

CLINICAL REVIEW

Risk Factors Associated with Suicide Rates Among Veterans

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ABSTRACT

Suicide is the tenth leading cause of death in America. For those at risk, Veterans are 1.5 times more likely to die by suicide than non-Veterans, and the suicide rate among service members has risen over the last decade. Overall, suicide is known to be one of the top three leading causes of death in the United States for individuals 15 years to 44 years old, accounting for nearly a million deaths every year. Suicide is the number one leading cause of preventable deaths for military service members. While suicide rates among the U.S. armed forces once sat at historical lows, it has continuously risen over the last two decades. The purpose of this study is to determine the relationship between risk factors associated with suicide rates among veterans in California. The most common risk factors were the ending of an intimate relationship, a history of deployment, issues with work, history of mental health issues, and history of substance abuse. Suicide is a major public health challenge that disproportionately affects service members and veterans. There are opportunities to improve risk identification, evaluation, support, and treatments and interventions.

KEYWORDS

Armed forces; Suicide; Military; Risk factors; PTSD

INTRODUCTION

According to Schafer et al. [1], suicide is the tenth leading cause of death in America. For those at risk, Veterans are 1.5 times more likely to die by suicide than non-Veterans, and the suicide rate among service members has risen over the last decade. Also, Traumatic Brain Injury, Substance/Alcohol use Disorders, prior Self-Injurious Thoughts and Behavior, PTSD, and depressive symptoms were among the most commonly studied risk factors. Anger/aggression were particularly strong risk factors, providing a source for future study and intervention efforts. Overall, suicide is known to be one of the top three leading causes of death in the United States for individuals 15 years to 44 years old, accounting for nearly a million deaths every year. Suicide is the number one leading cause of preventable deaths for military service members [2]. While suicide rates among the U.S. armed forces once sat at historical lows, it has continuously risen over the last two decades [3].

There is no single cause of suicide among military personnel or law enforcement service men and women. Criminal justice involvement is among the multiple risk factors for suicide among veterans and is consistent with findings that military discharges for misconduct were associated with elevated risk for suicide. Additionally, 20% of veterans reported that legal problems were an obstacle to successful reintegration. Most findings showed a complex interaction of risk and protective factors at the individual, interpersonal, community, and societal levels. Veterans who received general or other than honorable (OTH) discharges were more likely than those honorably discharged to screen positive for generalized anxiety, depression, posttraumatic stress disorder (PTSD), a history of traumatic brain injury, or alcohol or cannabis misuse. Also, Veterans who had completed fewer than four years of service before separation were at a higher risk for suicide than those who had served longer. To prevent Veteran suicide, it is important to have protective factors in place that maximize and minimize risk factors at all the levels.

Among service members with no diagnosed history of mental illness, the characteristics with the highest odds ratios for attempted suicide included having attained less than a high school education, having been previously deployed, past-year demotion, eight or more outpatient physical health care visits in the preceding two months, and injury-related inpatient or outpatient health care visits. About 27% of all Veterans reported having difficult time readjusting to civilian life, while 44% of the post-9/11 cohort indicated difficulty in readjusting. According to the U.S. Department of Veterans Affairs (2019), Veterans reported difficulty in several areas during reintegration into civilian life, including problems with productivity at work or school, an inability to take care of chores or health needs, and difficulty interacting with spouses, family members, and friends, including increase in potentially harmful behaviors like substance misuse, difficulty controlling anger, having thoughts about hurting someone, and dangerous driving.

Due to the unique work environment military service members are a part of, disclosing mental health concerns can result in social or professional consequences. Therefore, there is also a need to address the social and professional barriers associated with reporting and/or accessing mental health services, which may contribute to poorer mental health outcomes for this population. Social barriers can include stigma, lack of support from leadership, or social rejection from peers and colleagues [4]. It can also include masculinity norms, lack of skills to discuss mental and emotional concerns, and a culture of high self-reliance that are present in male-dominated professions. Professional barriers can include potential loss of employment or fear of career consequences [4]. In fact, seeking treatment for mental health concerns is associated with a higher likelihood of being involuntarily discharged from service. Addressing and reducing barriers to professional mental health treatment can increase the opportunity to access and benefit from them, potentially reducing suicide rates [5].

