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Profiles of Medicinal Cannabis Patients Attending Compassion Centers in Rhode Island

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Abstract—Little is understood regarding medicinal marijuana dispensary users. We sought to characterize socio-demographics and reasons for medicinal marijuana use among medical cannabis dispensary patients in Rhode Island. Participants ($n=200$) were recruited from one of two Compassion Centers in Rhode Island and asked to participate in a short survey, which included assessment of pain interference using the Brief Pain Inventory (BPI). The majority of participants were male (73%), Caucasian (80%), college educated (68%), and had health insurance (89%). The most common reason for medicinal marijuana use was determined to be chronic pain management. Participants were more likely to have BPI pain interference scores of > 5 if they were older (OR: 1.36, 95% CI: 1.04–1.78) or reported using cannabis as a substitute for prescription medications (OR: 2.47, 95% CI: 1.23–4.95), and were less likely to have interference scores of > 5 if they had higher income levels (OR: 0.53, 95% CI: 0.40–0.70) or reported having ever received treatment for an alcohol use disorder. One-fifth of participants had a history of a drug or alcohol use disorder. Most participants report that medicinal cannabis improves their pain symptomatology, and are interested in alternative treatment options to opioid-based treatment regimens.

Keywords—cannabis, chronic pain, Compassion Center, Rhode Island

INTRODUCTION

Since 1937, the United States government has prohibited the use of cannabis, including for medicinal reasons.

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Despite legal constraints, pharmaceutically based research into the therapeutic benefits of cannabis has continued. Research into the potential medicinal benefits of cannabis has amplified the demand for medicinal marijuana and, in 1996, California was the first state to permit the possession and use of cannabis for medicinal purposes (Nunberg et al. 2011). Since then, 20 states and Washington, D.C., have legalized medical cannabis.

A growing body of literature suggests that cannabis may have an important role in the treatment of chronic medical illnesses, particularly in the alleviation of pain symptoms and severity. The antiemetic and appetite-stimulation properties of cannabis have been found beneficial for chemotherapy and HIV/AIDS patients, as the intensive drug regimens for the treatment of these diseases often produces extreme nausea and weight loss (Ben

Amar 2006). Cannabis may also have a role in palliative medicine, particularly given its potentially lower toxicity compared with opioid analgesics, which are frequently prescribed for chronic pain (Carter et al. 2011). Recent reviews suggest that cannabis is efficacious in alleviating pain resultant from nerve injury or neuropathy (Rahn & Hohmann 2009) and that cannabis likely has beneficial effects for symptoms related to multiple sclerosis, epilepsy, and other movement disorders, including spasticity (though variable effects were observed depending on the cannabis oral formulation being studied), and self-reported pain (Koppel et al. 2014). A small-scale randomized trial of smoked cannabis to relieve posttraumatic or postsurgical neuropathic pain showed promising results in decreasing pain and improving sleep among patients experiencing pain for at least three months and who were on a stable analgesic regimen to treat their pain (Ware et al. 2010). A study of oramucosal cannabinoid spray for cancer pain found that patients tolerated the medication and reported improvements in overall pain scores as measured on the Brief Pain Inventory (Johnson et al. 2013). While comparative effectiveness and randomized controlled trials are needed to provide further evidence of the efficacy of medicinal cannabis to treat specific neurological disorders (Koppel et al. 2014), there is sufficient evidence to warrant further study of medicinal cannabis, including examination of factors such as choice of variety and route of administration, in the alleviation of pain resultant from a variety of acute and chronic conditions.

