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Abstract

Objective. To determine the association between veteran status and perceived mental health in US adults.

Methods. 2022 Behavioral Risk Factor Surveillance System cross-sectional telephone survey data were used. Analyses were adjusted for confounding sociodemographic and health-related characteristics. Weighted multinomial logistic regression was used to determine the association between veteran status and reporting 0, 1-13, or 14+ poor mental health days.

Results. A total of 430,653 individuals were included in this analysis. Veteran status was associated with decreased odds of reporting 1-13 poor mental health days than non-veterans (OR=0.81; 95% CI 0.77, 0.86) but greater odds of reporting 14+ poor mental health days (OR=1.23; 95% CI=1.15, 1.33). Sex, age, marital status, race/ethnicity, education, annual income, health insurance, rurality, BMI, and poor physical health days were significantly associated with the number of poor mental health days.

Conclusions. Veterans are more likely to suffer from frequent mental distress than non-veterans when sociodemographic and health-related characteristics are considered. These findings expand the complex relationship between veteran status and mental health diagnoses by providing evidence that veterans also perceive their mental health as poor.

Introduction

Even though the number of veterans has decreased in the United States (US), in 2022, veterans still accounted for about 6.2% of the US population.[1] Military lifestyle is much different than that of the general US population. Veterans' mental health is shaped by the military culture, traumatic experiences, and challenges when faced with reintegration into civilian life.[2–4] Mental health tends to be stigmatized in military culture.[4] Those in military service tend to have the mindset to "tough it out" when it comes to physical or mental illnesses and rarely seek help but rather avoid or turn to substance use as a coping mechanism.[4] Additionally, trauma from deployments has also been noted to be associated with negative mental health consequences.[3,5]

Veterans have been reported to have high rates of physical and mental health comorbidities such as chronic obstructive pulmonary disease (COPD), diabetes, obesity, substance abuse, arthritis, anxiety, and depression.[6–11] Veterans are impacted by many mental health conditions following service, such as depression, anxiety, and post-traumatic stress disorder (PTSD).[7–10,12] The diagnosis of PTSD has been well explored in veteran-related research, though not in contrast to non-veterans.[9]

Morbidities and other factors like age have impacted the observed relationships. Two previous studies found younger individuals had worse mental and physical health than older age groups when looking at different military sub-populations.[7,8] In contrast, an additional study using Behavioral Risk Factor Surveillance System (BRFSS) data found that older ages reported poorer mental health for Veterans Affairs (VA) patients, non-VA patient veterans, and non-veterans.[13]

Most veterans have access to care through the VA, but they do not always seek beneficial care or treatment for mental health problems. Possibly stemming from the military culture and social and self-stigmas surrounding mental health, veterans lack engagement in treatment opportunities.[14] Therefore, high rates of mental health problems are seen across multiple service member sub-populations. These studies, however, fail to consider how veterans may perceive their health and some lack comparisons with non-veteran populations.

Health-related quality of life (HRQoL) studies have been conducted and typically involve the Department of Veterans Affairs (VA) and use of the Veterans Health Study. They focus on assessing veterans mental, physical and overall health by scoring various health and lifestyle-related questions to result in an overall quality of life rating.[15] Few studies have investigated these BRFSS self-reported mental health measures, instead focusing on identifying differing health outcomes between military sub-populations. Some findings suggest that veterans appear to be more likely to report poor mental, physical, and general health.[12,13] The relationship between veteran status and mental, physical, and general health is complex, with some evidence indicating an association[12,13] and other evidence suggesting a null relationship.[6,12,16]

Direct self-perceptions of mental health have been under-researched compared to investigations of different health morbidities and mental illness diagnoses in veteran populations and especially in comparison to non-veteran populations. Awareness of how veterans perceive their health could play an important role in better understanding the complexities surrounding high rates of mental health diagnoses and impact veteran veteran-centered care.

Therefore, we aim to establish a clearer link between veteran status and perceived mental health. As a result, interventions and care might be better targeted and implemented to improve the multifaceted health of veterans.

