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Patterns and correlates of medical cannabis use for pain among patients prescribed long-term opioid therapy

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ABSTRACT

Objective: Little is known about co-occurring long-term opioid therapy (LTOT) and medical cannabis use. We compared characteristics of patients prescribed LTOT who endorsed using medical cannabis for pain to patients who did not report cannabis use.

Method: Participants (n = 371) prescribed LTOT completed self-report measures about pain, substance use, and mental health.

Results: Eighteen percent of participants endorsed using medical cannabis for pain. No significant differences were detected on pain-related variables, depression, or anxiety between those who endorsed medical cannabis use and those who did not. Medical cannabis users had higher scores of risk for prescription opioid misuse (median = 17.0 vs. 11.5, $p < 0.001$), rates of hazardous alcohol use (25% vs. 16%, $p < 0.05$), and rates of nicotine use (42% vs. 26%, $p = 0.01$). Multivariable analyses indicated that medical cannabis use was significantly associated with risk of prescription opioid misuse ($\beta = 0.17$, $p = 0.001$), but not hazardous alcohol use (aOR = 1.96, 95% CI = 0.96–4.00, $p = 0.06$) or nicotine use (aOR = 1.61, 95% CI = 0.90–2.88, $p = 0.11$).

Conclusion: There are potential risks associated with co-occurring LTOT and medical cannabis for pain. Study findings highlight the need for further clinical evaluation in this population. Future research is needed to examine the longitudinal impact of medical cannabis use on pain-related and substance use outcomes.

1. Introduction

Approximately 30% of Americans may experience chronic pain [1], a figure that is estimated to increase as the population ages and acquires more chronic medical conditions [2]. Prescription opioid medications are commonly prescribed for chronic pain [3]; however, the benefits of long-term opioid therapy (LTOT) remain unclear [4]. Furthermore, long-term opioid use is associated with adverse effects such as cardiovascular events, motor vehicle accidents, opioid use disorder, and overdose [5]. As a result, patients may seek alternative or adjunctive ways to treat their pain, including medical cannabis.

Currently, 28 U.S. states, Puerto Rico, and Washington D.C. have legalized medical cannabis, and eight states have legalized recreational cannabis [6]. While the evidence supporting the effectiveness of cannabis remains equivocal for most chronic pain conditions [7], recent studies suggest that among individuals who receive medical cannabis, 45–80% seek cannabis for pain management [8,9]. Among patients prescribed opioid medications for the treatment of chronic pain, up to 39% report co-occurring use of cannabis [10,11].

One prior study compared the clinical characteristics of patients with co-occurring prescription opioid therapy and medical cannabis to characteristics of those not using medical cannabis, and found that medical cannabis users had higher pain intensity, higher pain interference, and more symptoms of depression and anxiety than non-users [10]. Available evidence also suggests that among patients with chronic non-cancer pain, cannabis users are more likely to report recent non-cannabis substance use [9,12] and are more likely to have a history of a substance use disorder (SUD) diagnosis [13,9], and have higher rates of

Abbreviations: LTOT, long-term opioid therapy; AUD, alcohol use disorder; QOL, quality of life; IQR, interquartile range; SUD, substance use disorder; MED, morphine equivalent dose

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aberrant opioid related behaviors including more frequent refills [8,9]. The most commonly documented SUD diagnosis is alcohol use disorder (AUD), which has an estimated lifetime prevalence of 55% in cannabis users compared to 26% in non-users [9]. The simultaneous use of alcohol and other substances with prescription opioids has been linked to serious adverse events including respiratory depression, risk of overdose, and unintentional death [14] suggesting that medical cannabis users, who also drink alcohol, may be at greater risk for the negative consequences associated with opioids.

Overall, there is a paucity of research about patients with chronic pain who are prescribed LTOT and use medical cannabis for adjunctive pain treatment. In addition, there are limited data on the association between cannabis and the use of other substances among patients prescribed LTOT. Yet, these relationships are important to understand given the documented risks that are associated with non-cannabis substance use, alcohol, and prescription opioids. The present study expands the current literature by describing the pain, substance use, and mental health related characteristics and adverse events among patients diagnosed with musculoskeletal pain who are prescribed LTOT and are also using medical cannabis. Based on the current literature, we hypothesized that individuals who endorsed medical cannabis use would have higher pain intensity and interference, and more symptoms of anxiety and depression. Furthermore, we hypothesized that endorsement of medical cannabis use would be positively associated with the presence of current hazardous alcohol use, nicotine use, and increased risk of prescription opioid misuse while controlling for demographic and clinical factors.

