

Prevalence and Correlates of Cannabis Use and Cannabis Use Disorder Among U.S. Veterans: Results From the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC-III)

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Objective: The authors sought to estimate the prevalence of past-12-month and lifetime cannabis use and cannabis use disorder among U.S. veterans; to describe demographic, substance use disorder, and psychiatric disorder correlates of nonmedical cannabis use and cannabis use disorder; and to explore differences in cannabis use and cannabis use disorder prevalence among veterans in states with and without medical marijuana laws.

Methods: Participants were 3,119 respondents in the 2012–2013 National Epidemiologic Survey on Alcohol and Related Conditions–III (NESARC-III) who identified as U.S. veterans. Weighted prevalences were calculated. Logistic regression analyses tested associations of nonmedical cannabis use and cannabis use disorder with demographic and clinical correlates and examined whether prevalence differed by state legalization status.

Results: The prevalences of any past-12-month cannabis use and cannabis use disorder were 7.3% and 1.8%, respectively. Lifetime prevalences were 32.5% and 5.7%,

respectively. Past-12-month and lifetime cannabis use disorder prevalence estimates among nonmedical cannabis users were 24.4% and 17.4%, respectively. Sociodemographic correlates of nonmedical cannabis use and use disorder included younger age, male gender, being unmarried, lower income, and residing in a state with medical marijuana laws. Nonmedical cannabis use and use disorder were associated with most psychiatric and substance use disorders examined.

Conclusions: Among veterans, the odds of nonmedical cannabis use and use disorder were elevated among vulnerable subgroups, including those with lower income or psychiatric disorders and among survey participants residing in states with medical marijuana laws. The study findings highlight the need for clinical attention (e.g., screening, assessment) and ongoing monitoring among veterans in the context of increasing legalization of cannabis.

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The legal status of cannabis has changed dramatically in the United States. Although cannabis remains illegal at the federal level, 36 states and the District of Columbia have legalized cannabis for medical use, 17 states and the District of Columbia have legalized adult recreational use (1), and adults are increasingly likely to perceive cannabis use as harmless (2). Concomitantly, the prevalence of adult nonmedical cannabis use and cannabis use disorder has increased in general population and clinical samples (3–6).

Many conditions approved for medical cannabis use are common among veterans (e.g., posttraumatic stress disorder [PTSD]), and veteran groups have advocated for legalization

(1, 7–9). However, little is known about the prevalence and correlates of cannabis use among U.S. veterans. Studies of Veterans Health Administration (VHA) patients showed that 11%–14% used cannabis (10, 11). However, many U.S. veterans do not utilize VHA care (12). Only one study examined cannabis use in a nationally representative sample that included veterans without regard to VHA enrollment (13), showing that 9% of veterans reported past-year cannabis use. Other studies examining trends, recreational versus medical cannabis use, or cannabis use disorder among veterans are older (4) or are limited to particular subsamples (4, 13–15).

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Given growing legalization and acceptability of cannabis use, nationally representative data are needed to understand cannabis use among veterans, including frequent use patterns (e.g., daily use) and cannabis use disorder, and to identify high-risk subgroups (3, 13, 16). In civilian samples, frequent cannabis use and cannabis use disorder are associated with other substance and psychiatric disorders—for example, PTSD and anxiety and mood disorders (17–19)—and may worsen their outcomes (20–22). Such disorders are overrepresented among veterans (23, 24). Additionally, since civilian studies show higher rates of adult cannabis use in states with legalized cannabis than in other states (16, 25–28), understanding the risk for cannabis use among veterans in states with and without medical marijuana laws is critical to understanding public health effects of legalization among veterans. Only one such study exists, a VHA medical record study suggesting that in 2009, ICD-9-CM cannabis use disorder was more common among veterans in VHA care in states with medical marijuana laws (4). More recent, representative information is needed.

Data from the 2012–2013 National Epidemiologic Survey on Alcohol and Related Conditions–III (NESARC-III) can be used to examine the prevalence and correlates of cannabis use and use disorder among U.S. veterans prior to recreational cannabis sales (1), providing important baseline data for understanding veterans' cannabis use and use disorder prior to the additional influence of recreational marijuana laws. NESARC-III data further afford the opportunity to examine an array of sociodemographic and psychiatric correlates of use, including DSM-5 psychiatric and substance use disorders. We analyzed NESARC-III data to assess the following among veteran respondents: 1) the prevalence of past-12-month and lifetime cannabis use, frequent use, and cannabis use disorder; 2) the demographic, substance use disorder, and psychiatric disorder correlates of these outcomes; and 3) differences in prevalence of cannabis use and use disorder between veterans in states with and without medical marijuana laws.

METHODS

Samples and Procedures

The NESARC-III target population included U.S. noninstitutionalized civilians, at least 18 years of age, living in households and group quarters, including group homes and workers' dormitories (29, 30). Respondents were selected using multistage probability sampling, including primary (counties or groups of contiguous counties), secondary (Census-defined blocks), and tertiary sampling units (households within secondary sampling units), with oversampling of Black, Asian, and Hispanic respondents. Interviews were conducted from April 2012 to June 2013. Data were adjusted for nonresponse and weighted to represent the U.S. population (31). Weighting adjustments adequately compensated for nonresponse (30). All respondents gave informed consent and received \$90 for participation. The institutional review boards of the National Institute on Alcohol Abuse and Alcoholism and Westat approved survey procedures. The overall

response rate was 60.1%, comparable to other contemporaneous U.S. national surveys (32, 33). The NESARC-III sample included 36,309 participants. The present study used data from the 3,119 respondents (8.6% of sample) who reported that they had ever served on active duty in the U.S. Armed Forces, Military Reserves, or National Guard (excluding training only, including activation) and were no longer on active duty at the time of data collection.