There is little literature, particularly outside of California, on the socio-demographics of medicinal marijuana patients in states where medical cannabis is legal. Stigmas regarding medicinal cannabis patients imply that they are more likely to have had previous exposure to cannabis, previous and/or current exposure to other illicit drugs, and be of low socioeconomic status or low educational attainment (Bottorff et al. 2013; Ilgen et al. 2013). Also, it has been hypothesized that those with low socioeconomic status were more likely to use cannabis as a cheaper alternative to prescription drugs (Ilgen et al. 2013). However, other studies suggest that the majority of patients using medicinal cannabis are middle-aged with an educational attainment very close to or exceeding the national average, and no clear correlation has been found between medicinal cannabis use and the use of illicit drugs (Reinarman et al. 2011). One recent study found that medicinal cannabis users with specific psychological symptoms, including dysphoria, lassitude, appetite gain, and suicidality, had increased likelihood of problematic cannabis use as measured using the Cannabis Use Disorder Test (CUDIT-R) (Bonn-Miller et al. 2014). Although Bonn-Miller et al. did not find associations between pain severity and problematic cannabis use or perceived helpfulness of cannabis, Nunberg et al. (2011) found that cannabis was often used as a substitute for prescription drugs.

In 2006, Rhode Island (RI) legalized medicinal marijuana and, in 2013, the first dispensaries were approved by the RI Department of Health (DOH). Eight diseases and five medical conditions qualify patients for the use of medicinal marijuana: Alzheimer's, HIV/AIDS, cancer, Crohn's disease, epilepsy, glaucoma, Hepatitis C, multiple sclerosis, or "any debilitating, chronic condition that produces spasms, wasting, seizures or severe pain or nausea" (Pain Management of Rhode Island 2014). Our study sought to characterize basic demographics in the RI medicinal dispensary cannabis-using population, and to examine associations between socio-demographic characteristics and self-reported pain.

MATERIALS AND METHODS

This was a cross-sectional study among self-selected patients at two RI DOH-approved Compassion Centers. Currently, RI has three DOH-approved Compassion Centers, but the third had not yet been approved at the time of the study. The two dispensaries are located in geographically distinct areas; one is urban and the other rural. A brief (~20 minute) survey was administered to Compassion Center patients, including demographic characteristics, medical histories, reasons behind medicinal marijuana usage, and the relative amounts of cannabis used in treatment. Participants were asked if they had ever received any treatment (e.g., outpatient, residential, etc.) for an alcohol or substance use disorder. Patient mental health was assessed using Co-Occurring Disorders Screening Instrument Disorders for Mental Disorders (CODSI-MD), a seven-item screening tool developed through the Criminal Justice Drug Abuse Treatment Studies (CJ-DATS) research network. The CODSI-MD was derived from the *Global Appraisal of Individual Needs* (GSS, 1.0), the *Mental Health Screening Form* (MHSF), and the *Modified MINI Screen* (MMS). The CODSI-MD was assessed using the Structured Clinical Interview for DSM-IV (SCID) as the criterion for mental disorder and found to be appropriate for a variety of criminal justice populations (Sacks et al. 2007).

Self-Reported Pain

Pain was assessed using the Brief Pain Inventory (BPI). The BPI allows patients to rate their pain severity and the degree to which pain interferes with their daily functioning using a 1 to 10 scale, where 1 is no pain and 10 is the most severe. Pain severity is measured as a composite of four pain items (past-week worst, past-week average, past-week least, and current pain). Pain interference is measured as a composite of seven items which assess how much pain interferes with the following: general activities, walking, work, mood, general enjoyment of life, relations with others, and sleep (Shi et al. 2009).

Procedures

We sought to recruit 100 patients from each of the two Compassion Center sites. Two research staff members visited the Compassion Centers twice weekly and recruited patients as they came to purchase their medicine. Patients were approached and asked if they would like to participate in a brief, one-time, confidential survey consisting of the previously mentioned domains. If patients indicated that they were interested, one of the study staff would accompany the patient to a private area to further explain the study and to obtain verbal consent. Patients were informed that participation was voluntary, that their responses to survey questions would be kept confidential, and that participating in the study would in no way influence their access to medicinal cannabis at the Compassion Center. Additionally, informational fliers were given to Compassion Center staff to pass onto their patients so that patients would know about the study prior to days when research staff would be on-site conducting interviews. While specific data were not kept regarding refusal rates, we estimate that less than 2% of all patients approached refused to participate in the survey. Participants received \$10 cash for their participation. All aspects study procedures were approved by The Miriam Hospital Institutional Review Board (IRB).

