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Marijuana use among adults: Initiation, return to use, and continued use versus quitting over a one-year follow-up period

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ABSTRACT

Background: This study examined factors associated with marijuana use initiation among never users, prior-to-past year user who return to use, and users who continue use over a 12-month follow-up period.
Methods: Two waves (W1 and W2) of the Population Assessment of Tobacco and Health (PATH) Study provided data (N = 26,204 aged 18+). Multivariable logistic regression models were used to examine associations of W1 sociodemographic, health/mental health, and other substance use characteristics with W2 use status. As applicable, marijuana initiation age, use frequency, and use problems were also examined.
Results: At W2, 2.36% and 10.42% of W1 never users and prior-to-past year users, respectively, reported having used marijuana, and 72.54% of W1 past-year users reported continued use. Those in the 18–24 age group were most likely to initiate, resume, or continue use. Among never and prior-to-past year users, those who reported more mental health problems at W1 also had greater odds of use at W2. Marijuana initiation and return to use were significantly associated with movement from nonuse to use of other substances. Continued marijuana use, as opposed to quitting, was also associated with other substance use, initiation of marijuana use prior to age 18, weekly or more frequent use (AOR = 2.34, 95% CI = 1.87–2.93), and use problems (AOR = 1.40, 95% CI = 1.05–1.85) reported at W1.
Conclusions: Movement between marijuana nonuse and use was substantial during the 12-month follow-up period. Early intervention to prevent initiation of, return to, and continued marijuana and other substance use, especially among young adults, is needed.

1. Introduction

Prevalence of marijuana use, share of frequent (i.e., daily/near daily) users, use disorders, and user expenditures have increased in all demographic groups of adults over the past decade (Compton et al., 2016; Davenport and Caulkins, 2016; Hasin et al., 2015). The increase in marijuana use has been attributed, at least in part, to the liberalization of marijuana policies, especially medical marijuana laws, in many states (Cerdá et al., 2012; Hasin et al., 2015; Wen et al., 2015). With legalization of personal/recreational and/or medical marijuana use in increasing numbers of states, use and related problems are projected to continue increasing.

Marijuana use may be less harmful to self and others than alcohol use, other illicit substance use, and tobacco use (Nutt et al., 2010). Marijuana and cannabinoids have modest, short-term, therapeutic effects in adults with chemotherapy-induced nausea and vomiting, adults with chronic pain, and adults with multiple sclerosis-related spasticity (National Academy of Science, Engineering, and Medicine [NASEM], 2017). However, marijuana use has been associated with higher risks of traffic injuries, developing schizophrenia and other psychosis, social anxiety disorder, and other substance dependence (NASEM, 2017; World Health Organization, 2016). Marijuana use during adolescence is associated with impairments in subsequent academic achievement and education, employment and income, and social relationships and social roles; these negative effects stretch into adulthood (Meier et al., 2012; NASEM, 2017). Compared to those with no marijuana use in adolescence, those who used weekly or more frequently also had two to three times the rates of illicit drug use uptake, and daily users had six times the rate of uptake of cigarette smoking and lower cessation rates for all illicit drugs into young adulthood (Swift et al., 2012).

Previous studies show that most adult problem marijuana users try to quit (with or without formal treatment), and that their desire to quit and quitting are primarily motivated by concerns about marijuana's negative impacts on physical/psychological/cognitive health, legal status, social image/acceptability, interpersonal problems, self-control, self-image, or guilt after using (Chauchard et al., 2013; Copersino et al.,

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2006; Ellingstad et al., 2006; Pacek and Vandrey, 2014). One study found that spontaneous marijuana use cessation is often associated with an increase in legal substance use such as alcohol, tobacco, and sleeping aids, but it is not associated with initiating new illicit substance use (Copersino et al., 2006). However, another study found that among daily marijuana users who intended to stop using, alcohol and drug use did not increase, and tobacco use was less common on days abstinent from marijuana (Hughes et al., 2016). Return to marijuana use is common among those who try to quit (Chauchard et al., 2013). Compared to successful quitters, unsuccessful quitters had significantly more symptoms of depression and stress, negative affect, less education, lower exposure to formal treatment, higher day-to-day exposure to other marijuana users (e.g., social situations where others were using), and higher cannabis dependence scores (Buckner et al., 2013; Rooke et al., 2011). Poor sleep quality, cigarette smoking, and increased anxiety while discontinuing regular marijuana use have also been associated with relapse (Bonn-Miller and Moos, 2009; Babson et al., 2013; Haney et al., 2013).

