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Comparison of Opioid Use Disorder among Male Veterans and Non-veterans: Disorder Rates, Socio-demographics, Co-morbidities, and Quality of Life

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Abstract

Background and Objectives: Amidst a surging national crisis of opioid use, concern has been expressed about its impact on veterans, but no study has presented a population-based comparison of opioid use disorder (OUD) among veterans and non-veterans. We analyzed national epidemiologic data to compare rates, correlates and impacts of the opioid crisis on male veterans and non-veterans.

Methods: Restricted data from 2012–2013 National Epidemiologic Survey on Alcohol and Related Conditions-III (NESARC-III) were used to compare veteran and non-veteran men on rates of OUD, as well as correlates of OUD including socio-demographic characteristics, psychiatric and substance use co-morbidities, and reductions in health-related quality of life (HRQOL).

Results: About 2.0% of veterans and 2.7% of non-veterans, estimated at 418,000 and 2.5 million men, respectively, met criteria for life-time OUD. In both groups, OUD was associated with younger age, lower income levels, and fewer years of education. OUD was associated minority race among veterans, but with non-Hispanic white race among non-veterans. Both veteran and non-veteran adults with OUD were at least 5 times more likely than their peers to have both

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Data access and responsibility: Rhee had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Compliance with ethical standards: This article does not contain any studies with human participants or animals performed by the authors. All research procedures performed in this study are in accordance with the ethical standards of the Institutional Review Board at Yale University School of Medicine (#2000022543).

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psychiatric and substance use co-morbidities ($p < 0.001$) and they experienced strongly reduced HRQOL scores (Cohen's $d = -0.50$ to -0.93).

Discussion and Conclusion: Veterans and non-veterans experience similar risk of OUD, similar correlates and adverse HRQOL impacts suggesting that similar treatment approaches may be effective for both groups.

Scientific Significance: Our findings highlight comparable vulnerability of veterans to non-veterans in both the risk of OUD and adverse effects on HRQOL.

Keywords

opioid use disorder; veteran; socio-demographics; comorbidity; quality of life

INTRODUCTION

The increasing prevalence of opioid use disorder (OUD) in the US over the past 2 decades^{1,2} has led to a steady rise in opioid-related overdose deaths and other adverse drug-related events resulting in an unprecedented national public health crisis.¹⁻⁴ In 2017, drug overdoses killed about 72,000 Americans, more than the combined total from HIV/AIDS, car crashes, and gun deaths.⁵ More than 42,000 deaths were specifically associated with opioid-related overdoses in 2016, more than five times as many as in 1999, and more than 2 million Americans are estimated to suffer from OUD.³⁻⁷

One subgroup among whom OUD is of particular public concern, as expressed in the media, are veterans of US military service.⁶ Pain, a significant risk factor for OUD,⁷ is highly prevalent among veterans, and in 2015, about 60% of veterans deployed to service in Middle East conflicts, and 50% of veterans from previous eras reported to suffer from chronic pain.⁸ Data on veterans served by the Veterans Health Administration (VHA) suggest that in the five years from 2010 and 2015, the number of patients diagnosed with OUD rose by 55% to a total of roughly 68,000.⁸ Because pain is more prevalent in veterans than non-veterans, they may be more likely to be exposed to high-risk, addictive medications (i.e., opioid products) for their pain management.

Despite the availability of data on prevalence of OUD among patients treated by VHA and a growing body of research on the use and effectiveness of medication-assisted treatment for OUD among veterans served by VHA,^{1,9-11} no population-based study has yet evaluated whether veterans are more or less likely than other US adults to suffer from OUD and whether the sociodemographic risk factors and psychiatric co-morbidities that accompany OUD in veterans differ from those in non-veteran adults. In addition, no population-based study has evaluated the reduction in health-related quality of life (HRQOL) associated with OUD among either veterans or non-veterans, although several population studies have been published on other substance use disorders or medical conditions.¹²⁻¹⁴ Such information on the distinctive background status and consequences of OUD for veterans may be helpful in making effective services available to this important population.

