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Positive posttraumatic stress disorder screens among first-time medical cannabis patients: Prevalence and association with other substance use

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Abstract

Twenty-one states and the District of Columbia have passed legislation allowing for the use of medical cannabis for those individuals with qualifying medical conditions, which include posttraumatic stress disorder (PTSD) for a growing number of states. Little information is available regarding PTSD among medical cannabis patients. This study seeks to provide initial data on this topic by examining the prevalence and correlates of positive PTSD screens among a sample of patients seeking medical cannabis certification for the first time (n=186). Twenty-three percent (42/186; 95% Confidence Interval [CI] = 17%–29%) of the patients in the study sample screened positive for PTSD. Moreover, the group that screened positive for PTSD had higher percentages of lifetime prescription opioid, cocaine, prescription sedative, and street opioid use, as well as a higher percentage of recent prescription sedative use, than the group that screened negative for PTSD. These findings highlight the relatively common use of other substances among medical cannabis patients with significant PTSD symptoms, even when compared with other patients seeking medical cannabis for the first time. As a growing number of states include PTSD

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Contributors

The last author (Ilgen) was responsible for designing the parent survey and study. Bohnert and Jannausch were responsible for data management and analyses. All authors participated in conceptualizing the current study, reviewing and interpreting analyses, and preparing the manuscript.

Conflict of Interest

All authors declare no conflicts of interest.

among the list of qualifying medical conditions for medical cannabis, additional research is needed to better characterize the longitudinal relationship between medical cannabis use and PTSD symptoms.

Keywords

posttraumatic stress disorder; PTSD; medical cannabis; medical marijuana; prescription drug use

1. Introduction

Although cannabis is a schedule I controlled substance and illegal under federal law in the United States, 21 states and the District of Columbia have passed legislation allowing for the use of cannabis for those individuals with qualifying medical conditions (Berger, 2014). Qualifying medical conditions generally include cancers, human immunodeficiency virus infection/acquired immunodeficiency syndrome (HIV/AIDS), severe and chronic pain, and multiple sclerosis. A notable between-state difference, however, is that a minority of laws include posttraumatic stress disorder (PTSD) as a qualifying condition. Moreover, there has been a recent trend to amend laws to incorporate PTSD, with Maine, Oregon, and Michigan having amended laws to include PTSD as an allowable condition within the past year (Brogan, 2013; Oosting, 2014; Zheng, 2013). Despite this recent trend, few studies have examined PTSD among medical cannabis users.

Previous research outside of the medical cannabis setting has documented associations between PTSD and cannabis use. For example, using data from a nationally representative survey, Cogle and colleagues (2011) found that individuals with a lifetime history of PTSD had significantly greater odds of lifetime and past-year cannabis use, even after adjustment for other variables (Cogle, Bonn-Miller, Vujanovic, Zvolensky, & Hawkins, 2011). Another study reported that changes in PTSD symptom scores collected at PTSD treatment intake and discharge were associated prospectively with the frequency of post-treatment cannabis use, with lower levels of PTSD symptom change associated with greater cannabis use (Bonn-Miller, Vujanovic, & Drescher, 2011).

As a critical initial step in understanding how the existing general population and clinical research relates to settings that provide certification for medical cannabis, the present study seeks to estimate the prevalence of positive PTSD screens among individuals seeking medical cannabis certification for the first time. We use a cannabis clinic-based sample from Michigan before the amendment was passed allowing for PTSD as a qualifying condition, and examine differences between those with and without potential PTSD with respect to key sociodemographic, qualifying medical condition, and lifetime and recent substance use characteristics.

2. Materials and Methods

2.1. Sample

This study uses a convenience sample of patients from one medical cannabis clinic in Michigan. Specifically, patients were approached by research staff in the waiting area of the

clinic and asked to participate in a brief health survey (Ilgen, et al., 2013). Of the 370 individuals aged 18 years or older who were approached, 348 (94.1%) consented to participate. The present study is focused on the subset of patients who were seeking medical cannabis certification for the first-time (n=195) to better characterize individuals at the outset of medical cannabis use. Nine of the 195 first-time patients did not complete the PTSD screening module. Therefore, the total sample size for the present analysis is 186 individuals. The study was approved by the University of Michigan Medical School Institutional Review Board.

