



Marijuana use and achievement of abstinence from alcohol and other drugs among people with substance dependence: A prospective cohort study



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ABSTRACT

Background: Many with alcohol and other drug dependence have concurrent marijuana use, yet it is not clear how to address it during addiction treatment. This is partially due to the lack of clarity about whether marijuana use impacts one's ability to achieve abstinence from the target of addiction treatment. We examined the association between marijuana use and abstinence from other substances among individuals with substance dependence.

Methods: A secondary analysis of the Addiction Health Evaluation And Disease management study, a randomized trial testing the effectiveness of chronic disease management. Individuals met criteria for drug or alcohol dependence and reported recent drug (i.e. opioid or stimulant) or heavy alcohol use. Recruitment occurred largely at an inpatient detoxification unit, and all participants were referred to primary medical care. The association between marijuana use and later abstinence from drug and heavy alcohol use was assessed using longitudinal multivariable models.

Results: Of 563 study participants, 98% completed at least one follow-up assessment and 535 (95%) had at least one pair of consecutive assessments and were included. In adjusted analyses, marijuana use was associated with a 27% reduction in the odds of abstinence from drug and heavy alcohol use (adjusted odds ratio 0.73 [95% CI, 0.56–0.97], $P = 0.03$).

Conclusions: Marijuana use among individuals with alcohol or other drug dependence is associated with a lower odds of achieving abstinence from drug and heavy alcohol use. These findings add evidence that suggests concomitant marijuana use among patients with addiction to other drugs merits attention from clinicians.

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1. Introduction

Although marijuana is thought to be less harmful than other drugs (Nutt et al., 2007), its use has well-documented health consequences including detrimental effects on the cardiopulmonary, endocrine and central nervous systems (Khalsa and ElSohly, 2007;

Tetrault et al., 2007). Despite these health effects, some have perceived that marijuana use among substance dependent persons is inconsequential or even beneficial and it may not be a clinical focus during addiction treatment (DuPont and Saylor, 1989; Morgan et al., 2010, 2013), and published principles of addiction treatment do not mention how marijuana use or addressing it might affect the outcome of treatment for other substances (National Institute on Drug Abuse, 2012). A guideline for opioid treatment programs recommends addressing marijuana use in subjects with opioid addiction to reduce activities that might increase the risk of opioid relapse (Center for Substance Abuse Treatment, 2005).

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The use of marijuana is increasing: in the United States, 17.4 million people age 12 and older used marijuana in the past month (Substance Abuse and Mental Health Services Administration (SAMHSA), 2011). This high prevalence in part explains its accounting for 17% of admissions nationwide, ranking third after alcohol and opioid admissions and above cocaine, and amphetamines (SAMHSA, 2011). Marijuana use occurs commonly among people with substance dependence, even during the course of addiction treatment in specialty treatment programs (DuPont and Saylor, 1989; Scavone et al., 2013). Thus, it is important to understand its effect on those dependent on other drugs.

Use of multiple drugs portends worse addiction treatment outcomes compared to the use of a single drug (McLellan et al., 1994). But findings about marijuana's effects on use of other substances and the need to address it during addiction treatment for other substances are not uniform (Hill et al., 2013; Wasserman et al., 1998; Church et al., 2001; Epstein and Preston, 2003; Nirenberg et al., 1996; Saxon et al., 1993; Aharonovich et al., 2005; Alessi et al., 2011; Budney et al., 1996; Kadden et al., 2009). Many find no association between marijuana use and outcome of addiction treatment for other substances (Budney et al., 1996; Church et al., 2001; Epstein and Preston, 2003; Hill et al., 2013; Nirenberg et al., 1996; Saxon et al., 1993) and one small study suggested that marijuana use helped crack cocaine addiction (Labigalini et al., 1999). Another small study, however, suggests that addressing marijuana use may lead to more use of alcohol (Peters and Hughes, 2010) and at least two prospective studies suggest that marijuana use is associated with worse addiction treatment outcomes (Aharonovich et al., 2005; Wasserman et al., 1998).

The lack of focus on a seemingly less problematic but addictive substance in addiction treatment is not new. Cigarette smoking was not addressed and was even accommodated within addiction treatment programs until recently, based on the belief that addressing tobacco simultaneously would interfere with treatment for the primary drug. But studies now suggest that addressing smoking during addiction treatment does not worsen but improves outcomes (Olsen et al., 2005; Prochaska et al., 2004; Satre et al., 2007; Tsoh et al., 2011), and smoking cessation has become more a part of addiction treatment (Baca and Yahne, 2009; Schroeder and Morris, 2010). In sum, study results are conflicting regarding whether marijuana use affects use of other substances, and some perceive marijuana use to be inconsequential during addiction treatment. A larger, prospective and longitudinal study could contribute to the existing literature. Therefore, our aim was to explore whether marijuana use adversely impacts achievement of abstinence from other substances. We assessed the association between marijuana use and abstinence from drug (i.e., opioid and stimulant) and heavy alcohol use in people with alcohol or other drug dependence. The study hypothesis was that marijuana use would decrease the odds of subsequent abstinence.

