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Preliminary assessment of medical cannabis consumption by cancer survivors

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ABSTRACT

Objectives: To assess the motivation of cancer survivors to consume medical cannabis and to assess the patterns of use, perceived efficacy, as well as side and adverse effects.
Methods: Cross-sectional survey among 190 Israeli cancer survivors who were licensed to use medical cannabis in a single institution. In addition to demographic information, the questionnaire examined patterns of use (including dosage, type of cannabis and way of administration), motivation for medical cannabis consumption, perceived efficacy, adverse and side effects, motivation for ceasing cannabis consumption, and tobacco smoking.
Results: The mean monthly dosage of cannabis consumed was 42.4 grams; 95.8% of respondents reported not consuming cannabis regularly before being diagnosed with cancer; the most common way of administration was smoking, and most of the participants reported taking cannabis throughout the day. The most common symptoms for which participants took medical cannabis were pain (n = 169, 88.9%), sleeping disorder (n = 144, 75.8%) and anxiety (n = 79, 41.6%). Twenty patients (10.5%) reported on mild side (or adverse) effects.
Conclusions: This study indicates that cancer survivors may indeed consume cannabis for symptom relief, and not merely for recreational purposes. Although our findings point to perceived safety and efficacy of medical cannabis for cancer survivors, more research is needed to study the adequate role that cannabis may have for treating symptoms associated with cancer survivorship.

1. Introduction

Medical cannabis regulations are recently changing in many places, including Israel. Cannabis as a medical treatment is somewhat controversial, primarily given the lack of evidence-base to support its use for different symptoms and indications. Nevertheless, a recent review commissioned by the American National Academy of Sciences reported on a strong evidence-base for cannabis and its active compounds (cannabinoids) as an anti-emetic treatment for chemotherapy-induced nausea and vomiting.[1] Cannabis has been additionally suggested as a modulator for other common and debilitating symptoms that are associated with cancer and its treatments.[2]

For example, pain is a common symptom that more than half of cancer patients experience,[3] and cannabis has been shown to be effective in reducing pain.[4] Cannabis has been additionally pointed as interacting with opioid receptors,[5] and it present itself as an alternative to opioids.[6] Further, while loss of appetite and anorexia are common troubling symptoms which are common among cancer patients,[7] cannabis is known to boost appetite,[8,9] and observational data additionally supports such benefit among cancer patients.[10] To a certain extent, there is evidence to support the potential of cannabis for additional symptoms that impact cancer patients, such as gastrointestinal distress,[10] peripheral neuropathy,[11,12] as well as depression and anxiety.[10]

Notwithstanding, the body of knowledge is in its infancy, it has several limitations, and much more research is needed to decide on the safety and efficacy of cannabis for the symptoms mentioned above. Furthermore, cannabis may be also associated with several adverse effects, including cognitive problems,[13,14] and its long-term effects remain unexplored. Moreover, an observational study recently suggested that cannabis may have detrimental effects for cancer patients undergoing immunotherapy.[15]

Healthcare providers hold diversified views regarding the integration of medical cannabis into the medical practice.[16] Specifically

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regarding cancer care, however, more positive views have been reported. In a nationally representative survey in the US, despite a low self-reported knowledge, 67% of American oncologists perceived medical cannabis as a helpful adjunct to standard pain management strategies, and 65% as equal or better than standard treatments for anorexia and cachexia.[17] Similarly, the vast majority of Israeli oncologists reported on lack of knowledge regarding medical cannabis, but nevertheless perceived cannabis to be effective and safe, and prescribed it regularly to their patients.[18] Other studies additionally reported on favorable beliefs of healthcare providers regarding medical cannabis as a potential treatment option for hospice patients.[19–23]

1.1. The current study

The number of Israeli patients who are licensed to use medical cannabis is climbing over 45,000, and around 25% of these licenses are granted to cancer patients.[24] While Israeli physicians have a key role in the authorization of medical cannabis, it is not prescribed similarly to other medication. Rather, the consumption of medical cannabis is subject to a governmental license that is issued by the Ministry of Health upon approval of a medical recommendation by a specialist for a specific patient and for specific medical indication(s).

