supply, availability, physicians' desired level of involvement in the process of approval, and more. This section is a translated and adapted version of the questionnaire used by Kondrad and Reid in 2013 [23]. Lastly, participants were asked if they supported or objected to legalization of cannabis for non-medical purposes and if they sus-

pect that some people use medical excuses to obtain cannabis for non-medical purposes.

The overall reliability of the questionnaire was evaluated by five physicians (who had not answered the questionnaire) and, in accordance with their comments, minor changes were later made to the original questionnaire.

STATISTICAL ANALYSIS

Data were processed and analyzed with SPSS software, version 20. Pearson chi-square test was used to calculate correlations between attitudes and age, gender, seniority, specialty, knowledge and experience.

RESULTS

DEMOGRAPHIC DATA

Seventy-two physicians participated in this study. The average age was 50.5 ± 9.4 years (range 35–67). With regard to seniority, 17.2% had worked as a physician for less than 5 years, 20.3% for 5–10 years and 62.5% for more than 10 years. Gender, age and specialty of participants are presented in Table 1.

Male physicians recommended MC significantly more than female physicians ($P < 0.05$, $df = 1$). The different indications for MC recommendations are demonstrated in Figure 1 (physicians could have marked more than one indication). It is shown that the four most prevalent indications for MC use are chronic pain (29.2%), cancer pain (23.6%), chemotherapy-induced symptoms (23.6%) and palliative care (15.3%).

Figure 2 depicts physicians' practical experience with MC: 90.3% had been exposed to one MC patient or more and the majority of them, roughly 60%, recommended MC for at least one of their patients. It can be further seen that physicians recommended MC to some of the patients who requested a prescription but not to all.

Table 1. Gender, age and specialty

| | N | % | |
|--------------------|------------------|----------|------|
| Gender | Female | 25 | 34.7 |
| | Male | 47 | 65.3 |
| Age (years) | 35 > | 4 | 5.5 |
| | 36–45 | 19 | 26.4 |
| | 46–55 | 28 | 38.8 |
| | 56–65 | 15 | 20.9 |
| | < 66 | 6 | 8.4 |
| | Specialty | Oncology | 28 |
| Pain | | 5 | 6.9 |
| Psychiatry | | 20 | 27.8 |
| Neurology | | 13 | 18.1 |
| Rehabilitation | | 6 | 8.3 |

PHYSICIANS' KNOWLEDGE ASSESSMENT

Most physicians ($n=57$, 80.2%) rated themselves as having 'medium-high' or 'high' levels of knowledge in the field of "pharmacology and indications," and similarly ($n=53$, 74.7%) in the field "risks and side effects." Fewer physicians ($n=39$, 54.9%) rated their knowledge as 'medium-high' or 'high' in the field of "dosage and ways of administration." Compared with physicians who had never recommended MC in the past ($n=29$, 40.3%), physicians who had recommended MC once or more ($n=43$, 59.7%) reported themselves as having greater knowledge in the fields of "dosage and ways of administration" and "risks and side effects" ($P < 0.05$, $df = 5$).

Table 2 specifies the reported factors that influence physicians' decisions to recommend or not recommend MC for their patients. Clinical experience was stated as significantly more influential by physicians who had recommended MC in the past as compared to physicians who had never done so ($P < 0.05$).

PHYSICIANS' ATTITUDES ASSESSMENT

Physicians of all specialties generally agreed ($n=61$, 79.2%) that MC treatment could be helpful for chronic patients and terminally ill patients, that cannabis is a potential therapeutic agent ($n=54$, 75%), and that MC is a legitimate medical