2.2. Measures

2.2.1. PTSD screening assessment—Participants were queried whether they had ever been exposed to a qualifying traumatic event. For those who had been exposed to a traumatic event, the seven-item Short Screening Scale for Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV) PTSD was used to assess lifetime history of PTSD symptoms (Bohnert & Breslau, 2011; Breslau, Peterson, Kessler, & Schultz, 1999). Individuals who endorsed four or more of the seven items assessing lifetime symptoms were classified as screening positive, consistent with prior recommendations based on a comprehensive investigation of the scale's sensitivity, specificity, and predictive values (Bohnert & Breslau, 2011).

2.2.2. Sociodemographic characteristics—Sociodemographic information was ascertained via standardized, self-reported questions regarding sex, age, race, education, relationship status, and employment.

2.2.3. Qualifying medical conditions—Participants were asked to select the condition or conditions for which they were seeking medical cannabis from a list of qualifying medical conditions for Michigan.

2.2.4. Substance use—Items from the World Health Organization's Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) were used to assess any lifetime and any past three-month use of alcohol, cannabis, prescription opioids, hallucinogens, cocaine, amphetamines, prescription sedatives, inhalants, and street opioids (WHO ASSIST Working Group, 2002). The prescription drug questions specifically queried non-medical use of prescription drugs and contained the phrase "without a doctor's prescription."

2.3. Statistical Analysis

PTSD screen status (i.e., positive or negative) was calculated to estimate the prevalence of PTSD. Next, frequencies and percentages of sociodemographic, qualifying medical condition, and substance use characteristics were calculated for the overall sample, and by PTSD screen status. PTSD group frequencies were compared via chi-square and Fisher's exact tests. All analyses were conducted in SAS 9.

3. Results

Of the 186 patients seeking medical cannabis certification for the first time, 23% (n=42; 95% Confidence Interval [CI] = 17%–29%) screened positive for a lifetime history of PTSD. Table 1 displays sociodemographic characteristics of the sample, overall, and by PTSD screening group. Overall, 62% of the sample were male, the mean age was 40.1 (standard deviation=12.8; not shown in the table), 82% were Caucasian, 45% had a high school diploma/certificate of high school equivalency or less, 46% were married/partnered, and 52% were unemployed. PTSD screening groups differed significantly by partner status and employment, with a lower percentage of married/partnered individuals and a higher percentage of unemployed individuals in the group that screened positive for PTSD than in the group that screened negative for PTSD.

Also shown in Table 1, 93% (171/184) of patients reported seeking medical cannabis certification for severe and chronic pain, either alone (n=99) or in combination with one or more other conditions (n=72; the majority of which included severe and chronic pain and muscle spasms [n=27] and/or nausea [n=22]). Seven percent (13/184) reported seeking certification for other qualifying conditions, which included: muscle spasms (n=5), seizures (n=3), cancer (n=1), glaucoma (n=1), Crohn's disease (n=1), and another condition (n=2). Two patients in the sample declined to answer the question. The PTSD screening groups differed significantly by percentages of qualifying medical conditions. Compared with the negative PTSD group, the positive PTSD group endorsed lower percentages of pain, only, and higher percentages of pain in combination with one or more other conditions.

Table 1 also presents information on lifetime substance use, overall, and by PTSD group. Nearly all first-time medical cannabis patients had a lifetime history of alcohol and cannabis use. Lower percentages of other types of lifetime substance use were reported by the sample. Moreover, several significant differences were noted for lifetime substance use between the group that screened positive for PTSD and the group that screened negative for PTSD. Specifically, the positive PTSD group had significantly higher percentages of prescription opioid, cocaine, prescription sedative, and street opioid use (i.e., 55%, 38%, 41%, and 17%, respectively), as compared with the negative PTSD group (i.e., 31%, 22%, 15%, and 6%, respectively).

With respect to more recent substance use, alcohol and cannabis use were reported by a majority of the sample (Table 1). Other substance use in the past 3 months was relatively infrequent. Nonetheless, 29% of the group that screened positive for PTSD reported recent prescription sedative use, which was significantly greater than the negative PTSD group (5%).

