BRIEF REPORT

The Effect of Veteran Status and Chronic Pain on Past 30-Day Sedative Use Among Community-Dwelling Adult Males

Ayodeji Otufowora, MD, PhD, MPH, Yiyang Liu, PhD, MPH, Aderonke Okusanya, MSHS, Afeez Ogidan, MBChB, Adedoyin Okusanya, MD, and Linda B. Cottler, PhD, MPH, FACE

Introduction: **Given the high sedative prescription rate, the sedative-associated morbidity, and mortality nationally (especially among veterans), we aimed to test the hypothesis that veteran status in the presence of chronic pain would be associated with greater sedative use when compared with nonveteran status.**

Methods: **The study participants were recruited by Community Health Workers (CHWs) through the ongoing community engagement program (HealthStreet) at the University of Florida. CHWs collected information on sociodemographic factors, health status, and past 30-day drug use patterns.**

Results: **The study sample comprised 4,732 male participants, of which 21% were veterans, 58% were Blacks and 8.4% had used prescription sedatives in the past 30 days. Veterans (vs nonveterans) were twice as likely to have used prescription sedatives in the past 30 days in the presence of chronic pain.**

Conclusions: **Veterans with chronic pain are a high-risk population for current prescription sedative use. (J Am Board Fam Med 2023;00:000–000.)**

Keywords: **Chronic Pain, Sedatives, Substance-Related Disorders, Veterans Health**

Introduction

Prescription sedatives such as nonbenzodiazepines and benzodiazepines are central nervous system (CNS) depressants that cause sedation. Prescription sedatives are used to treat disorders such as anxiety, depression, insomnia, panic disorder, and seizures.[1–4] Benzodiazepines are one of the most highly prescribed prescription medications nationally.[1,5–7] Prescription sedatives have a dose-response relationship effect on CNS activity: at higher doses, they have a CNS-depressant effect and can be used as hypnotics, whereas at lower doses, they produce an anxiety-relieving effect.[8–10] The number of sedative prescriptions may have increased as a result of different factors. These include the safety of newer agents (nonbenzodiazepine agents), the public's awareness of insomnia symptoms, and the sedative's expanded application in treating other mental health conditions.[11] The consequence of such an increase in prescription sedatives is an increase in sedative-associated mortality. The study emphasizes the need to analyze the risks associated with the misuse of prescription sedatives among vulnerable groups (such as military veterans) and develop programs and solutions to address these issues. Veterans make up 5.6% of the

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From the Department of Pediatrics, Columbia University Medical Center, New York, NY (A Otufowora); Department of Epidemiology, College of Public Health and Health Professions, College of Medicine, University of Florida, Gainesville, FL (YL, LBC); Department of Pharmacy, College of Pharmacy and Health Sciences, Western New England University, Springfield, MA (A Okusanya); Department of Medicine & Surgery, Obafemi Awolowo College of Health Sciences, Olabisi Onabanjo University, Sagamu Campus, Ogun State, Nigeria (A Ogidan); Department of Public Health, Milken Institute School of Public Health, The George Washington University, Washington, DC (A Okusanya).
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Corresponding author: Ayodeji Otufowora, MD, PhD, MPH, Columbia University Medical Center, 3959 Broadway, CH10, New York, NY 10032 (E-mail: ao2895@cumc.columbia.edu).

overall population of the United States.[12] Many veterans return home from war with various mental, physical, and social issues that can make them vulnerable. Exposure to stressful environments especially in combat veterans has led to combat-associated post-traumatic stress disorder (PTSD) and the need to relieve these PTSD-related symptoms such as anxiety, depression, and insomnia. In addition, approximately half of the male veterans at the Veteran Affairs (VA) hospital systems[13,14] self-reported having chronic pain which indicates the need for pain medication such as opioids, and the high likelihood for veterans to be coprescribed sedatives.[15–19] Although coprescription of sedatives and opioids is linked to an increased likelihood of opioid-associated mortality, it also presents an opportunity for intervention to decrease opioid-related mortality if risk factors contributing to sedative misuse are identified.[20]