To fill gaps in existing literature, this study aims to address three questions: 1) What is the relative prevalence of OUD among US male veterans and non-veterans? 2) Are socio-

demographic characteristics and psychiatric co-morbidities associated with OUD different among veterans than among non-veterans? 3) Are there differences in the consequences of OUD for health-related quality of life (HRQOL) for veterans and non-veterans? This is the first analysis of national epidemiologic data to compare the correlates and impacts of the opioid crisis on veterans and non-veterans.

METHODS

Data source and study sample

The study procedures for this secondary analysis of restricted data were approved by the Institutional Review Board (#2000022543) at Yale School of Medicine. We collected restricted data from the National Epidemiologic Survey on Alcohol and Related Conditions-III (NESARC-III), sponsored by the National Institute on Alcohol Abuse and Alcoholism (NIAAA).¹⁵ The NESARC-III is a nationally representative cross-sectional survey, conducted from April 2012 through June 2013, of physical and mental health diagnoses, well-being and disabilities among non-institutionalized civilian adults aged 18 or older with a focus on alcohol and other substance use disorders. The NESARC-III included veterans of the United States Armed Forces, but excluded persons on active duty with the military because they could not be offered protection through a Certificate of Confidentiality.¹⁶ In this study, we limited our sample to male adults aged 18 or older (n=15,862 unweighted) since over 90% of veterans are men and all are adults.¹⁷ The NESARC-III provides life-time OUD status based on the criteria set forth in the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5). Using veteran status and life-time OUD status, we created four groups: veterans with OUD (n=61 unweighted), veterans without OUD (n=2,679 unweighted), non-veterans with OUD (n=329 unweighted), and non-veterans without OUD (n=12,793 unweighted). The overall survey response rate of NESARC-III was 60.1%.¹⁶ Further details of the survey, including descriptions, questionnaires, sampling methodology and datasets, are available on the NESARC-III website.¹⁵

Measures

Socio-demographic characteristics.—Socio-demographic variables¹⁸ included: age (18–44, 45–64, or 65+); race/ethnicity (non-Hispanic white or other); marital status (married or other); family income (< \$20,000, \$20,000–\$39,999, or ≥ \$40,000); education (< high school, high school or equivalent, some college, or bachelor's degree); insurance coverage through private insurance, Medicare, Medicaid, or other sources; and urban vs rural residence.

Psychiatric co-morbidities.—Using the DSM-5 criteria, NESARC-III evaluated criteria for the following life-time psychiatric disorders:¹⁹ major depressive disorder (hierarchical), dysthymia (hierarchical), bipolar I disorder, generalized anxiety disorder, post-traumatic disorder, and panic disorder. We further constructed a dichotomous variable representing any psychiatric disorder. In addition, NESARC-III provided data on the following life-time substance use disorder diagnoses:²⁰ alcohol, sedative use, cannabis use, cocaine use, stimulant use, hallucinogen use, inhalant/solvent use, club drug use, and tobacco use. We

further constructed a variable representing any illicit drug use disorder, which excluded alcohol and tobacco use disorders.

Health-related quality of life (HRQOL).—Health-related quality of life (HRQOL) is a multi-dimensional patient-reported indicator of health status, and assesses subjective evaluation of the impact of disease on bio-psycho-social well-being from both physical and mental health perspectives.²¹ The short form 12 (SF-12), is a standardized questionnaire of 12 items asking patients about their diverse health states, such as physical functioning, role limitations, pain, social functioning, emotions, mental health, and general health vitality.²² Using these 12 items, we constructed two continuous summary variables: physical component summary and mental component summary using standard scoring algorithms in which each 10 points represents a one standard deviation difference with 50 representing the US national average mental and physical HRQOL.^{23,24} A lower score indicates worse HRQOL, and a higher score means better HRQOL.

