Research paper

Associations between medical cannabis and other drug use among unstably housed women

Meredith C. Meacham[a,*], Danielle E. Ramo[a], Alex H. Kral[c], Elise D. Riley[b]

[a] Department of Psychiatry and Weill Institute for Neurosciences, University of California San Francisco, San Francisco, CA, USA
[b] Division of HIV, Infectious Disease & Global Medicine, University of California, San Francisco, CA, USA
[c] RTI International, San Francisco, CA, USA

ARTICLE INFO

ABSTRACT

Background: Several studies suggest that U.S. state-level legalization of cannabis for medical purposes may be associated with reductions in opioid use; yet its relationship with stimulant use, particularly in high-risk populations like unstably housed women, has received less attention. The purpose of this study was to estimate independent associations between medical and non-medical use of cannabis and use of stimulants and opioids among unstably housed women.
Methods: Cross-sectional data were analyzed from 245 women in the SHADOW study, a community based cohort in San Francisco, CA, in which HIV+ women were oversampled (126 HIV+ and 119 HIV-).
Results: Compared to no cannabis use in the past 6 months (51%), non-medical cannabis use (28%) was associated with a higher adjusted odds of using stimulants (Adjusted Odds Ratio [AOR] = 4.34, 95% confidence interval [CI]: 2.17–8.70) and opioids (AOR = 3.81, 95% CI: 1.78–8.15). Compared to no cannabis use, medical cannabis use (21%) was not significantly associated with stimulant or opioid use. Compared to non-medical cannabis use, however, medical cannabis use was associated with lower adjusted odds of using stimulants (AOR = 0.42, 95% CI: 0.18–0.96). These associations were not modified by HIV status.
Conclusions: Associations between use of cannabis and "street drugs" depend on whether the cannabis is obtained through a medical context. Interventions, research, and policy considering the influence of cannabis on the use of other drugs may benefit by distinguishing between medical and non-medical cannabis use.

Introduction

Homeless and unstably housed populations have elevated rates of substance use and dependence, which have been linked to poor physical and emotional health status (Grinman et al., 2010; Riley et al., 2011; Stringfellow et al., 2016). Two of the most commonly used illicit substances by homeless populations in North America are crack cocaine and cannabis (Edens, Mares, & Rosenheck, 2011; Grinman et al., 2010; Riley et al., 2015; Stringfellow et al., 2016; Torchalla et al., 2011; Tucker et al., 2005). The use of stimulants (cocaine, crack cocaine, methamphetamine) is linked to risky sexual activity (e.g., unprotected sex, sex exchange, multiple sexual partners) and drug use practices (e.g., injecting, drug use before sex) that are associated with HIV transmission (Neblett, Davey-Rothwell, Chander, & Latkin, 2011; Torchalla et al., 2011), and may

contribute to overdose (Bauer, Brody, Leon, & Baggett, 2016; Riley, Cohen, & Shumway, 2013). While overdose is often considered to be primarily related to opioid use, we recently reported that cocaine overdose is the leading cause of death among homeless and unstably housed women living in San Francisco (Riley et al., 2013), where the use of crack cocaine is self-reported by almost half of the population (Riley et al., 2014) and urine toxicology confirms cocaine use among 63% of the population (Riley et al., 2016). While use and dependence of one drug is often correlated with use and dependence on another, especially for cocaine (Bierut, Strickland, Thompson, Afful, & Cottler, 2008; Narvaez et al., 2014), less is known about the relationship between stimulant and cannabis use in a legal context that permits the medical use of cannabis.

A growing body of literature suggests that legalization of medical cannabis use may be associated with reductions in prevalence of opioid use reported at the U.S. state level (Bachhuber, Saloner, Cunningham, & Barry, 2014; Boehnke, Litinas, & Clauw, 2016; Kim et al., 2016). In addition, cannabis use may be associated with reductions in opioid use among individuals in states with

legal medical cannabis, possibly due to the pain relieving effects of cannabis (Kral et al., 2015; Peters, 2013). While fewer studies have been conducted that focus on stimulants, researchers in Canada recently reported that intentional cannabis use to reduce crack cocaine use was associated with subsequent decreased frequency of crack cocaine use among people who use drugs in Vancouver, Canada (Socias et al., 2017).

