



HHS Public Access

Author manuscript

JAMA. Author manuscript; available in PMC 2020 July 30.

Published in final edited form as:

JAMA. 2017 January 10; 317(2): 209–211. doi:10.1001/jama.2016.18900.

Use of Marijuana for Medical Purposes among Adults in the United States

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INTRODUCTION

By 2014, 23 states and the District of Columbia had legalized medical marijuana use, suggesting a need for information about national rates of marijuana use for medical purposes.¹ Although 17% of past-year marijuana users reported use for medical purposes in states with medical marijuana legalization,² physicians might recommend medical marijuana use to patients regardless of their residing states.³ Therefore, we examined differences between medical and nonmedical marijuana users across all US states.

METHODS

Data were from adults 18 years and older who participated in the 2013–2014 National Surveys on Drug Use and Health (NSDUH), providing representative data on marijuana and other substance use among the US civilian, noninstitutionalized population.⁴ NSDUH data collection was approved by the Institutional Review Board at the RTI International. Verbal informed consent was received from each study participant. Data were collected by interviewers in personal visits, using audio computer-assisted self-administered interviews. The annual mean response rate for the 2013–2014 NSDUH was 59.3%.

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Author Contributions: Dr. Han had full access to all of the data in this study and takes responsibility for integrity of the data and the accuracy of the data analysis.

Study concept and design: Compton, Han, Hughes.

Acquisition of data: Hughes, Compton.

Analysis and interpretation of data: All authors.

Drafting of the manuscript: Han, Compton.

Critical revision of the manuscript for important intellectual content: All authors.

Statistical analysis: Han.

Obtained funding: N/A.

Administrative, technical, or material support: Compton, Han.

Disclaimers: The findings and conclusions of this study are those of the authors and do not necessarily reflect the views of the National Institute on Drug Abuse of the National Institutes of Health, the Substance Abuse and Mental Health Services Administration, or the U.S. Department of Health and Human Services.

Conflict of Interest Disclosures: Compton reports ownership of stock in General Electric Co., 3M Co., and Pfizer Inc., unrelated to the submitted work. Han, Hughes, Jones, and Blanco have no conflicts to disclose.

In addition to sociodemographic, mental and physical health characteristics, NSDUH collected data on substance use and use disorders, age of onset, perceived risk of harm from marijuana use, perceived legalization of medical marijuana use in residing state, and perceived marijuana availability. To classify medical marijuana use, those reporting past-year marijuana use were asked if *any* marijuana use was recommended by health care professionals and if “yes”, whether *all* marijuana use was recommended.

We estimated 12-month prevalence of medical-only marijuana use, nonmedical-only marijuana use, and combined medical and nonmedical use (2-sided t test with a significance level of .05). We used multinomial logistic regressions to examine characteristics distinguishing the 3 groups. Our analyses used SUDAAN software (Release 11.0.1.) to account for the complex sample design and sampling weights of NSDUH data.

RESULTS

Based on 96,100 respondents, 12.9% (95% confidence interval (CI)=12.6%–13.2%) of US adults had past-year marijuana use (nonmedical-only 11.6% (95% CI=11.3%–11.8%), medical-only 0.8% (95% CI=0.7%–0.9%), medical and nonmedical 0.5% (95% CI=0.4%–0.5%)). Among past-year adult marijuana users, 90.2% (95% CI=89.5%–91.0%) used nonmedically-only, 6.2% (95% CI=5.6%–6.9%) used medically-only, and 3.6% (95% CI=3.1%–4.0%) used medically and nonmedically. Of medical marijuana users, 78.8% (95% CI=75.7%–81.9%) resided in states where medical marijuana was legal, and 21.2% (95% CI=18.1%–24.3%) resided in other states.

Prevalence patterns among adults were similar across medical-only, nonmedical-only and combined user groups with few exceptions (Table 1): Compared with the West region, medical-only and combined medical and nonmedical marijuana use was less common in other regions, and nonmedical-only use was more common in the Northeast. Medical-only marijuana use was more common among those reporting fair/poor health than better health and among those with stroke; the opposite was found for nonmedical-only marijuana use. Nonmedical-only marijuana use was less common and medical use more common among disabled adults than full-time employed.

Compared with nonmedical-only marijuana use, medical-only use was directly associated with older age, older marijuana initiation age, disability, Medicaid status, stroke diagnosis, poor self-rated health, anxiety disorder, daily/near daily marijuana use, residing in a medical marijuana legalization state, and perceived state legalization of medical marijuana, but was inversely associated with heavy alcohol use and nonmedical use of prescription stimulants and analgesics (Table 2).

