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RESEARCH ARTICLE

U.S. Military Veteran Versus Nonveteran Use of Licit and Illicit Substances

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Introduction: To provide up-to-date substance use surveillance data among U.S. military veterans versus nonveterans, this study assesses current use of tobacco products, alcohol, marijuana, prescription pain relievers, tranquilizers, sedatives, stimulants, cocaine, heroin, methamphetamines, inhalants, and hallucinogens.

Methods: Pooled data were from the 2015–2017 National Survey on Drug Use and Health, a nationally representative, self-reported survey of the U.S. adult non-institutionalized population. Military veterans were those who had "ever been in the United States Armed Forces" and were "now separated/retired from reserves/active duty" (n=7,301). Nonveterans were those who had never been in the U.S. Armed forces (n=121,366). Age- and gender-stratified weighted prevalence estimates were calculated and compared with chi-square tests. All analyses were conducted in 2019.

Results: Illicit substance use, including marijuana and cocaine, was generally lower among veterans than nonveterans, whereas use of licit substances such as tobacco and alcohol was higher among veterans than nonveterans. The most commonly used substances among veterans were tobacco and alcohol. Among male participants aged 18–25 years, 59.8% of veterans reported past-12-month cigarette/cigar smoking (vs 46.6% of nonveterans), whereas 17.6% reported heavy drinking (vs 12.2% of nonveterans). For both cigarette/cigar smoking and binge drinking, there was a marked narrowing of the male–female gap in prevalence with increasing age among veterans. Female veterans aged 18–25 years reported significantly higher opioid use than their nonveteran counterparts (54.7% vs 35.0%); they also had the highest prevalence of opioid misuse (15.3%) than any other group.

Conclusions: Intensified efforts are needed to reduce substance use among veterans and provide cessation and mental health services.

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INTRODUCTION

Since the release of the first Surgeon General's Report more than 50 years ago, major strides have been made in reducing the smoking rate in the U.S.; yet, progress has been uneven and some groups, including veterans, bear a disproportionate burden of tobacco use.[1,2] Not only do more veterans smoke cigarettes than nonveterans, they also engage in higher rates of polysubstance use, which can increase the likelihood of a lifetime of addiction and of initiating new substance use behaviors (gateway effects).[1,2] Studies show high prevalence of heavy drinking among veterans, and most veterans who drink alcohol at heavy levels do not engage in specialty substance use services.[3–9]

To capture the full scope of substance use behaviors among veterans, it is paramount to surveil the spectrum of abuse substances—licit and illicit. A better understanding of differences in substance use behaviors between and within veteran statuses can help inform the

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development of targeted interventions aimed at health promotion. One such campaign is the Centers for Disease Control and Prevention's Tips from Former Smokers campaign,[10] which features hard-hitting, mass media messages regarding the harmful consequences of smoking. Although the general target audience for the campaign is adults aged 18–54 years, some messages are tailored specifically for veterans. To optimize the effectiveness of such population-level interventions among veterans, however, audience segmentation is critical as the 18.2 million[11] military veterans in the U.S. are not a homogeneous group. Veterans and nonveterans may have different beliefs and behaviors related to the use of certain substances and may respond differently to certain types of messages. But even among veterans, background demographics such as gender or age can impact individuals' perception of smoking and the credibility of a specific message. Female veterans tend to be younger, have a higher education level, and include a greater percentage of minorities.[12] Similarly, veterans who participated in the major wars of the last century may also have unique behavioral characteristics and beliefs than younger veterans; age differences are therefore important to consider when tailoring messages to the veteran population.

With projected changes in the veteran population by age and gender,[11] and with the evolving landscape composed of conventional and emerging substances of abuse, up-to-date information on various substances among veterans by age and gender is timely, especially relative to the general population. To provide the most up-to-date surveillance data of substance use behaviors among U.S. military veterans, this study assessed prevalence of 12 types of substances using the 2015–2017 National Survey on Drug Use and Health (NSDUH). The assessed substances were tobacco products, alcohol, marijuana, prescription pain relievers, tranquilizers, sedatives, stimulants, cocaine, heroin, methamphetamines, inhalants, and hallucinogens. Because of small sample sizes, some substances were analyzed together as a class, rather than individually. Corresponding prevalence estimates were also computed among nonveterans as a comparative group.