Medical use of cannabis has been legal in California since 1996 and is now legal in 29 U.S. states as well as the District of Columbia. Specific legal measures (popular vote or legislative action) and qualifying medical conditions vary from state to state. Under California State law in place during the study period, individuals who obtained a written recommendation for cannabis use from a physician could obtain, grow, or use cannabis. Recent research suggests that medical use of cannabis relieves chronic pain, HIV-related symptoms (e.g. pain, nausea, loss of appetite), and conditions including post-traumatic stress disorder (PTSD) symptoms (D'Souza et al., 2012; Ellis et al., 2009; Greer, Grob, & Halberstadt, 2014; Hill, 2015; Lynch & Ware, 2015; Whiting et al., 2015; Woolridge et al., 2005). However, ongoing concerns about cannabis use by adults include increased risk of accidental injury after acute use and increased risk of dependence and impaired respiratory function following longer term use (Hall, 2009). While studies have examined and found differences in substance use behaviors, health conditions, and demographics between medical and non-medical cannabis use in the United States among primary care patients (Roy-Byrne et al., 2015), emergency department patients (Woodruff & Shillington, 2016), young adults (Lankenau et al., 2017a, 2017b), and the general population (Choi, DiNitto, & Marti, 2017; Lin, Ilgen, Jannausch, & Bohnert, 2016), such differences have not been examined in older adult populations experiencing a high burden of unstable housing and poor health, and who also report high levels of polydrug use.

Our prior work showed that the risk of incident stimulant use among unstably housed women who did not use at baseline was increased by homelessness, violence, and simultaneous use of un-prescribed opioid painkillers (Riley et al., 2015), but that work did not consider the role of cannabis use. The objective of this analysis was to estimate independent associations between cannabis use context (medical use and non-medical use) and "street drug" use (stimulant use and opioid use) among unstably housed women living with and at risk for HIV. We hypothesized a positive association between non-medical cannabis use (compared to no use) and stimulant and opioid use but a negative association between medical cannabis use (compared non-medical use) and stimulant and opioid use.

Methods

Study population

Data for this analysis come from the "Shelter, Health, and Drug Outcomes among Women" cohort study (Riley et al., 2014). Biological women were recruited from free meal programs, homeless shelters, and a probability sample of single room occupancy (SRO) hotels in San Francisco, CA, from 2008 to 2010 and followed biannually for three years. Those who had a history of housing instability and were 18 years or older were eligible for study participation. At baseline, 49% reported sleeping on the street or in a shelter in the past 6 months (Tsai, Weiser, Dilworth, Shumway, & Riley, 2015). HIV testing occurred during study screening and HIV-infected women were oversampled to address HIV specific aims. Informed consent procedures were followed, which included a baseline interview in which participants were asked to restate their understanding of voluntary participation. At their fourth biannual, or 18 month, study visit

(2010–2012), participants completed a follow up survey that included assessment of physician recommended cannabis use. Reimbursement of $15 USD was given for each study interview. Study procedures were approved by the Institutional Review Board of the University of California, San Francisco.

Measures

Surveys were administered to participants by trained interviewers in a private setting. Survey questions were pilot tested before baseline assessment to ensure appropriateness with this population. Drug use questions were asked using Audio Computer-Assisted Self-Interviews (ACASI), where participants listened to questions with headphones in private and entered responses into a computer. All measures were in regard to the 6-month time period prior to the interview, which allowed time for variation in housing status, drug use and health outcomes over time, and comparability with other community based studies of drug use.

Primary outcomes

The main outcome measures for the current study were self-reported past 6-month use of stimulants (crack cocaine, powdered cocaine, amphetamine or methamphetamine ["crystal, speed, crank, glass or ice"]) and of opioids (heroin or un-prescribed opioid painkillers, phrased as "painkillers that weren't prescribed for you, such as Oxycontin, Vicodin, morphine or other opioid painkillers").

Primary exposure variable

A three-level indicator variable, specifying no cannabis use (reference category), medical cannabis use, and non-medical cannabis use, was derived from frequency of cannabis use (using local terms "marijuana" and "pot") in the past 6 months, and whether the participant had a "prescription" for medical cannabis ("Do you currently have a prescription for medical marijuana?") At the time of interviews, a recommendation for cannabis use under California State law would have necessitated a physician's recommendation letter to buy cannabis at a dispensary for up to one year. The term "prescription" was chosen based on pilot studies in the same population, indicating that the term was understood as a written recommendation from a doctor. Furthermore, this definition of medical vs. non-medical use mirrors that used by the National Survey on Drug Use and Health to assess non-medical use of prescription opioids (SAMSHA, 2013).

Covariate variables

Secondary exposures included factors previously reported to be associated with stimulant and opioid use in low income populations, including social determinants of health, health status, and experience of violence (Riley et al., 2015). Social determinants of health included race and ethnicity, recent homelessness, age, completion of high school, monthly income, and unmet subsistence needs. Race and ethnicity were self-reported and then dichotomized for this analysis into White vs. non-White, though sensitivity analyses were conducted to determine whether there were differences across other racial/ethnic groups (African-American, Asian/Pacific Islander, Hispanic or Latina). Recent homelessness was defined by whether the participant reported sleeping in a shelter or public place in the past 6 months. Monthly income was dichotomized into greater or equal to vs. less than the population median monthly income. Unmet subsistence needs included insufficient access to food, clothing, a restroom, a place to wash, or a place to sleep (Gelberg, Gallagher, Andersen, & Koegel, 1997).