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Monograph

A survey of patients with cancer and oncology health-care professionals about cannabis use during treatment

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Abstract

Background: This study characterizes patient and health-care professional perspectives regarding medical cannabis use at a National Cancer Institute–Designated Cancer Center. Data evaluated included the prevalence and patterns of and reasons for cannabis use.

Methods: Patients with cancer undergoing treatment were recruited into a cross-sectional survey as part of a national National Cancer Institute–funded effort. Participants completed a survey about cannabis use, reasons for use, and types of cannabis. A health-care professional survey was also conducted to explore perspectives regarding patients' use of cannabis.

Results: A total of 313 patients with cancer (mean [SD] age = 60.7 [12.8] years) completed the survey (43% response rate) between 2021 and 2022. Of the respondents, 58% were female; identified as White (61%) and Black (23%); and had diverse cancer diagnoses. Nearly half of respondents (43%) had previously used cannabis, one-quarter (26%) had used cannabis since their cancer diagnosis, and almost 1 in 6 (17%) were actively using cannabis at the time of survey completion. The most common modes of ingestion were gummies (33%) and smoking (30%). The most commonly reported reasons for use were insomnia (46%), pain (41%), and mood (39%). For the 164 health-care professionals who completed the survey (25% response rate), the majority agreed that cannabis use (72%) is safe and beneficial for patients (57%). Four in 10 (39%) health-care professionals felt comfortable providing guidance to patients about cannabis use; however, only 1 in 8 (13%) felt knowledgeable about the topic of cannabis.

Conclusions: Approximately one-sixth of patients with cancer receiving treatment actively use cannabis for management of various cancer symptoms. Perceptions about cannabis use and education varied widely among health-care professionals.

Integrative medicine and complementary and alternative medicine (CAM) is a growing discipline in the United States. A 2012 Centers for Disease Control and Prevention (CDC) study found that more than one-third of adults had used a form of integrative medicine and CAM during the past 12 months (1). The National Center for Complementary and Integrative Health defines a therapy as complementary "if a non-mainstream approach is used together with conventional medicine," while "if a non-mainstream approach is used in place of conventional medicine, it's considered alternative" (2). In contrast, integrative medicine is an approach that "reaffirms the importance of the relationship between practitioner and patient, focuses on the whole person, is informed by evidence, and makes use of all appropriate therapeutic and lifestyle approaches, healthcare professionals, and disciplines to achieve optimal health and healing," as defined by the Academic Consortium for Integrative Medicine and Health. Studies demonstrate that the use of integrative medicine and CAM by patients with cancer is prevalent and may exceed that of the general population (3,4). Unfortunately, several studies have documented a low disclosure rate and poor communication between patients and physicians regarding patients' use of integrative medicine and CAM (5,6). Among the general population, nondisclosure of integrative medicine and CAM use has been estimated to be 23% to 72% (6), while among patients with cancer, nondisclosure has been estimated to range from 26% to 54% (7–11). Findings suggest that physicians commonly do not initiate conversations regarding integrative medicine and CAM (5,6,12). Herbs and supplements are the most common type of integrative medicine and CAM patients use, and 1 in particular has grown in popularity over the past few years: cannabis.

The National Health and Nutrition Examination Survey (NHANES) reported that 40.3% of patients with cancer had used cannabis in the past and that the current use of cannabis increased from 9.3% to 12.3% from 2005 to 2014 (13). In states with legalized medical cannabis, the rate of use is likely higher (14). Since 1996, 38 states and the District of Columbia have passed laws to legalize medical cannabis (15), but US federal law still classifies cannabis as an illegal schedule I drug (a substance

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with high potential for dependence or abuse), with no accepted use in medical treatment (16). In Ohio, medical cannabis was legalized in 2016. Patients must receive a letter of recommendation from a certified physician for at least 1 of 21 designated medical conditions, including cancer, and then purchase their medical cannabis from a licensed dispensary. Cannabis is still considered an illegal substance, however, for recreational use in Ohio. Similar to integrative medicine and CAM, notable nondisclosure has been reported, as 1 study showed that only about half of physicians were aware of their patients' use of medical cannabis (17). Despite the common belief among patients that cannabis therapies are inherently safe, the evidence is growing that greater caution is needed with cannabis because it may have potential direct side effects, including psychosis, anxiety, hyperemesis, and cognitive impairment (18,19). Another potential harm is the interactions between herbs such as cannabis and medications (20). Similarly, studies indicate that cannabis-derived compounds may interact with cytochrome P450 (CYP) oxidases, including CYP3A4, CYP2C9, and CYP2D6, and others (21–24). Recent studies have shown, however, that effects are highly dose dependent and highly variable depending on the source of cannabis (25). Given the discordant perspectives of and growing data regarding integrative medicine and CAM, greater information is needed to understand the use of cannabis by patients with cancer as well as how oncology health-care professionals view this use by patients.