Data analysis

First, we evaluated the significance of differences in the proportion of veterans and non-veteran men meeting DSM 5 criteria for lifetime OUD, adjusting for the substantial age difference between veterans and non-veterans. Next, we investigated differences in socio-demographic characteristics between men with and without OUD among veterans and among non-veterans separately. Bivariate logistic regression analyses were conducted separately for veterans and non-veterans to evaluate the likelihood of having a life-time OUD given each socio-demographic variable. We then compared risk relationships between veterans and non-veterans by adding an interaction term of veteran by each characteristic.

Next, we investigated differences of psychiatric and substance use co-morbidities by OUD status among veterans and among non-veteran independently. Using the same bivariate logistic regression analysis, we sought to determine whether individual psychiatric or substance use co-morbidities are associated with the likelihood of having a life-time OUD separately among veterans and non-veterans, and then used interaction analyses to determine the significance of differences in these associations between veterans and non-veterans.

Third, we tested whether HRQOL differed significantly by OUD status among veterans and non-veterans. Due to the large sample size, bivariate significance testing (e.g., t-tests) can be misleading as even trivial differences are likely to produce highly statistically significant results.²⁵ Thus, we estimated an effect size using a Cohen's d ,^{26,27} that is, mean differences between those with OUD and those without OUD, divided by a pooled standard deviation. Finally, we tested if there are significant interactions between OUD status and veteran status on HRQOL using liner regression models.

We used $p < 0.05$ as the test of statistical significance. We used Stata MP/6-Core 15.1 for all analyses,²⁸ and we employed the *svy* commands in Stata to account for the complex survey sampling design of the NESARC-III (e.g., unequal probability of selection, clustering and stratification).¹⁶

RESULTS

Socio-demographic characteristics of the sample

A slightly smaller proportion of male veterans (2.0%) than non-veterans (2.7%) were identified with a life-time prevalence of OUD ($p=0.084$) representing 418,000 male veterans and 2.5 million non-veterans. In an analysis unadjusted for age differences, veterans were 24.0% less likely to have a life-time OUD than non-veterans (odds ratio [OR]=0.76; 95% CI=0.56, 1.04; $p=0.085$). However, veterans both with and without OUD were substantially older than non-veterans (Table 1). When adjusted for this age difference, veterans were 1.24 times more likely to have a life-time OUD than non-veterans (OR=1.25; 95% CI=0.91, 1.70; $p=0.17$), although this difference was still not statistically significant. Overall, male veterans and non-veterans were equally likely to have a life-time OUD.

Bivariate logistic regression analyses of the veteran subsample showed those 65 or older were substantially *less* likely than those aged 18–44 to have a life-time OUD (OR=0.32; 95% CI=0.12, 0.88; $p=0.028$). Having family income higher than \$40,000 was also associated with *lower* odds of having a life-time OUD (OR=0.38; 95% CI=0.18, 0.80; $p=0.012$) when compared to those with family income of less than \$20,000. In addition, those with a private health insurance plan were 0.49 times *less* likely to have a life-time OUD than those without a private health insurance plan (OR=0.51; 95% CI= 0.24, 1.06; $p=0.072$) while Medicaid coverage was associated with 2.83 times greater odds of having a life-time OUD than lack of Medicaid (95% CI=0.97, 8.32; $p=0.058$). However, these findings were not statistically significant, and thus, no significant differences were found by virtue of private health insurance or Medicaid.

Findings were quite similar among non-veterans, with the exception of race/ethnicity and marital status (see below), although the statistical analyses were more often significant due to the larger sample sizes of non-veterans. In bivariate logistic regression analyses the odds of having a life-time OUD were significantly *lower* (all $p<0.001$) among non-veteran men who belong to a minority group other than among non-Hispanic whites, as well as among those with higher family income, or who had a bachelor's degree or higher. Those who were not married had 2.99 times greater odds of having a life-time OUD as compared to those who were (95% CI=2.20, 4.06; $p<0.001$). Finally, individuals with private health insurance and other public health insurance plans among non-veterans had lower odds of having a life-time OUD than others (all $p<0.001$), while those with Medicaid had 3.49 times greater odds of having a life-time OUD than those without Medicaid (95% CI=2.58, 4.71; $p<0.001$).

