

# CDP



## Research Update -- March 13, 2025

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<https://doi.org/10.1001/jamanetworkopen.2025.0268>

## **Prevalence of Depression and Anxiety Among Adults With Chronic Pain: A Systematic Review and Meta-Analysis.**

Aaron, R. V., Ravyts, S. G., Carnahan, N. D., Bhattiprolu, K., Harte, N., McCaulley, C. C., Vitalicia, L., Rogers, A. B., Wegener, S. T., & Dudeney, J.

JAMA Network Open  
March 7, 2025

### Key Points

#### Question

How prevalent are depression and anxiety among adults with chronic pain?

#### Findings

This systematic review and meta-analysis identified 376 studies comprising 347 468 individuals with chronic pain from 50 countries, with a pooled prevalence of 39.3% for depression and 40.2% for anxiety; the prevalences were highest among samples of people with fibromyalgia and samples of people who were younger and predominantly female. The prevalences of depression and anxiety were significantly higher among individuals with chronic pain than in both clinical and nonclinical control groups.

#### Meaning

This study suggests that the prevalences of depression and anxiety among adults with chronic pain are approximately 40%; to address this significant public health concern, it is essential to routinely screen for mental health symptoms in clinical settings where people with chronic pain are treated.

### Abstract

#### Importance

Depression and anxiety are common among adults with chronic pain, but their prevalence is unclear.

#### Objectives

To evaluate the prevalence of depression and anxiety among adults with chronic pain and identify factors that moderate prevalence.

## Data Sources

A literature search was conducted of MEDLINE, Embase, PsycINFO, and Cochrane Library from January 2013 to October 2023.

## Study Selection

Studies reporting the prevalence of depression or anxiety using a validated assessment tool among adults with chronic pain (excluding chronic headache disorders).

## Data Extraction and Synthesis

A total of 31 159 initial records were identified, and 5177 full texts were screened. Data were extracted per the Preferred Reporting Items for Systematic Reviews and Meta-analyses guideline using Covidence. Two independent reviewers completed abstract screening, full-text review, and data extraction and rated risk of bias. Random-effects meta-analyses were applied to pool prevalence, assess moderation, and compare prevalence of depression or anxiety among samples with chronic pain vs control samples.

## Main Outcomes and Measures

Prevalence of depression and anxiety based on clinically significant symptoms or diagnosis. The moderators of prevalence identified were pain condition, recruitment setting, continent, age, percentage female, and pain duration.

## Results

The search identified 376 studies from 50 countries comprising 347 468 individuals (mean [SD] age, 51.3 [9.5] years; 70.0% female) with chronic pain. Among adults with chronic pain, clinical symptoms of depression were present in 39.3% (95% CI, 37.3%-41.1%;  $I^2 = 98.9\%$ ), and clinical symptoms of anxiety were present in 40.2% (95% CI, 38.0%-42.4%;  $I^2 = 99.0\%$ ). Prevalence differed by pain condition (highest among samples of people with fibromyalgia [depression, 54.0% (95% CI, 48.5%-59.4%); anxiety, 55.5% (95% CI, 50.4%-60.4%)]; lowest among samples of people with arthritis conditions [eg, osteoarthritis: depression, 29.1% (95% CI, 20.3%-39.7%); anxiety, 17.5% (95% CI, 6.6%-38.8%)]) and was highest among younger people (depression,  $\beta = -0.02$  [95% CI,  $-0.03$  to  $-0.01$ ]; anxiety,  $\beta = -0.02$  [95% CI,  $-0.03$  to  $-0.01$ ]) and women (depression,  $\beta = 0.69$  [95% CI, 0.31-1.08]; anxiety,  $\beta = 0.90$  [95% CI, 0.48-1.33]). With regard to diagnoses, 36.7% (95% CI, 29.0%-45.1%) had a major depressive disorder, and 16.7% (95% CI, 11.8%-23.2%) had generalized anxiety disorder. Women, younger people, and people with nociplastic pain (ie, pain arising from altered nociception without tissue damage) were most likely to have depression and anxiety.

## Conclusions and Relevance

In this systematic review and meta-analysis of depression and anxiety among individuals with chronic pain, approximately 40% of adults had clinically significant depression and anxiety. Women, younger people, and people with nociplastic pain were most likely to have depression and anxiety. The co-occurrence of chronic pain with depression and anxiety is a significant public health concern necessitating routine screening in clinical settings, equitable access to specialty care, and innovative treatment development.

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## **Veterans at High Risk for Post-COVID-19 Suicide Attempts or Other Self-Directed Violence.**

Bui, D. P., Niederhausen, M., Hickok, A. W., Govier, D. J., Rowneki, M., Naylor, J. C., Hawkins, E., Boyko, E. J., Iwashyna, T. J., Viglianti, E. M., Ioannou, G. N., Chen, J. I., & Hynes, D. M.

JAMA Network Open  
March 4, 2025

### Key Points

#### Question

Which subgroups of veterans are at high risk for suicide attempt or other forms of self-directed violence (SDV) after COVID-19 infection?

#### Findings

By use of a cohort study design and latent class analysis, among a total of 285 235 veterans with COVID-19, 2 subgroups with high rates of post-COVID-19 suicide attempts and SDV were identified. The subgroups had distinct demographics, health profiles, and health care utilization.

#### Meaning

Given the increased risk of suicide attempt and SDV after COVID-19, these results could inform ways to tailor suicide prevention to veterans at highest risk.

## Abstract

### Importance

US veterans have a higher risk of suicide than the general civilian population. Research suggests that COVID-19 infection is associated with increased risk of suicide attempts or other forms of self-directed violence (SDV) among veterans.

### Objective

To identify subgroups of veterans with high risk of post–COVID-19 suicide attempts or SDV.

### Design, Setting, and Participants

This is a retrospective cohort study conducted using data from the Veteran Health Administration (VHA). Participants included VHA enrollees with a first case of COVID-19 between May 1, 2021, and April 30, 2022, residing in the 50 states or Washington, DC.