METHODS

Study Sample

An IRB review was not required for this study as it was a secondary data analysis. NSDUH is a nationally representative survey of the U.S. population aged ≥12 years. The target population includes residents of households and non-institutional group quarters (e.g., college dormitories) and civilians living on military bases. NSDUH's sampling frame does not include military personnel on active duty. Analyses were conducted on individuals aged ≥18 years. To ensure precise estimates, the authors pooled 2015, 2016, and 2017 data (pooled n=128,720 for people aged ≥18 years). Previous waves could not be used because of changes in NSDUH methodology for certain substances. NSDUH collected detailed information on recency of use, classified as either past-30-day or past-12-month usage, all operationalized as dichotomous indicators of use/no use in this study. Both time windows were utilized in this study to assess the impact of occasional use on prevalence estimates. This is important because for individuals who are social users, a measure of past-30-day use may not capture their relatively infrequent usage. Besides being methodologically more sensitive than a past-30-day measure, the information gleaned from a past-12-month measure of use also has implications for public health practice, programs, and policies. For example, those who use abuse substances only occasionally may be systematically different from those using it daily in terms of their underlying risks and risk perceptions. The types of interventions they may benefit from may also be different, including behavioral and pharmacologic interventions.

Measures

Military veteran status was self-reported. Individuals who had "ever been in the United States Armed Forces" and were "now separated/retired from reserves/active duty" were classified as veterans (pooled n=7,301). Individuals who had never been in the U.S. Armed Forces were classified as nonveterans (pooled n=121,366). Individuals who were currently in a reserve component or did not provide an answer were classified as missing.

Five specific tobacco product types were assessed: regular cigarettes, roll-your-own/hand-rolled cigarettes, cigars, pipes, and smokeless tobacco. Any past-30-day tobacco product use was defined as using at least 1 of these 5 products in the past 30 days. Any past-12-month tobacco smoking was defined as use of cigarettes or cigars; past-12-month use was not assessed in NSDUH for pipes, smokeless tobacco, and roll-your-own cigarettes.

This study analyzed both recency (past 30 days and past 12 months) and intensity of drinking (binge and heavy drinking). Binge drinking was defined as having 5 or more drinks for male participants, or 4 or more drinks for female participants, on the same occasion for ≥1 day in the past month. Heavy drinking was defined as binge drinking on ≥5 days within the past month.

Recreational marijuana use was assessed, regardless of the form in which it was consumed. Both past-30-day and past-12-month usage indicators were assessed.

Any use or misuse within the past 12 months of psychotherapeutics (prescription pain relievers, tranquilizers, sedatives, and stimulants) were assessed. Any use was nonspecific and included either medical or nonmedical use. Misuse was usage in any way not directed or prescribed, including use without a prescription of the individual's own or taking the medication in greater doses, frequency, or duration than prescribed. Use of prescription pain relievers were assessed for any use and misuse. Aggregate measures of any use and misuse of any psychotherapeutics (i.e., any one of prescription pain relievers, tranquilizers, stimulants, and sedatives) were also created.

Use of illicit drugs was assessed regardless of the route it was administered (i.e., injected, snorted, smoked, or used in any other way). Aggregate measures of past-30-day and past-12-month use of any illicit drug other than marijuana (i.e., any one of cocaine, heroin, methamphetamine, inhalants, and hallucinogens) were created.

Statistical Analysis

Veterans in this study differed markedly from nonveterans by having a higher distribution of individuals who were male (92.3% vs 44.0%) and aged ≥50 years (76.2% vs 42.2%). Direct veteran−nonveteran comparisons may therefore yield attenuated prevalence differences because substance use behaviors are markedly lower among older adults.[2] To account for the confounding effects of age and gender within the analyses, the authors stratified within the levels of age and gender. Eight unique substrata were created: males aged 18−25 years, females aged 18−25 years, males aged 26−34 years, females aged 26−34 years, males aged 35−49 years, females aged 35−49 years, males aged ≥50 years, and females aged ≥50 years. Chi-square tests were used for within- and between-group comparisons. Statistical comparisons were made between and within veteran status by age and gender; post hoc (pairwise) comparisons were not performed, and only global differences were evaluated to minimize the likelihood of type I statistical error. Data were weighted to account for the complex survey design of NSDUH. Estimates with relative SEs ≥40% were suppressed. All CIs were conservatively calculated at the 99% level. Analyses were conducted in 2019 using R, version 3.5.3.

