Toking, Vaping, and Eating for Health or Fun

Marijuana Use Patterns in Adults, U.S., 2014

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Introduction: Policies legalizing marijuana for medical and recreational use have been increasing in the U.S. Considering the potential impact of these policies, important knowledge gaps exist, including information about the prevalence of various modes of marijuana use (e.g., smoked in joints, bowls, bongs; consumed in edibles or drinks) and about medical versus recreational use. Accordingly, this study assessed (1) prevalence and correlates of modes of current and ever marijuana use and (2) prevalence of medicinal and recreational marijuana use in U.S. adults.

Methods: Data came from Summer Styles (n=4,269), a nationally representative consumer panel survey of adults aged ≥18 years, collected in 2014. The survey asked about past 30–day (current) and ever mode of marijuana use and current reason for use (medicinal, recreational, both). Weighted prevalence estimates were computed and correlates were assessed in 2014 using logistic regression.

Results: Overall, 7.2% of respondents reported current marijuana use; 34.5% reported ever use. Among current users, 10.5% reported medicinal-only use, 53.4% reported recreational-only use, and 36.1% reported both. Use of bowl or pipe (49.5%) and joint (49.2%) predominated among current marijuana users, with lesser use of bong, water pipe, or hookah (21.7%); blunts (20.3%); edibles/drinks (16.1%); and vaporizers (7.6%); 92.1% of the sample reported combusted-only marijuana use.

Conclusion: Combusted modes of marijuana use are most prevalent among U.S. adults, with a majority using marijuana for recreation. In light of changing policies and patterns of use, improved marijuana surveillance is critical for public health planning.

(Am J Prev Med 2016;50(1):1–8)

Introduction

Marijuana is the most commonly used federally illicit drug in the U.S.,[1,2] with 7.6% of adults reporting past 30–day use in 2013.[3] Although the health effects associated with marijuana use are widely debated, regular use poses potential public health concerns, including reduced educational attainment; risk of injury from driving; increased respiratory symptoms; potential long-term health consequences such as cancer, chronic obstructive pulmonary disease, and heart disease; addiction in some users; and increased risk of psychoses in vulnerable populations.[2]

State-level policies legalizing marijuana use are increasing, though use remains illegal federally. In 2010, 11 states had medicinal marijuana policies and none had legalized marijuana recreationally; by November 2014, a total of 23 states had enacted laws legalizing medicinal use,[4] and four states (Alaska, Colorado, Oregon, and Washington) and the District of Columbia had legalized recreational use.[5–8] This rapidly shifting landscape raises questions about the potential benefits and harms of marijuana use.[2,9] Despite a number of reviews that have summarized individual and public health effects,[10–15] data on marijuana use are limited.

One gap relates to mode of use. Most surveillance systems only monitor ever and current use. Although marijuana is thought to be primarily smoked,[2] little is known about different modes of use. Marijuana can be

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0749-3797/$36.00
http://dx.doi.org/10.1016/j.amepre.2015.05.027

consumed in multiple ways, including smoking or inhaling it in joints, bowls or pipes, bongs, water pipes, hookahs, and blunts (cigars filled with marijuana); eating or drinking it in food products and beverages; or vaporizing it. These modes are used to consume different marijuana products, including cannabis herb (dried and crushed marijuana flowers); resin (hashish); and oil (hash, butane honey, or butane hash oils).[16] The oil, which may contain more than 60% tetrahydrocannabinol (THC)—versus 5% to 10% in the herb or resin—is extracted using solvents, like butane, and can be vaporized, smoked, or inhaled (in "dabs").[16,17] Surveillance of modes of use and consumption of different marijuana products is critical, as these factors could be associated with differential health effects.[18]

A second gap is knowledge of the primary reason for use: medicinal use to treat or decrease health condition symptoms versus recreational use for pleasure or satisfaction. Although the size of the illicit marijuana market has been quantified,[19] no nationally representative data exist on adult consumption of marijuana for medical versus recreational reasons. This is important to understand because policies, regulations, and taxes may differ based on whether consumption is recreational or medicinal.