This study aimed to assess the prevalence and patterns of cannabis use among patients with cancer during active treatment as well as to inquire into patients' communication patterns regarding cannabis use with their treating medical team. Concurrently, a survey of oncology health-care professionals was conducted to examine their perceptions, education and knowledge, and practice patterns regarding cannabis use by their patients. It was hypothesized that a substantial proportion of patients receiving cancer treatment are using cannabis therapies and that such use is often unrecognized by the treating cancer team. It was also hypothesized that different patterns of cannabis use by patients would be observed across demographics and socioeconomic factors.

Methods

A cross-sectional survey of patients undergoing cancer treatment (surgery, radiation, or systemic therapy) was conducted at 3 sites in the Cleveland, Ohio, metropolitan area representing a diversity of patient locations: University Hospitals (UH) Seidman Cancer Center Cleveland Medical Center, UH Minoff Health Center, and UH St John Medical Center. UH Seidman Cancer Cleveland Medical Center is a large academic medical center; the latter 2 facilities are community health-care sites that primarily care for patients from low-income and minority communities. Data collection occurred between 2021 and 2022. Research staff rotated through sites and clinics on different days of the week to ensure maximum study enrollment. Research staff approached patients to participate in the study as they checked in for treatment-related appointments, including presurgery medical evaluation, chemotherapy infusion appointments, or a radiation oncology treatment. Patients were required to be at least 18 years of age; be able to understand and sign a written informed consent document; have a diagnosis of cancer; and be actively receiving cancer treatment, including surgery, radiation therapy, or systemic therapy (we define *systemic therapy* as chemotherapy, biologics, and hormone therapy [including oral medicines]). A trained research assistant provided additional information about the study and secured written informed consent. Following the consent process, the research assistant provided consenting patients a mobile tablet to complete the initial survey electronically. If patients were using a cannabis-based product, additional questions asked about patterns of use and potential benefits or harms associated with cannabis use. For patients that had recently started a cannabis-based product in the past 30 days, a follow-up phone survey was conducted 1 to 2 months later to determine any changes in the pattern of cannabis use and to gather more information about potential benefits or harms. Health-care professionals (physicians, advanced practice practitioners, and nurses) associated with the Case Comprehensive Cancer Center member clinical sites of University Hospitals were emailed an electronic survey. Patients were offered a $10 gift card after completing the initial survey and a $10 gift card after completing the follow-up interview, totaling $20 in compensation. Health-care professionals were offered a $10 gift card upon completion of the survey. This study was approved by the institutional review board of UH Cleveland Medical Center.

The patient survey was adopted from an instrument developed for a study evaluating herbs and supplements use in patients with cancer (26). The guide was revised to reflect the focus on cannabis use based on published studies (14,27,28). In-person surveys (see Supplementary Appendix A, available online) included the following sections: 1) basic information about cancer diagnosis and planned or ongoing treatment; 2) patient report of all prescription medications, over-the-counter medications, and herbs and supplements; 3) cannabis use (ie, history, type, and patterns of use; reasons for use or nonuse; expectations from cannabis use; knowledge and acquisition; communication about cannabis with their treating medical team; future use intentions); and 4) sociodemographics, including race and ethnicity, highest level of education achieved, and annual household income. The surveys used the terms *marijuana* and *cannabis* because patients may be more familiar with 1 term over the other, particularly because the Ohio law uses *medical marijuana*.

For each cannabis product patients were using, specific questions were posed about how they learned about the product, where they obtained the product, why they were taking the products; whether the product was working as they thought it would; possible side effects; and whether the product was recommended by 1 of their physicians. Both instruments underwent evaluation with the Patient and Family Advisory Committee and with a pilot group of 5 patients to maximize health literacy. The National Cancer Institute facilitated the coordination of all funded centers nationally to ensure that a set of common data elements was collected and to allow for pooled data analysis and coordinated research efforts.