### Exposure

COVID-19 infection.

### Main Outcomes and Measures

The main outcome was a suicide attempt or SDV 12 months after COVID-19 infection. Latent class analysis was used to identify subgroups. Outcome rates and 95% CIs per 10 000 veterans were calculated. Multinomial regressions were used to model outcome risk and marginal risk ratios with 99.5% CIs to compare outcome risk across latent classes.

### Results

The cohort included 285 235 veterans with COVID-19 and was predominantly male (248 118 veterans [87.0%]) and younger than 65 years (171 636 veterans [60.2%]). Chronic pain (152 788 veterans [53.6%]), depression (98 093 veterans [34.4%]), and posttraumatic stress disorder (79 462 veterans [27.9%]) diagnoses were common. The 12-month outcome rate was 73.8 events per 10 000 (95% CI, 70.7-77.0 events per 10 000). Two latent classes with high rates of suicide attempt or SDV were identified. The first high-risk subgroup (46 693 veterans [16.4%]) was older (34 472 veterans [73.8%] aged  $\geq 65$  years) and had a high prevalence of physical conditions (43 329 veterans [92.8%] had hypertension, and 36 824 veterans [78.9%] had chronic pain); the 12-month outcome rate was 103.7 events per 10 000 (95% CI, 94.7-113.3 events per 10 000). The second high-risk subgroup (82 309 veterans [28.9%]) was generally younger (68 822 veterans [83.6%] aged  $< 65$  years) with a lower prevalence of physical conditions but high prevalence of mental health conditions (61 367 veterans [74.6%] had depression, and 50 073 veterans [60.8%] had posttraumatic stress disorder); the

12-month outcome rate was 162.9 events per 10 000 (95% CI, 154.5-171.8 events per 10 000), and compared with the lowest risk subgroup, the 12-month risk of suicide attempts or SDV was 14 times higher in this subgroup (risk ratio, 14.23; 99.5% CI, 10.22-19.80).

### Conclusions and Relevance

In this cohort study of veterans with COVID-19, 2 veteran subgroups with distinct health profiles had high rates of suicide attempts and SDV, suggesting that different groups may require different approaches to suicide prevention after COVID-19.

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### **Eating Disorders: A Review.**

Attia, E., & Walsh, B. T.

JAMA

March 6, 2025

#### Importance:

Eating disorders are characterized by disturbances in eating behavior and occur worldwide, with a lifetime prevalence of 2% to 5%. They are more common among females than males and may be associated with medical and psychiatric complications, impaired functioning, and decreased quality of life.

#### Observations:

Common eating disorders include anorexia nervosa, bulimia nervosa, binge-eating disorder, and avoidant/restrictive food intake disorder. These disorders may be associated with changes in weight, electrolyte abnormalities (eg, hyponatremia, hypokalemia), bradycardia, disturbances in reproductive hormones (eg, decreased estradiol levels in females), and decreased bone density. Individuals with anorexia nervosa, bulimia nervosa, and binge-eating disorder have high lifetime rates of depression (76.3% for bulimia nervosa, 65.5% for binge-eating disorder, and 49.5% for anorexia nervosa) and higher rates of suicide attempts than those without eating disorders. Anorexia nervosa is associated with a mortality rate of 5.1 deaths per 1000 person-years (95% CI, 4.0-6.1), nearly 6 times higher than that of individuals of the same age without anorexia nervosa; 25% of deaths among individuals with anorexia nervosa are from suicide. First-line treatments for eating disorders include nutritional

support, psychotherapy, and pharmacotherapy. Behaviorally focused therapies, including cognitive behavioral therapy, may be effective, especially for bulimia nervosa and binge-eating disorder. Youth with anorexia nervosa benefit from family-based treatment with parental oversight of eating, resulting in a remission rate at 6 to 12 months of 48.6% vs 34.3% with individual treatment (odds ratio, 2.08; 95% CI, 1.07-4.03;  $P = .03$ ). Fluoxetine and other antidepressants decrease episodes of binge eating in individuals with bulimia nervosa, even in those without depression (fluoxetine vs placebo, standardized mean difference = -0.24 [small effect size; 95% CI, -0.41 to -0.08]). Antidepressants and the central nervous system stimulant lisdexamfetamine reduce binge frequency in binge-eating disorder compared with placebo (antidepressants vs placebo, standardized mean difference = -0.29 [small effect size; 95% CI, -0.51 to -0.06]; lisdexamfetamine vs placebo, Hedges  $g = 0.57$  [medium effect size; 95% CI, 0.28-0.86]). There are currently no effective medications for treatment of anorexia nervosa. Individuals with serious medical or psychiatric complications of eating disorders such as bradycardia or suicidality should be hospitalized for treatment.

#### Conclusions and relevance:

Globally, eating disorders affect 2% to 5% of individuals during their lifetime and are more common in females than males. In addition to weight changes, eating disorders may cause electrolyte abnormalities, bradycardia, disturbances in reproductive hormones, and decreased bone density, and are associated with increased risk of depression, anxiety, and suicide attempts. First-line treatments of eating disorders include nutritional support, psychotherapy, and pharmacotherapy.

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[https://doi.org/10.1016/S0140-6736\(25\)00355-1](https://doi.org/10.1016/S0140-6736(25)00355-1)

### **Global, regional, and national prevalence of adult overweight and obesity, 1990-2021, with forecasts to 2050: a forecasting study for the Global Burden of Disease Study 2021.**

GBD 2021 Adult BMI Collaborators

The Lancet  
Volume 405, Issue 10481 P813-838  
March 08, 2025

#### Background

Overweight and obesity is a global epidemic. Forecasting future trajectories of the



epidemic is crucial for providing an evidence base for policy change. In this study, we examine the historical trends of the global, regional, and national prevalence of adult overweight and obesity from 1990 to 2021 and forecast the future trajectories to 2050.