Assessments

Substance use and use disorders. The Alcohol Use Disorder and Associated Disabilities Interview Schedule–5 (AUDADIS-5) was the assessment measure of conditions in the past-12-month and lifetime (ever) time frames (34), which were not mutually exclusive. Nonmedical cannabis use was defined as use without a prescription or other than prescribed (e.g., to get high) (16). Medical use was assessed by asking whether or not respondents had received prescriptions for or used “medical cannabis” ever and in the past 12 months (35). Any nonmedical cannabis use was defined as at least one use within the past 12 months. Daily or near daily nonmedical use was defined as using cannabis five to seven times per week on average over the past 12 months. Consistent with AUDADIS procedures, only those endorsing nonmedical cannabis use were assessed for 12-month and lifetime cannabis use disorder, which required at least two of 11 criteria within the past 12 months. DSM-5 12-month and lifetime opioid (related to nonmedical use of prescription opioids), alcohol, tobacco, and other drug use disorders were assessed and defined similarly. Test-retest reliability of 12-month and lifetime cannabis use was found to be substantial (kappa values, 0.78 and 0.77, respectively) in a general population sample (36). Test-retest reliabilities of 12-month and lifetime cannabis use disorder (kappa values, 0.41 and 0.41, respectively) and respective criteria scales (intraclass correlation coefficients, 0.70 and 0.71, respectively) were fair to substantial in a subsample of NESARC-III participants (N=1,006) (34). Procedural validity was assessed through blind clinician reappraisal using the semi-structured, clinician-administered Psychiatric Research Interview for Substance and Mental Disorders, DSM-5 version (PRISM-5) (37) in a separate NESARC-III subsample (N=712). Concordance between the AUDADIS-5 and the PRISM-5 was moderate for cannabis use disorder (kappa values, 0.60 and 0.51) and substantial for its dimensional criteria scale (intraclass correlations, 0.79 and 0.78) (38). Concordance between the AUDADIS-5 and the PRISM-5 for alcohol and tobacco use disorders and corresponding criteria scales was fair to substantial (kappa values, 0.36–0.66; intraclass correlations, 0.68–0.91) (38).

DSM-5 psychiatric disorders assessed using the AUDADIS-5 included mood disorders (primary major depressive disorder, dysthymia, bipolar I and bipolar II disorders) and anxiety disorders (panic, agoraphobia, social and specific phobias, generalized anxiety disorder). Primary mood and anxiety diagnoses excluded substance-induced and medically induced

TABLE 1. Sociodemographic characteristics of U.S. veteran respondents in the NESARC-III sample (N=3,119)^a

Characteristic	%	SE
Sex		
Male	90.19	0.55
Female	9.81	0.55
Age group		
18–29 years	3.91	0.33
30–44 years	14.93	0.80
45–64 years	38.24	1.10
≥65 years	42.92	1.24
Race/ethnicity		
Black	10.42	0.78
Hispanic	6.49	0.63
White	79.53	1.04
Other	3.55	0.45
Education		
<High school	6.15	0.56
High school	25.78	0.93
Some college or more	68.07	0.99
Marital status		
Married or cohabiting	67.62	0.92
Widowed, separated, or divorced	24.98	0.80
Never married	7.40	0.46
Employment		
Employed full-time	33.88	1.31
Employed part-time	8.24	0.56
Unemployed	4.81	0.39
Other (e.g., retired, in school, disabled)	53.07	1.43
Family income		
\$0–\$19,999	16.02	0.72
\$20,000–\$34,999	18.37	1.04
\$35,000–\$69,999	32.10	1.10
≥\$70,000	33.50	1.24
Urbanicity		
Urban	74.99	1.82
Rural	25.01	1.82
Region		
Northeast	15.89	0.89
Midwest	22.69	0.98
South	40.21	1.81
West	21.20	1.50
Service Era		
WW2 or earlier (December 1946 or earlier)	5.02	0.53
Korea and post-Korea (January 1947–February 1961)	16.58	0.94
Vietnam era (March 1961–April 1975)	33.05	1.12
Post-Vietnam (May 1975–July 1990)	18.15	0.80
Gulf and post-Gulf (August 1990–August 2001)	14.62	0.82
Post-9/11 (September 2001–present)	12.60	0.77
Living in a state with medical marijuana laws by 2012	29.57	2.19

^a Based on weighted data. Percentages are rounded and may not total 100. At the time of NESARC-III data collection, 16 states had medical marijuana laws.

disorders. PTSD and schizotypal, borderline, and antisocial personality disorders were also assessed. Test-retest reliability and validity of the diagnoses were fair to substantial (kappa values, 0.40–0.87) in the NESARC-III reliability subsample (38, 39).

Sociodemographic characteristics. Sociodemographic characteristics included sex, age, race/ethnicity, education, marital status, employment, family income, urbanicity, region, military service era, and residing in a state with medical marijuana laws by 2012. Medical marijuana law status was based on evaluations by legal and economic experts, as described elsewhere (40).

Statistical Analysis

Weighted prevalence estimates of nonmedical and medical cannabis use and cannabis use disorder were calculated for the full veteran sample. Adjusted prevalence estimates and adjusted odds ratios from multivariable logistic regressions were used to test the associations between sociodemographic characteristics and any nonmedical cannabis use (i.e., with or without medical use) and cannabis use disorder, adjusting for all other variables. Similar logistic regressions were used to test associations between nonmedical cannabis use and cannabis use disorder and each of the substance use and psychiatric disorders examined, adjusting for sociodemographic characteristics. Only 12 veterans reported medical cannabis use without nonmedical use. Cannabis use disorder was not assessed in these participants, so the correlates of their cannabis use were not examined. Finally, logistic regression models that were run on the full veteran sample included state medical marijuana laws to examine whether any past-12-month nonmedical, medical and nonmedical, or nonmedical only use or use disorder differed by state legalization status after adjusting for demographic covariates and were rerun after adjusting for additional state characteristics, including percent male, White, <30 years of age, and ≥25 years of age without a high school diploma. Analyses were performed using SUDAAN (41), which adjusts standard errors for complex survey designs using Taylor series linearization. Odds ratios were considered statistically significant when 95% confidence intervals excluded 1.00.

RESULTS

Demographic Characteristics and Prevalence of Cannabis Use and Cannabis Use Disorder

Veteran respondents were primarily White (79.5%), male (90.2%), ≥45 years of age (81.2%), and married or cohabitating (67.6%) (Table 1). Many were retired, in school, or disabled (53.1%). Most resided in urban areas (75.0%); 29.6% resided in states with medical marijuana laws by 2012.