Specifically, suicide rates were highest among Veterans Health Administration (VHA) patients diagnosed with opioid use disorder or bipolar disorder (both between 120 and 130 suicide deaths per 100,000), followed by schizophrenia and substance use disorders overall (both between 80 and 100 deaths per 100,000), anxiety (67 per 100,000), depression (66.4 per 100,000), and posttraumatic stress disorder (between 50 and 60 per 100,000). There is also evidence that veterans with traumatic brain injuries are at an increased risk of suicide compared with those without these injuries [6]. Efforts were launched to promote community-based approaches to suicide prevention and the CDC's community prevention framework provided seven components, ranging from providing economic support to promoting connectedness and creating a protective environment [7]. In partnership with VA, the

Substance Abuse and Mental Health Services Administration recently issued a challenge (and is aiding) to governors and mayors across the United States to create and implement suicide prevention plans targeting service members, veterans, and their families. As of November 2020, 27 states and 18 communities were participating in the program [8]. Prior community-based initiatives similar in structure but focused on youth suicide prevention have produced promising results [9].

According to Gibbons et al. [10], stigma surrounding mental and behavioral health has historically always been stigmatized and remains to be an ongoing challenge among military personnel within all of the military services in the country. Both organizational and internalized individual belief attitudes regarding mental health can impact or influence one's willingness to seek and accept professional help and approximately 20%-30% of individuals who return from combat deployments continue to experience symptoms of PTSD while only about half of them seek needed care [10]. Among those who do seek care, only a small percentage remain in treatment until symptom remission.

Many of the barriers to accessing mental and behavioral health services in the military are unique to the military environment. Some of the personal barriers include wanting to fix issues on one's own, lack of trust in the system, belief that treatment is not helpful, and fear of stigma from others. Social barriers include not wanting to be seen as weak by others, concerns about the privacy of records from one's command, being found unfit for duty, and risking one's security clearance. Practical barriers include inability to get time off for appointments, frequent moves and changes in duty assignments, and issues with transportation [10].

PROBLEM STATEMENT

It has been proven in several research studies that veterans who misuse drugs or alcohol are more than twice as likely to die by suicide, when compared other veterans. According to Hooper and Hardey [11], prevalence of mental health or substance used disorders (SUD) among participants using the Veterans Health Administration (VHA) rose from 27.9% to 41.9% between 2001 and 2020 and in 2020 alone, there were 6,146 veteran suicides reported, which averages to 16.8% veterans dying by suicide every day. Also, the rate of suicide for veterans is about 1.5 times higher than that of the general population.

Shifting focus to women veterans, comparing the rates among women veterans to non-veteran adult women, the rate is 2.5 times higher. Hooper and Hardey [11] reported that in 2017, the U.S. Department of Veteran Affairs (VA) reported the highest suicide rate among women using VA health services at 20 per 100,000. Since 2017, however, that number has decreased and was recorded to be approximately 14 per 100,000 in 2020. Suicide rates have been historically high among young Veterans and older Veterans as well and in 20 years between 2001 and 2020, the suicide rate among Veterans between the ages of 18 and 34 increased by 95.3%. During that same time period, the suicide rate among Veterans between the ages of 55 and 74 rose 58.2%. Between 2019-2020, the suicide rate for older Veterans decreased, while the suicide rate among Veterans in the 18-34 age group increased [11].

Suicide has claimed more lives of service members than the number of individuals wounded or killed in war since World War II [12]. Suicide is associated with extensive suffering, and also causes extensive economic loss to individuals, families, and society. The annual cost of suicide and suicide attempts is approximately \$58.4 billion

in the United States [13]. Mental health has been one of the most common reasons service members are withdrawn from combat deployments, both throughout history and present day [14].

PURPOSE OF THE STUDY

The purpose of this study is to determine the relationship between risk factors associated with suicide rates among veterans in California. There are a few prior studies of suicide rates and suicide risk factors among military service members that support the conclusion of this study. The average suicide victim had a combination of risk factors at their time of death. The most common were the ending of an intimate relationship, a history of deployment, issues with work, history of mental health issues, and history of substance abuse [15]. Suicide is a major public health challenge that disproportionately affects service members and veterans. There are opportunities to improve risk identification, evaluation, support, and treatments and interventions.