Statistical analyses

The research team coded and entered all participants into a database using standard statistical software (Stata, version 9.0; StataCorp LP, College Station, TX). Standard descriptive statistics were computed for all study variables, with mean (SD) or median and percentile values for continuous variables and frequency distributions for categorical variables. We used χ^2 analyses to identify bivariate associations between demographic variables and overall cannabis prevalence and use during cancer treatment. Furthermore, χ^2 tests were used to examine associations between key variables such as demographic factors (eg, age, sex), cancer treatment type (surgery, chemotherapy, and radiation therapy), and cancer characteristics (eg, type and stage). Multivariable

logistic regression models were used to examine key study associations while controlling for demographics and other socioeconomic status–related factors (29). Regression model building began with stepwise inclusion of all variables that achieved a $P \leq 0.20$ based on the χ^2 tests. A cutoff of $P = .10$ to enter and $P = .05$ as the criterion for model retention was used. Age (>61 years vs ≤61 years), gender (male vs female), and race (White vs. non-White) were included in the model, regardless of level of statistical significance, because previous studies have found significant correlations between herb and supplement use and key variables such as demographics (age, gender, socioeconomic status, education) (30). In addition, for patient analysis, we included location vs community center, stage (stage IV vs other), and whether the patient was receiving systemic treatment (including chemotherapy, immunotherapy, and biologics). For the final regression model, the decision rule was based on a 2-sided test, with a type I error of 0.05 or less.

Results

Demographics

A total of 313 patients with cancer completed the survey (43% response rate), with a mean (SD) age of 60.7 (12.8) years, 50% of respondents being women, a variety of cancer types (hematologic [24%], breast [17%], gastrointestinal [16%], lung [10%]) and stages (I [8%], II [10%], III [15%], and IV [29%]). Of 264 patients, 226 completed section B's phone interview (85.6% response rate). Twelve patients withdrew, 3 declined to participate, 3 people died, and 30 could not be contacted. The respondents identified with differing racial and ethnic backgrounds (White [61%], Black [23%], other [8%]), education level (high school [24%], college [43%], postgraduate [15%]), and employment status (retired [35%], employed [26%], unemployed or disabled [19%]). Participants most commonly received chemotherapy (85%) as well as radiation therapy (19%) and surgery (16%). The majority of treatments were provided at the main cancer center (72%) vs at the community sites (27%). See Table 1 for further details.

A total of 164 health-care professional surveys (25% response rate) were completed and received. Approximately half of respondents were nurses (54% nurses, 22% advance practice practitioners, and 21% physicians), with the majority identifying as White (74%) and female (64%). Mean (SD) age was 41 (11.2) years. Participants reported working in the outpatient area (55%), inpatient area (19%), or both (23%). See Table 2 for details.

Table 1. Patient demographics

Characteristic	Total (N = 313)	Current cannabis users (n = 82)	Nonusers (n = 231)
Age, mean (SD), y	60.7 (12.8)	55.2 (12.9)	63.2 (12.1)
Gender, No. (%)			
Male	111 (35)	27 (33)	85 (37)
Female	156 (50)	48 (59)	107 (46)
Race or ethnicity, No. (%)			
Caucasian	191 (61)	51 (66)	143 (62)
Black	71 (23)	24 (29)	47 (20)
Hispanic, Asian, Southeast Asian, Pacific-Islander, Native American	26 (8)	7 (8.5)	6 (3)
Cancer type, No. (%)			
Hematologic	76 (24)	14 (17)	55 (24)
Breast	54 (17)	18 (22)	36 (16)
Gastrointestinal	50 (16)	3 (4)	5 (2)
Lung	32 (10)	8 (39)	23 (10)
Genitourinary	20 (6)	7 (9)	23 (10)
Melanoma	19 (6)	4 (5)	15 (6)
Treatment type, No. (%)			
Systemic therapy	268 (85)	56 (68)	202 (87)
Radiation	58 (19)	13 (16)	42 (21)
Surgery	49 (16)	12 (15)	35 (15)
Cancer stage, No. (%)			
I	25 (8)	3 (4)	22 (10)
II	32 (10)	13 (16)	19 (8)
III	44 (15)	13 (16)	31 (13)
IV	90 (29)	27 (33)	63 (27)

Patterns of cannabis use

Among respondents, nearly half (41%) had previously used cannabis, one-quarter (26%) had used cannabis since their cancer diagnosis, and about 1 in 6 (17%) were currently using cannabis. The health-care professionals estimated that 10% of patients with cancer overall were using cannabis and that 1 in 4 patients (23%) were using cannabis during cancer treatment. When patients were asked how many days they had used cannabis in the past 30 days, the average (SD) response was 17 (10.8) days. The most commonly reported reasons for use by respondents were insomnia (46%), pain (41%), mood (39%), poor appetite (39%), and gastrointestinal symptoms (29%). Among health-care professionals, the opinions regarding which conditions medical cannabis should be approved for included cancer (63%), pain (47%), anorexia (41%), terminal illness (41%), anxiety (38%), and cachexia (37%) (Figure 1, A and B). When all patients were asked whether cannabis had any benefits, even if they had never used it, the majority (84%) replied yes and stated that the perceived benefits of cannabis were for pain management (64%); mood, such as stress or anxiety (59%); poor sleep (43%); poor appetite (40%); and nausea/vomiting (35%).