Thus, correlates of having a greater likelihood of life-time OUD were generally similar among veterans and non-veterans. In both groups, younger age, lower income levels, fewer years of education, and receiving Medicaid, were associated with greater likelihood of lifetime OUD while receiving private insurance was associated, in both groups, with less likelihood of having a life-time OUD.

In the case of race/ethnicity and marital status, however, correlates of lifetime OUD were significantly different for veterans and non-veterans. The interaction of veteran status and minority racial groups was positive (OR=3.48; 95% CI=1.86, 6.50; $p<0.001$), indicating that

belonging to a minority group was associated with a *greater* likelihood of a life-time OUD among veterans, while belonging to a minority group was associated with a *lower* likelihood of life-time OUD among non-veterans. In contrast, the interaction of veteran status and being un-married was negative (OR=0.38; 95% CI=0.19, 0.79; $p=0.010$) reflecting the fact that among veterans, being un-married was not significantly associated with OUD, while among non-veterans, being un-married was strongly associated with a life-time OUD.

Thus life-time OUD was associated with social disadvantage for both veterans and non-veterans on most measures, but racial minority status was particularly associated with OUD among veterans, while being un-married was particularly associated with OUD among non-veterans.

Psychiatric and Substance use co-morbidities

OUD was strongly associated with psychiatric and substance use co-morbidities among both veterans and non-veterans. Among veterans, 63.4% of those with OUD had any co-morbid life-time psychiatric disorder, significantly higher than 22.0% among veterans without OUD (OR = 6.13; 95% CI=3.43, 10.97; $p<0.001$) (See Table 2), while among non-veterans, 60.9% of those with OUD had life-time psychiatric disorders, also significantly higher than the 21.2% of non-veterans without OUD with a similar odds ratio (OR =5.79; 95% CI=4.26, 7.87; $p<0.001$).

Similarly, the proportions of veterans having co-morbid OUD and alcohol use disorder, other drug use disorder, and tobacco use disorder were 88.5%, 51.8% and 74.4%, respectively, all significantly higher than among veterans without OUD (33.8%, 7.7%, and 35.7%), and representing 5–13 times greater odds of these substance use co-morbidities being documented among veterans with OUD (See Table 2).

Similarly, among non-veterans with OUD, the proportions of having co-morbid alcohol use disorder, drug use disorder and tobacco use disorder were 78.7%, 61.0% and 77.7%, respectively, all significantly higher than those without OUD (35.1%, 10.5% and 29.9%), again with 6–18 greater odds of having these substance use co-morbidities (See Table 2).

Quality of life of the sample

Among veterans, the mean of the mental component summary (MCS) among those with OUD was significantly lower than among those without OUD with a large effect size difference of -0.93 (Table 3). The effect sizes on the physical component summary (PCS) was substantial but somewhat lower at $-.50$. Among non-veterans, effect sizes were similar for both MCS and PCS, at -0.71 and -0.54 , respectively. There was no significant interaction between OUD and veteran status on HRQOL.

DISCUSSION

This population-based epidemiologic study showed OUD affects an estimated 418,000 veteran men and 2.5 million non-veteran men, with a life-time prevalence somewhat lower for veterans than non-veterans, although after adjustment for their older age, a slightly greater likelihood of OUD was observed among veterans (albeit not statistically significant).

We conclude therefore that rates of OUD are not significantly different between veterans than non-veterans.

Among both veterans and non-veterans, increased socio-demographic risk factors for life-time OUD included younger age, lower income, and fewer years of education. In addition, both veterans and non-veterans with OUD had a greater likelihood of being insured through Medicaid. These associations are similar to those found in other epidemiologic studies of drug use in the US,^{29–31} although previously published studies focused on either veterans with any substance use disorder or did not examine veterans as a subgroup.