RESULTS

Veteran−nonveteran differences in age and gender were statistically significant in bivariate analyses (all $p<0.05$). Furthermore, more veterans than nonveterans had some college or higher education (66.8% vs 61.4% respectively), were living at 2 times the federal poverty level (75.4% vs 64.5%), or were married (66.2% vs 50.7%) (Appendix Table 1, available online).

Veterans had a significantly higher prevalence of past-30-day any tobacco use than nonveterans in all age strata except those aged ≥50 years (Table 1). Among female participants, veterans had a higher prevalence of past-30-day any tobacco use than nonveterans among those aged 26−34 years (42.1% vs 29.0%, respectively) and ≥50 years (23.3% vs 16.7%). Among male participants, veterans had a higher prevalence of past-30-day any tobacco use than nonveterans in all age strata, except those aged ≥50 years, where prevalence was lower among veterans than nonveterans (22.5% vs 27.6% respectively).

Smokeless tobacco use was significantly higher among male veterans than their nonveteran counterparts for both past-30-day and past-12-month use in all strata of age, except those aged ≥50 years, where a reversal was seen for past-30-day and past-12-month use. Male veterans aged 18−25 years had the highest prevalence of smokeless tobacco use among all veterans (past 30 days, 19.9%; past 12 months, 27.0%). Among female participants, the only stratum for which reliable estimates existed (age 26−34 years) found a higher prevalence of past-12-month smokeless tobacco use among veterans than nonveterans (3.7% vs 1.2%).

Cigarette/cigar smoking patterns were similar to those of any tobacco use. Prevalence was higher among veterans than nonveterans in most age/gender substrata for both past-30-day and past-12-month smoking. Among male veterans, those aged 26−34 years had the highest prevalence of cigar/cigarette smoking for past-30-day use (46.2%), and those aged 18−24 years had the highest prevalence for past-12-month use (59.8%). Among female veterans, those aged 26−34 years had the highest smoking prevalence than any other age group (past 30 days, 36.6%; past 12 months, 43.9%). Gender differences in cigarette/cigar smoking were much higher among younger veterans than nonveterans of the same age group but became attenuated within the older cohort. For example, prevalence of past-30-day cigarette/cigar smoking was 14.8 percentage points higher among male veterans than female veterans among those aged 18−25 years but reversed to −1.9 percentage points among veterans aged ≥50 years; among nonveterans, a less dramatic decline was seen.

Alcohol drinking in the past 30 days and past 12 months was higher among veterans than nonveterans in all assessed age and gender strata, except female adults aged 18−25 years for both past-30-day and past-12-month drinking and female adults aged ≥50 years for past-30-day drinking where no significant difference was observed, and male participants aged ≥50 years where veterans had lower prevalence of drinking than nonveterans (past 30 days, 53.9% vs 56.3%; past 12 months, 63.9% vs 67.9%) (Table 2).

In all age strata except people aged ≥50 years, veterans overall had higher prevalence of binge drinking than nonveterans as follows: age 18−25 years (44.3% vs 38.0%), age 26−34 years (45.7% vs 37.2%), age 35−49 years (33.5% vs 29.2%). Exceptionally, among male participants aged ≥50 years, veterans had a lower prevalence of binge drinking than nonveterans (17.1% vs 24.8%).

For heavy drinking, veterans overall had a higher prevalence than nonveterans in all assessed age strata. Male veterans reported a higher prevalence of heavy drinking than their nonveteran counterparts among those aged 18−25 years (17.5% vs 12.2%) and 36−49 years (12.4% vs 9.8%).

Lower marijuana use was reported within the following subgroups among male veterans aged 18−25 years (past 30 days, 17.7% vs 24.1%; past 12 months, 29.9% vs 36.7%) and ≥50 years (past 30 days, 4.6% vs 6.3%; past 12 months, 6.4% vs 9.6%). By contrast, female veterans reported a higher prevalence of marijuana use among those aged ≥50 years (past 30 days, 5.7% vs 2.9%; past 12 months, 9.9% vs 4.9%).