2. Methods

2.1. Settings

The present manuscript focuses on baseline data from an ongoing, multisite prospective cohort study of patients prescribed LTOT; a more detailed description of the research methods has been previously described [15]. Study settings included Kaiser Permanente Northwest (KPNW) and VA Portland Health Care System (VAPORHCS). Both facilities maintain a full range of medical, mental health and addiction treatment, and provide patient care services in Oregon and SW Washington. At the time data were collected, medical cannabis was legal in Oregon, and recreational and medical cannabis was legal in Washington.

2.2. Participants

Participants were eligible for inclusion if they had a musculoskeletal pain diagnosis documented in their medical records. Participants must also have been receiving a stable dose of prescription opioid therapy for at least 90 consecutive days. Prior studies have defined 90 + days of consecutive opioid use as being indicative of LTOT [16]. Participants were excluded if they endorsed pending litigation or disability claim related to a pain condition (n = 37), received a cancer diagnosis in the last 12 months (n = 10), were enrolled in an opioid substitution program in the last 12 months (n = 1), were in the process of leaving the integrated health care system (n = 26) or whose only opioid prescriptions were for tramadol or buprenorphine (n = 11). Participants who had a current opioid dose > 120 mg morphine equivalent (n = 8) were also excluded because our overall study [15] is focused on examining outcomes from prescription opioid dose escalation; one of the sites included in this study had an institutional policy limiting opioid doses above a certain threshold, which would have led to potential site specific differences related to allowable opioid dose. Of the 517 participants who enrolled and completed study measures, 146 were excluded from the primary analyses because they denied use of medical cannabis, yet had a score of one or greater on the Drug Abuse Screening Test-10 (DAST-10), indicating a potential problem with illicit substance use (DAST-10 measure described more below). We excluded these individuals from the analyses because it was unclear whether they were endorsing a potential problem with use of recreational cannabis or with use of another substance, which would complicate interpretation of analyses. These 146 individuals were included in sensitivity analyses (described more below) to ensure that their exclusion did not significantly alter study findings.

2.3. Study procedures

Using administrative databases at both clinical sites, we identified potential study participants on the basis of their past-year ICD-9-CM musculoskeletal pain diagnoses and current prescription opioid use. A personalized invitation letter that provided study details, contact information, and a prepaid postcard to indicate interest in participating or to decline further contact was sent to each potential participant. Follow-up phone calls were conducted by study staff who provided additional details, answered questions, and conducted a brief screening. Individuals who met preliminary inclusion/exclusion criteria and indicated interest in participating were scheduled for their baseline assessment.

All study procedures were reviewed, approved, and monitored by the Institutional Review Boards of the involved institutions. All participants signed informed consent to participate. Participants were compensated with a store $50 gift card for participating.

2.4. Measures

2.4.1. Self-report measures

Basic demographic characteristics that were assessed included age, gender, race, marital status, employment, and socioeconomic status.

Use of medical cannabis for treatment of pain was assessed using two single-item Likert scale questions which inquired about the frequency of medical cannabis use for pain in the past month, and participants' perception of the extent to which cannabis was helpful in providing pain reduction (where 1 = not helpful and 5 = very helpful). We defined the endorsement of medical cannabis use for pain as “medical cannabis use,” and refer to it as such throughout the present manuscript. Participants were also asked if they possessed a current state-issued medical cannabis card.

The Chronic Pain Grade (CPG) questionnaire is a well-validated measure that was used to assess pain intensity and pain-related function [17,18]. Pain intensity is calculated by the mean intensity ratings for reported current, worst, and average pain within the past three months. Pain-related disability is the mean rating for responses to questions about difficulty performing daily, social, or work related tasks. Scores on these two subscales range from 0 to 100, where higher scores reflect higher pain intensity/disability.

Quality of life was measured with the Short-Form Health Survey, Version 2, a 12-item, well-validated self-report measure that provides subscale scores on physical and mental health functioning; higher scores are associated with better functioning [SF-12v2; [19]]. The Patient Health Questionnaire (PHQ) was used to assess depressive symptoms [20]. The PHQ is a brief, reliable, and psychometrically valid measure used to screen for depressive symptoms [20,21]. In this study, we administered the PHQ-8, which excludes a question assessing current suicidal ideation [22]. Anxiety symptoms were assessed using the Generalized Anxiety Disorder-7 Scale (GAD-7), a brief self-report measure designed to assess the severity of anxiety symptoms that has been validated as a robust predictor of the different anxiety disorders [23,24].

With regard to substance use, the 3-item Alcohol Use Disorder Identification Test [AUDIT-C; [25]]; was used to screen for the presence of current hazardous alcohol use. In this study, the presence of current hazardous alcohol use was indicated by scores of ≥ 4 for men and ≥ 3 for women [26,27]. The Drug Abuse Screening Test-10 [DAST-10; [28]]