Methods

Study Design.

2022 Behavioral Risk Factor Surveillance System (BRFSS) cross-sectional telephone survey data were used in this analysis.[17] BRFSS is a national health-related survey used to collect information about lifestyle factors that may impact health and other health conditions. Random Digit Dialing techniques are used to conduct surveys by telephone, and data are collected continuously from all 50 states, three US territories, and the District of Columbia. BRFSS uses survey weights to ensure these data are most representative of the U.S. population and minimize selection bias. BRFSS data is publicly available from the Centers for Disease Control and Prevention (CDC).[17]

Study population.

A total of 445,132 individuals either completed or partially completed interviews. Survey participants are non-institutionalized US adults over the age of 18. Those who answered Don't Know/Not Sure, Refused, and Not Asked/Missing in response to veteran status (5,649) and number of poor mental health days (9,067) were excluded, resulting in a total analytic sample size of 430,653. All measurements were self-reported by respondents.

Poor mental health.

Respondents were asked to report how many days their mental health was not good within the last 30 days. Continuous responses were classified into three levels by BRFSS: no (0 days), some (1-13 days), and frequent mental distress (14+ days). Previous literature has described frequent mental distress and diagnostic markers for depression by reporting a minimum of 14 out of 30 affected days.[18,19]

Military service.

The exposure of interest for this analysis is veteran status. Veterans were classified as individuals who reported having served as active duty with the United States Armed Forces in a regular military, National Guard, or military reserve unit. Responses were dichotomized as "Yes, Veteran" and "No, non-Veteran."

Sociodemographic characteristics.

Computed variables for sex, age, and race/ethnicity were used. Sex was dichotomized using self-reported birth sex when available. If birth sex was unavailable, self-reported male or female responses were used. Age was categorized as 18 to 44, 45 to 65, and 65+ years. Race/ethnicity was classified as White only, non-Hispanic, Black only, non-Hispanic, Hispanic, other race or multiracial, non-Hispanic. Those who reported multiple races or those other than Non-Hispanic White, Non-Hispanic Black, or Hispanic were combined into a single category. Missing data were imputed as the most common race/ethnicity reported for the matching state region. Marital status was also included and categorized as currently married, divorced/separated, widowed, or never married, as described in previous literature.[20,21] Education status was classified into four categories: less than high school graduate, high school graduate, college 1 to 3 years

(some college or technical school), and college four years or more/college graduate. Annual income was categorized as <$25,000, $25,000 to <$50,000, $50,000 to < $75,000, and >$75,000. Rurality and health insurance status were dichotomously categorized as urban vs. rural county of residence and yes vs. no, respectively.

Health-related characteristics.

Depressive disorder was categorized as yes or no. Those who reported having some form of health insurance, including those purchased through an employer, private plan, state or government-sponsored plans, Medicare, Medigap, Medicaid, CHIP, military-related care, or Indian Health Service, were classified as "Yes" for insurance status. The number of reported poor physical health days was included and categorized as 0 days, 1-13 days, and 14+ days. BMI measures were calculated using reported weight and height. BRFSS computed these values into four levels which were used in this analysis: underweight (BMI<18.50), normal weight (18.50<=BMI<25.00), overweight (25.00<=BMI<30.00), and obese (30.00<=BMI<9999).

An additional category of "Missing/Not Sure/Don't Know/Refused" was included for annual income (22.1%) and BMI (11.5%). Missing values were negligible (<5%) for the remaining demographic variables.

Statistical analysis.

All variables included in these analyses were categorical. Univariate analyses were performed using frequency tables to assess the distribution of covariates within the study population. Counts and frequencies were obtained.

Bivariate analyses were conducted using weighted binary logistic regression for veteran status and weighted multinomial logistic regression for perceived mental health due to the three-level outcome. Each covariate was compared to veteran status and perceived mental health. Weighted crude odds ratios and 95% confidence intervals were calculated.