More research on longitudinal patterns of marijuana use/nonuse is needed. Using wave 1 (W1) and wave 2 (W2; 12 months later) of a nationally representative panel dataset of individuals aged 18+ years, the present study examined the association of initiation, resumption, and continued use of marijuana at W2 with W1 sociodemographic characteristics, self-reported physical and mental health, and other substance use problems, and, when applicable, marijuana use frequency and use problems. Based on previous research, the study hypotheses were: (1) among W1 never and prior-to-past year (i.e., former or ex-) users, higher pain levels and more severe mental health problems will be associated with increased odds of marijuana use versus nonuse at W2; (2) initiation, resumption, or continued use of tobacco, alcohol, and other drugs between W1 and W2 will be associated with marijuana use initiation, resumption, or continued use at W2; and (3) among W1 prior-to-past-year and past-year users, early marijuana initiation age (i.e., < 18 years) and frequent marijuana use and use problems (when using) will also be associated with increased odds of resuming or continuing marijuana use at W2. Examining those who do and do not initiate marijuana use, return to use, and continue use among past-year users will expand knowledge of marijuana use versus nonuse.

2. Materials and methods

2.1. Data and sample

Data from two annual interview waves of the Population Assessment of Tobacco and Health (PATH) Study supported by the U.S National Institutes of Health and Food and Drug Administration were used. The PATH Study's W1 sample was selected using a four-stage stratified area probability sample design involving (1) primary sampling units consisting of counties or groups of counties, (2) second-stage sampling units consisting of smaller geographical segments, (3) a sampling frame consisting of the residential addresses located in these segments, and (4) adults and youth selected from the sampled households identified at these addresses, with varying sampling rates for adults by age, race, and tobacco use status (Interuniversity Consortium for Political and Social Sciences [ICPSR], 2017). Active-duty military and persons living in institutional and non-institutional group quarters other than college dormitories were excluded.

W1 interviews were conducted between September 2013 and December 2014, and W2 interviews with W1 respondents (except those who had subsequently been incarcerated) were conducted between October 2014 and October 2015. Computer-assisted personal interviewing was used to administer the household screener and audio computer-assisted self-interviewing was used for adult and youth interviews. Of 32,320 adults (aged 18 +) interviewed at W1, 26,447 (unweighted retention rate of 81.8%) were interviewed again at W2. Of these, 166 had missing data on marijuana use/nonuse at W1 and 77 had missing data on marijuana use/nonuse at W2. Those with and without marijuana use data did not differ significantly from each other on age group, gender, race/ethnicity, and education; thus, this study focused on the 26,204 respondents with W1 and W2 marijuana non/use data.

2.2. Measures

2.2.1. Marijuana use

At W1, respondents were asked about their "marijuana, hash, THC, grass, pot or weed" use as blunts or by other means. Those who had ever used marijuana were also asked about their age at first use and time since last use. Those who reported never using marijuana were designated as never users. Those who reported using it more than a year ago were designated as prior-to-past year users. Those who reported marijuana use within the past 30 days or past year were designated as past-year users. At W2, respondents were asked about their use in the past 12 months and past 30 days.

2.2.2. Weekly or more frequent marijuana use and use problems

Respondents who reported ever using marijuana were also asked if (1) they used it weekly or more often and (2) if it caused any of the following: (a) spending a lot of time using or recovering from use, (b) using it to stop being sick or avoid withdrawal problems, (c) use leading to reduced involvement in activities at work, school, home, or social events, (d) withdrawal problems (e.g., shaky hands, throwing up, having trouble sitting still or sleeping), and/or (e) continued use despite causing social problems (e.g., fights, troubles with others).

2.2.3. Sociodemographic characteristics

At W1, sample sociodemographic data were: age group (18–24, 25–34, 35–44, 45–54, 55–64, and 65 +), gender, race/ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic, and Other), education (> bachelor's degree or less), employment status (working full/part time or other), household income (below 100%, 100–199%, 200 +% of poverty, or missing), and W2 marital status (married/cohabiting vs. other [W1 marital status was not available]). Given the small numbers of marijuana users aged 65+, multivariable analyses were conducted using the 55+ age group.

2.2.4. Physical health status

At W1, physical health status was measured using the number of diagnosed medical conditions (hypertension, high cholesterol, stroke, heart disease, asthma, lung disease, diabetes, and cancer), average pain level in the past seven days (0 = low to 10 = high), and whether or not the respondent visited an emergency department or urgent care center (referred to as ED visit hereafter) for health problems in the past year.

2.2.5. Mental health problems

At W1, mental health problems were measured by asking four questions about internalizing symptoms (feeling very trapped/sad/depressed; trouble sleeping; feeling nervous/anxious/tense/scared; and being distressed/upset about the past; 0 = no, 1 = yes for each) and seven questions about externalizing symptoms (hard time paying attention, hard time listening to instructions, lied/conned to get something, bullied/threatened people, started a physical fight, felt restless/need to climb on things, and gave answers before question was finished: 0 = no, 1 = yes for each) in the past year. These measures (along with substance use problems shown above) were derived from the Global Appraisal of Individual Needs-Short Screener (Dennis et al., 2006). Following a previous study based on PATH data (Conway et al., 2017), severity levels were categorized as no/low (0–1 symptoms endorsed), moderate (2–3 symptoms), or high (4 symptoms for internalizing problems or ≥4 symptoms for externalizing problems). Cronbach's alphas for the study population were 0.81 for internalizing and 0.71 for externalizing problems.