Use of any psychotherapeutics was higher among veterans and nonveterans within most assessed age and

Table 1. Age- and Gender-Stratified Prevalence of Tobacco Product Use Among U.S. Military Veterans and Nonveterans Aged ≥18 Years, National Survey on Drug Use and Health, 2015–2017

	Any tobacco[a]		Smokeless tobacco				Cigarettes/cigars			
	Past-30-day		Past-30-day		Past-12-month		Past-30-day		Past-12-month	
Age/gender	Veteran	Nonveteran	Veteran	Nonveteran	Veteran	Nonveteran	Veteran	Nonveteran	Veteran	Nonveteran
18–25 years										
Female	32.9 (17.1, 48.7)	27.9 (26.7, 29.1)	—	0.8 (0.5, 1.1)	—	2.0 (1.7, 2.3)	31.4 (16.1, 46.7)	22.6 (21.7, 23.5)	40.5 (24.0, 57.0)	32.0 (30.9, 33.1)
Male	57.0 (48.0, 66.0)	43.0 (41.7, 44.3)	19.9 (13.2, 26.6)	9.3 (8.6, 10.0)	27.0 (19.6, 34.4)	14.4 (13.6, 15.2)	46.2 (37.5, 54.9)	33.6 (32.5, 34.7)	59.8 (51.2, 68.4)	46.6 (45.4, 47.8)
26–34 years										
Female	42.1 (30.6, 53.6)	29.0 (27.7, 30.3)	—	0.6 (0.3, 0.9)	3.7 (0.1, 7.3)	1.2 (0.9, 1.5)	36.6 (26.2, 47.0)	24.8 (23.6, 26.0)	43.9 (33.1, 54.7)	30.5 (29.3, 31.7)
Male	58.6 (52.4, 64.8)	45.2 (43.6, 46.8)	16.7 (12.1, 21.3)	8.2 (7.4, 9.0)	23.3 (18.0, 28.6)	11.5 (10.6, 12.4)	46.5 (40.2, 52.8)	37.3 (35.7, 38.9)	58.1 (52.0, 64.2)	47.9 (46.3, 49.5)
35–49 years										
Female	26.0 (18.0, 34.0)	24.5 (23.4, 25.6)	—	0.6 (0.3, 0.9)	—	0.9 (0.6, 1.2)	23.9 (16.4, 31.4)	21.1 (20.2, 22.0)	29.4 (21.4, 37.4)	24.3 (23.2, 25.4)
Male	44.3 (40.1, 48.5)	36.8 (35.4, 38.2)	13.2 (10.6, 15.8)	8.2 (7.4, 9.0)	15.5 (12.7, 18.3)	9.3 (8.5, 10.1)	33.0 (29.1, 36.9)	28.5 (27.2, 29.8)	39.4 (35.3, 43.5)	35.3 (34.0, 36.6)
≥50 years										
Female	23.3 (13.8, 32.8)	16.7 (15.6, 17.8)	—	0.4 (0.3, 0.5)	—	0.6 (0.3, 0.9)	20.2 (11.8, 28.6)	14.1 (13.3, 14.9)	21.4 (12.7, 30.1)	15.7 (14.6, 16.8)
Male	22.5 (20.3, 24.7)	27.6 (26.0, 29.2)	3.3 (2.5, 4.1)	4.4 (3.7, 5.1)	3.8 (2.9, 4.7)	4.9 (4.2, 5.6)	18.1 (16.1, 20.1)	21.5 (20.1, 22.9)	21.6 (19.5, 23.7)	25.6 (24.2, 27.0)

Note: Veterans were individuals who had "ever been in the United States Armed Forces" and were "now separated/retired from reserves/active duty" at the time of survey. Estimates with ≥40% relative SEs were suppressed (–). CIs were generated at the 99% level.

[a]Any tobacco product use was defined as using at least 1 of the 5 tobacco products assessed (regular cigarettes, roll-your-own/hand-rolled cigarettes, cigars, pipes, and smokeless tobacco).