Among current users of cannabis, the forms used were gummies (33%), smoked (30%), liquid (19%), edible (7%), and pill (6%). Health-care professionals thought that the forms of cannabis that should be available included gummies (66%), capsules (61%), cream or lotion (54%), baked goods (44%), and oils (42%). Users reported receiving the prescription most commonly from their primary care practitioner (44%) rather than from their oncologist (22%). The majority of respondents reported that the idea to use cannabis was primarily their own (63%) vs a shared decision (24%) vs mostly someone else's idea (13%). Most cannabis users (84%) after a cancer diagnosis reported that the cannabis worked.

Table 2. Health-care professional demographics (N = 164)

Characteristic	Value
Age, mean (SD), y	41.4 (11.2)
Gender, No. (%)	
Male	26 (16)
Female	105 (64)
Race and ethnicity, No. (%)	
Caucasian	121 (74)
Black, Hispanic, Asian, Southeast Asian, Pacific-Islander, Native American	14 (9)
Cancer team, No. (%)	
General	38 (23)
Hematologic	38 (23)
Genitourinary	15 (9)
Breast	12 (7)
Lung	9 (5)
Gastrointestinal	5 (3)
Health-care professional type, No. (%)	
Nurse	89 (54)
Advanced practice practitioner	36 (22)
Physician	35 (21)