Potential confounders (sex, age, race/ethnicity, marital status, education, income, health insurance, rurality, depressive disorder, physical health, BMI) were selected based on previous studies and then assessed by crude OR significance.[6,10,12,13,22] Age and sex were evaluated for effect modification by introducing interaction terms of each

into the model. Joint tests were used to determine the significance of interaction terms at an alpha level of 0.05. Depressive disorder was removed due to multicollinearity. All significant variables were included in the final model. The final weighted model includes mental health, veteran status, sex, age, marital status, race/ethnicity, education level, annual income, health insurance, rurality, BMI, and poor physical health days (R-Square = 0.21).

Multivariate analyses were performed using survey multinomial logistic regression. Crude and adjusted odds ratios and 95% confidence intervals for the primary outcome variable of mental health status were obtained. Ordinal logistic regression was ruled out due to violating the proportional odds assumption as determined by significant likelihood ratio, score, and Wald test p-values ($p<0.001$). Model fit was determined via the R-Square test with greater than 0.2 considered adequate fit. Adjusted ORs are reported with 95% confidence intervals.

Weighted regression procedures were performed using SAS Studio version 3.82 (SAS Institute, Cary, NC) to account for complex survey data.

Results

Sociodemographic and health characteristics of the study population are presented by weighted frequencies in Table 1 (n=439,438). About 10% of the total population were veterans. Most individuals reported no days of poor mental health (57.4%) followed by 26.8% reporting 1-13 and 15.8% reporting 14-30 poor mental health days. Roughly half of the total population was female (51.4%) and were married (50.2%). Just under half were between the ages of 18-44. Fifty-eight point six percent of the population identified as White, non-Hispanic. Most individuals attended some or graduated college (60.6%), and the greatest proportion reported an annual household income of $75,000+ (32.4%). The majority of individuals reported having some form of health insurance (87.0%) and residing in urban counties (93.7%). Most individuals were overweight or obese (34.1% and 33.4%). A substantial proportion of the population reported having a depressive disorder (20.7%) and 1-13 or 14-30 days of poor physical health (25.2% and 12.7%).

All crude relationships included in the bivariate analyses were significant (<0.05) (Table 2). Veteran status was associated with lower odds of poor mental health days than non-veterans (1-13 days: OR=0.58, 95% CI=0.55,0.61; 14+ days: OR=0.77, 95% CI=0.72,0.82). Being female, younger in age, having never been married or divorced/separated, having a depressive disorder, and having poor physical health days were predictive of greater odds of poor mental health days. Living in rural counties was associated with lower odds of poor mental health days than those living in urban counties. Those who reported greater education levels (high school or greater) had increased odds of 1-13 poor mental health days. In contrast, those who reported greater education levels had decreased odds of 14+ poor mental health days.

Similarly, an annual income of greater than $25,000 appeared to be predictive of greater odds of reporting 1-13 poor mental health days. In contrast, an annual income of greater than $25,000 was associated with lower odds of reporting 14+ poor mental health days. Those with no health insurance had lower odds of reporting 1-13 poor mental health days but increased odds of reporting 14+ poor mental health days.

Veteran status was associated with being female, younger age, never having been married, not having health insurance, depressive disorder, and reporting 1-13 days of poor physical health. Veterans were less likely to graduate from high school or greater schooling, have an annual income greater than $25,000, live in rural counties, and report 14-30 days of poor physical health.

Table 3 shows the results from the final weighted model. Veterans were less likely to report 1-13 poor mental health days (OR=0.81, 95% CI=0.77,0.86) but more likely to report 14+ poor mental health days (OR=1.23, 95% CI=1.15,1.33) than non-veterans.

Females were more likely to report poor mental health days than males (1-13 days: OR=1.60, 95% CI=1.55, 1.66 and 14+ days: OR=1.89, 95% CI=1.81,1.98). Younger age appeared to be highly associated with poor mental health days. Those who were 18-44 and 45-64 had 3.44 (95% CI= 3.28, 3.61) and 1.74 (95% CI=1.66, 1.82) times the odds of reporting 1-13 poor mental health days and 5.41 (95% CI=5.05,

5.80) and 2.31 (95% CI=2.16, 2.46) times the odds of reporting 14+ poor mental health days than those 65 years and older.