Table 2. Age- and Gender-Stratified Prevalence of Alcohol Consumption and Recreational Marijuana Use Among U.S. Military Veterans and Nonveterans Aged ≥18 Years, National Survey on Drug Use and Health, 2015–2017

	Alcohol								Marijuana			
	Past-30-day		Past-12-month		Binge drinking[a]		Heavy drinking[b]		Past-30-day		Past-12-month	
Age/gender	Veteran	Nonveteran	Veteran	Nonveteran	Veteran	Nonveteran	Veteran	Nonveteran	Veteran	Nonveteran	Veteran	Nonveteran
18–25 years												
Female	62.0 (46.2, 77.8)	56.5 (55.3, 57.7)	84.6 (73.3, 95.9)	75.1 (74.0, 76.2)	35.9 (20.0, 51.8)	36.4 (35.3, 37.5)	15.3 (1.6, 29.0)	8.2 (7.7, 8.7)	22.0 (7.0, 37.0)	17.6 (16.7, 18.5)	33.6 (21.3, 45.9)	30.2 (29.1, 31.3)
Male	68.7 (60.7, 76.7)	57.8 (56.6, 59.0)	88.6 (83.1, 94.1)	74.1 (73.0, 75.2)	46.1 (37.5, 54.7)	39.7 (38.5, 40.9)	17.5 (10.9, 24.1)	12.2 (11.4, 13.0)	17.7 (11.8, 23.6)	24.1 (23.0, 25.2)	29.9 (24.2, 35.6)	36.7 (35.6, 37.8)
26–34 years												
Female	73.1 (63.9, 82.3)	58.7 (57.3, 60.1)	91.0 (85.6, 96.4)	76.5 (75.3, 77.7)	37.7 (27.0, 48.4)	30.9 (29.6, 32.2)	8.0 (1.7, 14.3)	6.1 (5.4, 6.8)	11.7 (4.6, 18.8)	10.4 (9.6, 11.2)	18.5 (12.3, 24.8)	17.7 (16.6, 18.8)
Male	77.3 (72.2, 82.4)	69.6 (68.2, 71.0)	89.0 (85.2, 92.8)	82.2 (81.0, 83.4)	47.6 (41.4, 53.8)	44.0 (42.4, 45.6)	13.4 (9.2, 17.6)	12.7 (11.6, 13.8)	16.0 (11.7, 20.3)	18.1 (16.8, 19.4)	25.9 (21.9, 30)	26.9 (25.6, 28.2)
35–49 years												
Female	66.5 (58.3, 74.7)	54.3 (53.1, 55.5)	86.1 (80.7, 91.5)	71.0 (69.9, 72.1)	26.3 (18.8, 33.8)	24.0 (22.9, 25.1)	7.4 (2.8, 12.0)	4.5 (4.0, 5.0)	4.3 (1.1, 7.5)	5.7 (5.2, 6.2)	8.3 (4.8, 11.7)	9.8 (9.1, 10.5)
Male	70.7 (66.9, 74.5)	64.3 (63.0, 65.6)	82.4 (79.4, 85.4)	76.8 (75.7, 77.9)	34.9 (31.0, 38.8)	35.2 (33.9, 36.5)	12.4 (9.6, 15.2)	9.8 (8.9, 10.7)	10.7 (8.1, 13.3)	10.4 (9.5, 11.3)	15.5 (13.2, 17.9)	15.1 (14.2, 16.0)
≥50 years												
Female	48.9 (37.8, 60.0)	44.7 (43.4, 46.0)	69.1 (59.1, 79.1)	58.4 (57.1, 59.7)	18.1 (9.5, 26.7)	13.3 (12.4, 14.2)	—	2.7 (2.3, 3.1)	5.7 (1.0, 10.4)	2.9 (2.4, 3.4)	9.9 (5, 14.8)	4.9 (4.2, 5.6)
Male	53.9 (51.4, 56.4)	56.3 (54.5, 58.1)	63.9 (61.5, 66.3)	67.9 (66.3, 69.5)	17.1 (15.1, 19.1)	24.8 (23.2, 26.4)	5.9 (4.7, 7.1)	7.0 (6.1, 7.9)	4.6 (3.4, 5.8)	6.3 (5.5, 7.1)	6.4 (5.5, 7.4)	9.6 (8.5, 10.7)

Note: Veterans were individuals who had "ever been in the United States Armed Forces" and were "now separated/retired from reserves/active duty" at the time of survey. Estimates with ≥40% relative SEs were suppressed (–). CIs were generated at the 99% level.

[a]Binge drinking was defined as having 5 or more drinks for males, or 4 or more drinks for females, on the same occasion for at least 1 day in the past month.

[b]Heavy drinking was defined as binge drinking on 5 or more days within the past month.