Data Analysis

Descriptive analyses were performed to examine participant demographic characteristics, medical history, behavioral health, and cannabis use patterns. Logistic regression was used to examine independent predictors of having a pain interference score of 5 or greater (a cut-off score of 5 on the BPI has been shown to be associated with meaningful pain interference). All analyses were performed using STATA 13.0 (College Station, TX).

RESULTS

The majority of participants were under the age of 50 (71.5%) with a median age of 41 (see Table 1). Most participants were male (73%), Caucasian (80%), had at least a high school diploma or equivalent (95%), and had some form of health insurance (89%). As the population of RI was reported to be 81.4 % Caucasian according to the 2010 U.S. Census Bureau, the demographics in this study appear to proportionally reflect the state. Over 67% had received some college education, and 6.5% of these had post-graduate degrees. Reported income was widely distributed among participants, with more than a third reporting an annual income of less than \$20,000 and more than a fifth reporting an annual income of at least \$60,000 (Table 1). Most participants (95%) reported attending the Compassion Center at least monthly; more than half reported at least weekly visits. Participants reported modest pain severity and pain interference as assessed by the Brief Pain Inventory (BPI), with median average scores of

TABLE 1
Demographic Characteristics of Medicinal Marijuana Patients Attending a Dispensary in Rhode Island (N = 200)

Characteristic	N (%)
Age	
<31	54 (27%)
31–40	44 (22%)
41–50	45 (22.5%)
51–60	34 (17%)
>60	21 (10.5%)
Median (Range)	41 (18–76)
Gender	
Male	146 (73%)
Female	54 (27%)
Race/ethnicity	
Caucasian	160 (80%)
African American	7 (3.5%)
Other	24 (12%)
Hispanic	9 (4.5%)
Employment	
Full-time	62 (31%)
Part-time	22 (11%)
Unemployed	19 (9.5%)
Retired	20 (10%)
Disabled	74 (37%)
Health insurance	
Yes	178 (89%)
No	21 (10.5%)
Education	
Less than high school	10 (5%)
High school diploma or GED	53 (26.5%)
Some college	66 (33%)
College degree	56 (28%)
Post-graduate	13 (6.5%)
Income	
<\$20,000	71 (35.5%)
\$20,000–\$39,999	44 (22%)
\$40,000–\$59,999	37 (18.5%)
\$60,000–\$79,999	17 (8.5%)
\$80,000 or higher	25 (12.5%)
Frequency of attending the dispensary	
Every day	17 (8.5%)
Couple of days/week	68 (34%)
Once a week	46 (23%)
1–2 times/month	58 (29%)
Once every few months	9 (4.5%)
Pain (measured by the Brief Pain Inventory)	
Pain severity: Median average score (range)*	5 (0–10)
Pain interference: Median average score (range)**	5.4 (0–10)
Need for ongoing tx in addition to cannabis	127 (73%)
Behavioral health	
Ever receive treatment for alcohol dependence	15 (7.5%)
Ever receive treatment for drug dependence	27 (13.5%)
Ever use cannabis as a substitute for alcohol	52 (26%)
Ever use cannabis as a substitute for illicit drugs	32 (16%)
Tobacco use: Current smoker (Y)	57 (28.5%)
Mental health: Median (range)	2 (–2–4)

TABLE 2
Characteristics of Cannabis Usage among Dispensary Patients (N = 200)

Variable	N (%)
Preferred method for cannabis intake	
Oral	14 (7%)
Smoke	148 (74%)
Vaporizer	33 (16.5%)
Other	3 (1.5%)
Frequency of cannabis use	
1x/month	1 (0.5%)
2–3x/week	14 (7%)
1x/day	20 (10%)
2x/day	40 (20%)
3 or more times/day	121 (60.5%)
Usual amount of cannabis used per week	
1 grams	11 (5.5%)
2 grams	17 (8.5%)
3–5 grams	43 (21.5%)
6–8 gm	54 (27%)
> 8 grams	69 (34.5%)
Changes in cannabis consumption in the last 6 months	
No change	136 (68%)
Use has decreased	28 (14%)
Use has increased	33 (16.5%)
Ever use cannabis as a substitute for prescription drugs	111 (55.5%)
Side-effects relative to prescription medications	
More unwanted side-effects	5 (2.5%)
The same amount of unwanted side-effects	6 (3%)
Less unwanted side-effects	183 (91.5%)

