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Assessing the Relationship between Current Mental Health, Health Conditions, and Activity Limitations in Veterans Aged 25 and Older in the General Population

Jennifer A Knickerbocker, Juliana C Mcelroy and Jessica L Hartos*

Department of Physician Assistant Studies, University of North Texas Health Science Center, USA

*Corresponding author: Hartos JL, Department of Physician Assistant Studies, University of North Texas Health Science Center, USA Tel: 817-735-2454; Fax: 817-735-2529; E-mail: Jessica.hartos@unthsc.edu

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Abstract

Purpose: Many veterans face difficulties related to physical and mental health issues, but little is known about how these are related within veterans in the general population. The purpose of this study was to examine the association between current mental health, health problems, and activity limitations in population-based samples of veterans aged 25 years and older.

Methods: This cross sectional analysis used 2015 data from the Behavioral Risk Factor Surveillance System (BRFSS) for veterans aged 25 and older from Oklahoma, Virginia, and Washington. Multiple logistic regression analysis was used to assess the relationship between current mental health, health conditions, and activity limitations after controlling alcohol use and demographic variables.

Results: Across states, most veterans aged 25 and older reported good current mental health (77-81%), about half reported 3 or more health conditions (40-54%), and about one-fourth reported activity limitations (17-28%). After controlling for alcohol use and demographic factors, good current mental health was inversely related to health conditions and activity limitations in all three states with moderate to high effect sizes.

Conclusion: The results of this study indicated that current mental health among veterans aged 25 years and older in general populations is significantly related to health conditions, activity limitations, and gender. Because of moderate to high relations, primary care practitioners should screen for mental health, health conditions, and activity limitations if a veteran, especially a female veteran, presents with any of these, and then educate, treat, and provide referral services as comorbid conditions versus separate issues.

Keywords Veteran; Mental health; Activity limitations; Health conditions; Physical health; Comorbidities; Gender

Introduction

Health care for United States veterans continues to become increasingly complex. Physical and mental healthcare issues may be far greater in veterans than in the general U.S. population, and are significantly associated with higher utilization of healthcare [1,2]. With many veterans facing mental and physical challenges as they transition to civilian life, it is essential to determine comorbid factors in order to better screen and treat this population.

Research using data from veteran services indicate that mental and physical health conditions can compromise quality of life for veterans. Veterans may have high rates of depression and anxiety, as well as other mental health problems such as post-traumatic stress disorder (PTSD) and insomnia [1,2]. These issues can be further complicated by an inherent stigma in the military regarding emotional problems [3]. As such, the majority of veterans may not report poor mental health issues and, therefore, do not pursue treatment [1,2,4]. In addition, rates of physical health conditions such as arthritis, chronic obstructive pulmonary disease, diabetes mellitus, and heart conditions among veterans are high and can significantly affect self-perceived health and reported quality of life [2,5-7].

Furthermore, having concurrent mental and physical health issues is highly prevalent among veterans who use veteran services [2,5-7]. For example, veterans with physical health issues [8] have increased rates of depression [2] and anxiety [5]. In addition, the coexistence of physical and mental disorders further increases the incidence of activity limitations [5]. Results based on veteran services data have found that up to 55% of veterans may have activity limitations including difficulty walking [2,6] and in the younger veterans than older [9]. Although we found no research specifically with veterans, other studies have shown significant relationships between mental health and activity limitations, including difficulty walking, in civilian older adults [10,11].

Given the impact on daily lives that mental health issues, physical health issues, and activity limitations may have and that all veterans do not utilize veteran services [12], it would be important to establish the extent to which relations exist

between mental health, physical health, and activity limitations in veterans in the general population so that civilian primary care practitioners may better screen, educate, and make referrals for the care of this target population. The purpose of this study was to assess the association between the current mental health, health conditions, and activity limitations in samples of veterans 25 years and older in the general population.

Methods

Design

This cross-sectional analysis used data from the 2015 Behavioral Risk Factor Surveillance System (BRFSS) conducted by the Centers for Disease Control and Prevention [7]. BRFSS is a nationwide telephone survey using random digit dialing techniques completed by the CDC each year dating back to 1984. It is designed to gather data on health issues and promotion of healthy lifestyles in adults age 18 and older in all 50 states. This was a secondary data analysis of de-identified data available to researchers. This study was given exempt status by The University of North Texas Health Science Center.

Sample

From the available BRFSS data, we used data from veterans in Oklahoma, Virginia, and Washington states. Thus, the samples included veterans aged 25 and older from the general population in Oklahoma (N=1029), Virginia (N=1278), and Washington (N=2436). These states were chosen for their higher prevalence of veterans when compared to other states [7] and for their geographical spread across the country. We conducted analyses separately by state (instead of combining the data) to determine patterns in variable relations across similar samples. As such, a similar result in two or three states out of three states was considered reliable evidence for a relationship.