## Methods

Leveraging established methodology from the Global Burden of Diseases, Injuries, and Risk Factors Study, we estimated the prevalence of overweight and obesity among individuals aged 25 years and older by age and sex for 204 countries and territories from 1990 to 2050. Retrospective and current prevalence trends were derived based on both self-reported and measured anthropometric data extracted from 1350 unique sources, which include survey microdata and reports, as well as published literature. Specific adjustment was applied to correct for self-report bias. Spatiotemporal Gaussian process regression models were used to synthesise data, leveraging both spatial and temporal correlation in epidemiological trends, to optimise the comparability of results across time and geographies. To generate forecast estimates, we used forecasts of the Socio-demographic Index and temporal correlation patterns presented as annualised rate of change to inform future trajectories. We considered a reference scenario assuming the continuation of historical trends.

## Findings

Rates of overweight and obesity increased at the global and regional levels, and in all nations, between 1990 and 2021. In 2021, an estimated 1·00 billion (95% uncertainty interval [UI] 0·989–1·01) adult males and 1·11 billion (1·10–1·12) adult females had overweight and obesity. China had the largest population of adults with overweight and obesity (402 million [397–407] individuals), followed by India (180 million [167–194]) and the USA (172 million [169–174]). The highest age-standardised prevalence of overweight and obesity was observed in countries in Oceania and north Africa and the Middle East, with many of these countries reporting prevalence of more than 80% in adults. Compared with 1990, the global prevalence of obesity had increased by 155·1% (149·8–160·3) in males and 104·9% (95% UI 100·9–108·8) in females. The most rapid rise in obesity prevalence was observed in the north Africa and the Middle East super-region, where age-standardised prevalence rates in males more than tripled and in females more than doubled. Assuming the continuation of historical trends, by 2050, we forecast that the total number of adults living with overweight and obesity will reach 3·80 billion (95% UI 3·39–4·04), over half of the likely global adult population at that time. While China, India, and the USA will continue to constitute a large proportion of the global population with overweight and obesity, the number in the sub-Saharan Africa super-region is forecasted to increase by 254·8% (234·4–269·5). In Nigeria specifically, the number of adults with overweight and obesity is forecasted to rise to 141 million

(121–162) by 2050, making it the country with the fourth-largest population with overweight and obesity.

#### Interpretation

No country to date has successfully curbed the rising rates of adult overweight and obesity. Without immediate and effective intervention, overweight and obesity will continue to increase globally. Particularly in Asia and Africa, driven by growing populations, the number of individuals with overweight and obesity is forecast to rise substantially. These regions will face a considerable increase in obesity-related disease burden. Merely acknowledging obesity as a global health issue would be negligent on the part of global health and public health practitioners; more aggressive and targeted measures are required to address this crisis, as obesity is one of the foremost avertible risks to health now and in the future and poses an unparalleled threat of premature disease and death at local, national, and global levels.

See also:

[Global, regional, and national prevalence of child and adolescent overweight and obesity, 1990-2021, with forecasts to 2050: a forecasting study for the Global Burden of Disease Study 2021.](#)

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<https://onlinelibrary.wiley.com/doi/10.1002/hpja.70030>

#### **Social Determinants of Suicide and Suicidality in Serving Military Personnel: A Global Scoping Review.**

Dawes, N. G., Topp, S. M., Fullagar, B. J., Selman, J., Pak, A., & Devine, S. G.

Health Promotion Journal of Australia  
Volume 36, Issue 2, April 2025, e70030

#### Issue Addressed

Nearly a million people die by suicide annually, with military personnel being at heightened risk. For every suicide, about 20 cases of suicidality, including ideation and attempts, are reported. Social determinants of health may influence suicide risk factors, but research within military contexts, particularly in Australia, is scarce. This review aimed to scope global literature and synthesise current knowledge on the social determinants of suicide and suicidality among serving military members, focusing on the Australian military.

## Methods

A systematic review was conducted using the social determinants of health framework to analyse contemporary peer-reviewed articles and grey literature on military suicide and suicidality. Thematic analyses and critical appraisals were performed to identify key themes and assess the quality of the literature. The review included grey literature specific to the Australian military population.

## Results

Fifteen peer-reviewed articles were included, predominantly from the United States, with one each from South Korea and Israel. Five Australian military grey literature studies were also reviewed. The findings suggest a link between social support, addiction, socioeconomic status, education and occupational factors with suicide and suicidality.

## Conclusions

This review provides an update on the evidence regarding the social determinants of suicide and suicidality in military personnel. While some evidence links social support with suicidality, the research outside the United States remains limited.

## So What?

The review highlights the need for further research to identify effective health-promotion strategies and interventions addressing social determinants in military contexts.

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<https://doi.org/10.1111/sltb.70008>

## **Written Exposure Therapy for Posttraumatic Stress Symptoms and Suicide Risk: A Randomized Controlled Trial With High-Risk Patients Admitted to a Military Inpatient Psychiatric Unit.**

Kearns, J. C., Straud, C. L., Stanley, I. H., Sloan, D. M., Fina, B. A., Young-McCaughan, S., Tyler, H. C., Kaplan, A. M., Blankenship, A. E., Schrader, C. C., Green, V. R., Bryan, C. J., Peterson, A. L., Marx, B. P., & STRONG STAR Consortium

Suicide and Life-Threatening Behavior

First published: 07 March 2025

## Introduction

Active duty service members who are psychiatrically hospitalized for suicide are at the

highest risk for suicide death following discharge. It is essential to test brief treatments that can be delivered during the short length of stay in inpatient psychiatry. Written Exposure Therapy, a brief treatment for posttraumatic stress disorder (PTSD), was augmented with Crisis Response Planning (WET + CRP) to address PTSD and suicidal ideation (SI).

#### Methods

This randomized controlled trial evaluated the efficacy of the WET + CRP plus treatment as usual (n = 47; TAU) compared with TAU alone (n = 48) in reducing SI, PTSD symptoms, and rehospitalization among suicidal patients with at least moderate PTSD symptoms admitted to an inpatient psychiatric unit. PTSD symptoms and SI were assessed with clinician-administered interviews and self-report.