To address these gaps, this study assessed nationally representative, web-based survey data from U.S. adults to determine (1) prevalence and correlates of modes of current and ever marijuana use and (2) prevalence of medicinal and recreational marijuana use.

Methods

Study Sample

Data came from 2014 Summer Styles, a seasonal, national consumer panel survey conducted by Porter Novelli Public Services. Summer Styles assesses health-related indicators among U.S. adults aged ≥18 years, and draws from GfK's KnowledgePanel, an online panel initiated in 1999 that uses probability-based sampling to reach respondents regardless of landline phone or Internet access.[20] For 2014 Summer Styles, Knowledge Networks conducted probability-based sampling from an address-based sample of respondents from the larger KnowledgePanel. Participants were recruited and completed the survey online. In total, 4,269 participants completed Summer Styles during June–July 2014, yielding a response rate of 69%. Post-stratification sample weights were used to account for selection probabilities, and to achieve representativeness of the U.S. adult population based on seven factors from the Current Population Survey: sex, age, race/ethnicity, education, U.S. region, metropolitan area, and Internet access. GfK completes human subjects review for surveys using the KnowledgePanel. This study was exempt from CDC human subjects review because de-identified secondary data were used.

Measures

To determine mode of use, participants were asked, *Have you ever used marijuana or hashish in any of the following ways?* Responses included *joint, blunt or cigar with marijuana in it, bowl or small glass pipe, bong or water pipe, hookah pipe, vaporizer or other electronic device, baked in food, drank it, some other way*, or *I have never used marijuana or hashish*. Participants could select more than one response. Those who selected *I have never used marijuana or hashish* or who did not select any modes were considered never users. This question was modified from two similar fielded questions: the first from a cannabis consumption survey that RAND conducted in Washington State in 2013 that asked about consumption of specific marijuana products,[21] and the second from the 2014 Oregon Behavioral Risk Factor Surveillance System about mode of marijuana use (which was subsequently fielded by Washington and Colorado as well).[22]

Participants who reported ever use were asked, *In the past 30 days, have you used marijuana in any of the following ways?* They could select multiple responses from the same options as the ever use question. Those with no use in the past 30 days or who did not select any modes of use were considered to not be current users. All others who selected any form of use were considered current users.

For both ever and current use, *hookah* was combined with *bong or water pipe*, as these terms can be synonymous.[23,24] *Baked in food* was combined with *drank it* due to limited sample size. A count variable was computed to assess the total number of administration modes for both ever use and past 30–day use (range, 1–8). Joints, blunts, bowls/pipes, and bongs/waterpipes/hookah were considered combusted modes of use.

To determine reason for use, current users were asked, *When you used marijuana or hashish during the past 30 days, was it for medical reasons to treat or decrease symptoms of a health condition, or was it for non-medical reasons to get pleasure or satisfaction (such as: excitement, to "fit in" with a group, increase awareness, forget worries, or for fun at a social gathering)?* Response options were *only for medical reasons to treat or decrease symptoms of a health condition, only for non-medical purposes to get pleasure or satisfaction, both medical and non-medical reasons, and don't know/not sure*. Those who responded *don't know/not sure* were excluded from the analyses of reasons for use (n=17). Any medicinal use was defined as using marijuana for only medicinal reasons or using marijuana for both medicinal and recreational reasons. Any recreational use was defined as only recreational use or both recreational and medicinal use. This question was developed in consultation with subject matter experts at CDC and in Washington and Colorado.

Assessed socoiodemographic characteristics included sex, age in years, race/ethnicity, education, and U.S. region.

Statistical Analysis

Analyses were conducted in 2014 using SAS-callable SUDAAN, version 9.2. Weighted frequencies and 95% CIs were computed for current use, ever use, mode of use, and reason for use. Respondents reporting current use but not ever use (<1%) were imputed as ever users. Sociodemographic differences were assessed by modes of ever use, and by the three most common modes of current use (joints; bowl or pipe; and bong, water pipe, or hookah). Bivariate and multivariable logistic regressions were used to assess correlates