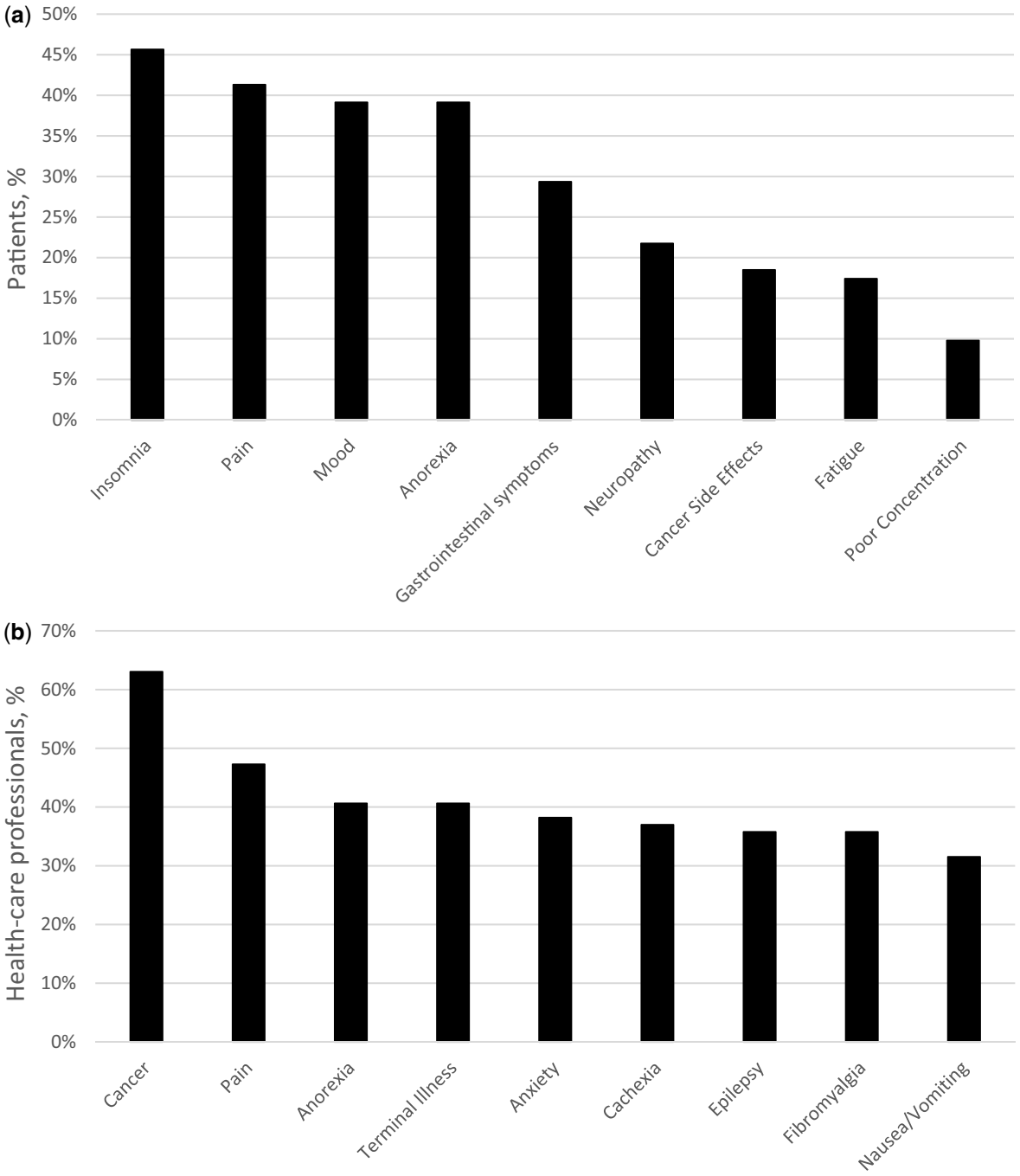

Figure 1. A) Reasons for cannabis use among users after cancer diagnosis. **B**) Conditions for which cannabis had to be approved by a health-care professional.

Particularly, patients most commonly reported using cannabis to aid insomnia (13%); pain (12%); lack of appetite (11.5%); and mood changes, stress, anxiety, or depression (11.5%).

Perceptions and communication about cannabis

About one-third of patients (31%) reported that legalization of medical cannabis in Ohio would increase the likelihood of using cannabis. Patients rarely felt that cannabis use worsened symptoms (fatigue, mood, gastrointestinal upset, psychosis, anxiety, hyperemesis, cognitive impairment, decreased sexual interest/activity), although in some cases it made no change in symptoms (Figure 2). Health-care professionals were most concerned about side effects such as sedation (61%), confusion (46%), anxiety (38%), psychosis (36%), and depression (29%). In general, patients reported feeling comfortable talking with their health-care practitioner about cannabis, although most patients (61%) had not discussed the use of cannabis for treatment of symptoms with a health-care practitioner. The most common reason was because they were never asked (29%). If they had discussed use with a health-care practitioner, it was most likely with their oncologist (17%), followed by advance practice practitioner (8%), and finally their primary care professional (5%).

Health-care professionals reported having discussed the topic of cannabis with approximately one-quarter (24%) of patients in the past 12 months. The respondent initiated approximately half of these conversations (45%). Four in 10 (39%) health-care

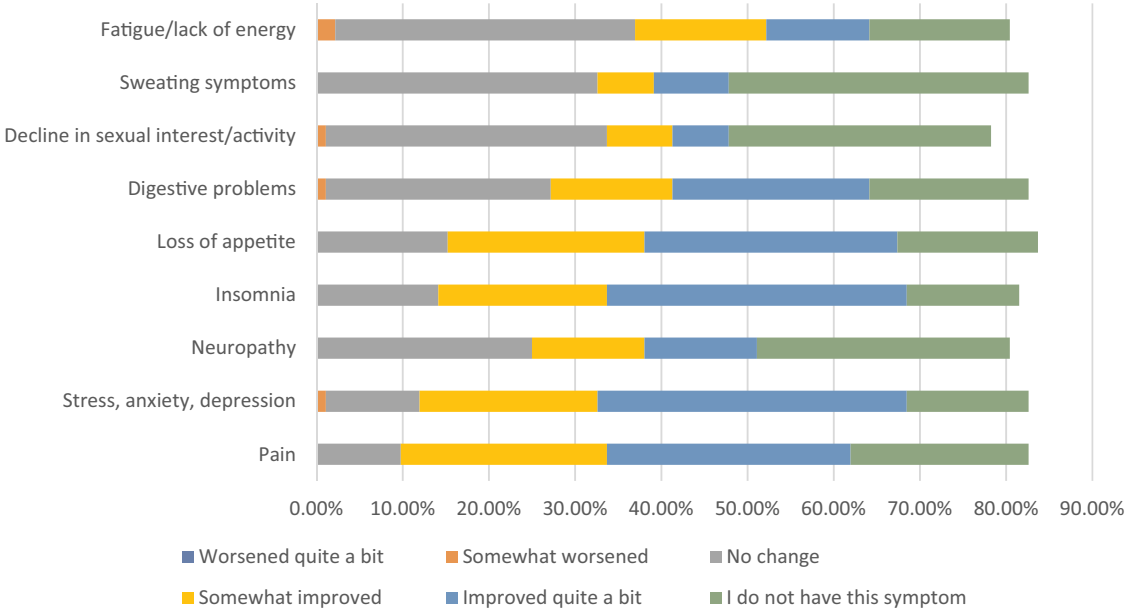

Figure 2. Patients' perceptions of the effects of cannabis use on their symptoms.