Figure 1. Indications for medical cannabis recommendations

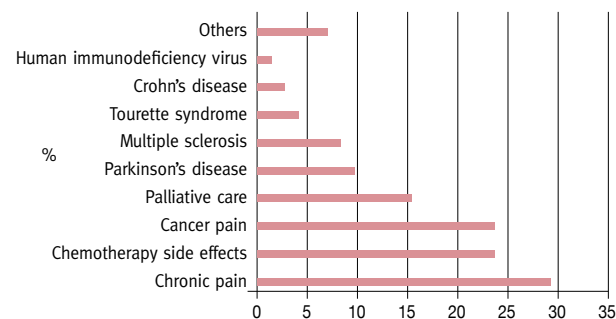


Figure 2. Physician's experience with medical cannabis

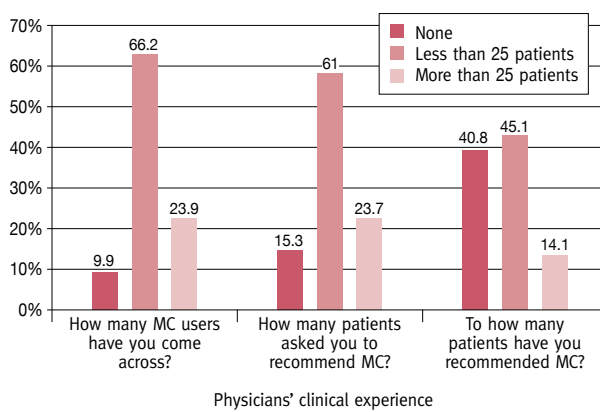


Table 2. Factors influencing physicians' decisions on MC recommendation

| | Recommended MC | | | | P value |
|-------------------------------|----------------|-------|----|-------|---------|
| | Yes | | No | | |
| | N | % | N | % | |
| Past experience with patients | 32 | 76.2% | 12 | 41.4% | 0.003 |
| Medical literature | 26 | 61.9% | 21 | 72.4% | 0.357 |
| Other physicians | 6 | 14.3% | 2 | 6.9% | 0.458 |
| Media | 0 | 0.0% | 1 | 3.4% | 0.408 |
| Lectures | 7 | 16.7% | 3 | 10.3% | 0.511 |
| Ministry of Health policy | 17 | 40.5% | 9 | 31.0% | 0.417 |
| MC suppliers | 0 | 0.0% | 0 | 0.0% | – |
| Past use of friends/family | 0 | 0.0% | 2 | 6.9% | 0.163 |
| Self-use of cannabis | 1 | 2.4% | 1 | 3.4% | 1.000 |

therapy (n=57, 75.8%). However, they were equally divided as to whether or not cannabis poses mental health risks.

Physicians noted that they felt updated with the MC regulations issued by the Ministry of Health (n=53, 75.8%) and agreed with the statement that MC should be distributed in pharmacies, as are all other medications (n=56, 77.8%). Regarding availability, only 39 physicians (55.4%) agreed with the statement that MC in Israel is available for patients who need it. Fifty-three physicians (73.6%) agreed with the statement that any direct connection between patients and MC growers should be disconnected.

Regarding the regulatory role of physicians, the majority (n=59, 83.1%) agreed that physicians should be involved in the process of authorizing MC use but did not agree with the statement that they should be permitted to prescribe it to patients directly, without the Ministry of Health's licensing procedure (n=55, 76.4%). Physicians also agreed that any affiliation of physicians with MC commercial growers should be prohibited (n=58, 80.6%).

Physicians seemed to agree unanimously that more education on MC should be available to physicians (n=64, 88.8%), and that physicians who are certified to recommend MC treatment should undergo specific training and broaden their knowledge on this subject before being certified (n=65, 90.2%).

Only a few significant differences were found: in contrast to physicians with no past experience, physicians who recommended MC in the past (once or more) agreed with the sentence "MC treatment in Israel is accessible to patients who need it" ($P < 0.05$, $df = 2$). The group of oncologists and pain physicians generally disagreed with the statement "The use of MC can undermine mental health," whereas other physicians tended to agree ($P < 0.001$, $df = 4$).

The majority of physicians (n=50, 69.5%) agreed with the statement that some people use medical excuses in order to

obtain cannabis for non-medical purposes. Regarding legalization of cannabis for non-medical purposes, 38 physicians (54.3%) objected, 16 (22.9%) were in favor, 11 (15.7%) were neutral and 5 (7.1%) refused to answer.

DISCUSSION

The goal of this primary study was to examine the knowledge, experience and attitudes of Israeli physicians of different specialties regarding the use of MC. We aimed at finding correlations between physicians' levels of knowledge on MC and their attitudes regarding its use. However, we did not find significant differences in most attitudes between physicians of different specialties or at various levels of seniority.

Most of the physicians participating in this study were generally in favor of cannabis use for medical purposes, acknowledging its legitimacy as a therapeutic agent for some medical indications. Those views stand in contrast to findings of prior studies that observed somewhat skeptical or negative attitudes among physicians [20–23]. Nevertheless, our findings resemble polling results collected recently by the *New England Journal of Medicine* [25]. In accordance with the findings of Kondrad and Reid [23], physicians in our study agreed that continuing education and professional training for physicians on MC is much needed.

Interesting is the difference between the reported number of patients who were provided with a signed MC recommendation and those who had requested a MC recommendation. This concurs with our finding that physicians believed some people might abuse the system and try to get a MC license despite not being sick. These findings highlight the challenges that MC brings to the patient-physician relationship [18] and also accord with barriers reported by MC patients from other countries [3].

Due to the varying efficacy and overall instability of cannabis, it is difficult to determine the precise therapeutic dosage of MC. Consequently, together with the laws and regulations that restrict scientific studies on this subject, MC use around the world is limited [2]. Nevertheless, this situation has been changing in recent years and the use of MC is gradually expanding, both in Israel and worldwide. Yet, few studies have examined attitudes of the medical community with regard to the benefits or harms of MC. Further theory-driven research is needed to examine the factors influencing physicians' attitudes in order to enhance evidence-based decision making.

The main limitation of our study was the sample, which was relatively small and not necessarily representative of the physician population in Israel since most of the participants were from one area (central Israel) and the spectrum of specialties was limited. Nevertheless, this study is the first to assess Israeli physicians' beliefs and perceptions on this evolving topic, and it provides primary yet valuable data.