DISCUSSION

Using nationally representative data, 9.8% of adult marijuana users in the US reported use for medical purposes. While the prevalence of medical marijuana use was higher in the states that had legalized medical marijuana, 21.2% of medical marijuana users resided in states that had not legalized such use, suggesting physicians might recommend medical marijuana use regardless of legalization³.

Similarities in correlates of medical and nonmedical users, especially co-occurrence with psychiatric conditions and other substance use, suggest that some marijuana users may access medical marijuana without medical need.⁵ However, medical-only marijuana users differed from nonmedical-only users in ways that are consistent with use to address medical problems.⁶ Limitations of this study include: lower response rates compared to prior years which increases the potential for nonresponse bias, and limited questions about medical marijuana use.

Acknowledgments

Funding/Support: The National Surveys on Drug Use and Health were supported by contracts from the Substance Abuse and Mental Health Services Administration.

Role of the Sponsors: This study was jointly sponsored by the National Institute on Drug Abuse of the National Institutes of Health, the Substance Abuse and Mental Health Services Administration, and the Office of the Assistant Secretary for Planning and Evaluation of the U.S. Department of Health and Human Services. The sponsors supported the authors who were responsible for preparation, review, and approval of the manuscript and the decision to submit the manuscript for publication. The sponsors had no role in the design and conduct of the study; analysis and interpretation of the data; preparation and review of the manuscript; or decision to submit the manuscript for publication. The sponsors reviewed and approved the manuscript.

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Table 1.

12-month prevalence of medical marijuana use only, nonmedical marijuana use only, and medical and nonmedical marijuana use *among adults in the U.S.* by sociodemographic characteristics, physical health status, mental health status, substance use and substance use disorder status, and related factors (N=96,100¹)

Characteristics	medical marijuana use only, weighted % (95% CI), N1=700	nonmedical marijuana use only, weighted % (95% CI), N1=17,500	medical and nonmedical marijuana use, weighted % (95% CI), N1=600
TOTAL (N=96,100)	0.8 (0.72–0.88)	11.6 (11.26–11.84)	0.5 (0.40–0.52)
Age			
18–29 (n=46,200)	1.0 (0.89–1.20)	27.0 (26.33–27.60)	0.9 (0.77–1.01)
30–49 (n=31,600)	0.9 (0.80–1.07)	10.9 (10.44–11.38)	0.5 (0.44–0.64)
50 ⁺ (n=18,300)	0.6 (0.47–0.76)	4.5 (4.12–4.93)	0.2 (0.14–0.30)
Gender			
Male, (n=45,000)	1.1 (0.94–1.21)	14.6 (14.13–15.05)	0.6 (0.49–0.66)
Female ⁺ (n=51,100)	0.6 (0.47–0.67)	8.7 (8.41–9.08)	0.4 (0.30–0.44)
Race/Ethnicity ²			
NH white ⁺ (n=61,000)	0.8 (0.74–0.96)	12.0 (11.59–12.33)	0.5 (0.42–0.57)
NH black (n=11,300)	0.5 (0.36–0.83)	14.1 (13.30–15.02)	0.3 (0.22–0.42)
Hispanic (n=15,300)	0.8 (0.65–1.05)	9.2 (8.61–9.89)	0.5 (0.36–0.66)
NH other (n=8,500)	0.9 (0.62–1.21)	8.7 (7.79–9.72)	0.4 (0.27–0.68)
Employment Status			
Full-time employed ⁺ (n=49,500)	0.6 (0.50–0.68)	12.0 (11.62–12.46)	0.4 (0.34–0.48)
Part-time employed (n=17,400)	1.0 (0.80–1.34)	16.6 (15.79–17.42)	0.6 (0.46–0.77)
Disabled for work (n=3,900)	3.0 (2.39–3.80)	10.4 (9.13–11.82)	1.0 (0.69–1.51)
Unemployed (n=6,900)	1.0 (0.74–1.37)	22.3 (20.91–23.78)	0.8 (0.59–1.15)
Health Insurance			
Private only ⁺ (n=53,500)	0.6 (0.47–0.66)	12.2 (11.78–12.58)	0.4 (0.29–0.44)
No insurance coverage (n=16,300)	1.0 (0.84–1.29)	18.4 (17.51–19.25)	0.8 (0.63–0.97)
Medicaid (n=13,400)	2.1 (1.69–2.53)	14.4 (13.60–15.34)	1.0 (0.74–1.22)
Other (n=13,000)	0.6 (0.45–0.80)	4.5 (4.04–4.98)	0.3 (0.18–0.38)
Metropolitan Statistical Area			
Large (n=42,600)	0.8 (0.73–0.97)	12.1 (11.69–12.54)	0.5 (0.40–0.55)
Small (n=33,300)	0.9 (0.73–1.08)	11.6 (11.09–12.14)	0.5 (0.36–0.57)
Nonmetropolitan ⁺ (n=20,200)	0.5 (0.40–0.71)	9.6 (8.91–10.24)	0.4 (0.33–0.59)
Region			
Northeast (n=18,800)	0.4 (0.26–0.52)	13.0 (12.33–13.75)	0.4 (0.29–0.53)
Midwest (n=24,500)	0.5 (0.38–0.59)	11.4 (10.84–11.95)	0.3 (0.25–0.42)
South (n=30,800)	0.2 (0.11–0.22)	10.7 (10.21–11.14)	0.3 (0.22–0.35)
West ⁺ (n=22,000)	2.5 (2.17–2.83)	12.0 (11.31–12.69)	0.9 (0.77–1.13)
Self-Rated Health			
Excellent (n=23,300)	0.5 (0.42–0.69)	10.9 (10.36–11.52)	0.3 (0.19–0.38)
Very good (n=37,200)	0.5 (0.41–0.61)	12.8 (12.31–13.27)	0.3 (0.28–0.43)
Good (n=25,700)	0.9 (0.78–1.10)	11.7 (11.13–12.20)	0.6 (0.46–0.69)
Fair or poor ⁺ (n=9,900)	1.8 (1.44–2.22)	9.1 (8.43–9.89)	0.9 (0.68–1.10)