Some of the extant studies[21,22] in the literature have examined specific sedatives such as benzodiazepine and past-year use in national samples and excluded veteran status as a predictor. Conversely, many studies[16,23–29] with veterans have largely based their analyses on participants recruited through government or VA-affiliated facilities despite the differences in patients' characteristics of veterans who used the VA facilities and those who did not[30] and the fact that many community-dwelling veterans receive their health treatment outside the VA system.[31] In the community, although 62% of veterans use the VA system, a substantial portion do not.[32] Thus, a study to assess medication misuse should be reflective of the experience of the average veteran and take into account both VA and non-VA users. Further, as noted in previous studies,[33,34] there are disparities in health outcomes between VA users and non-VA users. Compared with non-VA users, VA users had worse mental and physical health. Examining a population of veterans who received their health care services in a heterogeneous mixture of health care facilities, including VA hospitals, private hospitals, and clinics, is more reflective of the reality of typical veterans in the community.

To fill this gap, we examined past 30-day sedative use among a community sample of male veterans and nonveterans recruited through HealthStreet, a community engagement program at the University of Florida. The HealthStreet program operates on the principle of community-engaged research, which involves the recruitment of community members by local community health workers to participate in studies. Because veterans have good access to health care[35] and a high prevalence of pain[36–38] we tested the hypothesis that in a community sample, veteran status in the presence of chronic pain would be associated with greater sedative use when compared with nonveteran status with pain.

Methods

Data Source

We used data collected from October 2011 to February 2020 through the ongoing University of Florida's Clinical and Translational Science Award (UF-CTSA) supported community engagement program (HealthStreet). In the HealthStreet recruitment model,[39] Community Health Workers (CHWs) conduct a 25-minute health intake assessment. This cross-sectional study was approved by the Institutional Review Board (IRB) at the University of Florida.

Variables

The outcome variable was sedative use in the past 30 days. Independent variables included veteran status and chronic pain. Covariates included age, race, education, proxies for socioeconomic status (employment, food insecurity), marital status, having health insurance, having annual health checkup, number of ED visits in the past 6 months, having self-reported insomnia, anxiety, depression and past 30-day use of prescription opioids, marijuana, high risk alcohol, and illicit drug (cocaine or heroin) use.

Statistical Analysis

Bivariate analyses (χ^2) were conducted to compare the characteristics of community members who used prescription sedatives in the past 30 days compared with those who did not. Hierarchical multivariate logistic regression was used to assess the association between past 30-day prescription sedative use and the independent variables and the other covariates. Four regression models were sequentially fitted. P-value < 0.05 was considered statistically significant. SAS version 9.4 was used in conducting these analyses.

Results

Bivariate Results

As shown in Table 1, a total of 4732 participants were included in the current analysis. Approximately 21% of the participants were veterans; nearly half endorsed chronic pain (osteoarthritis or back pain). More than half of the participants (55%) were at least 50 years old, with a majority Black participants (58%). More than 2-thirds (77%) had at least a high school education, and 66% stated they were unemployed. Approximately 1-fifth were married, and nearly half were food insecure. Participants who endorsed past 30-day prescription sedative use (vs those who did not) were more likely to: be veterans, have chronic pain, be White, be at least 50 years of age, have at least a high school education, be unemployed and be food insecure (Table 1).

Multivariate Results

As shown in Table 2, model 1 indicated that veteran status and chronic pain were statistically

Table 1. Self-Reported Characteristics of Study Participants by Past 30-Day Sedative Drug Use Status, n = 4,732