#### Results

Participants were primarily male (61.1%) and active duty/reserve (93.7%). There were no significant group differences in clinician-assessed SI presence and PTSD symptom severity (the primary outcomes) or self-reported SI severity. WET + CRP demonstrated significant reductions in self-reported PTSD symptom severity compared with TAU; these reductions were the strongest during the month following discharge.

#### Conclusions

Although the findings were not fully consistent with hypotheses, WET + CRP is feasible to deliver to suicidal, psychiatrically hospitalized service members and warrants additional study.

Trial Registration: ClinicalTrials.gov Identifier: NCT04225130

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<https://doi.org/10.1111/sltb.13155>

### **Predictors of recent mental health service utilization among firearm-owning US service members with high levels of psychological distress.**

Rodriguez, T. R., Bandel, S. L., Bond, A. E., Anestis, M. D., & Anestis, J. C.

Suicide and Life-Threatening Behavior

First published: 12 December 2024

## Introduction

Service members with mental health difficulties and access to a firearm are at an increased risk for suicide. Mental healthcare providers are well-positioned to discuss firearms and create safety plans; however, many service members do not seek treatment. This study aims to identify potential sociodemographic predictors of recent mental healthcare utilization among firearm-owning service members who report past month distress.

## Methods

The sample included 268 US military service members. Participants reported whether they attended at least one behavioral health visit in the 3 months prior to participation.

## Results

Females, individuals of a racial background other than Black or White, older individuals, and those who have never been active-duty were more likely to have attended a session. Additionally, the likelihood of utilization was higher among those who reported past week wish to die and suicidal behaviors in the past year.

## Conclusion

While certain service members are less likely to have utilized mental healthcare, findings suggest that those with suicidal ideation and access to a firearm are likely to engage in at least one appointment. As such, providing mental healthcare providers with training and resources for promoting secure firearm storage is an important avenue for suicide prevention.

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<https://doi.org/10.1093/milmed/usae524>

## **Investigation of Military Spouse Suicide.**

Cole, R., Cowan, R. G., Pearce, E., Quintana, T., & Ren, X.

Military Medicine

Volume 190, Issue 3-4, March/April 2025, Pages e717–e723

## Background

Recent statistics released by the Department of Defense have revealed increasing numbers of military spouse suicide. Although past qualitative research has suggested possible reasons for this phenomenon, there is a lack of wide-scale quantitative

research regarding suicide within the military spouse population. To fill this gap, we aimed to examine military spouses' perceptions of suicide and their ability to access mental health care. We also aimed to explore the perceptions of suicide within various subgroups of military spouses.

### Materials and Methods

We recruited military spouse participants (officer and enlisted) through social media to complete a 12-item Likert survey focusing on their perception of suicide in the military spouse community, including the threat level of suicide, their own mental health status, barriers and stigmas to accessing mental health care, the view from the spouse's leadership, and the leading causes for military spouse suicide. A total of 141 military spouses participated in our study.

### Results

Spouses' perception of the main threats to their mental health and suicides in their community were an ongoing sense of loss of control (27.7%), loss of identity (25.5%), difficulty accessing mental health services (19.1%), and fear of seeking mental health services (10.6%). Additionally, 28.3% of participants were moderately concerned, quite concerned, or extremely concerned about their mental health. The participants also believed that the threat of suicides in their community was moderately prevalent (35.5%), quite prevalent (17.7%), and extremely prevalent (5%). There was no difference between spouses of officers or enlisted service members, spouses of service members in the Army, Navy, or Air Force on perceptions of suicide risk prevalence, stigma, participants' concern for themselves, confidence in their ability to access resources, confidence in their ability to help another spouse, or the perceived importance military leaders place on preventing suicide. Spousal tenure was similarly not significantly related to any of the variables of interest.

### Conclusions

Our military spouse participants reported elevated perceptions about the prevalence of suicide threats, concern for themselves, and stigma toward accessing mental health resources, as well as low perceived importance placed on spouse suicide prevention by military leadership. The spouses reported moderate confidence in their ability to help another spouse or access suicide prevention resources. Our participants also reported challenges in accessing mental health services and perceived a stigma associated with receiving counseling services. Continued focus and advocacy is needed to ensure military spouses receive the mental health support needed to prevent suicide within this population.

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<https://doi.org/10.1186/s40359-024-02305-4>

## **Psychological consequences of global armed conflict.**

Williamson, V., Murphy, D.

BMC Psychology

Published: 04 March 2025

Armed conflict unvaryingly leads to a loss of life, serious violations of human rights and international law, and extensive human suffering. As technological advances change the landscape of modern armed conflict, developments are also urgently needed to ensure accessible, evidence-based care is readily available to those affected.

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<https://doi.org/10.3389/fsoc.2025.1488372>

## **Engaging in moral learning: veterans' perspectives on how the moral dimensions of moral injury are addressed in one-on-one meetings with Dutch military chaplains.**

Mudde, L., Schuhmann, C., & Jacobs, G.

Frontiers in Sociology

20 February 2025

### Introduction:

There is an increasing attention for the role of military chaplains (MCs) in supporting veterans with moral injury. However, research into how veterans experience the support of MCs remains scarce. Moreover, no studies to date have explored this question in a Dutch context, while this is relevant as it can offer insight into what forms of care are helpful in predominantly secular societies.

### Methods:

This article presents a study from the Netherlands, involving 12 veterans. Using a longitudinal qualitative approach, we explored how the one-on-one conversations with MCs unfold over time.

## Results:

Our study shows that three types of moral questions underly experiences of moral injury. Veterans see the conversations with MCs as an opportunity to exchange thoughts and perspectives concerning these ongoing moral struggles, a process that we conceptualize as 'moral learning'. Over time, we found 5 types of change in veterans' experience of moral injury. The conversations with MCs helped veterans to: share their stories, thoughts and worries; grow personally; better understand and accept certain events; feel a stronger connection with others; critically engage with the Dutch Ministry of Defence.