Characteristics	medical marijuana use only, weighted % (95% CI), N1=700	nonmedical marijuana use only, weighted % (95% CI), N1=17,500	medical and nonmedical marijuana use, weighted % (95% CI), N1=600
TOTAL (N=96,100)	0.8 (0.72–0.88)	11.6 (11.26–11.84)	0.5 (0.40–0.52)
Stroke			
Yes (n=700)	1.2 (0.64–2.28)	4.0 (2.29–7.02)	*
No [†] (n=95,400)	0.8 (0.72–0.89)	11.7 (11.37–11.97)	0.5 (0.40–0.51)
Diagnosed Anxiety Disorder			
Yes (n=7,200)	2.4 (1.91–3.03)	18.4 (17.12–19.78)	1.7 (1.27–2.14)
No [†] (n=88,900)	0.7 (0.61–0.78)	11.1 (10.77–11.37)	0.4 (0.33–0.43)
Major Depressive Episode			
Yes (n=7,500)	1.7 (1.33–2.25)	19.5 (18.28–20.75)	1.3 (0.97–1.75)
No [†] (n=87,700)	0.7 (0.65–0.82)	11.0 (10.68–11.28)	0.4 (0.35–0.46)
Heavy Alcohol Use			
Yes (n=8,400)	1.4 (1.04–1.84)	37.7 (36.11–39.21)	1.2 (0.97–1.59)
No [†] (n=87,700)	0.8 (0.68–0.86)	9.7 (9.38–9.95)	0.4 (0.35–0.46)
Cocaine Use			
Yes (n=2,500)	3.3 (2.32–4.61)	70.1 (67.14–72.94)	3.7 (2.84–4.74)
No [†] (n=93,600)	0.8 (0.68–0.85)	10.5 (10.22–10.79)	0.4 (0.35–0.46)
Heroin Use			
Yes (n=500)	2.2 (0.99–4.69)	71.8 (65.47–77.33)	3.9 (2.31–6.48)
No [†] (n=95,600)	0.8 (0.72–0.89)	11.4 (11.07–11.66)	0.5 (0.40–0.51)
Nonmedical Use of Prescription Pain Relievers			
Yes (n=5,300)	2.2 (1.63–2.82)	47.5 (45.31–49.63)	2.0 (1.53–2.64)
No [†] (n=90,800)	0.8 (0.67–0.84)	10.1 (9.78–10.35)	0.4 (0.35–0.45)
Nonmedical Use of Prescription Stimulants			
Yes (n=2,000)	2.1 (1.22–3.49)	65.0 (61.52–68.39)	2.3 (1.60–3.34)
No [†] (n=94,100)	0.8 (0.71–0.88)	10.9 (10.58–11.16)	0.4 (0.39–0.50)
Nicotine Dependence			
Yes (n=13,600)	1.9 (1.56–2.24)	24.6 (23.54–25.72)	1.2 (1.01–1.50)
No [†] (n=82,500)	0.7 (0.57–0.74)	9.6 (9.35–9.93)	0.4 (0.30–0.40)
Marijuana Use Disorders			
Yes (n=2,500)	6.1 (4.68–8.02)	88.4 (86.17–90.35)	5.4 (4.23–6.96)
No [†] (n=93,600)	0.7 (0.65–0.81)	10.4 (10.13–10.70)	0.4 (0.34–0.44)
Non-Marijuana Illicit Drug Use Disorders			
Yes (n=1,400)	1.6 (0.83–2.97)	47.6 (43.51–51.64)	2.1 (1.35–3.11)
No [†] (n=94,700)	0.8 (0.71–0.89)	11.2 (10.87–11.46)	0.4 (0.39–0.50)