4. Discussion

A growing number of states have passed or modified laws to allow for PTSD as a qualifying condition for medical cannabis. Consequently, it is necessary to better understand the medical cannabis patient subgroup that has PTSD. The present study provides an initial description of patients who screened positive for PTSD among first-time medical cannabis

patients from a clinic in Michigan, where PTSD was not on the list of allowable medical cannabis conditions at the time of study data collection but was recently approved by a state panel as a qualifying condition (Oosting, 2014). We found that 23% of new medical cannabis patients screened positive for lifetime PTSD, and that the group that screened positive was less likely to be married/partnered and more likely to be unemployed than the group that screened negative. The overwhelming majority of patients in the study reported seeking cannabis for pain, with the positive PTSD group more likely to endorse pain and one or more other conditions than the negative PTSD group. Moreover, those who screened positive for PTSD were more likely to have a lifetime history of prescription opioid, cocaine, prescription sedative, and street opioid use, as well as, a recent history of prescription sedative use, compared with those who did not screen positive.

Few previous studies have examined PTSD among medical cannabis users. Bonn-Miller et al. (2014) recently published results from a cross-sectional study of medical cannabis users in California that found that an estimated 19% of participants reported using medical cannabis for PTSD; however, only a minority (8/40) reported a reduction in PTSD symptoms as the primary benefit of cannabis use (Bonn-Miller, Boden, Bucossi, & Babson, 2014). Another cross-sectional study conducted in California found that 13% of medical cannabis patients had a physician-recorded diagnosis of anxiety/depression as the documented reason for medical cannabis, and 38% of patients reported using cannabis to relieve anxiety (Reinarman, Nunberg, Lanthier, & Heddleston, 2011); however, PTSD-specific information was not reported. These previous studies, coupled with the present study, highlight that significant PTSD symptoms may be present in a sizable minority of individuals seeking medical cannabis, with similarities across states that varied with respect to the legality of PTSD as a qualifying condition at the time of study data collection. Moreover, the lifetime prevalence estimate of PTSD in the present study is 2–3 times greater than corresponding estimates from general US population-based surveys (which range from 6–8%) (Kessler, et al., 2005). Additional prospective research is needed to examine the course of PTSD symptoms over time among medical cannabis users, in particular, investigating whether medical cannabis use is associated with PTSD symptom change.

Associations between PTSD and substance use and use disorders are well-documented in the literature (Bohnert, et al., 2013; Chilcoat & Breslau, 1998; Jacobsen, Southwick, & Kosten, 2001). Results from the present study of first-time medical cannabis patients echo previous findings, with those who screened positive for PTSD reporting higher lifetime prescription opioid, cocaine, prescription sedative, and street opioid use than those who screened negative. A greater percentage of patients who screened positive for PTSD also reported more recent prescription sedative use. Despite recommendations that caution against the prescribing of sedative medications to treat symptoms of PTSD, these medications are commonly prescribed for individuals with the disorder (Abrams, Lund, Bernardy, & Friedman, 2013). Nonetheless, the question in the present study specifically asked about non-medical use; therefore, the self-medication of PTSD symptoms via sedative use is one viable explanation for our finding of greater recent use among those who screened positive for PTSD (Chilcoat & Breslau, 1998). Future studies will be needed, however, to examine this issue as well as alternative explanations in greater detail. Additional research is also necessary to examine the potential combined use of prescription sedatives with other drugs

and alcohol in the PTSD subgroup of medical cannabis users, given the potential for adverse effects (e.g., respiratory depression) (Vonghia, et al., 2008).

It is important to note that the cross-sectional and observational nature of the study design restricts temporal and causal interpretations. The study used a convenience sample from one medical cannabis clinic in Michigan; therefore, results may not be generalizable to other settings. In addition, data are based on patient self-report; final determination of PTSD requires the use of a structured clinical interview. Despite these limitations, this is one of a small number of studies to highlight the potentially high prevalence of PTSD among medical cannabis patients, and to characterize the unique substance use profiles of this group.