## Discussion:

This study raises questions about the centrality of the morally injurious events in chaplaincy interventions that are described in the literature. It suggests that supporting veterans in dealing with questions about the good life and about the conduct of the military may be just as or even more important as reflecting on morally injurious events. Moreover, the study highlights the importance of engaging with seemingly mundane, everyday issues when addressing the moral dimensions of veterans' struggles. This counters the focus on grand concepts like "forgiveness," "acceptance," "reconciliation," "restitution" and "vindication" which are usually emphasized in the literature about chaplaincy in the context of moral injury. The study shows that it is through reflection on the everyday that these larger concepts gain relevance and meaning within veterans' lives.

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<https://doi.org/10.1093/milmed/usae456>

## **Mapping the Fetal Alcohol Spectrum Disorder Continuum of Care Across the Military Health System.**

Rivera, I., Lee, E. H., Solomon, Z., & Koehlmoos, T. P.

Military Medicine

Volume 190, Issue 3-4, March/April 2025, Pages 751–757

## Introduction

Although a leading cause of developmental disability in the United States, many individuals with fetal alcohol spectrum disorders (FASDs) do not receive a timely diagnosis, are misdiagnosed, or are never diagnosed. Prevention, diagnosis, and clinical management of FASD have not been previously studied in the U.S. Military



Health System (MHS), where nearly 1 million of the nation's children receive health care. To address this gap, we undertook an environmental scan of the clinical guidelines, services, programs, educational resources, and policies within the MHS pertaining to alcohol use (AU), AU disorder (AUD), prenatal alcohol exposure, and FASD.

#### Materials and Methods

From March to June 2023, we undertook an environmental scan of MHS clinical guidelines, services, programs, educational resources, and policies that address AU, AUD, prenatal alcohol exposure, and FASD.

#### Results

We identified multiple resources that attended to AU and AUD before and during pregnancy in the MHS. However, despite numerous resources for other neurodevelopmental disorders, we did not find any MHS-specific resources that address diagnosis and management of FASD.

#### Conclusions

Findings suggest opportunities to raise awareness, educate providers, and improve guidelines, policies, and practices in the MHS.

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<https://doi.org/10.1093/milmed/usae521>

### **The Influence of Neck Pain and Sleep Quantity on Headache Burden in Service Members With and Without Mild Traumatic Brain Injury: An Observational Study.**

Reid, M. W., Lu, L. H., Hershaw, J. N., & Kennedy, J. E.

Military Medicine

Volume 190, Issue 3-4, March/April 2025, Pages e484–e490

#### Introduction

Headache is the most overwhelmingly reported symptom following mild traumatic brain injury (mTBI). The upper cervical spine has been implicated in headache etiology, and cervical dysfunction may result in neck pain that influences the experience of headache. Sleep problem is the second most reported symptom following mTBI. We explored the contribution of neck pain (as a potential proxy for cervical dysfunction) on headache burden along with the contribution of sleep quantity following mTBI.

## Materials and Methods

Retrospective data from a repository consisting of service members recruited from primary care, with (N = 493) and without a history of mTBI (N = 63), was used for analysis. Portions of the Neurobehavioral Symptom Inventory, Pittsburgh Sleep Quality Index, and Orebro Musculoskeletal Pain Questionnaire were used for headache, sleep, and neck pain measures.

## Results

Demographic and military characteristics that differed between groups were treated as covariates in analyses. Group comparisons revealed significant differences in the expected direction on all measures: mTBI > controls on headache and neck pain; controls > mTBI on sleep quantity. Regression revealed that neck pain accounted for the most variance in headache score, followed by group membership and sleep quantity. When analyzing groups separately, no difference in the pattern of results was revealed in the mTBI group. In the control group, variance in headache score was only significantly related to neck pain.

## Conclusions

Amongst service members who sought service from primary care, neck pain explains more variance in headache burden than mTBI history or sleep quantity, supporting that cervical dysfunction may be a salient factor associated with headache. Neck functioning may be a potential area of intervention in the management of headaches.

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<https://doi.org/10.1093/milmed/usae492>

## **Mechanisms of Injury for Traumatic Brain Injury Among U.S. Military Service Members Before and During the COVID-19 Pandemic.**

Hai, T., Agimi, Y., Deressa, T., & Haddad, O.

Military Medicine

Volume 190, Issue 3-4, March/April 2025, Pages e830–e837

## Objective

To understand the mechanisms of injury and demographic risk factors associated with traumatic brain injury (TBI) patients among active and reserve service members in the U.S. Military before and during the COVID-10 pandemic.

## Methods

Active and reserve service members diagnosed with an incident TBI from January 2019 through September 2021 were selected. Traumatic brain injury patients diagnosed before March 1, 2020 were categorized as pre-COVID (PC), and patients diagnosed on or after March 1, 2020 were categorized as the intra-COVID (IC) group, aligning closely with the date when the World Health Organization officially proclaimed the pandemic. We determined the frequency of causes of injuries associated with TBI separate by sex, age, occupation, and TBI severity. In addition, we conducted multivariate logistic regression analyses to assess the demographic risk factors associated with TBI severity during the PC and IC eras.

## Results

Our cohort included 48,562 TBI patients: 22,819 (47.0%) diagnosed during the PC era and 25,743 (53.0%) diagnosed during the IC era. The major mechanisms of injury within our TBI cohort were being struck by/against objects, falls/slips/trips, and motor vehicle traffic accidents before and during the pandemic. The most common causes of TBI were not impacted by COVID, but motor vehicle accidents did increase during the IC era. The mechanisms of injury associated with TBI differed by TBI severity: being struck by or against an object caused more mild and moderate TBI; motor vehicle accidents caused more severe TBI; and firearms was a major cause of penetrating TBI. In addition, the percentage of severe TBI because of firearms rose sharply during the IC era. Further, women were more likely to be diagnosed with mild TBI compared to men.

## Conclusion

Military leaders should consider how different causes of injury are associated with differing TBI severities and how certain demographic groups were vulnerable to specific TBI severities when developing injury prevention programs.