Table 3. Age- and Gender-Stratified Prevalence of Use and Misuse of Psychotherapeutics Among U.S. Military Veterans and Nonveterans Aged ≥18 Years, National Survey on Drug Use and Health, 2015–2017

	Any psychotherapeutics[a]				Prescription pain relievers			
	Any use (past-12-month)[b]		Misuse[b]		Any use (past-12-month)[b]		Misuse[b]	
Age/gender	Veteran	Nonveteran	Veteran	Nonveteran	Veteran	Nonveteran	Veteran	Nonveteran
18–25 years								
Female	62.3 (46.9, 77.7)	45.2 (44.1, 46.3)	16.0 (2.3, 29.7)	13.9 (13.1, 14.7)	54.7 (0.0, 70.9)	35.0 (33.9, 36.1)	15.3 (1.6, 29.0)	6.9 (6.2, 7.6)
Male	40.3 (31.9–48.7)	38.6 (37.4, 39.8)	12.2 (7.1, 17.3)	15.8 (14.9, 16.7)	32 (0.0, 40.2)	27.7 (26.6, 28.8)	6.8 (2.9, 10.7)	8.2 (7.5, 8.9)
26–34 years								
Female	61.0 (50.3, 71.7)	47.6 (46.3, 48.9)	13.3 (5.7, 20.9)	9.5 (8.7, 10.3)	45 (0.0, 55.8)	38.9 (37.5, 40.3)	8.1 (1.5, 14.7)	5.7 (5.0, 6.4)
Male	42.8 (36.6, 49.0)	39.9 (38.5, 41.3)	10.3 (6.6, 14.0)	12.5 (11.4, 13.6)	36.6 (0.0, 42.5)	31.3 (29.9, 32.7)	7.0 (4.0, 10.0)	8.2 (7.3, 9.1)
35–49 years								
Female	61.1 (52.5, 69.7)	48.4 (47.2, 49.6)	6.1 (2.4, 9.8)	6.1 (5.4, 6.8)	49.8 (0.0, 58.6)	39.3 (38.1, 40.5)	5.3 (1.9, 8.7)	4.2 (3.7, 4.7)
Male	49.5 (45.4, 53.6)	38.7 (37.4, 40.0)	7.6 (5.4, 9.8)	6.8 (6.1, 7.5)	41.9 (0.0, 46.0)	32.0 (30.8, 33.2)	5.0 (3.3, 6.7)	5.0 (4.3, 5.7)
≥50 years								
Female	62.8 (52.3, 73.3)	49.4 (48.1, 50.7)	4.5 (0.4, 8.6)	3.4 (2.9, 3.9)	49.1 (0.0, 60.2)	38.7 (37.4, 40.0)	—	2.1 (1.7, 2.5)
Male	47.5 (44.9, 50.1)	41.8 (40.1, 43.5)	3.0 (2.1, 3.9)	4.2 (3.5, 4.9)	40.6 (0.0, 43.1)	35.1 (33.5, 36.7)	2.0 (1.3, 2.7)	3.1 (2.6, 3.6)

Note: Veterans were individuals who had "ever been in the United States Armed Forces" and were "now separated/retired from reserves/active duty" at the time of survey. Estimates with ≥40% relative SEs were suppressed (–). CIs were generated at the 99% level.
[a]Any psychotherapeutic use was defined as using at least one of the psychotherapeutics assessed (prescription pain relievers, tranquilizers, stimulants, and sedatives).
[b]Any use in the past 12 months was defined regardless of the appropriateness for which it occurred (i.e., regardless of clinical indication, prescription availability or fidelity, or usage patterns). Misuse was defined as usage in any way not directed or prescribed, including use without a prescription of the individual's own, or taking the medication in greater doses, frequency, or duration than prescribed.

gender strata (Table 3). Among female participants, most veterans reported past-12-month use of any psychotherapeutics, whereas <50% of nonveterans reported past-12-month use within all age groups: 18–25 years (62.3% vs 45.2%), 26–34 years (61.0% vs 47.6%), 35–49 years (61.1% vs 48.4%), and ≥50 years (62.8% vs 49.4%). Among male participants, veterans reported a higher prevalence of past-12-month use of any psychotherapeutics among those aged 35–49 years (49.5% vs 38.7%) and ≥50 years (47.5% vs 41.8%). Misuse of any psychotherapeutics did not differ significantly between veterans and nonveterans, except among male veterans aged ≥50 years, who reported a lower prevalence of misuse than nonveterans (3.0% vs 4.2%).