Racial minority status was associated with an increased risk of life-time OUD among veterans but not among non-veterans. This finding differs from some previous studies.^{11,31} For instance, a study of veterans who served in either Afghanistan or Iraq found that racial/ethnic minorities had a lower risk of chronic opioid use than non-Hispanic whites,¹¹ and another study showed that both non-Hispanic blacks and Hispanic whites were less likely to have a 12-month prescription-based OUD than their non-Hispanic white counterparts. Our finding from the general veteran population likely reflects the fact that veterans tend to include representative of an older generation of adults with OUD whose opioid abuse started in an earlier era when the problem was more prevalent among African Americans than Caucasians and was initiated with heroin more often than prescription opioids. In recent years opioid users are mostly Caucasian and they more frequently started off with prescription opioids rather than heroin.³²

Among both veterans and non-veterans, more than two-thirds of adults with OUD had co-occurring psychiatric and substance use co-morbidities. Previous studies (e.g., National Comorbidity Study Replication (NCS) and VHA) have also found that multi-morbidity is common in adults with at least one psychiatric or substance use disorder.^{18,19,33–39} While there is clear evidence of the effectiveness of medication-assisted treatment (i.e., with buprenorphine or methadone) from randomized clinical trials (RCTs) as well as from observational studies,^{10,40–45} these studies typically have not considered the specific effectiveness of treatment of OUD in the context of multi-morbidity and many trials limit study entry of patients with concurrent behavioral disorders. Because multi-morbidity is common in this population as well as in real-world clinical practice, future research is needed to assess outcomes and side effects of such treatments in the presence of other behavioral disorders and their treatments. Treatment modifications may be required by patients with multi-morbidities among adults with OUD among both veterans and non-veterans.

This study offers the first population-based data showing that HRQOL is substantially lower, by almost a full standard deviation, among adults with OUD than those without OUD. This adverse effect was similarly large in both veterans and non-veterans, and affects both the mental and physical components of HRQOL. One previous study of a clinical sample veterans diagnosed with heterogeneous array of addictive disorders (n=250), showed significantly lower HRQOL than the general, non-veteran population²¹ while another study showed, more specifically, that opioid-dependent patients (n=653), in particular, reported lower HRQOL than the general, non-veteran population.⁴⁶ These two studies, however, were

conducted in clinic settings and thus their generalizability is less certain than the data presented here and they did not explicitly compare veterans and non-veterans.

Several clinical and policy conclusions emerge from this study. First, lower socio-economic status (e.g., income, education, and Medicaid eligibility) and co-morbidities were common among adults with OUD among both veteran and non-veteran populations. Such patterns imply that previous treatment outcome findings^{39,46–50} from general population studies (mostly involving non-veterans) are likely be applicable to veterans with OUD.

In addition, our findings suggest that, since we concluded that rates of OUD are not significantly different among veterans than non-veterans, OUD does not seem to be related to any distinctive feature of military service. This stands in contrast to the case of post-traumatic stress disorder which is highly and specifically related to military service and especially combat service. It appears that increased use of opioids among veterans most likely reflects the general expansion of prescription opioid use and related increase in rates of OUD in the US population in general in recent decades.

Second, the relationship of HRQOL to OUD among veterans and non-veterans are important for two reasons. First, HRQOL measures reflect how veterans and non-veterans with OUD perceive their physical and mental health status, quality of life and well-being, and represent the ultimate outcomes and deficits for health care. Second, these measures are highly patient-centered, such that they can facilitate decision-making processes for healthcare providers and policy-makers by addressing what matters the most to patients. Our findings suggest that future research should not only focus on medication-assisted treatment for OUD, but should also develop and test psycho-social interventions to improve aspects of quality of life and well-being that matter the most to individual veterans as well as non-veterans with OUD.

Several limitations require comment. First, as acknowledged earlier, the sample size for veterans with OUD was relatively small limiting statistical power available for comparisons between veterans and non-veterans. Second, life-time OUD was our primary measure of interest although current OUD may be a more immediately relevant policy indicator. In supplemental analyses, we found past-year OUD accounted for 37.5% and 42.0% of life-time OUD in veterans and non-veterans, respectively. However, analysis of past-year OUD was not feasible because of especially small sample sizes among veterans. Future studies will be needed to assess the association of current OUD, with sociodemographic risk factors and HRQOL, although we think it is likely that relationships observed here would be replicated in such analyses. Third, as stated in earlier reports,^{18,19} some sub-groups of the US population (e.g., active-duty military personnel, homeless, and the incarcerated) were excluded in the survey data collection, and thus, findings are not generalizable to these groups. Finally, the survey on which we report was conducted in 2012–2013 and the opioid epidemic has accelerated rapidly since then. While circumstances may have changed, we believe it is likely that the relationships observed here have probably persisted.