Since 2010, several hospitals in Israel are allowed to issue such governmental license to cancer patients that are being treated within the hospital. In Sheba Medical Center, in accordance with the Ministry of Health regulations, medical cannabis is considered for cancer patients who suffer from symptoms that are associated with their diagnosis and/or their anti-cancer treatment(s). Licenses are issued for 3-6 months, and renewed if recommended by the oncologist. Patients with a personal or family history of mental illness are referred to be evaluated by a psychiatrist prior to being licensed.

In recent years we are fortunately witnessing a partial shift in cancer care; early detection increases, more successful anti-tumor treatments are available, and more and more patients survive cancer.[25] Cancer survivors make up a unique population with distinct clinical needs, and many cancer survivors continue to experience physical and psychosocial effects after treatment completion.[26] In a recent qualitative study, cancer survivors reported that medical cannabis offers symptomatic benefit and relief from side effects – mainly reducing and managing pain – and additionally reported on barriers related to knowledge and adequate access.[27] The objective of this study was to assess the motivation of cancer survivors to consume medical cannabis and to assess the patterns of use, perceived efficacy, as well as side and adverse effects.

2. Methods

The Institutional Review Board of the Cancer Center at Sheba Medical Center approved the study procedures. Potential participants were identified by the oncologist who is the competent authority in Sheba Medical Center to sign and issue governmental licenses for medical cannabis to cancer patients. Eligibility criteria were patients licensed for medical cannabis who had no apparent evidence of active disease and were not undergoing anti-cancer treatments. Potential participants were contacted by phone by a department staff member. Prior to survey initiation, participants were presented with an informed consent which included a brief description of the purpose of the study and assurance of anonymity and confidentiality. SPSS version 25 was used for all statistical analyses.

The survey instrument included 18 items, that were developed based on the clinical experience of the co-authors (L.E. and O.M.), as well as on consultations with fellow clinicians in the Cancer Center at Sheba Medical Center. The questionnaire is available upon request from the corresponding author. In addition to demographic questions (age, gender and occupational status), and the cancer type which was formerly diagnosed, the questionnaire included the following sections:

2.1. Patterns of use

Participants were asked about the monthly dosage of medical cannabis consumed (in grams), the type of cannabis (high THC, high CBD, equal ratio of THC:CBD or "don't know"), and the way of administration (smoking, vaporizer, ointment or other). Participants were additionally asked for how long they have been consuming medical cannabis (in months), about cannabis consumption in the year prior to their diagnosis of cancer (yes/no), and about the time during the day in which they regularly take it (throughout the day, mostly at evening/night time, or only at evening/night time).

2.2. Motivation for consumption and perceived efficacy

Participants were asked what is the reason for which they take medical cannabis. Responses were "Pain", "Sleeping disorder", "Anxiety" or "Other". Participants who answered "Other" were asked to specify the symptom(s). In addition, participants were asked to rate their agreement to the following statements: "Medical cannabis improves my mood", "Medical cannabis improves my daily function", and "Medical cannabis improves my sexual function". Responses ranged from 1 ("completely disagree") to 7 ("completely agree").

2.3. Adverse and side effect

Participants were asked if they have ever experienced side effects or adverse effects from their consumption of medical cannabis. Participants who answered "Yes" were asked to specify which side/adverse effect(s) they experienced.

2.4. Motivation for ceasing cannabis consumption

Participants were asked if they had tried ceasing their cannabis consumption since their anti-cancer treatments were over, if they wish to do so in the future, and if a friend or a relative recommended that they cease or reduce their cannabis consumption. Optional responses were "Yes" or "No".

2.5. Tobacco smoking

Participants were asked if they are currently smoking cigarettes or tobacco (Yes/No). Smokers were asked about the number of cigarettes they smoke per day, the number of years during which they smoke, and about the effect of cannabis consumption on their smoking of cigarettes ("smoking more", "smoking less", or "smoking the same").

3. Results

Out of the 287 potential participants, 63 did not answer the phone at two different days and at different times of the day, 8 deceased and 26 did not give their consent to participate. Therefore, this study includes data from 190 remaining participants. The mean age of participants was 56.7 years (range 24-88; SD 12.9), and 56.6% were males. The most common cancer type was lung cancer (n = 26, 13.8%), followed by cervical cancer (n = 22, 11.6%), lymphoma (n = 20, 10.6%), colon cancer (n = 17, 9%), and rectal cancer (n = 17, 9%).