Characteristics	medical marijuana use only, weighted % (95% CI), N1=700	nonmedical marijuana use only, weighted % (95% CI), N1=17,500	medical and nonmedical marijuana use, weighted % (95% CI), N1=600
TOTAL (N=96,100)	0.8 (0.72–0.88)	11.6 (11.26–11.84)	0.5 (0.40–0.52)
Alcohol Use Disorders			
Yes (n=8,800)	1.5 (1.13–1.90)	37.8 (36.31–39.36)	1.3 (1.02–1.63)
No ⁺ (n=87,300)	0.8 (0.67–0.85)	9.6 (9.33–9.90)	0.4 (0.35–0.46)
Residing in a Medical Marijuana State			
Yes (n=37,800)	1.9 (1.65–2.08)	12.6 (12.11–13.18)	0.8 (0.67–0.92)
No ⁺ (n=58,300)	0.2 (0.13–0.23)	10.9 (10.55–11.26)	0.3 (0.22–0.32)
Perceived State Legalization of Medical Marijuana Use			
Yes (n=25,900)	2.5 (2.21–2.79)	15.5 (14.86–16.20)	1.0 (0.88–1.21)
Not Sure/Unknown (n=12,400)	0.1 (0.04–0.25)	0.5 (4.16–5.10)	0.1 (0.05–0.20)
No ⁺ (n=57,800)	0.2 (0.15–0.25)	11.4 (11.06–11.80)	0.3 (0.24–0.34)

Notes: Data source: The 2013–2014 National Surveys on Drug Use and Health (NSDUH). This analysis used SUDAAN software to account for the complex sample design and sampling weights of NSDUH data. N=overall sample size; N1=numerator; n=denominator for each category; CI: confidence interval; NH: Non-Hispanic.

⁺: Reference Group.

*: Estimate is not reported due to low precision.

¹ SAMHSA requires that any description of overall sample sizes based on the restricted-use data files has to be rounded to the nearest 100 to minimize potential disclosure risk.

² Race/ethnicity was NSDUH respondent's self-classification of racial and ethnic origin and identification based on the classifications developed by the US Census Bureau. This study assessed race/ethnicity because prior research indicates racial/ethnic differences. Percentages in **bold**: Each bolded percentage is significantly different (p<0.05) from the percentage of the reference group within each table cell.

Table 2.

Multivariable multinomial logistic regression results showing characteristics that distinguish adults with 12-month medical marijuana use only from adults with 12-month medical and nonmedical marijuana use as well as adults with 12-month nonmedical marijuana use only (N=18,800[†])