The prevalence of 12-month cannabis use and cannabis use disorder was 7.3% and 1.8%, respectively (Table 2). Lifetime use and cannabis use disorder prevalence was 32.5% and 5.7%, respectively. Among past-12-month users, 15.2% endorsed any medical use and 96.0% reported nonmedical use. Among past-12-month users, 84.9% endorsed nonmedical use only, 4.0% endorsed medical use only, and 11.2% endorsed both medical and nonmedical use. The prevalence of 12-month cannabis use disorder among past-12-month users was 24.4%. Among those endorsing lifetime use, nearly all veterans endorsed nonmedical use only (95.5%).

Correlates of Past-12-Month Nonmedical Cannabis Use and Cannabis Use Disorder

Table 3 lists the prevalences of 12-month nonmedical cannabis use and cannabis use disorder by sociodemographic characteristics and adjusted odds ratios indicating associations between each characteristic and cannabis use and use disorder. Men had higher odds of cannabis use than women (adjusted odds ratio=2.2, 95% CI=1.2, 3.9), and those in the 18- to 29-year age range (adjusted odds ratio=9.0, 95% CI=4.1, 19.9), the 30- to 44-year age range (adjusted odds ratio=8.8, 95% CI=4.7, 16.3), and 45- to 64-year age range (adjusted odds ratio=4.9, 95% CI=3.0, 8.2) had higher odds of use than those ≥ 65 years of age. Compared with married veterans, those who were widowed, separated, or divorced (adjusted odds ratio=2.3, 95% CI=1.5, 3.4) or never married (adjusted odds ratio=2.7, 95% CI=1.7, 4.3) had higher odds of cannabis use. Compared with those with incomes $\geq \$70,000$, those in the income categories $\leq \$19,999$ and $\$20,000$ – $\$34,999$ had higher odds of cannabis use (adjusted odds ratios, 2.4 [95% CI=1.3, 4.4] and 1.8 [95% CI=1.0, 3.3], respectively).

Similarly, men had higher odds of cannabis use disorder than women (adjusted odds ratio=10.6, 95% CI=2.7, 42.1). Those in the 30- to 34-year age group (adjusted odds ratio=2.8, 95% CI=1.3, 6.0) had greater odds of cannabis use disorder than those in the 45- to 64-year age group; prevalence among those ≥ 65 years of age was too sparse for comparison. Compared with married veterans, widowed, separated, or divorced veterans had greater odds of cannabis use disorder (adjusted odds ratio=2.8, 95% CI=1.5, 5.0), and those with incomes in the $\leq \$19,999$ category had higher odds of cannabis use disorder than those in the $\geq \$70,000$ category (adjusted odds ratio=5.0, 95% CI=1.4, 18.2).

Table 4 lists the prevalences of 12-month nonmedical cannabis use and cannabis use disorder by psychiatric and other substance other disorders and adjusted odds ratios indicating associations between these disorders and cannabis use and use disorder. All substance use and psychiatric disorders were associated with cannabis use (adjusted odds ratios, 2.0–12.6) except 12-month PTSD. All substance use and psychiatric disorders were associated with cannabis use disorder (adjusted odds ratios, 2.1–5.9) except past-12-month PTSD, opioid use disorder, and other drug use disorders.

Correlates of Lifetime Nonmedical Cannabis Use and Cannabis Use Disorder

Associations between lifetime cannabis use and cannabis use disorder and sociodemographic correlates were similar to 12-month associations (see Table S1 in the online supplement). The only difference was related to income: participants in all lower income categories had higher odds of lifetime use disorder than those in the $\geq \$70,000$ category (adjusted odds ratios, 2.1–2.5).

Associations with lifetime nonmedical cannabis use and cannabis use disorder and substance use and other psychiatric disorders were also similar to 12-month findings, although

TABLE 2. Prevalence of past-12-month and lifetime cannabis use and DSM-5 cannabis use disorder among U.S. veterans in the NESARC-III sample (N=3,119)^a

Cannabis Use	%	SE
Past 12 months		
Any use (N=272)	7.26	0.54
Cannabis use disorder (N=60)	1.77	0.29
Among past-12-month users		
Any medical use	15.15	2.55
Any nonmedical use	96.04	1.22
Both medical and nonmedical use	11.20	2.10
Medical use only	3.96	1.22
Nonmedical use only	84.85	2.55
Daily or near daily nonmedical use	24.68	3.12
Cannabis use disorder	24.38	3.48
Lifetime		
Any use (N=1,102)	32.46	1.12
Cannabis use disorder (N=191)	5.69	0.51
Among lifetime users		
Any medical use	4.54	0.87
Any nonmedical use	99.44	0.17
Both medical and nonmedical use	3.98	0.85
Medical use only	0.56	0.17
Nonmedical use only	95.46	0.87
Daily or near daily nonmedical use	30.36	1.62
Cannabis use disorder	17.42	1.43

^a Based on weighted data. Percentages are rounded and may not total 100.

associations with PTSD and opioid use disorder varied slightly (see Table S2 in the online supplement). Lifetime cannabis use was associated with all substance use disorders and psychiatric disorders examined, including PTSD (adjusted odds ratios, 1.5–9.0). Lifetime cannabis use disorder was associated with all disorders examined, including lifetime PTSD and opioid use disorder (adjusted odds ratios, 2.8–7.6).

Past-12-month Cannabis Use and Cannabis Use Disorder by State Medical Marijuana Law Status

In states with legalized medical marijuana, the prevalence and odds of any cannabis use, daily or near daily use, nonmedical use, medical use, medical and nonmedical use, and use disorder were significantly higher than in other states (adjusted odds ratios, 1.6–4.4) (Table 5).