3.1. Patterns of use

The mean monthly dosage of medical cannabis was 42.4 grams (range: 20-100), with 98 patients (51.6%) consuming 30 grams or less. The most common way of administration was smoking (n = 151, 79.5%), followed by vaporizer (n = 72, 37.9%) and ointment (n = 30, 15.8%). Almost half of the sample (n = 89, 46.8%) reported consuming medical cannabis with "equal THC:CBD ratio, 89 participants (46.8%) reported not knowing if the medical cannabis they consume is "High

THC", "High CBD" or "equal THC:CBD ratio", 7 participants (3.7%) reported consuming "High CBD" cannabis, and 5 participants (2.6%) reported consuming "High THC" cannabis.

While most of the sample (n = 181, 95.8%) reported that they had not taken cannabis regularly in the year prior to their diagnosis of cancer, the mean number of months that participants were consuming medical cannabis under a governmental license was 22 (range: 1-120). Most of the participants (n = 126, 66.3%) reported consuming medical cannabis throughout the day, 47 participants (24.7%) reported consuming mostly at evening or night time, and 15 participants (7.9%) reported consuming only at evening or night time.

3.2. Motivation for consumption and perceived efficacy

The most common symptom for which participants reported consuming medical cannabis was pain (n = 169, 88.9%), followed by sleeping disorder (n = 144, 75.8%) and anxiety (n = 79, 41.6%). Sixty-four participants (33.7%) reported on other reasons for medical cannabis consumption, mainly neuropathy, depression and loss of appetite.

On a 7-point scale (1="completely disagree" to 7="completely agree"), 161 participants (84.8%) answered 5 or higher in regards to the statement "Medical cannabis improves my mood", and 172 participants (90.6%) answered 5 or higher in regards to the statement "Medical cannabis improves my daily function". Forty-two participants (22.1%) answered 5 or higher in regards to the statement "Medical cannabis improves my sexual function", with 89 participants (46.8%) answering 1 ("completely disagree") in regards to this statement.

3.3. Adverse and Side Effects

Twenty patients (10.5%) reported on mild side (or adverse) effects which were associated with medical cannabis. The most common side/adverse effect was anxiety/fatigue (n = 6), and other adverse/side effects included dizziness, memory loss, coughing and dry mouth.

3.4. Motivation for ceasing cannabis consumption

Thirty-one patients (16.3%) reported that they have previously tried to cease taking medical cannabis, 19 patients (10%) reported that they wish to do so in the future, and 2 patients (1.1%) reported that a friend or a family member advised them to quit or reduce their cannabis consumption.

3.5. Tobacco smoking

Sixty-five patients (34.2%) reported that they smoked cigarettes or tobacco. The mean number of cigarettes used daily was 11.4 (range: 1-40), and the mean number of years during which smokers were using cigarettes/tobacco was 29 (range: 2-50). Out of these smoking patients, 85.9% (n = 55) reported that they use less cigarettes/tobacco since they have started to take medical cannabis. 10.9% (n = 7) reported no change on their tobacco consumption, and 3.1% (n = 2) reported smoking more cigarettes/tobacco.

4. Discussion

The aim of this study was to assess the motivation of cancer survivors to consume medical cannabis and to examine the patterns of use, perceived efficacy, as well as side and adverse effects. To the best of our knowledge, this is the first study which used quantitative methods to explore medical cannabis consumption by cancer survivors. One of our major findings is that the vast majority within cancer survivors who consume cannabis reported to have not using cannabis regularly prior to the cancer diagnosis. We additionally found that smoking is the main way of cannabis administration, that nearly half were not sure about the type of cannabis which they consume, and that pain and sleeping disturbance were the main reasons for cannabis consumption.

The perceived efficacy and safety of medical cannabis which were overall reported by our sample are in line with results reported in previous studies in Israel and elsewhere.[10,28–30] Notably, despite anecdotal reports of patients on positive impact of their cannabis consumption on sexual function, twice as many respondents in this study reported gaining a negative effect than those reporting a positive effect (46.8% vs. 21.1%). Purely observational, these results indicate the need for controlled studies in order to advance our understanding of the clinical implications that cannabis may have on different symptoms that are relevant to cancer care, and more specifically to cancer survivors. Indeed, cancer survivors are prone to suffer from distressing symptoms, including pain, sleep disturbance and anxiety,[31,32] and are more likely to take medications to cope with such symptoms.[33] Given that previous studies have pointed to a therapeutic potential of cannabis, and cannabinoid-based products, for such indications,[34] the potential risks and benefits should be considered in relation to other, more conventional, treatments.