Data

The outcome was good current mental health. BRFSS 2015 data includes a variable on mental health that asks participants to determine the number of days during the past 30 days that their "mental health, including stress, depression, and problems with emotions," was not good. Because we are interested in good mental health and because the responses were severely skewed in each state, we reversed and dichotomized (based on the mode, which was 30 days in each state) the responses to this variable.

Our outcome, good current mental health, was measured as "yes" (30 days of good mental health in the past 30 days) versus "no" (less than 30 days).

The factors of interest were health conditions and activity limitations. The variable for health conditions was measured by adding the number of "yes" responses to ever diagnosed with:

hypertension, high cholesterol, heart attack, coronary heart disease, stroke, cancer, COPD, arthritis, depression, kidney disease, diabetes, or asthma. The total was then categorized as "0," "1," "2," or "3 or more" health conditions. Activity limitations was based on a BRFSS variable for yes/no "having serious difficulty walking or climbing stairs."

BRSS variables that we used as control variables included alcohol use and demographic factors, including gender. Alcohol use was measured as "drank alcohol in the past 30 days" versus "did not." Marital status was measured as "married" versus "not married." Metropolitan status was measured as "urban," "suburban," or "rural." Age was categorized into 25-34, 35-44, 45-54, 55-64 and 65 and older. Because over 75% of respondents in each state reported white race, ethnicity/race was measured as "White, non-Hispanic" versus "other." The categories and responses for each variable are listed in Table 1 and results of analyses are listed in Table 2.

Analysis

Descriptive statistics by state were used to determine the distribution of each variable and any issues by state. Multiple logistic regression analysis separately by state was used to assess patterns in relations between current mental health, health conditions, and activity limitations after controlling for alcohol use and demographic variables.

Any observations with missing data for any variable in the model were removed from the final analysis. All statistical analyses were conducted using R (Copyright (C) 2017 The R Foundation for Statistical Computing).

Results

Descriptive statistics

Table 1 shows sample characteristics for veterans aged 25 and older in the general population in Oklahoma, Virginia, and Washington. Overall, these samples consisted of mostly white, older, unemployed, married men.

Across states, most veterans reported good mental health (77-81%), about half reported 3 or more health conditions (40-54%), and about one-fourth reported having activity limitations (17-28%). Only the responses for metropolitan status differed by 20% or more across states, in which living in a rural area was 23% higher in Oklahoma compared to Washington.

Adjusted

As shown in Table 2, the results of multiple logistic regression analyses for veterans aged 25 and older separately in Oklahoma, Virginia, and Washington indicated that after controlling for all other variables in the model, mental health was significantly and inversely related to health conditions and activity limitations.

Table 1: Sample characteristics by state.

Variable	Oklahoma		Virginia		Washington	
	N =1045		N=1278		N =2481	
	N	Percentage (%)	N	Percentage (%)	N	Percentage (%)
Mental health						
30 days of good mental health in past 30 days	800	78	1014	81	1877	77
Less than 30 days	229	22	244	19	559	23
Total	1029	98	1258	98	2436	98
Activity limitations						
Serious difficulty walking or climbing stairs	290	28	211	17	422	18
No serious difficulty	735	72	1042	83	1977	82
Total	1025	98	1253	98	2399	97
Health conditions						
0 conditions	101	11	234	20	266	13
1 condition	157	17	248	21	371	17
2 conditions	162	18	217	19	454	21
3 or more conditions	499	54	473	40	1036	49
Total	919	88	1172	96	2127	86
Alcohol Use						
Drank alcohol in the past 30 days	413	41	694	56	1416	60
Did not drink alcohol in the past 30 days	595	59	537	44	952	40
Total	1008	96	1231	96	2368	95
Marital status						
Married	644	62	827	65	1560	63
Not married	400	38	444	35	909	37
Total	1044	100	1271	99	2469	100
Employment status						
Employed	334	32	628	50	795	32
Not employed	708	68	638	50	1668	68
Total	1042	100	1266	99	2463	99
Metropolitan status						
Urban	217	30	481	63	894	51
Suburban	213	30	139	18	556	32
Rural	281	40	146	19	298	17
Total	711	68	766	60	1748	70
Age						
25-34	41	4	88	7	130	5
35-44	51	5	145	11	134	5
45-54	104	10	202	16	242	10

55-64	200	19	269	21	447	18
65 and older	649	62	574	45	1528	62
Total	1045	100	1278	100	2481	100
Ethnicity/Race						
White	826	80	951	76	2169	90
Not white	207	20	295	24	250	10
Total	1033	99	1246	97	2419	98
Gender						
Male	952	91	1066	83	2225	90
Female	93	9	212	17	256	10
Total	1045	100	1278	100	2481	100

Table 2: Results of logistic regression analyses by state.