Those who were never married had the greatest odds of reporting poor mental health days than widowed and divorced when compared to married individuals (1-13 days: OR=1.66, 95% CI=1.59, 1.74 and 14+ days: OR=2.13, 95% CI=2.16, 2.46). All race categories, when compared to those who identified as White only, non-Hispanic had lower odds of reporting poor mental health days. Education level appeared to have more influence over the odds of reporting 1-13 days of poor mental health than 14+ days. All of those who reported graduating high school or higher had increased odds of reporting 1-13 poor mental health days. Those with some college were 11% more likely to report 14+ days of poor mental health, whereas college graduates were 12% less likely to report 14+ days of poor mental health. Only those missing an annual income were significantly associated with having lesser odds of reporting 1-13 days of poor mental health than those with an annual income of less than $25,000 (OR=0.86; 95% CI=0.80, 0.92). Annual household income of greater than $25,000 or missing had lower odds of reporting 14+ poor mental health days, with greater income having lesser odds.

Those without health insurance were less likely to report 1-13 days of poor mental health (OR=0.80, 95% CI=0.74, 0.86). Those living in rural counties had lower odds of reporting either level of poor mental health (1-13 days: OR=0.84, 95% CI=0.79, 0.89 and 14+ days: OR=0.84, 95% CI=0.78, 0.90). No clear patterns arose for the relationship between BMI and poor mental health days. Poor physical health days appeared to have a significant association with poor mental health days across both categories of 1-13 and 14-30 days. Those who reported 14-30 days of poor physical health had 10.56 times the odds of reporting 14+ days of poor mental health.

Discussion

When controlling for influential sociodemographic and health-related characteristics, veterans appeared to have more frequent mental distress than non-veterans. However, the unadjusted model suggests that veterans have less frequent mental distress than non-veterans. It is possible that this observed difference is due to lesser odds of higher education and annual income for veterans contributing to their

mental health, as these have been seen to result in poorer reported health.[22] Additionally, veterans reporting more frequent mental distress is not surprising due to the known high rates of veterans struggling with mental health diagnoses,[10,23] we would expect to see veterans having more frequent mental distress fitting diagnostic criteria for depression and anxiety diagnoses of 14+ poor mental health days within the last 30.[18,24] Although not investigated in our study, it is possible that treatment might impact these results as well. Military personnel have been known to have less support due to barriers and stigma regarding mental health issues both during and after service, which could result in worse mental health.[14,23,25]

Our results align with previous studies showing a relationship between sex and poor mental health. Females had more frequent mental distress in both crude and adjusted models, which might be related to female veterans having a higher prevalence than males of depressive disorders and other measures of poor mental health.[10,20,26] Also, it is possible that males have more access to social support with peers who have gone through similar situations as most military members are male;[26] although, it is also possible that females are less impacted by social and self-stigmas surrounding mental health and are more likely to seek help.[27]

Younger age groups also appeared to have more mental distress than older, regardless of the impacts of sociodemographic and health-related characteristics. Previous findings are also consistent that younger individuals had poorer mental health than older age groups.[8,13] Younger populations have also been documented to have worse HRQoL, which could be explained by differences in mental health between older and younger VA populations.[15] This variation between age groups may be due to different war events for different veteran cohorts. It is also possible that the length of time out of military service could lead to more engagement in seeking help for conditions, leading to lower reported mental distress.

As shown in our results, sociodemographic and health-related characteristics impact perceived mental health of veterans and non-veterans. This warrants further investigation into the interrelatedness of external influences that impact veterans' health.