Similar patterns were seen for any use of prescription pain killers as indicated by a generally higher prevalence among veterans than nonveterans. For misuse of prescription pain killers, the largest difference was seen among female veterans aged 18–25 years, who reported higher misuse prevalence than nonveterans (15.3% vs 6.9%).

With few exceptions, there were no significant differences in any illicit drug (other than marijuana) use between veterans and nonveterans across age and gender strata (Table 4). The few significant differences that existed were among male participants and consistently showed lower prevalence of any illicit drug other than marijuana among veterans than nonveterans, including among those aged 18–25 years (past 12 months, 8.4% vs 13.2%) and those aged ≥50 years (past 12 months, 0.8% vs 2.1%).

DISCUSSION

This study utilized cross-sectional data from NSDUH to examine age- and gender-stratified prevalence estimates of substance use among U.S. veterans and nonveterans. With few exceptions, illicit substance use, including marijuana and cocaine, was lower among veterans than nonveterans, whereas use of licit substances such as tobacco, alcohol, or prescription opioids was higher among veterans than nonveterans. The widespread prevalence of use in both veteran and nonveteran populations for prescription psychotropic medications, tobacco consumption, or binge drinking is striking and of great

Table 4. Age- and Gender-Stratified Prevalence of Use of Illicit Drugs Other Than Marijuana Among U.S. Military Veterans and Nonveterans Aged ≥18 Years, National Survey on Drug Use and Health, 2015–2017

	Any illicit drugs other than marijuana[a]				Cocaine			
	Past 30-day		Past 12-month		Past 30-day		Past 12-month	
Age/gender	Veteran	Nonveteran	Veteran	Nonveteran	Veteran	Nonveteran	Veteran	Nonveteran
18–25 years								
Female	—	2.7 (2.4, 3.0)	—	8.7 (8.0, 9.4)	—	1.2 (0.9, 1.5)	—	4.6 (4.1, 5.1)
Male	3.7 (0.1, 7.3)	4.7 (4.2, 5.2)	8.4 (3.7, 13.1)	13.2 (12.4, 14.0)	—	2.2 (1.8, 2.6)	5.3 (1.9, 8.7)	6.7 (6.0, 7.4)
26–34 years					—			
Female	—	1.7 (1.3, 2.1)	—	4.6 (3.9, 5.3)	—	0.8 (0.5, 1.1)	—	2.5 (2.1, 2.9)
Male	2.2 (0.4, 4.0)	4.0 (3.3, 4.7)	7.3 (4.3, 10.3)	9.6 (8.7, 10.5)	—	2.1 (1.7, 2.5)	3.5 (1.3, 5.7)	5.4 (4.7, 6.1)
35–49 years					—			
Female	—	0.8 (0.7, 0.9)	—	1.7 (1.4, 2.0)	—	0.4 (0.1, 0.7)	—	0.8 (0.7, 0.9)
Male	1.8 (0.5, 3.1)	2.0 (1.6, 2.4)	3.7 (2.0, 5.4)	4.0 (3.5, 4.5)	—	1.0 (0.7, 1.3)	2.0 (0.7, 3.3)	2.2 (1.8, 2.6)
≥50 years					—			
Female	—	0.3 (0.2, 0.4)	—	0.7 (0.6, 0.8)	—	0.4 (0.1, 0.7)	—	0.4 (0.3, 0.5)
Male	0.4 (0.0, 0.9)	1.1 (0.7, 1.5)	0.8 (0.4, 1.2)	2.1 (1.6, 2.6)	—	1.0 (0.7, 1.3)	0.3 (0.0, 0.6)	1.3 (0.9, 1.7)

Note: Veterans were individuals who had "ever been in the United States Armed Forces" and were "now separated/retired from reserves/active duty" at the time of survey. Estimates with ≥40% relative SEs were suppressed (–). CIs were generated at the 99% level.
[a]Any illicit drug (other than marijuana) use was defined as using at least 1 of the 5 illicit drugs assessed (cocaine, heroin, methamphetamine, inhalants, and hallucinogens).