DISCUSSION

Among veteran respondents in the NESARC-III survey, over 7% had used cannabis during the previous 12 months, and 1.8% met criteria for cannabis use disorder. Corresponding lifetime prevalence estimates were 32.5% and 5.7%, respectively. Approximately 1 in 4 (24.4%) who used nonmedical cannabis in the past 12 months met criteria for 12-month cannabis use disorder, and more than 1 in 6 (17.4%) who reported lifetime nonmedical use met criteria for lifetime cannabis use disorder. Sociodemographic correlates of nonmedical use and cannabis use disorder included being younger, being male, being unmarried, and having a lower income. Cannabis use and cannabis use disorder were associated with most psychiatric and substance use disorders examined. Finally, veterans

TABLE 3. Prevalence and adjusted odds ratios of past-12-month nonmedical cannabis use and past-12-month cannabis use disorder among U.S. veterans in the NESARC-III sample: relationship to demographic characteristics

Characteristic	Nonmedical Cannabis Use, Past 12 Months				Cannabis Use Disorder, Past 12 Months			
	% ^a	SE	Adjusted Odds Ratio ^b	95% CI	% ^a	SE	Adjusted Odds Ratio ^b	95% CI
Sex								
Male	7.15	0.55	2.18	1.21, 3.93	1.93	0.32	10.63	2.69, 42.06
Female	5.33	1.24	Reference		0.33	0.20	Reference	
Age group								
18–29 years	17.96	3.50	9.02	4.08, 19.92	5.32	2.42	2.94	0.83, 10.37
30–44 years	12.05	1.55	8.77	4.73, 16.27	3.82	0.94	2.79	1.29, 6.00
45–64 years	9.18	0.87	4.94	2.96, 8.23	2.36	0.57	Reference	
≥65 years	2.23	0.49	Reference		0.21	0.15	— ^c	
Race/ethnicity								
Black	12.58	2.24	1.43	0.93, 2.19	3.69	1.43	1.39	0.62, 3.13
Hispanic	8.89	1.77	0.99	0.58, 1.67	2.60	1.12	1.00	0.36, 2.77
Other	11.32	2.61	1.25	0.64, 2.44	3.94	1.60	1.72	0.64, 4.62
White	5.88	0.54	Reference		1.35	0.28	Reference	
Education								
<High school	4.00	1.44	0.68	0.29, 1.60	1.19	1.06	1.02	0.13, 7.82
High school	9.05	1.20	1.27	0.88, 1.85	2.78	0.75	1.57	0.80, 3.10
Some college	6.45	0.55	Reference		1.44	0.27	Reference	
Marital status								
Married	4.25	0.57	Reference		0.94	0.25	Reference	
Widowed, separated, or divorced	10.72	1.17	2.26	1.50, 3.41	3.29	0.78	2.75	1.51, 5.02
Not married	19.14	2.19	2.70	1.69, 4.31	4.23	1.33	1.79	0.67, 4.79
Employment								
Employed full-time	6.99	0.79	Reference		1.91	0.44	Reference	
Employed part-time	10.22	1.88	1.62	0.86, 3.05	1.05	0.46	0.51	0.17, 1.58
Unemployed	13.49	3.18	1.17	0.67, 2.03	2.67	1.10	0.65	0.27, 1.59
Other (e.g., retired, in school, disabled)	5.86	0.73	1.54	0.97, 2.45	1.71	0.44	1.86	0.81, 4.28
Family income								
\$0–\$19,999	13.79	1.85	2.35	1.26, 4.38	4.09	1.08	5.00	1.37, 18.21
\$20,000–\$34,999	8.68	1.52	1.82	1.02, 3.26	2.16	0.79	3.27	0.85, 12.56
\$35,000–\$69,999	5.99	0.72	1.34	0.78, 2.28	1.70	0.44	2.70	0.73, 9.92
≥\$70,000	3.72	0.68	Reference		0.51	0.28	Reference	
Urbanicity								
Urban	6.67	0.54	0.70	0.47, 1.04	1.87	0.33	1.16	0.54, 2.51
Rural	7.86	1.25	Reference		1.46	0.51	Reference	
Region								
Northeast	7.83	1.34	0.59	0.34, 1.04	2.65	1.13	1.33	0.53, 3.32
Midwest	5.34	0.78	0.36	0.22, 0.59	1.65	0.44	0.71	0.34, 1.50
South	4.93	0.66	0.30	0.18, 0.51	1.15	0.36	0.40	0.18, 0.89
West	11.94	1.79	Reference		2.41	0.58	Reference	

^a Based on weighted data.

^b Odds ratios are adjusted for sex, age, race/ethnicity, education, marital status, employment status, family income, and urbanicity.

^c Odds ratio was not estimable because of low prevalence of the outcome in the reference group.

in states with legalized medical cannabis were more likely than those in other states to use cannabis nonmedically and to have cannabis use disorder.

Two previous studies addressing cannabis use or cannabis use disorder among veterans in VHA care with mental health needs (10, 11) reported higher prevalence of cannabis use than we found in the present study, perhaps owing to the association of cannabis use with psychiatric disorders (10, 11). A study utilizing 2009 VHA-wide electronic medical record data (4) found a prevalence of past-year cannabis use disorder among VHA-enrolled veterans ~70% lower than we found using the 2012–2013 NESARC-III data. This may reflect national

increases in cannabis use disorder (3), or it may be because VHA providers do not routinely assess cannabis use disorder, underestimating prevalence in the medical record. Veterans in VHA care tend to be of lower socioeconomic status, a risk factor for cannabis use disorder, and many are diagnosed with substance use and psychiatric disorders, characteristics associated with nonmedical cannabis use and use disorder in the present study and in previous research (17, 42–46). Given VHA patient characteristics and national increases in cannabis use disorder (3, 6), cannabis use and use disorders may be more common among VHA patients now than in 2009. Because the VHA serves approximately 6 million

TABLE 4. Prevalence and adjusted odds ratios of past-12-month nonmedical cannabis use and past-12-month cannabis use disorder among U.S. veterans in the NESARC-III sample: relationship to past-12-month psychiatric and other substance use disorders