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<https://doi.org/10.1097/HTR.0000000000000996>

## **Research Letter: Retrograde Amnesia and Posttraumatic Amnesia in Service Members and Veterans With Remote History of TBI.**

Lippa, S. M., Gillow, K. C., Hungerford, L. D., Bailie, J. M., French, L. M., Brickell, T. A., & Lange, R. T.

Objective:

The recently updated American Congress of Rehabilitation Medicine diagnostic criteria for mild traumatic brain injury (mTBI) removed retrograde amnesia (RA) as a main criterion for mTBI, recommending it be included as a substitute criterion only when posttraumatic amnesia (PTA) cannot be reliably assessed. This study aimed to investigate the evidence base for this recommendation.

Setting:

Military treatment facility.

Participants:

A total of 752 US military service members/veterans (mean age = 36.1 years, SD = 9.4 years) with a history of TBI prospectively enrolled in the Defense and Veterans Brain Injury Center-Traumatic Brain Injury Center of Excellence 15-Year Longitudinal TBI study who sustained a total of 1015 TBIs with substantiated RA and PTA. Most participants were male (93.6%), not of Hispanic Origin (84.7%), and White (84.5%). Evaluations were conducted on average 7.6 years (SD = 6.9 years) after injury.

Design:

Case series.

Main Measures:

Presence and duration of RA and PTA; and ratio of PTA and RA (PTA:RA).

Results:

There were no TBIs where RA was present but PTA was absent. Within the 1015 TBIs, 896 (88.3%) involved both RA and PTA, 65 (6.4%) involved PTA only, and 54 (5.3%) did not involve RA or PTA. For the 635 TBI events with substantiated recorded minutes of RA and PTA both >0, the mean ratio of PTA:RA was 31:1. In only one instance was the ratio of PTA:RA <1.

Conclusion:

There were no TBIs where RA was present without PTA. RA tended to be much shorter than PTA. Findings support the American Congress of Rehabilitation Medicine's decision to remove RA as a main criterion for mTBI.

<https://doi.org/10.1097/HTR.0000000000000989>

**Research Letter: Characterizing Lifetime Mild TBI Exposure Among Female and Male Military Service Members and Veterans in the LIMBIC-CENC Study.**

Walton, S. R., Oldham, J. R., Remigio-Baker, R. A., Brett, B. L., Austin, T. A., Cetin, O. D., Wilde, E. A., Lempke, L. B., Ou, Z., Kaminen, S., Martindale, S. L., O'Neil, M. E., Pugh, M. J., Swanson, R. L., Pappadis, M. R., Cifu, D. X., & Walker, W. C.

Journal of Head Trauma Rehabilitation  
40(2): p E121-E128, March/April 2025

**Objective:**

To (1) characterize lifetime mild traumatic brain injury (TBI) exposures among male and female US military service members and Veterans (SMVs) and (2) evaluate sex-related differences in mild TBI exposures.

**Setting:**

Clinical research laboratory.

**Participants:**

Participants were enrolled in the ongoing Long-term Impact of Military-relevant Brain Injury Consortium—Chronic Effects of Neurotrauma Consortium (LIMBIC-CENC) Prospective Longitudinal Study.

**Design:**

Cross-sectional.

**Main Measures:**

Lifetime history of mild TBI was measured via structured interview. All mild TBI characteristics were collected as part of this interview, including total lifetime number; environment (deployment vs. non-deployment); timing of injury (relative to military service and age); and mechanism of injury (blast-related vs. non-blast).

**Results:**

Most participants (n = 2323; 87.5% male; 79.6% Veteran) reported  $\geq 1$  lifetime mild TBI (n = 1912; 82%), among whom, many reported  $\geq 2$  lifetime mild TBIs. Female SMVs reported fewer total lifetime mild TBIs than male participants ( $P < 0.001$ ), including fewer deployment-related ( $P < 0.001$ ) and non-deployment ( $P < 0.001$ ) mild TBIs. There

were significant sex differences for total number of mild TBIs sustained before ( $P = 0.005$ ) and during ( $P < 0.001$ ) military service but not after separation from military service ( $P = 0.99$ ). Among participants with a lifetime history of mild TBI, female SMVs were less likely to report  $\geq 2$  mTBIs ( $P = 0.003$ ); however, male SMVs were more likely to report a mild TBI during military service ( $P = 0.03$ ), including combat-related mild TBI ( $P < 0.001$ ) and mild TBI involving blast ( $P < 0.001$ ).

#### Conclusions:

These findings inform clinical and research efforts related to mild TBI in US military SMVs. It may not be sufficient to simply measure the total number of mild TBIs when seeking to compare clinical outcomes related to mild TBI between sexes; rather, it is important to measure and account for the timing, environment, and mechanisms associated with mild TBIs sustained by female and male SMVs.

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<https://doi.org/10.1093/milmed/usae484>

### **Associations Between Sleep Disorders and Treatment Response in Service Members With Post-traumatic Stress Symptoms: A Secondary Outcome Analysis.**

Abanes, J. J., & Raiciulescu, S.

Military Medicine

Volume 190, Issue 3-4, March/April 2025, Pages e467–e473

#### Introduction:

Compared with the civilian population, a higher rate of reported sleep apnea exists among military service members resulting in inadequate sleep. Those who experience chronic sleep deprivation may suffer from debilitating problems that may compromise military mission readiness and unit safety. The purpose of the study on which this secondary outcome analysis was based was to evaluate the effect of manual standardized stress acupuncture as an adjunct therapy to an abbreviated form of cognitive behavioral therapy for insomnia for sleep disturbances in post-deployment service members. The aim of this secondary outcome analysis was 2-fold: (1) to assess the relationship between sleep disorder symptoms and post-traumatic stress symptoms (PSS) and (2) to determine if the presence of sleep disorder symptoms influenced the effects of acupuncture and cognitive behavioral therapy as compared to cognitive behavior therapy only on PSS in post-deployment military service members.