As such, our findings suggest that the odds of some or frequent mental distress decreased for those who did not identify as White, non-Hispanic, without health insurance, and living in rural areas. Differences in health outcomes have been seen previously and support our findings of lesser mental distress among those who do not identify as White, non-Hispanic.[6] Conversely, higher rates of mental health issues are typically seen among those without health insurance and living in rural areas due to limited access to care among civilian populations.[13] However, consistent with our findings, veterans have been observed to have poorer health with better access to care.[12] These differences may arise due to different care techniques and options through VA healthcare and non-VA healthcare.

Education, annual income, and BMI appeared to have varying impacts on mental distress. An increase in education level was seen to increase the odds of some mental distress but decrease the odds of frequent mental distress. Similarly, an increase in annual income resulted in lesser odds of frequent mental distress. These findings are consistent with previous studies that fewer social determinants of health are associated with a higher risk of poor mental health.[22,28] Overall, BMI appeared to impact frequent mental distress regardless of other characteristics. Those who were overweight were less likely to have frequent mental distress, whereas being obese or underweight was associated with frequent mental distress. BMI has been seen to predict lower QoL and an increase in depression, which may be why our results suggest that being underweight or obese is associated with increased odds of frequent mental distress. It is possible that body positivity, especially for overweight populations, has resulted in being slightly protective of some and frequent mental distress regardless of other factors.

Additionally, the odds of some or frequent mental distress increase for those who are not married, regardless of the influence of other characteristics. Although this study did not investigate social support systems, this observation could be due to a limited social support system, which has been seen to be influential in the mental health status of veterans.[26] Physical health also appeared to be highly associated with some and frequent mental distress, both with and without other significant characteristics. These results are unsurprising as living with disabilities is challenging, limits some aspects of

healthy habits, and can take a great toll on one's mental health. The interconnectedness of physical health and mental health has been observed frequently, suggesting the importance of tackling physical health to improve mental health.[7,9]

Limitations.

Information about military service, such as the length or type of service, deployment status, or military branch, was not collected. Therefore, these factors could not be accounted for in this analysis, which limits our ability to make inferences. Due to the nature of the survey, all information, including military service, was self-reported and could not be verified, which could lead to misclassification. The number of poor mental health days reported by an individual is objective, and the definition might vary from person to person, resulting in some form of recall bias and self-report bias due to the stigmatization surrounding mental health. Veterans might also under-report poor mental health days due to the stigmatization of mental health in military culture.[4] Treatment or medication for mental health diagnoses was not described, which could impact the results should more veterans be utilizing treatment or vice versa.

Public Health Implications

Veteran populations are more likely to have self-perceived frequent mental distress, according to diagnostic criteria, than non-veterans when sociodemographic and health-related characteristics are considered. Females also continue to have greater odds of mental distress, as do younger populations. These findings add to the complex relationship between veteran status and mental health diagnoses by providing evidence that veterans also perceive their own mental health to be poor.

This study also reiterates the complexities surrounding social determinants of health and their impact on perceived mental health.[22] The impact that sociodemographic and health-related characteristics have on mental health warrants further investigation into the effects of these external influences on perceived mental health and, furthermore, how veterans perceive their mental health.

Social support and socioeconomic status might be useful themes to target in future interventions to help improve mental health in veteran populations. Interventions targeting military populations to better equip veterans with resources to target some of

these external influences and minimize falling into groups of greater risk of poor mental health should be implemented. Further investigations into specific military experiences not limited to deployment/combat status and social stigma are also important to continue improving methods to address all factors related to mental distress in veterans. Additionally, validated methods for assessing perceived mental health should be standardized to allow for comparable monitoring of mental health perceptions.