5 and 5.4 (out of a high pain score of 10), respectively. Importantly, about three-quarters of participants reported that they needed additional ongoing treatment for their pain in addition to medicinal cannabis. Table 1 also shows that one-fifth of participants reported having a history of substance use or alcohol use treatment, yet 42% reported that they had ever used cannabis as a substitute for either alcohol or illicit drugs (Table 1). Median mental health score on the CODSI-MD was 2 (a score of three or greater indicates the need for referral for further mental health evaluation).

Table 2 provides information on cannabis use among participants across the two Compassion Center sites. The two Centers were located in distinct geographic locations but there were no statistically significant differences with respect to demographics or use patterns between the two sites. Overall, nearly three-fourths of participants indicated that their preferred method for cannabis intake was smoking. Most participants reported using cannabis at least daily (90.5%); 60.5% reported using at least three times per

TABLE 3
Predictors of Pain Interference >5

Variable	OR (95% CI)
Ever used cannabis as a substitute for prescription medications	
No	Referent
Yes	2.46 (1.23–4.95)
Age category	
<31	Referent
31–40	
41–50	
41–60	
>60	1.36 (1.04–1.78)
Education	
Less than high school	Referent
High school or GED	
Some college	
College degree	
Post-graduate	1.41 (0.98–2.03)
Income	
<\$20,000	Referent
\$20,000–\$39,999	
\$40,000–\$59,999	
\$60,000–\$79,999	
\$80,000 or higher	0.53 (0.40–0.70)
Ever receive treatment for alcohol use	
No	Referent
Yes	0.18 (0.04–0.83)
Ever receive treatment for drug use	
No	Referent
Yes	3.23 (0.92–11.30)

day. The total amount of cannabis used varied but about half reported using between 3–8 grams on a weekly basis (Table 2). Importantly, 55.5% of respondents indicated that they had used cannabis as a substitute for prescription medications and the majority (91.5%) reported that cannabis had fewer unwanted side-effects relative to prescription medications.

To examine predictors of pain interference, we performed logistic regression analysis (see Table 3). Participants were more likely to have pain interference scores of > 5 if they were older (OR: 1.36, 95% CI: 1.04–1.78) or reported using cannabis as a substitute for prescription medications (OR: 2.47, 95% CI: 1.23–4.95), and were less likely to have interference scores of >5 if they had higher income levels (OR: 0.53, 95% CI: 0.40–0.70) or reported having ever received treatment for an alcohol use disorder (OR: 0.18, 95% CI: 0.004–0.83; Table 3).

DISCUSSION

Our study is the first characterization of patients attending RI Compassion Centers. While some of our findings are consistent with published literature, several findings may have implications for medicinal marijuana patients with chronic pain. Additionally, the findings refute common misconceptions associated with medicinal marijuana use.

Pain management is classically treated using opioid-based therapies. However, opioid overdose is one of the leading causes of death in RI, with more yearly deaths occurring from accidental overdose than from car accidents (Yokell et al. 2011). Occurrences of accidental overdose in RI due to illicit and prescription drugs have been steadily rising from 2009 (100 deaths) to 2012 (137) (Health 2013). Further, a recent study suggests a possible inverse correlation between opioid overdose fatalities and access to medical marijuana, as measured by the presence or absence of state medicinal cannabis legislation (Bachhuber et al. 2014). Studies have shown that co-administration of vaporized cannabis with morphine or oxycodone acts synergistically to relieve pain without affecting opioid plasma levels (Abrams et al. 2011). Thus, the addition of cannabis to pain management may be a safe alternative to exclusive opiate-based therapy. Additionally, the use of cannabis in treating chronic pain may produce less reliance on opioid-based treatment options and therefore lessen the risk for opioid misuse and/or overdose.