Characteristics	Total (n = 4,732) n (%)	Past 30-Day Sedative Non-Use N = 4,366 n (%)	Past 30-Day Sedative Use N = 366 n (%)	*p*-Value
Veteran status				
Veteran	1,014 (21)	867 (20)	147 (40)	<0.0001
Non-veteran	3,718 (79)	3,499 (80)	219 (60)	
Chronic pain (back pain or osteoarthritis)	2,307 (49)	2,038 (47)	269 (74)	<0.0001
Age				
<50 years	2,585 (55)	2,441 (56)	144 (39)	<0.0001
≥50 years	2,144 (45)	1,923 (44)	221 (61)	
Race				
Black	2,730 (58)	2,583 (59)	147 (40)	<0.0001
White	1,669 (35)	1,475 (34)	194 (53)	
Other*	333 (7)	308 (7)	25 (7)	
Education				
<High school	1,075 (23)	1,013 (23)	62 (17)	0.0057
≥High school	3,647 (77)	3,343 (77)	304 (83)	
Employment				
Employed	1,615 (34)	1,539 (35)	76 (21)	<0.0001
Unemployed	3,087 (66)	2,800 (65)	287 (79)	
Marital status				
Married	923 (20)	856 (20)	67 (18)	0.5436
Other**	3,794 (80)	3,496 (80)	298 (82)	
Food insecurity	2,183 (46)	1,971 (45)	212 (58)	<0.0001
Health insurance	2,586 (55)	2,349 (54)	237 (65)	<0.0001
Annual health checkup	2,943 (62)	2,657 (61)	286 (78)	<0.0001
ED visits in past 6 months (at least 1 ED visit)	1,417 (30)	1,227 (28)	190 (52)	<0.0001
Insomnia	1,128 (24)	941 (22)	187 (51)	<0.0001
Anxiety	994 (21)	751 (17)	243 (67)	<0.0001
Depression	1,202 (26)	961 (22)	241 (66)	<0.0001
Other drug use (past 30 days)				
Prescription opioid use	543 (11)	414 (9)	129 (35)	<0.0001
Marijuana use	1,083 (23)	991 (23)	92 (25)	0.2861
High risk alcohol use	1,415 (30)	1,307 (30)	108 (30)	0.8637
Other illicit drugs (cocaine/heroin)	162 (3)	130 (3)	32 (9)	<0.0001

Other* = Asian, American Indian/Alaskan native, native Hawaiian/Pacific Islander.
Other** = never married, separated, divorced, or widowed.
Abbreviation: ED, emergency department.

Table 2. Adjusted Odds of Past 30-Day Prescription Sedative Use Among Community-Dwelling Adult Males in Florida, n = 4,732

Variable	Model 1 (Controlled for Chronic Pain and Veteran Status) Past 30-Day Sedative Use (vs no Use) aOR (95% CI)	Model 2 (Significant Factors from Model 1 + Sociodemographic Factors) Past 30-Day Sedative Use (vs no Use) aOR (95% CI)	Model 3 (Significant Factors from Model 2 + Health Conditions, Health Care Utilization, and Drug Use) Past 30-Day Sedative Use (vs no Use) aOR (95% CI)	Model 4 (Model 3 + Interaction Term Veteran Status*Chronic Pain) Past 30-Day Sedative Use (vs no Use) aOR (95% CI)
Veteran status				
Nonveteran	Ref	Ref	Ref	
Veteran	2.24 (1.79 – 2.82)	1.88 (1.47 – 2.42)	1.67 (1.28 – 2.18)	1.52 (0.92 – 2.53)
Chronic pain (back pain or osteoarthritis)				
No	Ref	Ref	Ref	
Yes	2.84 (2.22 – 3.63)	2.43 (1.89 – 3.14)	1.42 (1.07 – 1.88)	1.37 (0.98 – 0.91)
Socio-demographic factors				
Age group				
<50		Ref		
≥50		1.15 (0.90 – 1.47)	Eliminated	Eliminated
Race				
White		Ref		
Black		0.51 (0.40 – 0.64)	0.75 (0.58 – 0.98)	0.75 (0.58 – 0.98)
Other*		0.74 (0.47 – 1.17)	0.84 (0.51 – 1.38)	0.83 (0.51 – 1.37)
Education				
<High school		Ref		
≥High school		1.33 (0.99 – 1.79)	Eliminated	Eliminated
Employment				
Unemployed		Ref	Ref	Ref
Employed		0.66 (0.50 – 0.88)	0.94 (0.70 –1.27)	0.94 (0.70 –1.27)
Marital status				
Other**		Ref		
Married		0.84 (0.63 – 1.13)	Eliminated	Eliminated
Food insecurity				
No		Ref		
Yes		1.41 (1.12 – 1.78)	1.05 (0.81 –1.37)	1.06 (0.81 –1.38)