According to Thompson [16], the 2020 Fort Hood Independent Review Committee (FHIRC) at the Fort Hood Army base in Killeen, Texas found numerous systemic failures with the base's Sexual Harassment/Assault Response and Prevention (SHARP) program, involving numerous Army organizations and leaders, with evidence that shows the impact sexual harassment and assault can have on an individual, including challenges at work and higher rates of physical and mental health conditions.

Many risk factors for suicide in the military are similar to those facing the civilian population, including mental and physical health challenges, alcohol and substance abuse disorders, both romantic and familiar relationship challenges, legal trouble, and financial challenges [15]. In addition to these factors, studies show that military suicide victims also face a unique set of service-related risk factors. These include deployments, exposure to combat, administrative issues affecting status, pay, or rank, occupational issues, and challenges with sleep [15].

This study will analyze data to measure what percent of service members report struggling with a few known suicide risk factors. The 2018-2024 strategic plan from the U.S. Department of Veterans Affairs (VA) identified preventing veteran suicide as its highest clinical priority, and the RAND Epstein Family Veterans Policy Research Institute is also committed to helping the VA and the country achieve this critical goal. In 2018 alone, about 6,435 veterans and 40,075 nonveteran adults died by suicide. There are significantly more nonveterans in the population, and the rate of suicide among veterans was 32.0 per 100,000 compared with 17.2 per 100,000 for nonveterans [17,18].

SIGNIFICANCE OF THE STUDY

Suicide has been identified as a major public health issue and among the top ten causes of death in the United States. Unfortunately, the suicide rate continues to be rising among the general U.S. population and especially among veterans, both among men and women who risked their lives for the country [17,18]. This study highlights the need for expanded mental health services and suicide prevention strategies for all service men both active and retired. It is also very significant to determine the risks and contributing causes to better prevent future tragedies. Understanding risk factors and patterns helps to create better informed monitoring systems, prevention programs, care, outreach, and policies to protect individuals who are at risk of ending their lives. This knowledge can help to reform education and training of mental health providers serving military communities by addressing their unique challenges and the potential solutions and coping mechanisms. It can also help to reform current policies

within each branch regarding screening, monitoring, and referring service members to seek needed professional care, who may not be doing so voluntarily.

Many studies focus on the psychological and emotional distress service members experience after deployments. It is important to note that the day-to-day life and job stress for service members also presents a great deal of stress, even for those who have not been in combat. Unique working and living conditions, in addition to already being in a high-risk occupation, can have an adverse effect on the mental and emotional wellbeing of service members. Studies show that some of these conditions include conflicts with co-workers, sexual harassment, over-commitment to work, imbalances in effort and rewards, job demands, lack of autonomy, dissatisfaction with physical work environment and conditions, greater workloads and hours, and income related stress. These conditions are predictors for higher turnover rates, stress, depression, post-traumatic stress disorder (PTSD), misuse of alcohol, and suicidal ideation. Some factors that have been shown to improve mental and overall health within the military include physical fitness, social support from colleagues, supportive and effective leadership, concern for morale, and unit cohesion [19].

METHODOLOGY AND RESEARCH DESIGN

This study used data from the 2021 adult public use file available on California Health Interview Survey (CHIS) and is the nation's largest state health survey and a critical source of data on Californians, as well as on the state's various racial and ethnic groups. CHIS is a leading source of credible and comprehensive data on the health and health care needs of California's large and diverse population. Each year, the CHIS interviews more than 20,000 households on a wide range of health matters, from the use of and access to health care, to health conditions and behaviors, to a range of topics that influence health: public program participation, housing, income and employment, climate change, food, gun violence, adverse childhood experiences, and much more [20]. The analysis of CHIS data design provides simple summaries about the sample, the measures and the descriptive statistics. Using Statistical Package for the Social Sciences (SPSS) can provide summaries that may enable comparison across other units of measurements.