#### Materials and methods:

The study was a 2-arm, single-center, randomized controlled trial approved by the Naval Medical Center San Diego and the Vanderbilt University Institutional Review Board. It was conducted at the U.S. Naval Hospital in Okinawa, Japan. Participants were active duty service members from all military branches who were stationed in Okinawa. Two measures were used to analyze the data: the Global Sleep Assessment Questionnaire (GSAQ) and the Post-traumatic Stress Disorder Checklist. A Pearson correlation coefficient was calculated to determine the relationship between sleep disorder symptoms (i.e., 11 pre-intervention GSAQ symptoms) and PSS treatment outcomes (i.e., PCL and PTSD clusters).

#### Results:

Results indicated associations between the GSAQ components and PCL total and PTSD cluster scores. Findings showed that the presence of sleep disorder symptoms influenced PSS treatment response in post-deployment military service members.

#### Conclusions:

Results from this secondary outcome analysis showed associations between GSAQ components (i.e., excessive daytime sleepiness, working conditions causing inadequate sleep, involuntary movements in sleep, and sadness or anxiousness) and PCL total and PTSD cluster scores (i.e., avoidance, negative cognition and mood, avoidance, and hyperarousal). Furthermore, sleep disorder symptoms such as having stressful working conditions (e.g., shift work), probable obstructive sleep apnea, insomnia, anxiety, and depression influenced PSS treatment responses. This study provided information on the major contribution of sleep disorder symptoms in the treatment of PSS through self-report. Future researchers should consider the use of physiologic measures to further understand the mechanisms of how sleep disorder symptoms affect treatment responses in service members with PSS. Implications for this study may assist clinicians in determining effective PSS treatments for those with OSA and insomnia.

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<https://doi.org/10.1093/milmed/usaf070>

### **Behavioral Health Outcomes in the 12 Months Following Major Limb Loss Among Active Duty Service Members Treated in the Military Health System, 2001-2017.**

Jannace, K. C., Schulz, R. N., Sparling, T., Cooper, D. B., Harrington, C., & Pasquina, P. F.

## Introduction

Over 2,100 active duty service members (ADSM) have experienced traumatic limb loss since 2001. Combat-injured ADSMs have over 3 times the odds of developing a behavioral health condition as compared to those with noncombat injuries. Additionally, severity of injury has been associated with increased risk of post-traumatic stress disorder and depression, which increase the risk of suicidal behavior. Despite previous research, studies have not investigated incident behavioral health diagnoses in the 12 months following amputation and the highest-risk subpopulations.

## Materials and Methods

A retrospective cohort study using existing electronic health record data identified ADSMs experiencing major limb loss between 2001 and 2017. Incident behavioral health conditions diagnosed in the 12 months following limb loss were identified. Disorders typically diagnosed in childhood were excluded. Wilcoxon rank-sum tests and chi-squared tests calculated differences between those with and without a diagnosis in the 12 months post-amputation. Logistic regression models calculated odds ratios and 95% CIs measuring the association between significant demographic and amputation characteristics and between post-amputation incident behavior health diagnosis and incident traumatic brain injury (TBI) and incident behavioral health diagnosis for each diagnostic category.

## Results

Approximately 56% of ADSMs were diagnosed with an incident behavioral health condition in the 12 months following major limb loss. Those diagnosed with a condition were likely to be younger, enlisted ADSMs, and sustaining a combat-related lower extremity amputation. The most common diagnosis was adjustment disorder (31%). Over 41% were also diagnosed with a TBI. Unadjusted odds of a behavioral health condition were 3.3 (95% CI: 2.8-4.0) times higher among those also diagnosed with a TBI.

## Conclusions

In this study, more than half of ADSMs experiencing major limb loss developed incident behavioral health conditions within the first 12 months. This study highlights the need for awareness of the potentially increased risk of these diagnoses in the acute period following amputation.



<https://doi.org/10.1038/s41598-025-91916-x>

**Assessment of PTSD in military personnel via machine learning based on physiological habituation in a virtual immersive environment.**

Pellegrin, G., Ricka, N., Fompeyrine, D. A., Rohaly, T., Enders, L., & Roy, H.

Scientific Reports

Volume 15, Article number: 7562 (2025)

Posttraumatic stress disorder (PTSD) is a complex mental health condition triggered by exposure to traumatic events that leads to physical health problems and socioeconomic impairments. Although the complex symptomatology of PTSD makes diagnosis difficult, early identification and intervention are crucial to mitigate the long-term effects of PTSD and provide appropriate treatment. In this study, we explored the potential for physiological habituation to stressful events to predict PTSD status. We used passive physiological data collected from 21 active-duty United States military personnel and veterans in an immersive virtual environment with high-stress combat-related conditions involving trigger events such as explosions or flashbangs. In our work, we proposed a quantitative measure of habituation to stressful events that can be quantitatively estimated through physiological data such as heart rate, galvanic skin response and eye blinking. Using a Gaussian process classifier, we prove that habituation to stressful events is a predictor of PTSD status, measured via the PTSD Checklist Military version (PCL-M). Our algorithm achieved an accuracy of 80.95% across our cohort. These findings suggest that passively collected physiological data may provide a noninvasive and objective method to identify individuals with PTSD. These physiological markers could improve both the detection and treatment of PTSD.

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<https://doi.org/10.1093/milmed/usae362>

**Review of EmPATH Units for Behavioral Health Casualties in Prolonged Field Care Environments.**

Garces, J. D., McElroy, M. L., Salmond, L. L., & Taylor, D. A.

Military Medicine

Volume 190, Issue 3-4, March/April 2025, Pages e510–e514

## Introduction

Psychiatric conditions are one of the leading non-battle injury diseases resulting in medical evacuation (MEDEVAC) from combat environments. The challenge of limited MEDEVAC capability necessitating prolonged field care in future large-scale combat operations must be addressed. Therefore, a robust program is needed to address frontline care of behavioral health (BH), maximizing service members returning to duty and minimizing MEDEVAC. This review summarizes the literature on the impacts of the Emergency Psychiatric Assessment, Treatment, and Healing (EmPATH) Unit program as a solution to the challenges of treating behavioral health in future wars.

