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Prevalence, correlates, and trends in tobacco use and cessation among current, former, and never adult marijuana users with a history of tobacco use, 2005–2014☆

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ABSTRACT

Background: Approximately 70% of current (past 30-day) adult marijuana users are current tobacco users, which may complicate tobacco cessation. We assessed prevalence and trends in tobacco cessation among adult ever tobacco users, by marijuana use status.

Methods: Data came from the National Survey on Drug Use and Health, a cross-sectional, nationally representative, household survey of U.S. civilians. Analyses included current, former, and never marijuana users aged ≥ 18 reporting ever tobacco use (cigarette, cigar, chew/snuff). We computed weighted estimates (2013–2014) of current tobacco use, recent tobacco cessation (quit 30 days to 12 months), and sustained tobacco cessation (quit > 12 months) and adjusted trends in tobacco use and cessation (2005–2014) by marijuana use status. We also assessed the association between marijuana and tobacco use status.

Results: In 2013–2014, among current adult marijuana users reporting ever tobacco use, 69.1% were current tobacco users (vs. 38.5% of former marijuana users, $p < 0.0001$, and 28.2% of never marijuana users, $p < 0.0001$); 9.1% reported recent tobacco cessation (vs. 8.4% of former marijuana users, $p < 0.01$, and 6.3% of never marijuana users, $p < 0.001$), and 21.8% reported sustained tobacco cessation (vs. 53.1% of former marijuana users, $p < 0.01$, and 65.5% of never marijuana users, $p < 0.0001$). Between 2005 and 2014, current tobacco use declined and sustained tobacco cessation increased among all marijuana use groups.

Conclusions: Current marijuana users who ever used tobacco had double the prevalence (vs. never-marijuana users) of current tobacco use, and significantly lower sustained abstinence. Interventions addressing tobacco cessation in the context of use of marijuana and other substances may be warranted.

1. Introduction

State-level policies legalizing marijuana use, possession, production and sale have increased in the U.S. during recent years. In 2003, 8 states had enacted laws legalizing marijuana for medicinal use (National Conference of State Legislatures, 2016), and none had legalized recreational use. As of December 2016, more than half of all U.S. states have a law legalizing marijuana for recreational or medical use (Association of State and Territorial Health Officials, 2015; National Conference of State Legislatures, 2016). During 2011–2012, more than two-thirds of adult past 30 day marijuana users reported past 30 day use of any tobacco product (Schauer, Berg, Kegler, Donovan, & Windle, 2015). Several studies have documented possible reasons why tobacco and marijuana use co-occur, including a shared route of administration (both are still primarily smoked) (Agrawal, Budney, & Lynskey, 2012; Centers for Disease Control and Prevention, 2014; Schauer, King, Bunnell, Promoff, & McAfee, 2016a), co-administration in shared products (i.e., blunts – which are hollowed out cigars filled with marijuana, and spliffs or marijuana cigarettes, which are marijuana joints that contain tobacco) (Agrawal et al., 2012), shared environmental factors (e.g., overlapping peer influences, familial and social exposures) (Agrawal et al., 2012), possible shared genetic factors (Agrawal, Lynskey, Kapoor, et al., 2015; Agrawal et al., 2012), and a synergistic interaction between nicotine and tetrahydrocannabinol (THC) that may increase the rewarding effects over using either substance alone (Jansma, van Hell, Vanderschuren, et al., 2013; Valjent, Mitchell,

☆ The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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Besson, Caboche, & Maldonado, 2002).

While the potential health effects of marijuana use are still emerging (Hall & Degenhardt, 2014; Volkow, Baler, Compton, & Weiss, 2014), the profoundly deleterious health risks from tobacco use are well documented. Tobacco use is the leading cause of preventable disease and death in the U.S., and cigarette smoking harms nearly every organ in the body (U.S. Department of Health and Human Services, 2014). Combined use of combusted marijuana and tobacco may compound certain negative health outcomes from tobacco use, including respiratory effects, and possible mental health and cognitive development effects (Agrawal et al., 2012; Barsky, Roth, Kleerup, Simmons, & Tashkin, 1998; Fligiel et al., 1997; Peters, Schwartz, Wang, O'Grady, & Blanco, 2014). Co-use of marijuana and tobacco could also impact successful tobacco cessation (Ford, Vu, & Anthony, 2002; Patton, Coffey, Carlin, Sawyer, & Lynskey, 2005), but this relationship is not well understood. Understanding possible effects marijuana use has on tobacco use and tobacco cessation is vital to assessing the net potential harms and benefits of policies that may increase marijuana use.

