



Brief communication

Population mental health among U.S. military veterans: results of the Veterans Health Module of the Behavioral Risk Factor Surveillance System, 2011–2012



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ABSTRACT

Purpose: To examine mental health indicators, in aggregate and stratified by sex, among a population-based sample of U.S. military veterans.

Methods: Data are from veteran who completed the Veterans Health Module (VHM) of the 2011 and 2012 Behavioral Risk Factor Surveillance System ($n = 10,406$). VHM items included lifetime diagnoses of mental illnesses, service in a combat zone, sources of mental health care, and past 12-month suicidal ideation and attempt. We used weighted, multiple logistic regression models, adjusted for sociodemographics, to examine differences in suicidal ideation and attempt among men and women.

Results: Overall, 5.0% of the sample reported recent suicidal ideation and 1.0% reported attempting suicide. Among men, unemployment was positively associated with suicidal ideation, and combat exposure was negatively associated with suicidal ideation. Being separated, divorced, or widowed was positively associated with suicidal ideation among women. After adjusting for sociodemographic and VHM variables, veterans who sought mental health treatment from both Veterans Affairs (VA) and non-VA facilities had more than fourfold increased odds of suicidal ideation than veteran who sought mental health treatment from only VA facilities (adjusted odds ratio = 4.02; 95% confidence interval 1.23–13.13).

Conclusions: Correlates of suicidal ideation differ between male and female veterans. Veterans who use both non-VA and VA facilities for mental health services may have greater risk of self-directed violence.

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Introduction

Over the last 15 years of U.S. military operations in the Middle East, the mental health of returning servicepersons has been a national priority under which substantial resources have been devoted to the issue of self-directed violence [1,2]. Specifically, over this period, suicide deaths rose to unprecedented levels among active duty military personnel [3], and there has been growing awareness that veterans' rates of suicide exceed those of the general

U.S. population [1]. Among current and former military personnel, research has focused mainly on suicide mortality [4–7] with relatively fewer studies about suicidal ideation and attempt and fewer still examining the problem of suicidal risk specifically among female veterans [8]. Of the extant literature documenting prevalence and correlates of suicidal ideation and attempt among veterans, most rely either on convenience or clinical samples (i.e., veterans using health care through the Department of Veterans Affairs [VA]) [1,9–12], which limits the generalizability of findings.

To answer the need for population-based epidemiologic data, VA researchers developed the Veterans Health Module (VHM) to be implemented within the Centers for Disease Control and Prevention's Behavioral Risk Factor Surveillance System (BRFSS) during the survey years of 2010–2012. Results of the 2010 survey have been previously published [13]; however, in 2010, only two U.S.

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states (Nebraska and Tennessee) elected to administer the survey. The aims of this brief report are to present data from the 2011–2012 VHM, which was administered across 10 states with a substantially larger sample of veterans. In addition to analyses of the overall sample, we provide analyses stratified by sex. Finally, we examined the association of different forms of mental health treatment (i.e., VA facility only, non-VA facility only, and both VA and non-VA facilities) with past 12-month suicidal ideation.

Methods

Data are from the 2011 and 2012 BRFSS from U.S. states that administered the VHM via landline phone surveys to noninstitutionalized adults aged 18 years and older (2011: Alaska, Kansas, Louisiana, Maine, Nebraska, Nevada, New Jersey, North Carolina, Tennessee; 2012: Kansas, Montana, Nebraska, New Jersey, Tennessee). Information about the complex sampling design and weighting procedures are available from the Centers for Disease Control and Prevention [14].

Respondents were administered the VHM if they answered affirmatively to a demographic question about military service: “Have you ever served on active duty in the U.S. Armed Forces, either in the regular military or in a National Guard or military reserve unit? Active duty does not include training for the Reserves or National Guard, but does include activation, for example, for the Persian Gulf War.”

The VHM included dichotomous questions about ever serving in a combat or war zone; ever being diagnosed with depression, anxiety, or post-traumatic stress disorder (PTSD) by a health professional; or ever being diagnosed with a traumatic brain injury (TBI) by a health professional. Respondents were asked about receiving mental health treatment in the past 12 months; mutually exclusive response options were as follows: yes, from a VA facility; yes from a non-VA facility; yes from both VA and non-VA facilities; no. We preserved the original response categories and considered this variable an indicator of mental health treatment. Respondents were also asked “Has there been a time in the past 12 months when you thought of taking your own life?” Individuals who answered yes were asked, “During the past 12 months, did you attempt to commit suicide? Would you say: yes, but did not require treatment; yes, was treated at a VA facility; yes, was treated at a non-VA facility; no.” We recoded this question into a dichotomous variable of suicide attempt. The survey architecture assumed that persons who indicated no suicidal ideation should not receive the question about suicide attempt. Consequently, for purposes of the current analysis, persons who were not administered the suicide attempt item were coded as “no,” which aligns with a previous analysis of VHM data [13].