Despite these limitations, strengths of the study included the use of nationally representative data, the availability of psychiatric and substance use diagnoses based on DSM-5 criteria,

and of standardized measures of HRQOL. Our findings highlight comparable vulnerability of veterans to non-veterans in both the risk of OUD and adverse effects on HRQOL and suggest that treatment approaches validated in the general population are likely to be applicable to veteran men as well.

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Table 1.

Socio-demographic characteristics (weighted column %) of men aged 18 and older by veteran status and life-time opioid use disorder (OUD), NESARC-III

	Total	Veteran		Bivariate odds ratio	Total	Non-veteran		Bivariate odds ratio
		with OUD (%)	without OUD (%)			with OUD (%)	without OUD (%)	
Sample size								
Unweighted sample	2,740	61	2,679		13,122	329	12,793	
Weighted population (row %)	20,471,053 (100.0%)	418,381 (2.0%)	20,052,673 (98.0%)		92,740,766 (100.0%)	2,478,959 (2.7%)	90,261,807 (97.3%)	
Age								
18-44	3,486,571	22.9	16.9	Reference	51,616,810	70.6	55.3	Reference
45-64	7,697,194	57.4	37.2	1.14	32,143,886	28.4	34.8	0.64***
65+	9,287,289	19.8	45.9	0.32**	8,980,069	1.0	9.9	0.08****
Race/ethnicity								
Non-Hispanic white	16,411,539	71.6	80.4	Reference	59,073,359	78.7	63.3	Reference
Other ^{a)}	4,059,514	28.4	19.7	1.62	33,667,407	21.3	36.7	0.47****
Marital status								
Married	13,249,857	61.6	64.8	Reference	47,073,663	26.2	51.4	Reference
Other ^{b)}	7,221,197	38.4	35.2	1.15	45,667,103	73.8	48.6	2.99****
Family income								
<\$20,000	3,309,003	28.2	15.9	Reference	19,538,972	38.8	20.6	Reference
\$20,000 - \$39,999	4,884,932	31.6	23.7	0.75	21,541,467	28.6	23.1	0.66**
\$40,000	12,277,118	40.2	60.4	0.38**	51,660,327	32.6	56.3	0.31****
Education								
<High school	1,361,853	5.6	6.7	Reference	13,787,238	20.3	14.7	Reference
High school or equivalent	5,457,013	37.2	26.4	1.66	24,958,084	37.4	26.6	1.02
Some college	7,911,143	45.2	38.5	1.39	27,450,522	30.2	29.6	0.74
Bachelor's degree	5,741,044	12.0	28.4	0.50	26,544,922	12.1	29.1	0.30****
Insurance coverage ^{c)}								

	Veteran			Non-veteran			Bivariate odds ratio
	Total	with OUD (%)	without OUD (%)	Total	with OUD (%)	without OUD (%)	
Private (%)	10,438,426	34.8	51.3	54,727,880	41.1	59.5	0.48 ****
Medicare (%)	9,713,596	35.5	47.7	13,192,936	16.3	14.2	1.18
Medicaid (%)	1,026,847	12.6	4.9	7,408,510	22.3	7.6	3.49 ****
Other ^{d)} (%)	14,079,520	63.4	68.9	36,599,223	27.1	39.8	0.56 ****
Urbanity							
Rural	5,222,038	30.1	25.4	18,574,131	19.3	20.1	Reference
Urban	15,249,015	69.9	74.6	74,166,635	80.7	80.0	1.05

* <0.1,

** <0.05,

*** <0.01, and

**** <0.001.

^{a)} includes non-Hispanic black, Hispanic, Asian, and other racial groups;

^{b)} includes single, divorced, separated, widowed, partnered, and others; and

^{c)} each insurance type has a response of yes or no.