For this study, the four variables that were pulled from this data were whether the respondent had ever served in the U.S. armed forces, whether they felt depressed in the past month, whether their emotions interfered with a relationship in the past month, and whether they needed help for an emotional, mental, alcohol, or drug problem in the past year. Military service is the only independent variable, and the dependent variables are:

- **Depression:** The analysis provided answers to how many U.S. service members reported feeling depressed in the past month.
- **Emotional interference in relationships:** The analysis provided answers to how many U.S. service members reported that their emotions interfered with a relationship in the past month; and
- **Drug/Alcohol/Emotional/Mental problems:** The analysis provided answers to how many U.S. service members reported needing help for a drug, alcohol, emotional, or mental problem in the past year.

FINDINGS AND ANALYSIS OF RESULTS

The findings from the bivariate analysis shows the stratification of respondent's level of depression and whether the respondent had ever served in the U.S. armed forces. Of those that had served in the U.S. armed forces, 1,576 responded inapplicable, 253 responded between a little of the time - most of the time, and 117 responded they did not feel depressed at all. The 253 that responded to feeling depressed somewhere between a little of the time - most of the time accounted for approximately 13% of the population of 1,947 that had ever served in the U.S. armed forces. The second bivariate analysis was performed on the variables of emotional interference with relationships and military service. This analysis also stratifies the respondent's level of emotional interference and whether they had ever served in the U.S. armed forces. Of those that had served in the military, 1,637 responded inapplicable, 275 responded between some - a lot, and 34 responded not at all. The 275 that responded that their emotions interfered with relationships somewhere between some - a lot accounted for 14% of the population of 1,947 that had served in the U.S. armed forces.

The Chi-Square test shows that there is a statistically significant relationship between feeling depressed among those with military service with Chi-Square value of 113.494, with df of 6 and p-value of 0.001. For those responses to emotion and relationships, the Chi-Square test revealed that there is a statistically significant relationship between emotions interfering with relationships and their military services with Chi-Square value of 114.52, df of 4 and p-value of 0.001.

The final bivariate analysis that was performed using the variable of whether respondents needed help for an emotional, mental, alcohol, or drug problem in the past year and whether they had ever served in the U.S. armed forces. Of those that had served in the military, one person skipped the question, 318 responded yes, and 1,628 responded no. The 318 that responded yes accounted for approximately 16% of the population of 1,947 that had ever served in the military.

The final analysis demonstrated that there is a statistically significant relationship between military services and needing help for an emotional, mental, or drug problem with Chi-Square value of 70.351, df of 2 and p-value of .001. This result emphasizes the need for increased surveillance, support services, and suicide prevention efforts with a focus on drug/alcohol, emotional, and mental issues across the military.

ADDITIONAL ANALYSIS

The 2023 national veteran suicide prevention annual report indicated that in 2021, about 6,392 veterans died by suicide resulting to an increase of 114 suicides from 2020 and the age and sex-adjusted suicide rate among veterans increased by 11.6%, while the age-and sex-adjusted suicide rate among non-Veteran U.S. adults increased by 4.5%. The Veterans remain at elevated risk for suicide which reflects Veterans' lives prematurely ended and continue to be grieved by family members, loved ones and the Nation (National Veteran Annual Report, 2023) [21].

As reported from 2020 - 2021:

- Suicide rates fell by 8.1% for Veteran men aged 75-year-old and older.