We included several sociodemographic variables. Marital status was recoded into a three-category variable of married and/or coupled, formerly married (i.e., separated, divorced, widowed), and never married. Education was recoded into three categories of having at least a high school diploma, some college, and college degree or more. Race and ethnicity were coded into eight mutually exclusive categories for bivariate analyses, but, because of small individual cell sizes, categories were collapsed into a dichotomous variable of minority race and/or ethnicity and white for multivariable analyses. Employment status was recoded into a five-category variable of employed (i.e., employed for wages or self-employed), unemployed (i.e., out of work for more than 1 year or out of work for less than 1 year), retired, unable to work, or other (i.e., homemaker or student).

We calculated frequencies for each item in the VHM and selected sociodemographic characteristics for the overall sample and stratified by sex. We conducted three multiple logistic

regression analyses (overall, men, women) to determine the associations of VHM correlates with the outcomes of suicidal ideation. Because of the low prevalence of suicide attempt, the multivariable analysis for suicide attempt was not stratified by sex. Variance inflation factors showed no problematic collinearity in multivariable models (mean variance inflation factor = 1.14). We conducted an additional logistic regression using the subgroup of individuals who reported seeking mental health care (n = 760), and we regressed suicidal ideation on type of mental health treatment (i.e., only VA services, only non-VA services, or both VA and non-VA services). All multivariable

Table 1
Sociodemographics and Veterans Health Module items among veterans, BRFSS 2011 and 2012

Sociodemographics and Veterans Health Module items	Overall	Men	Women	P
	(n = 10,406)	(n = 9589)	(n = 817)	
	n (%)	n (%)	n (%)	
Sociodemographics				
Sex				
Men	9589 (92.8)	9589 (92.8)	—	
Women	817 (7.2)	—	817 (7.2)	
Race/ethnicity				
White	9053 (77.9)	8423 (78.6)	630 (68.9)	<.01
Black/African American	631 (13.1)	526 (12.4)	105 (22.7)	
Asian	20 (0.4)	16 (0.3)	4 (1.1)	
Native Hawaiian/other Pacific Islander	17 (0.2)	13 (0.2)	4 (0.9)	
American Indian/Alaskan Native	163 (1.3)	142 (1.3)	21 (1.1)	
Other race	78 (0.8)	72 (0.8)	6 (0.4)	
Multiracial	143 (2.3)	128 (2.3)	15 (0.8)	
Hispanic	195 (4.0)	166 (4.0)	29 (4.2)	
Employment status				
Employed	3599 (43.8)	3235 (43.5)	364 (47.2)	<.01
Unemployed	371 (6.4)	315 (6.2)	56 (9.4)	
Retired	5622 (39.2)	5383 (40.8)	239 (17.5)	
Unable to work	652 (7.4)	579 (7.4)	73 (7.9)	
Other*	138 (3.2)	55 (2.1)	83 (18.0)	
Education				
≤High school diploma	3522 (24.5)	3171 (23.7)	351 (34.1)	<.01
Some college	3096 (37.5)	2801 (37.3)	295 (40.1)	
≥College degree	3764 (38.0)	3594 (38.9)	170 (25.8)	
Marital status				
Married/coupled	6693 (68.0)	6314 (69.3)	379 (51.7)	<.01
Formerly married	3059 (22.3)	2724 (21.8)	335 (28.8)	
Never married	628 (9.7)	527 (8.9)	101 (19.5)	
Age (M, SE)	57.5 (0.45)	58.2 (0.48)	47.5 (1.02)	<.01
Veterans Health Module				
Ever serve in combat or war zone	4060 (42.8)	3913 (44.4)	147 (21.8)	<.01
Ever diagnosed with depression, anxiety, or PTSD	1331 (15.5)	1132 (14.8)	199 (24.1)	<.01
Ever diagnosed with TBI	339 (4.2)	306 (4.2)	33 (3.9)	.86
Received mental health treatment in past 12 months				
Yes, from a VA facility	436 (5.9)	385 (5.9)	51 (6.4)	<.01
Yes, from a non-VA facility	249 (3.3)	198 (2.8)	51 (9.7)	
Yes, from both VA and non-VA facilities	75 (0.8)	67 (0.8)	8 (0.9)	
Suicidal ideation in past 12 months	376 (5.0)	328 (5.1)	48 (4.6)	.70
Attempt suicide in past 12 months (any)	42 (1.0)	34 (1.0)	8 (1.1)	.89
Yes, did not require treatment	16 (0.4)	14 (0.4)	2 (0.2)	.73
Yes, was treated at VA facility	10 (0.7)	9 (0.8)	1 (0.4)	
Yes, was treated at a non-VA facility	13 (0.5)	11 (0.5)	5 (0.8)	

Frequencies are unweighted; percentages and means are weighted.
* Included the categories of homemaker or student.

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