Mental health (30 days of good mental health in the past 30 days vs. less)	Oklahoma			Virginia			Washington		
	AOR	95% CI		AOR	95% CI		AOR	95% CI	
		Low	High		Low	High		Low	High
Activity limitations									
Serious difficulty walking or climbing stairs	0.62	0.39	0.99	0.37	0.22	0.67	0.48	0.34	0.68
Health conditions									
0 condition	ref	--	--	ref	--	--	ref	--	--
1 condition	1.4	0.5	3.98	0.18	0.07	0.49	0.67	0.36	1.27
2 conditions	0.86	0.33	2.28	0.17	0.06	0.5	0.51	0.28	0.95
3 or more conditions	0.34	0.14	0.82	0.1	0.04	0.28	0.31	0.17	0.57
Alcohol use									
Drank alcohol in past 30 days	0.91	0.58	1.41	1.15	0.72	1.84	0.9	0.68	1.2
Marital status									
Married	1.3	0.84	2	1.21	0.76	1.94	1.26	0.95	1.67
Employment status									
Employed	1.38	0.79	2.4	1.52	0.85	2.72	1.18	0.81	1.73
Metropolitan status									
Urban	ref			ref			ref		
Suburban	0.88	0.52	1.49	0.63	0.35	1.13	1.03	0.76	1.4
Rural	1.18	0.7	2	0.74	0.41	1.33	1.12	0.76	1.64
Age									
25-34	ref			ref			ref		
35-44	0.93	0.12	7.03	2.32	0.51	10.5	0.77	0.16	3.79
45-54	1.65	0.26	10.7	6.58	1.44	30	1.59	0.34	7.45
55-64	2.64	0.41	16.9	16.3	3.46	76.4	1.62	0.36	7.3

65 and older	5.61	0.86	36.9	26.9	5.62	128	4.09	0.91	18.4
Ethnicity/Race									
White, non-hispanic	1.03	0.61	1.75	0.89	0.5	1.6	1.3	0.81	2.09
Gender									
Male	1.41	0.71	2.82	3.06	1.7	5.51	1.99	1.33	2.99
Note: Ref=referent group; AOR= adjusted odds ratio; 95% CI= 95% confidence interval; Bolded results are significant (AORs with 95% CI that do NOT include 1.0 are significant)									

In all three states, veterans who reported three or more health conditions were about 3 to 10 times less likely to report good mental health compared to those who reported no health conditions. Also, in two out of three states those who reported two health conditions were about 2 to 6 times less likely to report good mental health compared to those who reported no health conditions. In addition, in all three states, participants who reported activity limitations were about 2 to 3 times less likely to report good mental health compared to those who did not report activity limitations. Furthermore, in two out of three states, male participants were about 2 to 3 times more likely to report good mental health compared to females.

Discussion

The purpose of this study was to assess the relationship between current mental health, health conditions, and activity limitations among veterans 25 years and older in the general population and the findings across states may generalize to primary care settings. Across states, most veterans reported good mental health (77-81%), about half reported health conditions (40-54%) and about one-fourth reported activity limitations (17-28%). The results of this study indicate that across the three states, good current mental health was moderately to highly-related to health conditions and activity limitations after controlling for health conditions, alcohol use, marital status, employment status, metropolitan status, age, ethnicity/race, and gender. Our findings are consistent with past research indicating relations between veteran mental health and physical health issues in veterans using veteran services [2,5-8] and between activity limitations and depressive symptoms in older adults [10,11]. Because not all veterans use Veteran Affairs Services [12], it is important that civilian practitioners know about the relations among mental health, physical health, and activity limitations in this target population. Also, because mental health, physical health, and activity limitations are moderately- to highly-related, it is important that civilian providers screen for and treat these concurrently, which may require the coordination of efforts across various medical domains [7,13-15].

Limitations

Using BRFSS data allowed for population-based samples of veterans from which to assess the relationship between current mental health, health conditions, and activity limitations. However, no information was available for the cause, severity, treatment, or management of mental health issues, health

conditions, or activity limitations currently or over time. This information could be useful in considering treatment options. It may be beneficial to study specific mental disorders such as PTSD, depression, and anxiety and how these relate to health conditions and activity limitations to form more individualized treatment plans for veterans. In addition, the findings of the study indicated that male participants were 2 to 3 times more likely to report good mental health compared to females. However, the small percentage of female veterans in this study and the lack of above information make it determine any basis for gender differences. Future studies assessing mental and physical health issues in community samples of veterans should focus on female veterans.

Conclusion

From these results, veterans 25 years and older in the general population may show high proportions with good current mental health; high proportions with multiple health conditions; and low proportions with activity limitations. Given the consistent, moderate to high relationships among “less than good” mental health, multiple health conditions, and activity limitations in veterans 25 years and older, practitioners should screen for all of these if veterans present with any of these and provide education, treatment, and referrals as comorbid conditions rather than separate issues. It is important that civilian providers and veterans are educated on recognizing the risk of poor mental health for those with multiple health conditions and/or activity limitations, as well as the need to treat mental health issues. Practitioners should also be aware of the veteran services available in their area.

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