## Materials and Methods

We conducted a systematic literature search and review, and a non-systematic literature critique. We then used the Johns Hopkins evidence appraisal tool to appraise the strength and quality of the evidence. The following electronic databases were utilized for the search: Google Scholar, Embase, CINAHL, and PubMed. Search terms included: included “EmPATH,” “prolonged field care,” and “operational,” alone and combined.

## Results

The literature review found that the EmPATH unit, a recently developed civilian hospital-based program, can work with higher acuity psychiatric crisis patients who would otherwise be admitted to an inpatient unit, showing promising results in avoiding the need for inpatient hospitalization. EmPATH units help decrease hospitalization rates, reduce restraints and violence, and shorten the patients’ boarding time in a holding area. Such findings support the use of the EmPATH unit as a tactic for prolonged field care of psychiatric patients in a combat operational environment.

## Conclusions

This is the first literature review to consider EmPATH units for psychiatric prolonged field care based on its advantages demonstrated in the civilian sector. Studies have yet to be done on EmPATH units’ usefulness in the military, showing a knowledge gap in current evidence supporting its suitability. Thus, this review recommends further studies of EmPATH units in military settings, especially prolonged field care environments.

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## **Lethal Means Among Veterans With Recent Experience of Housing Instability by Age.**

Ann Elizabeth Montgomery, Aerin J. DeRussy, Gala True, John R. Blosnich

American Journal of Preventive Medicine  
Volume 68, Issue 4, April 2025, Pages 821-823

### **INTRODUCTION**

U.S. military Veterans have a greater rate of suicide than the general U.S. population; the U.S. Department of Veterans Affairs (VA) has designated suicide prevention as a top clinical priority. Veterans experiencing housing instability have especially high rates of suicide, but details about their suicide mortality that may direct intervention efforts, such as age-specific effects and prevalence of types of lethal means, are underexamined.

### **METHODS**

The cohort for this cross-sectional study comprised 662,682 Veterans with an incident indicator of housing instability in their VA Electronic Health Record ascertained during 1/1/2014–12/31/2018. Housing instability was defined using data from both the Corporate Data Warehouse and the Homeless Management Information System.

### **RESULTS**

Among the study cohort, 2,078 (0.31%) died by suicide during the observation period; the highest rate was among Veterans aged 35–44 (131 suicides/100,000 person-years) and the lowest was among Veterans aged 54–65 (62 suicides/100,000 person-years). While death by firearm was the most prevalent lethal means overall, the proportion of Veterans who used this method varied by age ( $p < 0.001$ ): 67.1% of the sample who were older than 65 and died by suicide used firearms...

### **DISCUSSION**

To the authors' knowledge, this is the first report on the epidemiology of suicide deaths among Veterans with experience of housing instability at the intersection of age and lethal means. Access to lethal means, particularly firearms, is a major moderator of suicide death in the U.S.: in 2021, 72.2% of suicides among Veterans involved a firearm. In the present study, most suicide deaths did involve a firearm; however, the prevalence was lower than among the general VA population...

## CONCLUSIONS

Future efforts should focus on making free secure firearm storage devices available along with lethal means counseling.

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## Links of Interest

Evidence-Based Practicing in Mental Health (Viewpoint)

<https://doi.org/10.1001/jamapsychiatry.2025.0010>

Staff Perspective: Couples Counseling as Preventative Care - A Transitive Model

<https://deploymentpsych.org/blog/staff-perspective-couples-counseling-preventative-care-transitive-model>

386th EMDS Psychological Readiness Team empowers Airmen with mental health tools

<https://www.dvidshub.net/news/492034/386th-emds-psychological-readiness-team-empowers-airmen-with-mental-health-tools>

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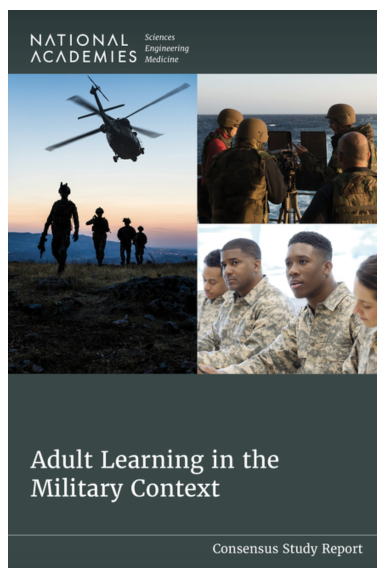
## Resource of the Week: [Adult Learning in the Military Context](#)

From the National Academies of Sciences, Engineering, and Medicine:

As the largest U.S. employer, the Department of Defense (DoD) is a major provider of training and development. Given the complex and increasingly unpredictable operational landscape within which the military operates across land, sea, air, cyberspace, and space, continuous learning is vital in the military. Military learners must acquire diverse skills, from communication to using advanced technology, and retain those skills for use when necessary. Success in learning - and the ability to retain and transfer what is learned to military missions - is directly linked with military innovation, operational success, and the success of our nation.

Adult Learning in the Military Context examines motivations shaping learning, contextual and equity factors, emerging learning technologies, effective approaches to assessment, and provides a research agenda. This report highlights that adult learners are most motivated when learning aligns with personal goals but notes that military structures may limit autonomy, potentially

impeding motivation. Effective learning contexts are active, interactive, and adaptable, but the use of systematic needs assessments in the military are unevenly implemented. Different stress responses and instructor support can affect learning and performance meaningfully. Technology-enabled learning has established principles that can enhance learning outcomes at scale, but a holistic systems approach is needed rather than treating each learning experience in isolation, even as new technologies like generative AI create additional opportunities. Finally, improved, unbiased assessments are essential for evaluating competencies that may be increasingly important in the future, like adaptability and creativity. The research agenda highlights key areas for researchers to prioritize.



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