Previous studies on the impact of co-use of marijuana and tobacco on tobacco cessation have yielded varying results. For example, in a longitudinal study of adults < 45 years of age, co-users of marijuana and tobacco at baseline had greater odds than non-marijuana users of reporting continued tobacco use at follow-up 13 years later; the odds were even stronger if baseline marijuana use was daily (Ford et al., 2002). Furthermore, compared with never and ever marijuana users, past 30-day co-users of tobacco and marijuana at baseline had lower odds of reporting trying to quit tobacco at follow-up 13 years later (Ford et al., 2002). Other studies have suggested that frequent marijuana use may increase nicotine dependence (Patton et al., 2005), perhaps due to the synergistic effects of THC and nicotine, or co-administration in blunts and spliffs. In contrast, a more recent study of individuals enrolled in a smoking cessation intervention found past week marijuana use was associated with 7-day point prevalence abstinence from tobacco, suggesting participants may have used marijuana as a replacement for tobacco (Leyro, Hendricks, & Hall, n.d.). Similarly, a 2012 review of clinical correlates of co-occurring marijuana and tobacco use and treatment found that while co-use of marijuana and tobacco was associated with a greater likelihood of marijuana use disorders and poorer marijuana cessation outcomes, it was not consistently associated with greater likelihood of tobacco use disorders or poorer tobacco cessation outcomes (Peters, Budney, & Carroll, 2012).

To date, no studies have used nationally representative data to assess prevalence, correlates, and trends in tobacco cessation by marijuana use status. Given the comorbidity between the two substances and increasing rates of marijuana use (SAMHSA, 2014), documenting changes to tobacco cessation among a nationally-representative sample of co-users of marijuana and tobacco is critical to inform our understanding of how changes to marijuana policies and patterns of use may impact tobacco use and cessation. Accordingly, this study used a nationally representative sample of US adults who ever used tobacco to assess: 1) the prevalence of tobacco cessation (recent cessation and sustained cessation) among current, former, and never marijuana users; 2) trends over time (2005–2014) in past 30-day tobacco use, recent tobacco cessation, and sustained tobacco cessation among current, former, and never marijuana users; 3) the association between marijuana use status and tobacco cessation, and 4)characteristics of current marijuana users who are current tobacco users versus recent or sustained quitters.

2. Methods

2.1. Sample

Data for this study came from 558,372 non-institutionalized U.S. adults aged 18 and older who responded to the National Survey on Drug Use and Health (NSDUH) between 2005 and 2014, reported ever using tobacco, and responded to questions about history of marijuana use. NSDUH is a cross-sectional, nationally representative household interview survey conducted annually by the Substance Abuse and Mental Health Services Administration. NSDUH employs a state-based design with stratified independent, multistage area probability sampling within each state and the District of Columbia. Because of changes to the sampling and survey methodology, data prior to 2002 cannot be used with recent data for trend analyses (SAMSHA, 2013). In addition, NSDUH did not collect information about blunt use among adults until after 2004. Therefore, we used the most recent ten years of available NSDUH data (2005–2014). Data were combined into two-year increments to ensure statistically stable estimates. Response rates to NSDUH between 2005 and 2014 ranged from 73% to 76%. Because these were analyses of publically available data, this study did not require IRB approval.

2.2. Measures

2.2.1. Tobacco use and cessation

Ever using tobacco was defined by asking participants if they had ever smoked a cigarette, used smokeless tobacco (chew/snuff), or smoked all or part of a cigar. The lifetime threshold of having smoked 100 or more cigarettes was not used, since there is no similar question that can be used to gauge lifetime cigar or smokeless tobacco use. Participants who responded yes to any of those questions were considered ever users of tobacco. Past 30-day tobacco use was defined as those who reported using tobacco (cigarettes, cigars, or smokeless tobacco) at least once in the past 30 days.

Recent and sustained cessation were assessed using the questions: "How long has it been since you last [smoked all or part of a cigarette/smoked part of all of any type of cigar/last used snuff/last used chewing tobacco]?" Recent tobacco cessation was defined as those who reported having last smoked or used cigarettes, smokeless tobacco, and cigars between 30 days and 12 months from the time of the survey (i.e., having been quit 30 days to 12 months). Sustained tobacco cessation was defined as having last used tobacco products > 12 months from the time of survey (i.e., having been quit > 12 months).

2.2.2. Marijuana use

Ever use of marijuana was assessed using the question, "Have you ever, even once, used marijuana or hashish?" Ever users were then asked about past 30-day use of marijuana and past 30-day use of blunts. Past 30-day marijuana use was defined as any past 30-day use of marijuana, hashish, or blunts. Marijuana use frequency was assessed among those with current marijuana use. For the purposes of this study, frequency was categorized into use on > 20 of the past 30 days (daily/near daily use) and use on ≤ 20 of the past 30 days. Participants without past 30-day marijuana use, but who reported ever using marijuana were considered former marijuana users, those with no past 30-day and no former marijuana use were considered never marijuana users.

2.2.3. Co-marijuana and tobacco use

Co-users of marijuana and tobacco were those who reported using marijuana and tobacco within the past 30 days. Marijuana users who reported consuming blunts were considered to be co-users of tobacco, regardless of what other tobacco products they reported using. Spliff use or marijuana cigarette use was not collected as part of NSDUH. We were unable to assess whether use of marijuana and tobacco occurred on the same day or at the same time.

2.2.4. Alcohol use

Past 30-day alcohol use was defined as having had any drink of an alcoholic beverage in the past 30 days. Participants were also asked on

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