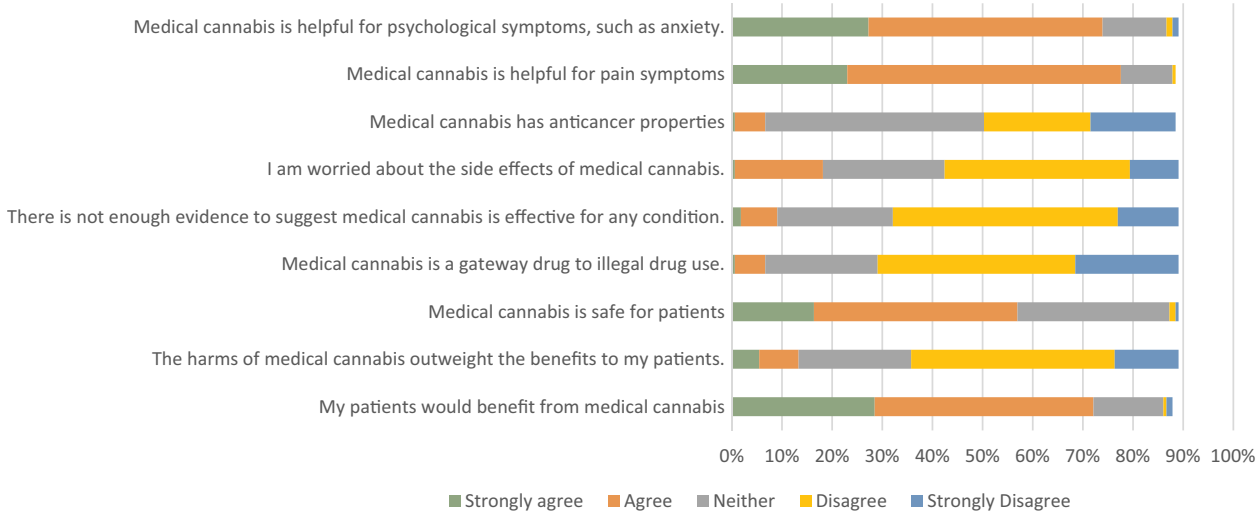

Figure 3. Health-care professionals' perceptions of cannabis use.

professionals felt comfortable providing guidance to patients about cannabis use, but only 1 in 8 (13%) felt knowledgeable about the topic of cannabis. When cannabis was discussed, one-third of patients (32%) reported that the conversation strengthened the relationship with their practitioner, while only 5% reported that it weakened the relationship. The most common barriers to cannabis use by patients were cost (20%), health-care professional recommendations against it (15%), and contradictions to personal beliefs (13%). One in 5 health-care professionals (20%) were worried about the side effects of cannabis, and 1 in 7 (15%) felt that the harms of cannabis use outweigh the benefits. In contrast, most health-care professionals felt that patients would benefit from cannabis (72%) and that cannabis was safe for patients (57%) (Figure 3).

Associations

In univariate analyses, age (≥61 years), sex (female), race and ethnicity (White), education level (college degree or higher), and income (>$75 000/y) were notably associated with cannabis use before cancer diagnosis, but for cannabis use after cancer diagnosis, only patients younger than 61 years of age and with less than a college degree were correlated with cannabis use ($P < .05$). Multivariable logistic regression did not reveal any notable predictors of cannabis use before cancer diagnosis, cannabis use after cancer diagnosis, or if patients felt cannabis had any benefits, but previous use of cannabis before cancer diagnosis was strongly correlated with use of cannabis after a cancer diagnosis (odds ratio = 7.1, 95% confidence interval = 2.7 to 18.6). Additionally, White patients were 9.3 times (range = 1.9-44.9) more likely to perceive a benefit from cannabis use (Table 3).