2. Methods

2.1. Study design

This is an analysis of data collected prospectively from participants in a randomized clinical trial testing the effectiveness of chronic disease management (the Addiction Health Evaluation And Disease management (AHEAD) study, NCT00278447; Saitz et al., 2013). Those who had at least one pair of consecutive assessments (i.e., study entry and 3-month or 3-month and 6-month or 6-month and 12-month) were included in this study so that exposure could be assessed during at least one assessment and outcome assessed during the second assessment in the pair.

2.2. Participants

AHEAD study participants were recruited primarily at a residential detoxification unit by approaching patients, as well as by referral from ambulatory clinics, an emergency department, urgent care center, and inpatient settings at one

hospital, and through local advertisements. Inclusion criteria were the following: (1) age 18 years or greater; (2) current Diagnostic and Statistical Manual of Mental Disorders fourth edition (DSM-IV) diagnosis of alcohol dependence (determined by the Composite International Diagnostic Interview Short-Form (CIDI-SF) (Kessler et al., 1998) and very heavy alcohol use in the past 30 days (defined as ≥ 4 standard drinks for women and ≥ 5 standard drinks for men at least twice, or ≥ 15 drinks per week for women or ≥ 22 drinks per week for men—weekly average based on typical daily drinking in the past month) or current DSM-IV diagnosis of drug dependence (determined by the CIDI-SF) (Kessler et al., 1998) and any drug use in the past 30 days, defined as cocaine (or any other psychostimulant) or heroin (or any other opioids or prescription painkiller without a prescription, in larger amounts than prescribed, or for a longer period of time than prescribed); and (3) willingness to continue or establish primary care at one hospital-based clinic and attend an outpatient (study) disease management visit within that primary care clinic.

The exclusion criteria were the following: (1) unable to be interviewed due to acute illness; (2) breath alcohol ≥ 100 mg/dL; (3) unable to provide the names, phone numbers, and addresses of 2 contact persons; (4) not fluent in English or Spanish; (5) cognitive impairment (score of less than 21 of 30 on the Mini-Mental State Examination; Smith et al., 2006) (6) pregnancy; and (7) inability to provide informed consent. All enrollees provided written informed consent. The Institutional Review Board (IRB) at Boston University Medical Campus approved this study. Additional privacy protection was secured by the issuance of a Certificate of Confidentiality by the Department of Health and Human Services (DHHS), to protect participants from release of their research data even under a court order or subpoena.

2.3. Assessments

Participants were evaluated at study entry, 3, 6 and 12 months after enrollment. All underwent the same structured interview in English or Spanish (based on participant preference) conducted by a trained research associate. Assessments addressed demographics, past 30-day cigarette use, past 30-day alcohol use by validated calendar method (Timeline Follow-back [TLFB]; Sobell and Sobell, 1995), other drug use by the Addiction Severity Index (ASI; McLellan et al., 1992) alcohol and drug consequences using the Short Inventory of Problems (SIP for alcohol, SIP-DU for drugs; Allensworth-Davies et al., 2012; Smith et al., 2009), depressive symptoms using the 9-item Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001), anxiety symptoms categorized as minimal, mild, moderate or severe using the Beck Anxiety Inventory (BAI; Beck and Steer, 1993), medical comorbidity using a validated comorbidity questionnaire (Charlson et al., 1987; Katz et al., 2003), recent incarceration based on if the participants had spent time in a jail, prison, correctional institution or had been arrested in the past 3 months (McLellan et al., 1992), and homelessness based on if the participants spent any nights on the street or in a shelter in the past 3 months (Kertesz et al., 2005). Interviews usually occurred at the General Clinical Research Unit in the medical school but were also conducted at jails/prisons (with DHHS, IRB and jail/prison approval), inpatient settings, in other outpatient locations or by phone as a last alternative. In order to obtain accurate information and encourage truth-telling by participants, Research Assistants administered breath alcohol testing at every assessment. They also reminded participants that interviews were confidential, would not be shared with their clinicians, or affect their health care in any way. The study also obtained a certificate of confidentiality which further protects participant data.

2.4. Independent variable

The main independent variable was any (versus no) days of marijuana use in the past 30 days at study entry, 3- and 6-month follow-up assessments as determined by the Addiction Severity Index (ASI).

2.5. Dependent variable

The outcome was abstinence from drug (i.e., opioid and stimulant) and heavy alcohol use as determined at 3-, 6- and 12-month follow-up assessments. Stimulant and opioid use were evaluated using the ASI, with abstinence defined as zero days reported use of cocaine, amphetamines, heroin, methadone, or other opioids. In all cases, use of prescription medications (i.e., opioids including methadone) was counted only if the substance was used without a doctor's prescription, in amounts greater than prescribed, or for a longer period than prescribed. Heavy alcohol use was defined as ≥ 4 standard drinks for women and ≥ 5 standard drinks for men at least once in the past 30 days and was assessed using the Timeline Follow-back calendar method, administered by a trained research associate in an interview format. In order to confirm the findings based on self-reported abstinence, we performed a similar analysis to the main study question, looking at the association between marijuana use at 3 months and the outcome abstinence at 6 months by biochemical testing (abnormal carbohydrate deficient transferrin (CDT), any drug by saliva or hair testing).

2.6. Covariates

Covariates were added to multivariable models to control for factors that could potentially confound the association between marijuana use and abstinence

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