In our study, 69% of participants reported experiencing chronic pain and described feeling “much better” with the use of medicinal marijuana (85%). These findings are consistent with Hazekamp et al., who surveyed 953 medicinal cannabis users across 31 countries and found that the leading reason for respondents’ use of medicinal cannabis was for pain (Hazekamp et al. 2013). In this same study, most respondents indicated a favorable side-effect profile of medicinal cannabis in treating their medical condition (Hazekamp et al. 2013). In our study, a majority (92%) considered medicinal marijuana to have fewer unwanted side-effects than conventionally prescribed pain management medications. An interesting finding was that >50% of participants reported using cannabis in place of prescription drugs or were making serious attempts to wean off of high doses of prescription drugs, such as opioids prescribed for chronic pain. This finding supports previous studies depicting synergistic effects between cannabis and opioid use for chronic pain, and suggests that many participants in our study have a desire to reduce their own reliance on opioid medications to treat their pain.

Lower income and a history of treatment for alcohol use were inversely associated with higher pain scores. A recent analysis using data from the National Health and Nutrition Examination Survey (NHANES) suggests

that lower SES, particularly among individuals between 40 and 64 years of age, may be associated with greater rates of chronic pain (Riskowski 2014). This analysis is consistent with our findings that individuals with greater income were less likely to report pain interference scores of >5. With respect to having a history of alcohol treatment, one recent review suggested that alcohol has potential for use as a substitute for cannabis among some individuals (Subbaraman 2013). It may be that some individuals in our sample use cannabis not only to treat chronic pain or other medical conditions, but also as a substitute for alcohol.

According to RI DOH, the number of registered marijuana users as of April 2014 was 7,631, representing a 36% growth rate over the last 1.5 years. Collectively, the two Compassion Centers included in this study see more than 4,000 patients. A recent RI law has limited the number of plants a dispensary can grow to 99 mature plants and 51 seedlings, with a maximum of 1,500 ounces of marijuana ready for sale (RIPAC 2013). With the new law, this would limit the total sale amount available per person to much less than the 2.5 oz (70.8 g) users are allotted in a two-week period. Per two-week period, 27% of participants reported using 12–16 g, 20% reported using 18–24 g, and 15% use > 24 g. While still within the limits for purchase, nearly half of medicinal marijuana users purchasing from Compassion Centers would be cut short from the amount they use to alleviate their pain. The decrease in marijuana available for purchase may negatively impact pain management among Compassion Center patients, potentially encouraging patients to seek cannabis elsewhere.

Our study showed that the majority of participants interviewed at the RI Compassion Centers had never received treatment for substance or alcohol use, had obtained at least a high school diploma or GED, and had health insurance. This is in contrast to the stigmas regarding medicinal marijuana users as having previous and/or current illicit drug exposure and to be of low socioeconomic status or low educational attainment (Bottorff et al. 2013; Ilgen et al. 2013).

There are several limitations to this study. First, our sample represented only about 52% of the total number of patients holding medicinal marijuana cards in RI, as the Compassion Centers dispense to approximately 4,000 out of the >7,000 medicinal marijuana card holders. Thus, our data may not generalize to all Compassion Center Patients in RI. Also, purchasing from a licensed dispensary is one of two ways to obtain medical marijuana legally; the other is via personal “care-givers.” Several issues can arise with purchasing from “care-givers” as opposed to Compassion Centers. For instance, the products sold at the Compassion Centers are regulated and tested for purity and active cannabinoid content, thus ensuring that the products

are not “laced” (i.e., contaminated with a substance, usually harmful or toxic, present in a small amount), as is common on the street. Compassion Centers also allow for a safe environment in which to purchase and consume products, complete with gate guards. Our sample was self-selected so the possibility of selection bias is possible. Also, social desirability bias may have occurred if patients felt the need to portray their medicinal cannabis use in a particular way.

CONCLUSION

The majority of study participants sought to obtain relief from chronic pain and other debilitating chronic medical illnesses through use of medicinal cannabis. Most patients we interviewed at the Compassion Centers report that medicinal cannabis improves their pain symptomology, and are interested in alternative treatment options to opioid-based treatment regimens.

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