Among health-care professionals, controlling for age, sex, and race and ethnicity, no correlations were found with whether they felt that cannabis was beneficial for patients or safe. In multivariable analysis, we found that younger health-care professionals (age <41 years) were 3.8 times more likely to have perceived benefit from cannabis use (range = 1.3-11.4). In addition, nurses were

Table 3. Results from multivariable analysis of patients

Characteristic	Perceived benefit, odds ratio (95% confidence interval)	Use before diagnosis, odds ratio (95% confidence interval)	Use after diagnosis, odds ratio (95% confidence interval)
Age (<61 y vs ≥61 y)	0.5 (0.1 to 2.1)	1.1 (0.5 to 2.4)	0.9 (0.35 to 2.3)
Sex (male vs female)	1.8 (0.39 to 8.1)	1.1 (0.5 to 2.5)	1.7 (0.6 to 4.4)
Race (Caucasian vs not Caucasian)	9.3 (1.9 to 44.9)*	1.3 (0.5 to 3.2)	0.6 (0.2 to 1.8)
Income (≤$75 000/y vs >$75 000/y)	1.9 (0.3 to 11.5)	0.9 (0.4 to 2.2)	1.1 (0.4 to 3.3)
Education (less than college degree vs college degree or higher)	2.8 (0.6 to 12.7)	0.7 (0.3 to 1.7)	0.4 (0.2 to 1.1)
Location (medical center vs community facility)	0.4 (0.1 to 1.7)	0.5 (0.2 to 1.2)	0.7 (0.2 to 2.1)
Cancer stage (stage IV vs other stage)	0.3 (0.1 to 1.3)	0.7 (0.3 to 1.62)	0.9 (0.3 to 2.3)
Systemic treatment	1.3 (0.1 to 15.7)	2.7 (0.5 to 15.0)	0.5 (0.1 to 5.3)
Use before diagnosis	2.0 (0.384 to 10.7)	—	7.1 (2.7 to 18.6)**
Use after diagnosis	4.9 (0.7 to 36.6)	—	—

* $P < .05$, ** $P < .001$.

Table 4. Results from multivariable analysis of health-care professionals

Characteristic	Perceived safety, odds ratio (95% confidence interval)	Perceived benefit, odds ratio (95% confidence interval)
Age (<41 y vs >41 y)	0.6 (0.3 to 1.3)	0.3 (0.1 to 0.8)*
Sex (male vs female)	0.5 (0.2 to 1.4)	0.6 (0.1 to 2.9)
Race (Caucasian vs non-Caucasian)	2.1 (0.6 to 7.7)	3.5 (0.8 to 14.8)
Type of health-care professional (nurse vs physicians and advanced practice practitioners)	0.5 (0.3 to 0.9)*	0.5 (0.3 to 1.2)

* $P < .05$.

1.9 (range = 1.1-3.3) times more likely to report that cannabis was safe for patient use than were physicians and advanced practice practitioners (Table 4).

Discussion

This study describes perspectives of cannabis use in patients and health-care professionals. We found some interesting similarities and differences in these perspectives. This study adds some novel findings to the small body of published studies in the United States that examines the use of medical cannabis among patients with cancer during treatment. Similar to the study by Pergam et al. (14), a comparable rate of current cannabis use was observed here (17% vs 20%, respectively), a finding in line with other, more recent studies (31,32). Additionally our prevalence of approximately one-quarter of patients trying cannabis after their cancer diagnosis is consistent with studies from other cancer centers (32–34). Participants also reported similar reasons for use, including pain, mood, anorexia, and gastrointestinal symptoms, but 1 major difference was that insomnia was listed as the most common reason in our study, while in the Washington state study, only 10% of participants reported insomnia as a reason to use cannabis (14). Of note, Ohio does not allow for recreational cannabis use, which may explain some of the differences found. Interestingly, a vast majority of patients surveyed (84%), regardless of past use of cannabis, reported that cannabis had benefits for patients. A major barrier to cannabis use was cost or being discouraged by their physician. Overall, patients using cannabis reported few side effects and a variety of positive benefits.

Health-care professionals for these patients had similar perspectives regarding cannabis, with approximately 80% reporting that patients would benefit from medical cannabis use and nearly two-thirds feeling that it was safe for patients. The discrepancy between these 2 percentages suggests that about 14% of patients believe that there is benefit, despite feeling that cannabis may not be safe. This finding illuminates a sentiment among some patients that there is unfamiliarity with cannabis but they believe that it could be helpful. There was also strong agreement (>70%) that cannabis is helpful for pain and mood symptoms; however, health-care professionals reported concerns about potential side effects such as sedation, confusion, and changes in mood. Fewer than half of health-care professionals felt comfortable discussing cannabis, and even fewer felt knowledgeable about the topic. These findings are similar to a national survey of oncologists conducted by Braun et al. (35). One notable difference was that only about one-quarter of health-care professionals in our study reported discussing the topic of cannabis compared with 80% in the national survey. The impact of these discussions was more likely to be positive with respect to the relationship with the patient. We also found that younger health-care professionals were more likely to have a positive view of the benefits of cannabis for patients. There was a 26% difference in the comfortability of practitioners who feel comfortable "providing guidance about cannabis use" (39%) compared with the number of practitioners who felt "knowledgeable about the topic of cannabis" (13%). This finding suggests that either they feel comfortable with cannabis within the bounds of how it specifically pertains to their field or caution that health-care professionals may not be adequately equipped with the tools needed to use cannabis effectively with their patients.