Table 1. Sociodemographic and health-related characteristics of study participants, 2022 BRFSS (n=430,653)

Characteristic	Total – n (%)
Veteran Status	
Yes	52051 (10.0)
No	378602 (90.0)
Poor Mental Health Days	
0	261687 (57.4)
1-13	109480 (26.8)
14-30	59486 (15.8)
Sex	
Male	202104 (48.6)
Female	228549 (51.4)
Age	
18-44	129755 (45.5)
45-64	144694 (31.5)
65+	156204 (22.9)
Race/Ethnicity	
White only, non-Hispanic	311950 (58.8)
Black only, non-Hispanic	33970 (11.7)
Hispanic	40967 (18.4)
Other race or multiracial, Non-Hispanic	31168 (11.0)
Marital Status	
Married	221533 (50.2)
Divorced/Separated	63924 (12.6)
Widowed	46064 (7.0)
Never Married	95248 (30.1)
Education	
Did Not Graduate High School	24319 (11.3)
High School Graduate	104834 (27.5)
Some College	116616 (30.4)
College Graduate	183143 (30.9)
Annual Income	
<$25,000	54363 (13.2)
$25,000 to <$50,000	87329 (19.7)
$50,000 to <$75,000	58317 (12.2)
$75,000+	87371 (32.8)
Missing/Not Sure/Don’t Know/Refused	87371 (22.1)
Health Insurance	
Yes	392479 (91.7)
No	21876 (8.3)
Depressive Disorder	
Yes	88355 (20.7)
No	340066 (79.3)

Characteristic	Total – n (%)
BMI	
Normal weight	114512 (26.9)
Underweight	6560 (1.8)
Overweight	2137291 (30.2)
Obese	130011 (29.5)
Missing/Not Sure/Don't Know/Refused	42279 (11.5)
Poor Physical Health Days	
0 days	261027 (62.3)
1-13 days	105551 (25.1)
14-30 days	56058 (12.6)

n= Population, All percentages are weighted

Table 2. Crude odds ratios for veteran status and self-reported poor mental health days among US adults, 2022 BRFSS (n=430,653).

Characteristic	Veteran Status - OR (95% CI)[a]	Poor Mental Health Days - OR (95% CI)[b]	
Veteran Status			
No	n/a	REFERENCE	REFERENCE
Yes	n/a	0.58 (0.55-0.61)	0.77(0.72-0.82)
Sex			
Male	REFERENCE	REFERENCE	REFERENCE
Female	8.22 (7.76-8.72)	1.53 (1.49-1.58)	1.72 (1.66-1.79)
Age (years)			
65+	REFERENCE	REFERENCE	REFERENCE
45-64	2.16 (2.06-2.25)	1.65 (1.69-1.88)	1.65 (1.59-1.72)
18-44	3.05 (2.90-3.20)	3.25 (3.13-3.37)	3.45 (3.28-3.63)
Marital Status			
Married	REFERENCE	REFERENCE	REFERENCE
Never Married	2.28 (2.14-2.42)	2.05 (1.98-2.12)	3.05 (2.92-3.19)
Divorced/Separated	0.98 (0.93-1.03)	1.21 (1.16-1.26)	2.31 (2.19-2.43)
Widowed	1.00 (0.93-1.07)	0.74 (0.70-0.79)	1.24 (1.15-1.32)
Race/Ethnicity			
White only, Non-Hispanic	REFERENCE	REFERENCE	REFERENCE
Black only, Non-Hispanic	0.95 (0.89-1.02)	0.96 (0.92-1.01)	1.09 (1.02-1.15)
Hispanic	2.09 (1.92-2.27)	0.84 (0.80-0.88)	0.96 (0.90-1.01)
Other race or multiracial, Non-Hispanic	1.59 (1.45-1.74)	1.06 (1.00-1.12)	1.06 (0.99-1.14)
Education Level			
Did not graduate high school	REFERENCE	REFERENCE	REFERENCE
High school graduate	0.35 (0.31-0.39)	1.28 (1.19-1.38)	0.92 (0.86-0.99)
Some college	0.27 (0.24-0.30)	1.62 (1.51-1.74)	0.97 (0.90-1.04)
College graduate	0.37 (0.33-0.42)	1.72 (1.60-1.84)	0.58 (0.54-0.62)
Annual Income			
<$25,000	REFERENCE	REFERENCE	REFERENCE
$25,000 to <$50,000	0.56 (0.52-0.61)	1.04 (0.98-1.10)	0.69 (0.65-0.73)