- Among Recent Veteran Veterans Health Administration (VHA) Users between ages 55-year and 74-year-old, the suicide rate fell by 2.2% overall (-0.6% for men, -24.9% for women).
- Among male Recent Veteran VHA Users, suicide rates fell by 1.9% for those aged 18-year to 34-year-old .
- The suicide rate among Recent Veteran VHA Users with mental health or substance use disorder diagnoses fell from 77.8 per 100,000 to 58.2 per 100,000 in 2021.
- Suicide rates fell for Recent Veteran VHA Users with diagnoses of sedative use disorder (-40.4%), depression (-32.9%), posttraumatic stress disorder (-27.6%) and anxiety (-26.9%).
- Recent Veteran VHA Users rates grew more slowly across 20 years when compared to rates of Veterans without Recent VHA use. From 2001 to 2021, age-adjusted suicide rates rose 24.5% for male Veterans with Recent VHA use and 62.6% for male Veterans without Recent VHA use. Age-adjusted suicide rates rose 87.1% for female Veterans with recent VHA use and 93.7% for female Veterans without Recent VHA use.
- From 2011-2012 to 2020-2021, the suicide rate among Veterans in VHA care with diagnoses related to gender identity fell from 267.9 per 100,000 person-years to 84.6 per 100,000 person-years.
- In 2021, the unadjusted suicide rate was 46.3 per 100,000 for American Indian or Alaska Native Veterans; 36.3 per 100,000 for White Veterans; 31.6 per 100,000 for Asian, Native Hawaiian or Pacific Islander Veterans; 17.4 per 100,000 for Black or African American Veterans; and 6.7 per 100,000 for Veterans of multiple races.
- In 2021, the unadjusted suicide rate was 19.7 per 100,000 for Veterans with Hispanic ethnicity, and it was 33.4 per 100,000 for other Veterans.

During the year 2021, Veterans and the entire U.S. population directly faced health and mortality effects of the COVID-19 pandemic. On a weekly basis, U.S. COVID-19 deaths peaked, ebbed, and climbed anew across 2021. By year's end, over 837,000 Americans had died from COVID-19 since the pandemic began, including over 469,000 Americans who perished from COVID-19 in 2021 alone (National Veteran Annual Report, 2023) [21].

CONCLUSION

In 2020 and 2021, COVID-19 was the third leading cause of death in the U.S., both overall and for Veterans. There were 52,538 Veteran deaths from COVID-19 in 2020, and 60,356 in 2021. Veteran's age and sex adjusted with all-causes resulted in mortality rates that were 13.7% higher in 2020-2021 than in 2017-2019. In addition to these losses, the Nation faced greater financial strain, housing instability, anxiety and depression levels, barriers to health care and increased firearms availability, all of which are associated with heightened suicide risk (National Veteran Annual Report, 2023) [21].

With the increased purchasing of firearms noted in 2020 and 2021, those who purchased and owned firearms were more likely than non-firearm owners to report experiencing thoughts of suicide, and first-time firearm purchasers were more likely to report suicidal ideation. In 2021, potential further distress was experienced by many as a result of social conflict and political violence. Veteran distress increased from fall 2019 to fall and winter 2020, with evidence of the highest increases in distress among Veterans aged 18-year to- 44-year-old and among women Veterans. These increases in reported distress were associated with increasing socioeconomic concerns, greater

problematic alcohol use and decreased community integration. During the COVID-19 pandemic, Veterans were found to experience more mental health concerns than non-Veterans. A systematic review of 23 studies found increases in the prevalence rates of alcohol use, anxiety, depression, posttraumatic stress disorder, stress, loneliness and suicidal ideation. The results of this systematic review found key risk factors to include pandemic-related stress, family relationship strain, lack of social support, financial concerns and preexisting mental health disorders (National Veteran Annual Report) [21].

These results demonstrate that there is a need for increased surveillance, support services, and health resources to improve mental and emotional health and reduce suicide rates of military members. It is important to acknowledge the complexity of suicide and the interrelated factors that can contribute to attempted or successful suicide, including a multitude of personal and external factors individuals face. It is also important to acknowledge both the individuals who may be at risk (as determined by vulnerable populations) and the behaviors that present a risk, even if the individual does not have a known mental health diagnosis [22-29].

Current available resources and services will also need to be improved. If prevention efforts are going to recommend that service members seek help from their healthcare providers, the MHS needs to ensure that they are providing thorough and proper care. Surveillance must not be limited to medical and mental health providers, as many individuals facing distress may not seek help or report it to their health care provider. Surveillance is also important within an individual's social or professional environment. Surveillance for these warning signs could be improved through suicide prevention efforts that educate individuals at all levels and professional backgrounds of suicide prevention strategies. Some suggestions may include information on available resources, dialogue on how to check-in with coworkers or subordinates, creating psychologically safe environments to discuss concerns, supporting work-life balance, reducing barriers to accessing care, and emotional coping strategies.

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