Apart from treatment of symptoms, there is a contentious debate about the anti-cancer potential of cannabis and cannabinoids. While some pre-clinical and pilot studies pointed to the anti-cancer properties of cannabinoids,[35–37] hitherto there is clearly no sufficient evidence from human clinical trials to support the use of cannabis as an anti-cancer agent.[38] Cancer patients may however hold such false beliefs since both the internet and the social media are full of misinformation about using cannabis to cure cancer.[39] Our survey did not directly ask if respondents took cannabis for purported anti-cancer effects, and this was neither listed by participants under the "other" response option; future studies are encouraged to inquire this subject in depth.

Although cannabis oil extracts are an available option for licensed patients in Israel, participants reported on smoking as their main way of using cannabis. Combined with the relatively large proportion of tobacco smokers in our sample, and given the carcinogenic risk of smoking, these results point to both the need of finding more safe alternatives to administrate cannabis, as well as to the importance of promoting smoking cessation programs among cancer survivors. Surprisingly, around half of the respondents reported not knowing which type of cannabis they were consuming. The differences between THC and CBD are well-established, and these compounds have divergent effects; the main difference is that THC is psychoactive and CBD is not. Although medical cannabis products in Israel are marked with their levels of THC and CBD, this finding may be partially due to inadequate labelling of cannabis products. This finding additionally indicates the need for better education to patients who are using medical cannabis, in order to maximize their therapeutic benefit and avoid potential risks.

Undoubtedly, there is a conundrum about the addictive nature of cannabis, and it has been additionally suggested that people might take advantage of medical cannabis in order to "launder" their recreational use.[40] However, the vast majority of our respondents reported not taking cannabis for recreational purposes prior to the diagnosis of cancer. Although our survey did not include specific screening for cannabis use disorder, this finding may suggest that they are not recreational users, but in fact consuming it for medical purposes. Moreover, our finding that most respondents were consuming cannabis type of either balanced ration of THC and CBD or of high CBD indicates that the motivation of most respondents for consumption of cannabis was in fact not to experience euphoria ("high").

Previous studies have shown that medical cannabis may be more accepted by healthcare providers in the field of oncology than in other fields of medicine.[17,24,41] However, patients are generally taking medical cannabis without relying on guidance of health professionals.[42,43] As medical cannabis is becoming more common, it is important for physicians and other health professionals to be educated and knowledgeable on its indications, side effects, pharmacology, and routes of administration in order to adequately consult to patients on safe and effective

practices.

This cross-sectional study is based solely on patients' self-reports. However, we believe that the assurance of anonymity has reduced or eliminated potential biases of responses. Nevertheless, our analysis may have been affected by selection bias, as the patients who declined to participate may have had more negative experiences than those who responded. The study is also limited by the scope of the collected data, as our dataset did not include verified data on medical diagnoses (other than past diagnosis of cancer), nor about the past and current use of other medications and/or medical treatment(s). Future studies could benefit from including verified data from medical records, as well as from monitoring patients throughout time, in order to better understand cancer survivors' persistence of taking cannabis and their motivation for doing so.

In conclusion, despite the many challenges and uncertainties, cannabis is being slowly diffused into healthcare. Survivors who have ongoing symptoms as a result of their prior treatments should be carefully assessed as to whether there is a medical need for which cannabis may be helpful. Indeed, patients and physicians should establish and maintain a therapeutic alliance in which medical needs and potential treatments, including medical cannabis, are honestly discussed and mutually considered and agreed upon. More research is needed to study the motivation of some cancer survivors to consume cannabis, as well as the perceived effect(s), in order to map the potential risks and benefits and to guide evidence-based practices and policies. Until such evidence is available, patients and clinicians alike are prone to be challenged with finding the adequate role that cannabis may have for treating symptoms associated with cancer survivorship.

CRediT authorship contribution statement

Yuval Zolotov: Conceptualization, Methodology, Formal analysis, Resources, Writing - original draft. **Lia Eshet:** Conceptualization, Methodology, Resources, Writing - review & editing. **Ofir Morag:** Conceptualization, Methodology, Resources, Writing - review & editing.

Declaration of Competing Interest

None.

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