Disorder, Past 12 Months	Nonmedical Cannabis Use, Past 12 Months				Cannabis Use Disorder, Past 12 Months			
	% ^a	SE	Adjusted Odds Ratio ^b	95% CI	% ^a	SE	Adjusted Odds Ratio ^b	95% CI
Alcohol use disorder								
Yes	22.80	2.38	3.37	2.37, 4.78	8.95	1.82	5.87	3.33, 10.34
No	5.03	0.47	Reference		0.89	0.19	Reference	
Opioid use disorder ^c								
Yes	30.63	10.29	4.73	2.02, 11.06	8.05	6.40	2.85	0.58, 14.03
No	6.79	0.52	Reference		1.72	0.28	Reference	
Drug use disorder ^d								
Yes	57.18	10.51	12.64	4.44, 35.94	8.21	5.04	2.57	0.63, 10.51
No	6.66	0.51	Reference		1.73	0.29	Reference	
Tobacco use disorder								
Yes	15.15	1.43	2.01	1.39, 2.90	4.69	0.89	2.09	1.12, 3.93
No	4.84	0.56	Reference		1.01	0.24	Reference	
Any mood disorder								
Yes	21.10	3.03	2.90	1.88, 4.48	8.04	2.01	4.37	2.16, 8.82
No	5.40	0.47	Reference		1.07	0.22	Reference	
Any anxiety disorder								
Yes	15.57	2.43	2.27	1.54, 3.34	5.32	1.54	2.99	1.52, 5.90
No	6.00	0.46	Reference		1.37	0.25	Reference	
PTSD								
Yes	16.70	3.93	1.66	0.94, 2.94	5.89	2.62	2.05	0.80, 5.27
No	6.37	0.51	Reference		1.52	0.25	Reference	

^a Based on weighted data.

^b Odds ratios are adjusted for sex, age, race/ethnicity, education, marital status, employment status, family income, and urbanicity.

^c Related to nonmedical use of prescription opioids.

^d Excluding cannabis use disorder and opioid use disorder.

veterans a year (47), understanding VHA clinical and treatment needs related to cannabis use is of considerable national importance. Therefore, updated, comprehensive studies of cannabis use and use disorder prevalence in VHA patients are warranted.

In the only other study of cannabis use among veterans in a nationally representative survey (13), the prevalence of 12-month cannabis use in 2014 was slightly higher (9%) than in our study (7.3%). Interviewer administration of the NESARC-III surveys may have contributed to lower rates

compared with the previous survey, which was self-administered. However, the previous study did not examine lifetime prevalence or DSM-5 substance use and psychiatric disorders, all of which are important in understanding the distribution of cannabis use among U.S. veterans. Results from the present study are more easily compared with findings from the full NESARC-III sample, in which the prevalence of cannabis use and use disorder was also higher (16) than in our veteran subsample. Study findings provide an important benchmark of veteran status relative to nonveterans prior

TABLE 5. Past-12-month cannabis use and cannabis use disorder among U.S. veterans in the NESARC-III sample, by state medical marijuana law status as of 2012

Cannabis Variable, Past 12 Months ^a	No Medical Marijuana Law by 2012 (N=2,164)		Medical Marijuana Law by 2012 (N=955)		Adjusted Odds Ratio ^c		Adjusted Odds Ratio ^d	
	% ^b	SE	% ^b	SE	95% CI	95% CI	95% CI	
Any nonmedical use (N=260)	5.51	0.52	10.44	1.35	2.41	1.64, 3.55	1.91	1.33, 2.75
Medical and nonmedical use (N=272)	5.51	0.52	11.41	1.42	2.67	1.83, 3.92	2.09	1.45, 2.99
Nonmedical use only (N=227)	5.31	0.51	8.17	1.05	1.80	1.27, 2.56	1.63	1.10, 2.42
Daily or near daily nonmedical use (N=73)	0.99	0.22	3.47	0.62	4.39	2.24, 8.59	3.08	1.47, 6.44
Cannabis use disorder (N=60)	1.39	0.32	2.66	0.58	2.37	1.29, 4.38	2.68	1.09, 6.60

^a Medical use was assessed by asking whether or not respondents had received prescriptions for or used "medical cannabis" ever and in the past 12 months and could have been endorsed by veterans residing in states with or without medical marijuana laws.

^b Based on weighted data. Percentages are rounded and may not total 100.

^c Odds ratios are adjusted for sex, age, race/ethnicity, education, marital status, employment status, family income, and urbanicity.

^d Additionally adjusted for state-level variables, including percent male, percent White, percent younger than age 30, and percent age 25 and older without a high school diploma.

to implementation of recreational marijuana laws. Whether such trends continue with increasing legalization will be an important focus for future study.

Identified demographic correlates of cannabis use and cannabis use disorder were similar to those found in previous veteran and civilian studies (13, 17), as were associations between substance use and other psychiatric disorders and cannabis use and use disorder (13, 17, 19, 42). Importantly, our study extends earlier findings by examining DSM-5 diagnoses. Taken together, these findings add to evidence suggesting that certain individuals are consistently at increased risk for cannabis use and use disorder, while highlighting that veterans share risk factors with the general population. The demographic composition of the veteran population (i.e., predominantly male, with a bimodal age distribution including older veterans from earlier wars and younger veterans of recent conflicts) (48), and findings indicating that veterans experience disproportionately high levels of substance use and psychiatric disorders (46, 49) underscore the need for careful screening, assessment, and treatment of cannabis use disorder in clinical settings serving veterans, as well as ongoing monitoring of cannabis use and related functional and symptom outcomes. Screening may be particularly important among veterans with substance use and psychiatric disorders, such as PTSD, as cannabis use during treatment of these disorders is associated with worse outcomes (21, 22).