In conclusion, we found partial acceptance among Israeli physicians of MC as a therapeutic agent, in particular for treatment in cancer and terminal diseases. It is therefore assumed that the number of licensed MC patients in Israel will continue to climb. More clinical studies are required to evaluate the safety and efficacy of MC and to instruct evidence-based clinical choices. In order to advise the changing policy and regulations and to assess the need for continuing medical education, further studies on attitudes and perceptions of physicians and other health professionals towards MC use are warranted.

Correspondence

Y. Zolotov

Fax: (972-3) 738-4041

email: tubyzolo@gmail.com

References

1. Zuardi AW. History of cannabis as a medicine: a review. *Rev Bras Psiquiatr* 2006; 28: 153-7.
2. Bostwick JM. Blurred boundaries: the therapeutics and politics of medical marijuana. *Mayo Clin Proc* 2012; 87: 172-86.
3. Belle-Isle L, Walsh Z, Callaway R, et al. Barriers to access for Canadians who use cannabis for therapeutic purposes. *Int J Drug Policy* 2014; 25: 691-9.
4. Natan G. Regulation of Medical Cannabis in Israel. Information and Research Center of the Israeli Parliament, 2012.
5. Ashton CH. Pharmacology and effects of cannabis: a brief review. *Br J Psychiatry* 2001; 178: 101-6.
6. Naftali T. Medical cannabis: the opportunity versus the temptation. *Harefuah* 2011; 150: 911-12, 935 (Hebrew).
7. Tramer MR, Carroll D, Campbell FA, Reynolds DJM, Moore RA, McQuay HJ. Cannabinoids for control of chemotherapy induced nausea and vomiting: quantitative systematic review. *BMJ* 2001; 323: 16.
8. Abrams DI, Hilton JF, Leiser RJ, Shade SB, et al. Short-term effects of Cannabinoids in patients with HIV-1 infection: a randomized, placebo-controlled clinical trial. *Ann Intern Med* 2003; 139: 258-66.
9. Ware MA, Doyle CR, Woods R, Lynch ME, Clark AJ. Cannabis use for chronic

non-cancer pain: results of a prospective survey. *Pain* 2003; 102: 211-16.

10. Ware MA, Wang T, Shapiro S, et al. Smoked cannabis for chronic neuropathic pain: a randomized controlled trial. *CMAJ Can Med Assoc J* 2010; 182: E694-701.
11. Pacher P, Batkai S, Kunos G. The Endocannabinoid system as an emerging target of pharmacotherapy. *Pharmacol Rev* 2006; 58: 389-462.
12. Naftali T, Bar-Lev Schleider L, Dotan I, et al. Cannabis induces a clinical response in patients with Crohn's disease: a prospective placebo-controlled study. *Clin Gastroenterol Hepatol* 2013; 11: 1276-80.e1.
13. Williamson EM, Evans FJ. Cannabinoids in clinical practice. *Drugs* 2000; 60: 1303-14.
14. Baker D, Pryce G, Giovannoni G, Thompson AJ. The therapeutic potential of cannabis. *Lancet Neurol* 2003; 2: 291-8.
15. McGee R, Williams S, Poulton R, Moffitt T. A longitudinal study of cannabis use and mental health from adolescence to early adulthood. *Addiction* 2000; 95: 491-503.
16. Anthony JC, Warner LA, Kessler RC. Comparative epidemiology of dependence on tobacco, alcohol, controlled substances, and inhalants: basic findings from the National Comorbidity Survey. *Exp Clin Psychopharmacol* 1994; 2: 244.
17. Shoenfeld N, Bodnik D, Rosenberg O. Six month follow-up study of drug treatment in Cannabis addiction: four drugs comparison study. *Harefuah* 2011; 150: 888-2 (Hebrew).
18. Kleber HD, Dupont RL. Physicians and medical marijuana. *Am J Psychiatry* 2012; 169: 564-8.
19. Bar-Sela G, Batash R, Schaffer M. Is The clinical use of cannabis by oncology patients advisable? *Curr Med Chem* 2014; 21 (6): 1923-30.
20. Doblin RE, Kleiman MA. Marijuana as antiemetic medicine: a survey of oncologists' experiences and attitudes. *J Clin Oncol* 1991; 9: 1314-19.
21. Schwartz RH, Voth EA, Sheridan MJ. Marijuana to prevent nausea and vomiting in cancer patients: a survey of clinical oncologists. *South Med J* 1997; 90: 167-72.
22. Charuvastra A, Friedmann PD, Stein MD. Physician attitudes regarding the prescription of medical marijuana. *J Addict Dis* 2005; 24: 87-93.
23. Kondrad E, Reid A. Colorado family physicians' attitudes toward medical marijuana. *J Am Board Fam Med* 2013; 26: 52-60.
24. Uritsky TJ, McPherson ML, Pradel F. Assessment of hospice health professionals' knowledge, views, and experience with medical marijuana. *J Palliat Med* 2011; 14: 1291-5.
25. Adler JN, Colbert JA. Medicinal use of marijuana — polling results. *N Engl J Med* 2013; 368: e30.