Table 2. Psychiatric comorbidity of men aged 18 and older by life-time opioid use disorder (OUD) and veteran status, NESARC-III

	Sample size	Veteran			Non-veteran			Bivariate odds ratio	Bivariate odds ratio
		Total	with OUD (%)	without OUD (%)	Total	with OUD (%)	without OUD (%)		
Unweighted sample	2,740	61	2,679		13,122	329	12,793		
Weighted population (row %)	20,471,053 (100.0%)	418,381 (2.0%)	20,052,673 (98.0%)		92,740,766 (100.0%)	2,478,959 (2.7%)	90,261,807 (97.3%)		
Life-time psychiatric disorder									
Any psychiatric disorder (%)	4,673,984	63.4	22.0	6.13 ***	20,653,474	60.9	21.2	5.79 ***	
Major depressive disorder (hierarchical) (%)	2,924,059	41.2	13.7	4.40 ***	13,691,244	33.2	14.3	2.98 ***	
Dysthymia (hierarchical) (%)	1,050,030	16.1	4.9	3.73 **	4,497,642	20.5	4.4	5.59 ***	
Bipolar 1 disorder (hierarchical) (%)	350,360	8.7	1.6	6.02 **	2,112,335	12.8	2.0	7.25 ***	
Generalized anxiety disorder (%)	1,196,659	14.4	5.7	2.80	5,158,762	12.6	5.4	2.55 ***	
Post-traumatic stress disorder (%)	1,277,834	19.9	6.0	3.92 **	3,335,426	17.0	3.2	6.15 ***	
Panic disorder (%)	776,195	16.0	3.5	5.21 **	2,916,797	12.9	2.9	4.99 ***	
Life-time substance use disorder									
Alcohol use disorder (%)	7,128,621	88.5	33.8	11.58 ***	33,605,476	78.7	35.1	6.83 ***	
Any substance use disorder (%)	1,757,143	51.8	7.7	12.90 ***	11,018,406	61.0	10.5	13.30 ***	
Sedative use disorder (%)	195,817	18.4	0.6	38.00 ***	1,010,267	24.8	0.4	74.84 ***	
Cannabis use disorder (%)	1,201,407	32.0	5.3	8.36 ***	8,271,648	43.2	8.0	8.77 ***	
Cocaine use disorder (%)	471,857	26.6	1.8	19.79 ***	2,909,182	33.7	2.3	21.57 ***	
Stimulant use disorder (%)	359,271	25.2	1.3	26.34 ***	1,752,311	24.4	1.3	25.06 ***	
Hallucinogen use disorder (%)	104,033	15.8	0.2	99.60 ***	832,780	15.8	0.5	38.41 ***	
Inhalant/solvent use disorder (%)	34,811	6.3	0.0	161.81 ***	230,714	5.8	0.1	64.71 ***	
Club drug use disorder (%)	70,943	7.7	0.2	42.87 ***	627,667	12.6	0.4	41.05 ***	
Tobacco use disorder (%)	7,468,040	74.4	35.7	5.24 ***	28,903,310	77.7	29.9	8.15 ***	

* <0.05,

** <0.01, and

*** <0.001

Quality of life (QOL) and interaction effects of veteran status and life-time opioid use disorder (OUD) on QOL among men aged 18 and older, NESARC-III

Table 3.

	Veteran		Non-veteran		Interaction		
	with OUD	without OUD	Cohen's <i>d</i>	with OUD	without OUD	Coefficient	<i>P</i> -value
Health-related Quality of Life							
Mental component summary	42.4 ± 12.6	51.8 ± 10.0	-0.93	45.0 ± 11.2	51.7 ± 9.3	-2.46	0.302
Physical component summary	40.1 ± 13.1	46.0 ± 11.8	-0.50	45.6 ± 12.8	50.9 ± 9.6	-2.41	0.222