Continued

Table 2. Continued

Variable	Model 1 (Controlled for Chronic Pain and Veteran Status) Past 30-Day Sedative Use (vs no Use) aOR (95% CI)	Model 2 (Significant Factors from Model 1 + Sociodemographic Factors) Past 30-Day Sedative Use (vs no Use) aOR (95% CI)	Model 3 (Significant Factors from Model 2 + Health Conditions, Health Care Utilization, and Drug Use) Past 30-Day Sedative Use (vs no Use) aOR (95% CI)	Model 4 (Model 3 + Interaction Term Veteran Status*Chronic Pain) Past 30-Day Sedative Use (vs no Use) aOR (95% CI)
Health, health care utilization, and drug use				
Health insurance				
No			Ref	Ref
Yes			1.39 (1.06 – 1.83)	1.40 (1.06 – 1.83)
Annual checkup				
No			Ref	Ref
Yes			1.77 (1.31 – 2.39)	1.76 (1.31 – 2.38)
ED visits (at least one visit in past 6 months)				
No			Ref	Ref
Yes			1.40 (1.09 – 1.81)	1.40 (1.09 – 1.81)
Insomnia				
No			Ref	Ref
Yes			1.41 (1.08 –1.83)	1.41 (1.08 –1.83)
Anxiety				
No			Ref	Ref
Yes			4.65 (3.46 – 6.24)	4.65 (3.46 – 6.24)
Depression				
No			Ref	Ref
Yes			1.94 (1.44 – 2.63)	1.95 (1.44 – 2.63)
Prescription opioid use (past 30-day)				
No			Ref	Ref
Yes			3.46 (2.61 –4.59)	3.47 (2.62 –4.60)
High risk alcohol use (past 30-day)				
No			Ref	Ref
Yes			0.99 (0.75 –1.31)	0.99 (0.75 –1.31)
Marijuana use (past 30-day)				
No			Ref	Ref
Yes			1.02 (0.76 –1.38)	1.02 (0.76 –1.38)

Continued

Table 2. Continued

Variable	Model 1 (Controlled for Chronic Pain and Veteran Status) Past 30-Day Sedative Use (vs no Use) aOR (95% CI)	Model 2 (Significant Factors from Model 1 + Sociodemographic Factors) Past 30-Day Sedative Use (vs no Use) aOR (95% CI)	Model 3 (Significant Factors from Model 2 + Health Conditions, Health Care Utilization, and Drug Use) Past 30-Day Sedative Use (vs no Use) aOR (95% CI)	Model 4 (Model 3 + Interaction Term Veteran Status*Chronic Pain) Past 30-Day Sedative Use (vs no Use) aOR (95% CI)
Illicit drug use (cocaine or heroin) (past 30-day)				
No			Ref	Ref
Yes			2.33 (1.42 – 3.83)	2.35 (1.42 – 3.86)
Interaction termveteran status * chronic pain				
Nonveteran and No chronic pain				Ref
Veteran and No chronic pain				1.52 (0.92 – 2.53)
Nonveteran and chronic pain				1.37 (0.98 – 1.91)
Veteran and chronic pain				2.08 (1.02 – 4.27)

Other* = Asian, American Indian/Alaskan native, native Hawaiian/pacific islander.
Other** = never married, separated, divorced, widowed.
Abbreviations: ED, emergency department; CI, confidence interval; aOR, adjusted odds ratio.

significantly related to sedative use, and both remained significant in model 2 when we controlled for sociodemographic factors. In addition, statistically significant in model 2 were race, employment status, and food insecurity. In model 3, after controlling for significant variables in model 2, veterans were 67% more likely to have used prescription sedatives in the past 30 days compared with nonveterans; individuals with chronic pain were 42% more likely to have used prescription sedative use in the past 30 days compared with those without chronic pain. In addition, compared with Whites, Blacks were 25% less likely to have used prescription sedatives in the past 30 days. Model 3 also showed that individuals who have health insurance (vs no health insurance), have annual checkup (vs no checkup), have visited the ED at least once in the past 6 months were 39%, 77%, and 40% respectively more likely used prescription sedatives in the past 30 days. Individuals with insomnia (vs no insomnia), anxiety (vs no anxiety), and depression (vs no depression) were respectively associated 41%, 365%, and 94% higher risk of past 30-day prescription sedative use. In addition, past 30-day prescription opioid use and illicit drug use were significant predictors for past 30-day prescription sedative use.

Further, in model 4, we tested for interaction between veteran status and chronic pain for predicting past 30-day prescription sedative use. We found a significant interaction between veteran status and chronic pain, meaning that in the presence of chronic pain, veterans were twice as likely to have used prescription sedatives in the past 30 days compared with nonveterans with no pain.