clinical and public health concern.[13–18] The authors also observed that the magnitude of occasional or nondaily use, using the difference in past-12-month versus past-30-day use as a proxy, was similar between veterans and nonveterans for cigarette smoking; for smokeless tobacco, however, veterans reported much higher occasional use. For example, among male participants aged 26–34 years, this marker for occasional use was twofold higher among veterans than nonveterans. Although some smokers may use smokeless tobacco to help with quitting, there is no conclusive evidence of its effectiveness as a smoking-cessation aid[19]; dual users may be exposing themselves to more nicotine and carcinogens in smokeless tobacco.[20]

Although female veterans reported a lower prevalence of substance abuse than male veterans in general, these estimates were higher than those observed among female nonveterans. For example, past-12-month cigarette/cigar smoking among female veterans aged 18–25 years (40.5%) was 8.5 percentage points higher than the corresponding prevalence among female nonveterans in the same age group (32.0%). Similarly, smokeless tobacco use among female veterans aged 26–34 years was 3 times higher than their nonveteran counterparts (3.7% vs 1.2%). For both cigarette/cigar smoking and binge drinking, the authors observed a narrowing of the male–female gap in prevalence with increasing age among veterans. Various explanations may account for these observations, including the possibility of higher mortality among the heavier smoking and drinking male veterans than female veterans and nonveterans. It is also possible that older male veterans may have higher rates of successfully quitting substance use behaviors than their female veteran counterparts.

Misuse of prescription pain relievers was highest among female veterans aged 18–25 years. The differential use and misuse of pain relievers between the genders may be attributable to differential patterns of musculoskeletal injuries, which are more common among women military members than men. Bedno and colleagues[21] described 50% greater injury prevalence among women military members in a 3-year cohort study with injuries occurring at a mean of 3 months of service versus 5 months for men. Notably, the 50% greater prevalence of self-reported use of prescription pain relievers in the female group aged 18–25 years parallels the increased injury rate in the study by Bedno et al.[21] The Centers for Disease Control and Prevention's opioid guidelines note that musculoskeletal injuries and their overtreatment with pain relievers are major causes of overuse, as well as dental prescription.[22] A higher proportion of younger patients have also been shown to receive opioid prescriptions following dental visits,[23–25] and the trend shows an increase in the quantity of pain relievers prescribed over time,[25,26] which is a source of concern given the risk of developing drug dependence in otherwise opioid-naive patients[27] and the incidence of drug diversion among this population subgroup.[28]

The health consequences of substance use among veterans extend beyond just the individual user and include the risk of exposing other members of the household to secondhand smoke. Further potential consequences for

families and societies, particularly with substance use behavior that is heavy or illegal, are increased risk of violence, drunk driving, and lost wages. Furthermore, given that 83% of new recruits into the U.S. military come from a family with a veteran,[29] there is also the danger of perpetuating a culture of substance use and abuse within the military and among veterans. Substance use behaviors among active duty military and veterans are tightly intertwined, especially as veterans continue to have access to military installations after retirement. Several advances have been made in recent years to decrease tobacco sales and utilization on military facilities, including eliminating the tax-free status of tobacco products in commissaries and on-base establishments, leading to a 25%–35% price increase in 2016.[30] Recalibration of social norms among active duty military and veterans, coupled with barrier-free clinical cessation and mental health services, can help these individuals quit substance addiction.

Limitations

This study has some limitations. First, the definition of veterans may not necessarily be identical with the statutory definition of veterans; for example, it may include individuals who served in the U.S. Armed Forces but were dishonorably discharged. Second, data are cross-sectional and rely on self-report. Additionally, the selection of variables is limited by those included in the NSDUH data set, which was not specifically designed to examine important military-related factors that might influence substance use such as branch or length of service, reason for military separation, combat experience, or other military trauma. Finally, despite pooled data, sample sizes were small for certain substances and population subgroups (e.g., female veterans).

CONCLUSIONS

With few exceptions, illicit substance use, including marijuana and cocaine, was lower among veterans than nonveterans, whereas use of licit substances including tobacco, alcohol, and prescription pain relievers was higher among veterans than nonveterans. The most used substances among veterans were tobacco and alcohol, especially among male veterans aged 18–25 years. Intensified efforts are needed to reduce substance use among veterans, as well as provide cessation and mental health services.

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SUPPLEMENTAL MATERIAL

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