With the majority of Americans supporting legalization of cannabis, the number of patients asking their doctors about medical cannabis has also increased. In states where medical cannabis is legalized, health-care professionals are often the gatekeepers to its access. Thus, health-care professionals are in an uncertain position of responsibility regarding best practices on medical cannabis prescriptions and patient education. This situation is further complicated by the federally funded US Drug Enforcement Administration discouraging health-care professionals from discussing cannabis use with their patients (36). Limited knowledge of medical cannabis is another barrier to informed decision making because the clinical impact of cannabis for patients with active cancer is not well described in peer-reviewed literature because of its federal legal status. In 1 study, 84.9% of residents and fellows reported receiving no education in medical school or residency on medical cannabis (37). As a result, many physicians receive knowledge about medical cannabis

through the lay press rather than through peer-reviewed literature (38). Health-care professionals may also consider their reputation at risk among colleagues and the community when contemplating recommendation of a stigmatized substance. As more states legalize medical cannabis, the perspectives of health-care professionals on this issue must be better understood, as well.

Limitations

Although only little controlled information is available on cannabis, this study is not intended to be a representative population-based survey to create broad conclusions; rather, it is designed to provide a novel comparison of health-care professional and patient perceptions at the same institution, providing descriptive cross-sectional data and current use patterns. Because the regulations for cannabis vary greatly from state to state, the generalizability of these findings is limited. This study was conducted at a single comprehensive cancer center in northeast Ohio, a state that requires obtaining a supporting letter from a physician. In addition, this study was framed as a medication study, and we were interested in all types of cannabis use (both recreational or medical, legally or illicitly obtained). Therefore, there is an inherent selection bias in which more resourced patients may be able to obtain and purchase cannabis 1 way or another. The racial and ethnic diversity of the participants, however, with nearly one-third being a race other than White, improved the generalizability to some degree. For the patient survey, the response rate was moderate, at 43%. Due to the highly confidential nature of the subject, we did not link the data to the medical record to maintain confidentiality and obtain information about whether cannabis was obtained legally. Therefore, the data were based on self-report, which may not be entirely accurate. Another limitation was the inability to verify cannabis use by blood or urine testing. Thus, some patients may have declined to report cannabis use, especially if it was obtained illegally or recreational in nature, considering that Ohio does not allow recreational cannabis use. The health-care professional survey had a lower response rate, at 25%, and thus some key perspectives may have been missed.

In summary, one-quarter of patients had used cannabis after a cancer diagnosis, and 17% were actively using cannabis during treatment at the time of survey collection. The most common reasons for cannabis use were insomnia, pain, mood, and anorexia, with insomnia being a relatively new finding. Additionally, younger health-care professionals seemed more positive about the benefits of cannabis for patients. Additional research, however, including clinical trials, are needed to further understand the benefits and harms of cannabis use during cancer treatment, particularly the potential for medical interactions between cancer treatment and cannabis products. A critical next step in this study effort will be to examine pooled data across all National Cancer Institute–funded groups to determine patterns in cannabis use and reasons for use across regions of the United States with varying state-level cannabis legalization policies.

Data availability

De-identified data are stored at Case Western Reserve University and can be shared, upon request. Please contact Dr. Jennifer Cullen (JCullen@HoustonMethodist.org) or Richard T. Lee (RichLee@coh.org) to request access.

Author contributions

Richard T. Lee, MD (Conceptualization; Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Project administration; Supervision; Writing—original draft; Writing—review & editing), Elyssa Kim, BA (Formal analysis; Writing—original draft; Writing—review & editing), Prateek Mendiratta, MD (Data curation; Writing—review & editing), Megan Farrell, MA (Data curation; Supervision; Writing—review & editing), Shalena Finklea, BA (Data curation; Writing—review & editing), Lauren Huang, BA (Data curation; Writing—review & editing), Erika Trapl, PhD (Conceptualization; Funding acquisition; Writing—review & editing), Stanton Gerson, MD (Conceptualization; Funding acquisition; Writing—review & editing), Jennifer Cullen, PhD (Conceptualization; Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Project administration; Supervision; Validation; Writing—original draft; Writing—review & editing)

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