5. Conclusions

Although PTSD has received recent attention as a qualifying condition for medical cannabis, little is known about this mental health disorder, as well as its correlates, among medical cannabis patients. This study found that nearly one in four persons seeking medical cannabis for the first time screened positive for PTSD. In addition, findings highlight the relatively common lifetime and recent use of other substances among medical cannabis patients who screen positive for PTSD. Future longitudinal research is needed to better understand potential relationships between medical cannabis use and PTSD symptoms.

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Highlights

- One in four new medical cannabis patients screened positive for lifetime PTSD.
- Use of other substances is common among medical cannabis users with PTSD symptoms.
- An estimated one-third of PTSD-positive cannabis patients had recent sedative use.

Table 1

Sociodemographic, qualifying medical condition and substance use characteristics, overall, and by PTSD screening group, among the sample of patients seeking medical cannabis certification for the first time (n=186)

	PTSD Screen			p-value ^I
	Overall (n=186) n (%)	Positive (n=42) n (%)	Negative (n=144) n (%)	
Sociodemographic Variables				
Male	115 (62%)	22 (52%)	93 (65%)	NS
Age Group (years) ^a				NS
18–30	55 (30%)	8 (19%)	47 (33%)	
31–40	43 (23%)	11 (27%)	32 (22%)	
41–50	44 (24%)	12 (29%)	32 (22%)	
51+	43 (23%)	10 (24%)	33 (23%)	
Caucasian ^a	151 (82%)	33 (80%)	118 (82%)	NS
H.S. /G.E.D. or Less ^{2, b}	84 (45%)	16 (38%)	68 (48%)	NS
Married/Partnered ^b	86 (46%)	14 (33%)	72 (50%)	0.05
Unemployed ^{3, a}	96 (52%)	28 (68%)	68 (47%)	0.02
Qualifying Medical Cannabis Conditions^b				
				0.003
Severe and Chronic Pain, Only	99 (54%)	14 (33%)	85 (60%)	
Severe and Chronic Pain, and Other Condition(s)	72 (39%)	26 (62%)	46 (32%)	
Other Condition	13 (7%)	2 (5%)	11 (8%)	
Lifetime Substance Use Variables				
Alcohol	161 (87%)	39 (93%)	122 (85%)	NS
Cannabis	174 (94%)	41 (98%)	133 (92%)	NS
Prescription Opioids ^a	67 (36%)	23 (55%)	44 (31%)	0.005
Hallucinogens ^c	59 (33%)	17 (41%)	42 (30%)	NS
Cocaine	48 (26%)	16 (38%)	32 (22%)	0.04
Amphetamines ^a	33 (18%)	11 (26%)	22 (15%)	NS
Prescription Sedatives ^d	38 (21%)	17 (41%)	21 (15%)	0.0002
Inhalants ^a	6 (3%)	1 (2%)	5 (4%)	NS ⁴
Street Opioids ^a	15 (8%)	7 (17%)	8 (6%)	0.047 ⁴
Recent (3-month) Substance Use Variables				
Alcohol	113 (61%)	26 (62%)	87 (61%)	NS
Cannabis	147 (79%)	29 (69%)	118 (82%)	NS
Prescription Opioids	38 (20%)	10 (24%)	28 (20%)	NS
Hallucinogens	11 (6%)	4 (10%)	7 (5%)	NS ⁴

	PTSD Screen			p-value ¹
	Overall (n=186) n (%)	Positive (n=42) n (%)	Negative (n=144) n (%)	
Cocaine	3 (2%)	2 (5%)	1 (0.7%)	NS ⁴
Amphetamines	7 (4%)	2 (5%)	5 (4%)	NS ⁴
Prescription Sedatives	19 (10%)	12 (29%)	7 (5%)	<0.0001
Inhalants	1 (0.5%)	0 (0%)	1 (1%)	NS ⁴
Street Opioids	3 (2%)	2 (5%)	1 (0.7%)	NS ⁴

¹ Chi-square

² H.S./G.E.D. or Less = High school diploma/certificate of high school equivalency or less

³ also includes disabled, retired, and student

⁴ Fisher's exact

^a overall n=185;

^b overall n=184;

^c overall n=18;

^d overall n=183.