Characteristics	medical marijuana use only vs. nonmedical marijuana use only AOR (95% CI) N=18,200 [†]	medical marijuana use only vs. medical and nonmedical marijuana use AOR (95% CI) N=1300 [†]
Age		
18–29	0.6 (0.41–0.92)	0.6 (0.36–1.15)
30–49	1.2 (0.80–1.70)	0.9 (0.50–1.55)
50 ⁺	1.0	1.0
Employment Status		
Full-time employed ⁺	1.0	1.0
Part-time employed	1.2 (0.81–1.64)	1.3 (0.81–2.09)
Disabled for work	3.1 (1.96–4.81)	2.5 (1.31–4.88)
Unemployed	0.9 (0.61–1.35)	1.1 (0.65–1.94)
Health Insurance		
Private only ⁺	1.0	1.0
No insurance coverage	1.4 (1.02–1.99)	1.0 (0.66–1.60)
Medicaid	1.5 (1.05–2.19)	1.1 (0.66–1.80)
Other	1.5 (0.98–2.41)	1.0 (0.56–1.79)
Metropolitan Statistical Area		
Large	1.5 (1.04–2.16)	1.6 (1.00–2.61)
Small	1.4 (0.98–2.13)	1.5 (0.94–2.51)
Nonmetropolitan ⁺	1.0	1.0
Region		
Northeast	0.2 (0.14–0.29)	0.4 (0.25–0.73)
Midwest	0.4 (0.27–0.52)	0.7 (0.46–1.15)
South	0.3 (0.14–0.42)	0.4 (0.20–0.76)
West ⁺	1.0	1.0
Self-Rated Health		
Excellent	0.5 (0.32–0.74)	1.3 (0.72–2.46)
Very good	0.3 (0.23–0.50)	0.9 (0.53–1.50)
Good	0.6 (0.44–0.90)	1.0 (0.63–1.68)
Fair or poor ⁺	1.0	1.0
Stroke		
Yes	2.8 (1.16–6.94)	0.6 (0.19–2.00)
No ⁺	1.0	1.0
Diagnosed Anxiety Disorder		
Yes	2.1 (1.50–3.01)	1.1 (0.66–1.71)
No ⁺	1.0	1.0
Heavy Alcohol Use		

Characteristics	medical marijuana use only vs. nonmedical marijuana use only AOR (95% CI) N=18,200 ¹	medical marijuana use only vs. medical and nonmedical marijuana use AOR (95% CI) N=1300 ¹
Yes No ⁺	0.6 (0.40–0.78) 1.0	0.7 (0.44–1.03) 1.0
Nonmedical Use of Prescription Pain Relievers		
Yes No ⁺	0.7 (0.46–0.98) 1.0	0.8 (0.47–1.6) 1.0
Nonmedical Use of Prescription Stimulants		
Yes No ⁺	0.5 (0.23–0.85) 1.0	0.8 (0.36–1.54) 1.0
Daily/Near Daily Marijuana Use		
Yes No ⁺	3.5 (2.75–4.52) 1.0	1.8 (1.27–2.47) 1.0
Age of First Marijuana Use		
<18 18–29 ⁺ 30	1.1 (0.81–1.46) 1.0 2.5 (1.15–5.55)	1.0 (0.64–1.43) 1.0 3.0 (0.96–9.38)
Residing in a Medical Marijuana State		
Yes No ⁺	1.8 (1.21–2.80) 1.0	1.1 (0.63–2.03) 1.0
Perceived State Legalization of Medical Marijuana Use		
Yes Not Sure/Unknown No ⁺	3.0 (2.08–4.36) 1.0 (0.42–2.60) 1.0	2.1 (1.27–3.43) 1.7 (0.54–5.45) 1.0
Perceived Risk of Smoking Marijuana 1–2/Week		
No risk ⁺ Slight risk Moderate risk Great risk	1.0 0.6 (0.45–0.76) 0.4 (0.21–0.58) 0.7 (0.26–1.95)	1.0 0.9 (0.61–1.27) 0.8 (0.39–1.53) 1.4 (0.32–5.88)

Note: The 2013–2014 National Surveys on Drug Use and Health (NSDUH). This analysis used SUDAAN software to account for the complex sample design and sampling weights of NSDUH data. AOR=Adjusted Odds Ratio; CI=Confidence Interval; NH: Non-Hispanic.

⁺: Reference Group.

¹ SAMHSA requires that any description of overall sample sizes based on the restricted-use data files has to be rounded to the nearest 100 to minimize potential disclosure risk.

² Nonmedical use of prescription sedatives also includes nonmedical use of prescription tranquilizers. In addition to the variables shown in Table 2, the multivariable model also controlled for survey year, gender, race/ethnicity, education, number of past-year emergency room visit, heart disease, hypertension, diabetes, asthma, hepatitis, HIV/AIDS, past-year major depressive episode, suicidal ideation, tobacco use, cocaine use, hallucinogen use, heroin use, inhalant use, nonmedical use of prescription sedatives, marijuana use disorders, non-marijuana illicit drug use disorders, and perceived marijuana availability which did not significantly distinguish the three examined groups. Multicollinearity (using variance inflation factors) and potential interaction effects between examined factors were assessed and were not identified in the final multivariable model. AORs in **bold**: Each bolded AOR is significantly different (p<0.05) from the corresponding reference group.