Characteristic	Veteran Status – OR (95% CI)[a]	Poor Mental Health Days - OR (95% CI)[b]	
$50,000 to <$75,000	0.45 (0.41-0.49)	1.08 (1.02-1.15)	0.56 (0.52-0.59)
$75,000+	0.55 (0.51-0.60)	1.12 (1.06-1.18)	0.37 (0.35-0.39)
Missing/Not Sure/Don't Know/Refused	0.79 (0.73-0.86)	0.83 (0.78-0.87)	0.50 (0.47-0.53)
Rurality			
Urban	REFERENCE	REFERENCE	REFERENCE
Rural	0.90 (0.84-0.95)	0.77 (0.73-0.81)	0.93 (0.88-0.99)
Depressive Disorder			
No	REFERENCE	REFERENCE	REFERENCE
Yes	1.09 (1.04-1.15)	4.84 (4.65-5.04)	16.51 (15.80-17.26)
BMI			
Normal weight	REFERENCE	REFERENCE	REFERENCE
Underweight	1.38 (1.10-1.73)	1.12 (0.99-1.26)	2.00 (1.74-2.29)
Overweight	0.63 (0.59-0.66)	0.79 (0.76-0.82)	0.77 (0.73-0.80)
Obese	0.77 (0.73-0.81)	0.92 (0.89-0.96)	1.20 (1.15-1.26)
Missing/Not Sure/Don't Know/Refused	1.36 (1.23-1.51)	0.68 (0.65-0.72)	0.73 (0.68-0.78)
Poor Physical Health Days			
0 days	REFERENCE	REFERENCE	REFERENCE
1-13 days	1.13 (1.08-1.19)	3.07 (2.97-3.18)	3.69 (3.53-3.86)
14-30 days	0.80 (0.75-0.84)	1.95 (1.85-2.05)	8.69 (8.27-9.14)

[a] = Calculated via Binary Logistic Regression model, [b] = Calculated via Multinomial Logistic Regression model, n= Population, Reference category = 0 poor mental health days or non-veteran, OR = Odds Ratio, 95% CI = 95% Confidence Interval

Table 3. Crude and adjusted odds ratios for self-reported number of poor mental health days among U.S. adults, 2022 BRFSS (n=430,653).

Characteristic	Crude OR (95% CI)		Adjusted[1] OR (95% CI)	
	1-13 days	14+ days	1-13 days	14+ days
Veteran Status				
No	REFERENCE	REFERENCE	REFERENCE	REFERENCE
Yes	0.58 (0.55-0.61)	0.77 (0.72-0.82)	0.81 (0.77-0.86)	1.23 (1.15-1.33)
Sex				
Male	REFERENCE	REFERENCE	REFERENCE	REFERENCE
Female	1.53 (1.49-1.58)	1.72 (1.66-1.79)	1.60 (1.55-1.66)	1.89 (1.81-1.98)
Age				
65+	REFERENCE	REFERENCE	REFERENCE	REFERENCE
45-64	1.65 (1.69-1.88)	1.65 (1.59-1.72)	1.74 (1.66-1.82)	2.31 (2.16-2.46)
18-44	3.25 (3.13-3.37)	3.45 (3.28-3.63)	3.44 (3.28-3.61)	5.41 (5.05-5.80)
Marital Status				
Married	REFERENCE	REFERENCE	REFERENCE	REFERENCE
Never Married	2.05 (1.98-2.12)	3.05 (2.92-3.19)	1.66 (1.59-1.74)	2.13 (2.01-2.25)
Widowed	1.21 (1.16-1.26)	2.31 (2.19-2.43)	1.16 (1.51-1.79)	1.43 (1.30-1.56)
Divorced/Separated	0.74 (0.70-0.79)	1.24 (1.15-1.32)	1.36 (1.30-1.44)	1.87 (1.75-1.99)
Race/Ethnicity				
White only, Non-Hispanic	REFERENCE	REFERENCE	REFERENCE	REFERENCE
Black only, Non-Hispanic	0.96 (0.92-1.01)	1.09 (1.02-1.15)	0.82 (0.77-0.87)	0.75 (0.70-0.81)
Hispanic	0.84 (0.80-0.88)	0.96 (0.90-1.01)	0.74 (0.69-0.79)	0.60 (0.55-0.65)
Other race or multiracial, Non-Hispanic	1.06 (1.00-1.12)	1.06 (0.99-1.14)	0.80 (0.75-0.85)	0.81 (0.75-0.89)
Education				
Did not graduate high school	REFERENCE	REFERENCE	REFERENCE	REFERENCE
High school graduate	1.28 (1.19-1.38)	0.92 (0.86-0.99)	1.16 (1.06-1.26)	1.01 (0.92-1.10)
Some college	1.62 (1.51-1.74)	0.97 (0.90-1.04)	1.48 (1.36-1.61)	1.11 (1.02-1.22)
College graduate	1.72 (1.60-1.84)	0.58 (0.54-0.62)	1.64 (1.51-1.79)	0.88 (0.80-0.97)