Discussion

This analysis examined past 30-day prescription sedative use among a community sample of military veterans and nonveterans. We hypothesized that in this population, veteran status in the presence of chronic pain would be associated with greater sedative use when compared with nonveteran status. This hypothesis was supported. We found that veterans (vs nonveterans) were 1.67 times as likely to have used prescription sedatives in the past 30 days. This result was supported by past literature that veterans have a high prevalence of sedative use.[16,40–42] The stress of regular deployments and exposure to combat are potential risk factors for mental health problems[26,43–45] including anxiety, depression, insomnia, panic disorder, and PTSD. Veterans, faced with these diagnoses that often require sedative use, coupled with better access to health care and subsequent access to prescription sedatives, are at increased risk for sedative misuse.[35]

Further, we found a significant interaction between veteran status and chronic pain. The relationship between veteran status and sedative use may be moderated by chronic pain. When chronic pain is absent, veterans were no longer at increased risk of prescription sedative use compared with nonveterans. Chronic pain is a very common condition among veterans[46]; the presence of pain due to physical disability and high prevalence of coprescription of both opioids and sedatives[15–17,19,47] may explain the higher odds of past 30-day sedative use in military veterans compared with nonveterans. In addition, pain catastrophizing and perceived pain severity were higher in individuals using benzodiazepines compared with those who were not.[48,49] Prior studies[15,16] in the literature have also shown a high prevalence of coprescription of opioids and sedatives opioids. Our study showed that past 30-day sedative users (vs nonusers) were also more likely to be past 30-day prescription opioid users.

Further, the results showed that Black participants were less likely to report using prescription sedatives in the past 30 days compared with their White counterparts as other studies have shown.[3,50–52] Given that sedatives are often coprescribed with opioids[15–17,19,47] and because racial differences exist in the treatment of pain,[53–56] with Blacks more likely to be undertreated for pain than Whites,[57] it is certainly plausible that Blacks were less likely to be prescribed sedatives as well.

In this study we showed a positive relationship between anxiety/depression and past 30-day prescription sedative use. This was expected because anxiety, depression, and insomnia are all indications for sedative use.[58–61] Further, among veterans, studies have reported a high prevalence of mental health conditions[29,62] such as anxiety,[31] depression,[63] or sleep disorders[64] as independent diagnoses or as part of PTSD.

Strengths and Limitations

Our study has some limitations including the use of nonrandom study sample, which may account for overrepresentation of some racial-ethnic groups in our study population. In addition, although the data were gathered in 62 of Florida's 67 counties, the

limitation of the extrinsic validity of a single state or site study does apply. We do however believe that the inclusion of a large population of a minority group such as African Americans who are often underrepresented in research[65–67] is a strength of this study.

In addition, one of the strengths of this study is the daily recruitment of veterans and nonveterans by Community Health Workers who are culturally sensitive and members of the same community as participants. This gives us confidence in the integrity of our data especially with survey items where social desirability bias is a possibility. Given the chronicity of pain, future research should include a longer evaluation period such as past 60-day sedative use.

Conclusions

Our study found both veteran status and chronic pain are significant predictors of past 30-day prescription sedative use. Particularly, we found that in the presence of chronic pain, veterans were twice as likely to use prescription sedatives in the past 30 days compared with nonveterans. However, when the pain was absent, veterans were no longer at increased risk of sedative use compared with their counterparts. Thus, although pharmacological treatment of pain is the mainstay of pain management, other options such as physical and occupational therapy, strength training, yoga, biofeedback therapy, interventions such as nerve root block injections, and newer technologies such as spinal nerve stimulation should be fully explored in this population.

Teaching Points of Significant Clinical Relevance

The results of this study highlight the need to pay close attention to the indicators of drug use and misuse during military personnel recruitments; to guide against the stress of military life triggering any underlying drug misuse problems. In addition, given the high prevalence of coprescription (and co-use) of opioids and sedatives, particularly in the emergency department (ED),[17] and the downstream public health crisis, the knowledge of these correlates may help guide physicians in the ED in the management of patients by helping identify patients with these risk factors and subsequently provide health education on the importance of complying with physician's instructions on the appropriate use of medications with high addictive potential as sedatives.

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