PTSD is a condition of high relevance to veterans, with 9%–13% of veterans meeting current criteria (23, 50). In this study, lifetime cannabis use and lifetime use disorder were significantly associated with lifetime PTSD. While past-12-month cannabis use and use disorder were not significantly associated with PTSD in a sociodemographically adjusted model, associations were in the same direction, with near-significant confidence intervals. Among 2001–2002 NESARC survey respondents, lifetime PTSD was significantly associated with cannabis use disorder and marginally associated with lifetime cannabis use (51). In the full NESARC-III sample, PTSD was significantly associated with past-12-month and lifetime cannabis use disorder (17). Among veterans with cannabis use disorder enrolled in the VHA, PTSD is the most common psychiatric comorbidity (4). Together, these findings show a relationship between PTSD and cannabis use as well as cannabis use disorder, with more consistent associations with cannabis use disorder. Despite a lack of evidence that plant cannabis is an effective treatment for PTSD, 25 of 36 states with medical marijuana laws include PTSD as an approved condition for medical use (1, 8, 20), and a study of post-9/11 veterans showed that PTSD was one of the leading reasons for seeking medical cannabis (14). Given the relevance of PTSD to veterans, further efforts are needed to increase our understanding of the relationship between PTSD and cannabis use and use disorder, including the sequence of their occurrence and whether the association between PTSD and cannabis use differs by reasons for use (e.g., medical-only versus medical and recreational), which was not examined in this cross-sectional study.

The current U.S. opioid crisis has also focused attention on the role of cannabis in increasing or decreasing opioid use and adverse outcomes (40, 52). Our findings suggest that veterans engaging in nonmedical cannabis use have *increased* odds of opioid use disorder, findings that are consistent with a large study of nonveterans showing that cannabis use predicted higher risk of nonmedical opioid use and use disorder among those with moderate to severe pain than among those without pain (52). Taken together, these studies add to evidence that advocating cannabis legalization to remediate the opioid crisis is premature.

Similar to past civilian and veteran studies (4, 16, 25, 28), we found higher odds of cannabis use and use disorder in states with medical marijuana laws, including odds almost five times higher for daily or near daily cannabis use. Because frequent use increases risk for negative consequences (e.g., cannabis use disorder, respiratory symptoms, intoxication-related injury, psychotic symptoms) (16, 17, 53–55), this finding is of particular concern. Further, at the time of NESARC-III data collection, 16 states had medical marijuana laws, but none had enacted recreational marijuana laws. Currently, 17 states and the District of Columbia (all of which previously had medical marijuana laws) have recreational laws. Because recreational laws further increase adult nonmedical cannabis use, frequent use, and cannabis use disorders (27), continued study of how cannabis use and cannabis use disorder prevalence change among veterans as legalization expands will be important, as will efforts to examine other conditions potentially affected by marijuana laws, such as opioid and psychiatric medication use. Overall, our study results highlight the importance of careful clinical screening, assessment, and monitoring of veterans as additional states pass permissive marijuana laws and continued consideration of policies guiding veterans and providers, particularly within the VHA, a federal system that currently defines cannabis as a Schedule I controlled substance.

Our study has some limitations. NESARC-III relied on self-report, which is subject to bias. Data were cross-sectional; thus, causality cannot be determined. Assessment of medical cannabis use relied on a single question, and it did not differentiate between use recommended by a physician or for self-determined reasons and thus may have been interpreted differently in states with and without medical marijuana laws. Cannabis use disorder was not assessed among those reporting medical use only, but should be in future surveys. AUDADIS-5 interviewers were not clinicians, although a validation substudy utilizing clinicians revealed nearly identical past-year prevalence (39). The relationship of our study findings to veterans treated in the VHA is unknown, as NESARC-III did not assess whether respondents were receiving VHA care. Additionally, in this large exploratory study, corrections for multiple testing were not made because of the paucity of data examining prevalence and correlates of cannabis use and use disorder among veterans. Finally, our findings may underestimate cannabis use among veterans overall if

many were excluded from the survey because of incarceration (56), institutionalization, or homelessness.

In summary, our findings provide important information to inform future studies of veterans and may help guide clinical services. A clear risk for cannabis use disorder was evident among veterans reporting nonmedical cannabis use, with up to 37% meeting criteria for a cannabis use disorder in their lifetime. The odds of cannabis use and use disorder were also higher among vulnerable veteran subgroups, including those of lower socioeconomic status and those with psychiatric and substance use disorders. Our results indicate that the odds of use, daily or near daily use, and use disorder are even higher among veterans in states with medical marijuana laws. Such findings highlight the importance of continued research examining the impact of changing marijuana laws on our nation's veterans. These findings are also important to communicate to policy makers, to health care professionals who may need to consider cannabis screening and intervention services when caring for veterans, and to veterans themselves so they can be well-informed about potential risks and benefits of cannabis use.