Characteristic	Crude OR (95% CI)		Adjusted[1] OR (95% CI)	
	1-13 days	14+ days	1-13 days	14+ days
Annual Income				
<$25,000	REFERENCE	REFERENCE	REFERENCE	REFERENCE
$25,000 to <$50,000	1.04 (0.98-1.10)	0.69 (0.65-0.73)	1.02 (0.96-1.09)	0.88 (0.82-0.94)
$50,000 to <$75,000	1.08 (1.02-1.15)	0.56 (0.52-0.59)	1.02 (0.95-1.10)	0.78 (0.72-0.85)
$75,000+	1.12 (1.06-1.18)	0.37 (0.35-0.39)	1.03 (0.96-1.10)	0.61 (0.56-0.65)
Missing/Not Sure/Don't Know/Refused	0.83 (0.78-0.87)	0.50 (0.47-0.53)	0.86 (0.80-0.92)	0.70 (0.65-0.76)
Health Insurance				
Yes	REFERENCE	REFERENCE	REFERENCE	REFERENCE
No	0.85 (0.79-0.90)	1.30 (1.21-1.38)	0.80 (0.74-0.86)	0.98 (0.90-1.07)
Rurality				
Urban	REFERENCE	REFERENCE	REFERENCE	REFERENCE
Rural	0.77 (0.73-0.81)	0.93 (0.88-0.99)	0.84 (0.79-0.89)	0.84 (0.78-0.90)
BMI				
Normal weight	REFERENCE	REFERENCE	REFERENCE	REFERENCE
Underweight	1.12 (0.99-1.26)	2.00 (1.74-2.29)	0.97 (0.85-1.11)	1.34 (1.14-1.57)
Overweight	0.79 (0.76-0.82)	0.77 (0.73-0.80)	0.94 (0.90-0.98)	0.92 (0.87-0.97)
Obese	0.92 (0.89-0.96)	1.20 (1.15-1.26)	1.01 (0.96-1.05)	1.15 (1.09-1.22)
Missing/Not Sure/Don't Know/Refused	0.68 (0.65-0.72)	0.73 (0.68-0.78)	0.76 (0.71-0.81)	0.71 (0.65-0.77)
Poor Physical Health Days				
0 days	REFERENCE	REFERENCE	REFERENCE	REFERENCE
1-13 days	3.07 (2.97-3.18)	3.69 (3.53-3.86)	2.96 (2.85-3.07)	3.58 (3.41-3.76)
14-30 days	1.95 (1.85-2.05)	8.69 (8.27-9.14)	2.67 (2.52-2.83)	10.56 (9.93-11.22)

n= Population, OR= Odds Ratio, 95% CI = 95% Confidence Interval, 1 = Adjusted model excludes depressive disorder

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