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REFERENCES

1. ProCon.org: Legal Medical Marijuana States and DC. 2019. <https://medicalmarijuana.procon.org/view.resource.php?resourceID=000881>
2. Compton WM, Han B, Jones CM, et al: Marijuana use and use disorders in adults in the USA, 2002–14: analysis of annual cross-sectional surveys. *Lancet Psychiatry* 2016; 3:954–964
3. Hasin DS, Saha TD, Kerridge BT, et al: Prevalence of marijuana use disorders in the United States between 2001–2002 and 2012–2013. *JAMA Psychiatry* 2015; 72:1235–1242
4. Bonn-Miller MO, Harris AHS, Trafton JA: Prevalence of cannabis use disorder diagnoses among veterans in 2002, 2008, and 2009. *Psychol Serv* 2012; 9:404–416
5. Compton WM, Conway KP, Stinson FS, et al: Prevalence, correlates, and comorbidity of DSM-IV antisocial personality syndromes and alcohol and specific drug use disorders in the United States: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *J Clin Psychiatry* 2005; 66:677–685
6. Charilaou P, Agnihotri K, Garcia P, et al: Trends of cannabis use disorder in the inpatient: 2002 to 2011. *Am J Med* 2017; 130:678–687.e7
7. Benson T: PTSD and pot: the fight to get veterans some weed. *Rolling Stone*, December 9, 2014. <http://www.rollingstone.com/politics/news/ptsd-and-pot-the-fight-to-get-veterans-some-weed-20141209>
8. Kansagara D, O'Neil M, Nugent S, et al: Benefits and Harms of Cannabis in Chronic Pain or Post-traumatic Stress Disorder: A Systematic Review. VA ESP Project 05-225. August 2017. (<https://europepmc.org/books/n/vacannabis/pdf/>)
9. Bohnert KM, Perron BE, Ashrafioun L, et al: Positive posttraumatic stress disorder screens among first-time medical cannabis patients: prevalence and association with other substance use. *Addict Behav* 2014; 39:1414–1417
10. Goldman M, Suh JJ, Lynch KG, et al: Identifying risk factors for marijuana use among veterans affairs patients. *J Addict Med* 2010; 4:47–51
11. Gentes EL, Schry AR, Hicks TA, et al: Prevalence and correlates of cannabis use in an outpatient VA posttraumatic stress disorder clinic. *Psychol Addict Behav* 2016; 30:415–421
12. US Department of Veterans Affairs, National Center for Veterans Analysis and Statistics: VA Utilization Profile: FY 2016. November 2017 (https://www.va.gov/vetdata/docs/QuickFacts/VA_Utilization_Profile.PDF)
13. Davis AK, Lin LA, Ilgen MA, et al: Recent cannabis use among veterans in the United States: results from a national sample. *Addict Behav* 2018; 76:223–228
14. Metrik J, Bassett SS, Aston ER, et al: Medicinal versus recreational cannabis use among returning veterans. *Transl Issues Psychol Sci* 2018; 4:6–20
15. Loflin M, Earleywine M, Bonn-Miller M: Medicinal versus recreational cannabis use: patterns of cannabis use, alcohol use, and cued-arousal among veterans who screen positive for PTSD. *Addict Behav* 2017; 68:18–23
16. Hasin DS, Sarvet AL, Cerda M, et al: US adult illicit cannabis use, cannabis use disorder, and medical marijuana laws: 1991–1992 to 2012–2013. *JAMA Psychiatry* 2017; 74:579–588
17. Hasin DS, Kerridge BT, Saha TD, et al: Prevalence and correlates of DSM-5 cannabis use disorder, 2012–2013: findings from the National Epidemiologic Survey on Alcohol and Related Conditions-III. *Am J Psychiatry* 2016; 173:588–599
18. Teesson M, Slade T, Swift W, et al: Prevalence, correlates, and comorbidity of DSM-IV cannabis use and cannabis use disorders in Australia. *Aust N Z J Psychiatry* 2012; 46:1182–1192
19. Lev-Ran S, Le Foll B, McKenzie K, et al: Cannabis use and cannabis use disorders among individuals with mental illness. *Compr Psychiatry* 2013; 54:589–598
20. National Academies of Science and Medicine: *The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research*. Washington, DC, National Academies Press, 2017
21. Wilkinson ST, Stefanovics E, Rosenheck RA: Marijuana use is associated with worse outcomes in symptom severity and violent

- behavior in patients with posttraumatic stress disorder. *J Clin Psychiatry* 2015; 76:1174–1180
22. Bedard-Gilligan M, Garcia N, Zoellner LA, et al: Alcohol, cannabis, and other drug use: engagement and outcome in PTSD treatment. *Psychol Addict Behav* 2018; 32:277–288
 23. Seal KH, Bertenthal D, Miner CR, et al: Bringing the war back home: mental health disorders among 103,788 US veterans returning from Iraq and Afghanistan seen at Department of Veterans Affairs facilities. *Arch Intern Med* 2007; 167:476–482
 24. Trivedi RB, Post EP, Sun H, et al: Prevalence, comorbidity, and prognosis of mental health among US veterans. *Am J Public Health* 2015; 105:2564–2569
 25. Wen H, Hockenberry JM, Cummings JR: The effect of medical marijuana laws on adolescent and adult use of marijuana, alcohol, and other substances. *J Health Econ* 2015; 42:64–80
 26. Sarvet AL, Wall MM, Keyes KM, et al: Self-medication of mood and anxiety disorders with marijuana: higher in states with medical marijuana laws. *Drug Alcohol Depend* 2018; 186:10–15
 27. Cerda M, Mauro C, Hamilton A, et al: Association between recreational marijuana legalization in the United States and changes in marijuana use and cannabis use disorder from 2008 to 2016. *JAMA Psychiatry* 2020; 77:165–171
 28. Cerdá M, Wall M, Keyes KM, et al: Medical marijuana laws in 50 states: investigating the relationship between state legalization of medical marijuana and marijuana use, abuse, and dependence. *Drug Alcohol Depend* 2012; 120:22–27
 29. Grant BF, Chu A, Sigman R, et al: Source and Accuracy Statement: National Epidemiologic Survey on Alcohol and Related Conditions–III (NESARC–III). Bethesda, Md, National Institute on Alcohol Abuse and Alcoholism, 2014 (https://www.niaaa.nih.gov/sites/default/files/NESARC_Final_Report_FINAL_1_8_15.pdf)
 30. Grant BF, Goldstein RB, Saha TD, et al: Epidemiology of DSM-5 alcohol use disorder: results from the National Epidemiologic Survey on Alcohol and Related Conditions III. *JAMA Psychiatry* 2015; 72:757–766
 31. Bureau of the Census: American Community Survey, 2012. Suitland, Md, Bureau of the Census, 2013
 32. Substance Abuse and Mental Health Services Administration: Results From the 2013 National Survey on Drug Use and Health: Summary of National Findings (NSDUH Series H-48, HHS Publication [SMA] 14-4863). Rockville, Md, Substance Abuse and Mental Health Services Administration, 2014
 33. Blackwell DL, Lucas JW, Clarke TC: Summary Health Statistics for US Adults: National Health Interview Survey, 2012. *Vital Health Stat* 10 2014; (260):1–161
 34. Grant BF, Goldstein RB, Smith SM, et al: The Alcohol Use Disorder and Associated Disabilities Interview Schedule-5 (AUDADIS-5): reliability of substance use and psychiatric disorder modules in a general population sample. *Drug Alcohol Depend* 2015; 148:27–33
 35. Wall MM, Liu J, Hasin DS, et al: Use of marijuana exclusively for medical purposes. *Drug Alcohol Depend* 2019; 195:13–15
 36. Grant BF, Harford TC, Dawson DA, et al: The Alcohol Use Disorder and Associated Disabilities Interview schedule (AUDADIS): reliability of alcohol and drug modules in a general population sample. *Drug Alcohol Depend* 1995; 39:37–44
 37. Hasin D, Aivadyan C, Greenstein E, et al: Psychiatric Research Interview for Substance Use and Mental Disorders, DSM-5 Edition (PRISM-5). New York, Columbia University, Department of Psychiatry, 2011
 38. Hasin DS, Shmulewitz D, Stohl M, et al: Procedural validity of the AUDADIS-5 depression, anxiety and post-traumatic stress disorder modules: substance abusers and others in the general population. *Drug Alcohol Depend* 2015; 152:246–256
 39. Hasin DS, Greenstein E, Aivadyan C, et al: The Alcohol Use Disorder and Associated Disabilities Interview Schedule-5 (AUDADIS-5): procedural validity of substance use disorders modules through clinical re-appraisal in a general population sample. *Drug Alcohol Depend* 2015; 148:40–46
 40. Hasin DS, Shmulewitz D, Cerdá M, et al: US adults with pain, a group increasingly vulnerable to nonmedical cannabis use and cannabis use disorder: 2001–2002 and 2012–2013. *Am J Psychiatry* 2020; 177:611–618
 41. Research Triangle Institute: SUDAAN, release 11.0.1. Research Triangle Institute, Research Triangle Park, NC, 2013
 42. Stinson FS, Ruan WJ, Pickering R, et al: Cannabis use disorders in the USA: prevalence, correlates, and co-morbidity. *Psychol Med* 2006; 36:1447–1460
 43. Meffert BN, Morabito DM, Sawicki DA, et al: US veterans who do and do not utilize Veterans Affairs health care services: demographic, military, medical, and psychosocial characteristics. *Prim Care Companion CNS Disord* 2019; 21:18m02350
 44. Nelson KM, Starkebaum GA, Reiber GE: Veterans using and uninsured veterans not using Veterans Affairs (VA) health care. *Public Health Rep* 2007; 122:93–100
 45. Agha Z, Lofgren RP, VanRuiswyk JV, et al: Are patients at Veterans Affairs medical centers sicker? A comparative analysis of health status and medical resource use. *Arch Intern Med* 2000; 160:3252–3257
 46. Hoerster KD, Lehavot K, Simpson T, et al: Health and health behavior differences: US military, veteran, and civilian men. *Am J Prev Med* 2012; 43:483–489
 47. US Department of Veteran Affairs, National Center for Veterans Analysis and Statistics: VA Utilization Profile: 2017. May 2020 (https://www.va.gov/vetdata/docs/Quickfacts/VA_Utilization_Profile_2017.pdf)
 48. US Department of Veterans Affairs: Key statistics by veteran status and period of service (<https://www.va.gov/vetdata/docs/SpecialReports/KeyStats.pdf>)
 49. Lehavot K, Hoerster KD, Nelson KM, et al: Health indicators for military, veteran, and civilian women. *Am J Prev Med* 2012; 42:473–480
 50. Dohrenwend BP, Turner JB, Turse NA, et al: The psychological risks of Vietnam for US veterans: a revisit with new data and methods. *Science* 2006; 313:979–982
 51. Kevorkian S, Bonn-Miller MO, Belendiuk K, et al: Associations among trauma, posttraumatic stress disorder, cannabis use, and cannabis use disorder in a nationally representative epidemiologic sample. *Psychol Addict Behav* 2015; 29:633–638
 52. Olfson M, Wall MM, Liu SM, et al: Cannabis use and risk of prescription opioid use disorder in the United States. *Am J Psychiatry* 2018; 175:47–53
 53. Volkow ND, Swanson JM, Evins AE, et al: Effects of cannabis use on human behavior, including cognition, motivation, and psychosis: a review. *JAMA Psychiatry* 2016; 73:292–297
 54. Hall W, Degenhardt L: Adverse health effects of non-medical cannabis use. *Lancet* 2009; 374:1383–1391
 55. Hjorthøj C, Albert N, Nordentoft M: Association of substance use disorders with conversion from schizotypal disorder to schizophrenia. *JAMA Psychiatry* 2018; 75:733–739
 56. Compton WM, Dawson D, Duffy SQ, et al: The effect of inmate populations on estimates of DSM-IV alcohol and drug use disorders in the United States. *Am J Psychiatry* 2010; 167:473–474

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Examination Questions: Browne et al.

1. **Which of the following statements reflects the 12-month prevalence of cannabis use and of DSM-5 cannabis use disorder among U.S. veterans?**
 - A. Among veterans, 7.3% reported non-medical cannabis use, but almost none of these met the criteria for DSM-5 cannabis use disorder.
 - B. The prevalence of non-medical cannabis use overall was 7.3%, and of these, nearly one-quarter (24.4%) met criteria for current DSM-5 cannabis use disorder.
 - C. Among cannabis users, nearly all reported medical cannabis use only, and none of these met criteria for DSM-5 cannabis use disorder.
 - D. Among veterans, the number using cannabis for medical reasons only was greater than the number using cannabis for non-medical reasons.
2. **In veterans, which of the following statements correctly reflects the associations of other psychiatric and substance use disorders with DSM-5 cannabis use disorder?**
 - A. DSM-5 cannabis use disorder is not associated with psychiatric comorbidity or other substance use disorders.
 - B. Only PTSD is associated with DSM-5 cannabis use disorder.
 - C. Veterans with DSM-5 cannabis use disorder are at increased risk for alcohol, nicotine, mood and anxiety disorders.
 - D. Among the substance use disorders, only opioid use disorder increased the risk for cannabis use disorder.
3. **Which of the following statements reflects the differences in the risk for non-medical cannabis use and DSM-5 cannabis use disorder between veterans living in states with legalized medical marijuana and other veterans?**
 - A. Veterans living in states with legalized medical marijuana are at significantly greater risk for both non-medical cannabis use and DSM-5 cannabis use disorder.
 - B. Veterans do not differ in their risk for cannabis use or DSM-5 cannabis use disorder by whether their state has legalized medical cannabis use or not.
 - C. Veterans living in states with legalized medical marijuana are at significantly greater risk for non-medical cannabis use but not DSM-5 cannabis use disorder.
 - D. The survey data utilized did not provide enough statistical power to be able to detect differences between veterans in states with medical marijuana laws and veterans in other states.