January 2024

Barriers To Mental Health Care In Us Military Veterans

Connor Lewis

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Barriers to Mental Health Care in US Military Veterans

A Thesis Submitted to the Yale University School of Medicine in Partial Fulfillment of the Requirements for the Degree of Doctor of Medicine

By
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ABSTRACT

BARRIERS TO MENTAL HEALTH CARE IN US MILITARY VETERANS. Connor Lewis, Ian Fischer, and Robert Pietrzak. Department of Psychiatry, Yale University, School of Medicine, New Haven, CT.

Objectives: The aims of this study were to analyze data from a nationally representative sample of US veterans to: (1) Determine the prevalence of barriers to mental health care among current US veterans spanning numerous conflicts and generations of service and who have no history of mental health treatment; and (2) Identify predisposing, enabling, and needs factors associated with barriers to care. Aims were examined in both the full sample of veterans and a subsample of veterans who screened positive for a psychiatric disorder.

Methods: Descriptive statistics were computed to summarize the prevalence of endorsed barriers to care. A series of multivariable binary logistic regression analyses were performed to identify independent predisposing, enabling, and need variables associated with endorsement of any stigma, instrumental barrier to care, and negative belief about mental healthcare. Relative importance analyses were utilized to determine the variance in endorsement of any stigma, instrumental barrier to care, and negative belief about mental healthcare item explained by each significant independent variable.
Results: In the full sample, 33.7% endorsed any barrier to care, with 22.2% endorsing any instrumental barrier to care, 19.1% any perceived stigma item, and 13.9% any negative belief about mental healthcare. The endorsement of all barriers to care were greater in the subsample with psychiatric need: 47.1% endorsed any barrier to care, with 38.7% endorsing any instrumental barrier to care, 28.8% any perceived stigma item, and 22.0% any negative belief about mental healthcare. Several correlates were identified for each barrier to care, with differences in the strength and direction of association for each correlate. Lower purpose in life, grit, and received social support were most consistently associated with barriers to care.

Conclusion: Results of this study provide the first known data on the prevalence and key predisposing, enabling, and need-based correlates of barriers to mental health care in a current, nationally representative sample of U.S. veterans. Results can be used to inform resource allocation, as well as prevention, psychoeducation, and treatment efforts to help reduce barriers to care and promote engagement with mental health care services in this population.
ACKNOWLEDGEMENTS

A special thanks to my research mentor Robert Pietrzak, PhD, MPH, for his guidance and strong support throughout this project.

Thank you to Ian Fischer, PhD for his insightful revisions and input.

Thank you to the Department of Psychiatry for the support of this project.
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INTRODUCTION

Mental health treatment has a history of stigmatization and relative inaccessibility, which can make it difficult for individuals to receive the help they need [1]. Moreover, although improvements have been made in decreasing stigma and increasing access to mental health treatment, there are still populations with severe unmet need. One such population is military veterans [2].

Veterans and Mental Health Care

The United States has a long history of military engagements, yet an understanding of the mental and emotional repercussions of war and the implementation of suitable treatments for associated disorders have only emerged relatively recently. While the mental health impact of trauma and stress-related conditions had long been observed among veterans, an official diagnosis for posttraumatic stress disorder (PTSD) did not emerge until the late 20th century [3]. Previously labeled with various terms such as "shell shock" and "war neurosis," it was not until the 1970s that heightened attention was directed toward these symptoms, primarily prompted by the high prevalence of Vietnam veterans who had them [3]. Initially dubbed "post-Vietnam syndrome" and frequently co-occurring with other diagnoses like mood, anxiety, and substance use disorders, this constellation of symptoms was officially recognized as PTSD in the third edition of the Diagnostic and Statistical Manual of Mental Disorders in 1980 [3].
Vietnam veterans represent one of the first cohorts of veterans to be systematically studied for service-related psychiatric disorders and offered psychiatric treatment on a large scale. Many veterans who returned from Vietnam were initially diagnosed with somatic illnesses (e.g., chronic fatigue, insomnia, headache, dizziness, joint pain) despite no physical findings, and were eventually discovered to be suffering from PTSD [4]. One study in 2008 found that the rate of PTSD among Vietnam veterans was higher than that of veterans who served in other eras [5]. Unfortunately, many of these veterans went undiagnosed and untreated for a significant period, often resulting in negative long-term mental health consequences [5].

The significant need for mental health care among veterans was again realized during the conflicts in Afghanistan and Iraq. Due to awareness of the relationships among trauma, stress-related disorders, and war, numerous studies have been conducted to examine mental health problems and needs of veterans from these conflicts [6-12]. OIF/OEF veterans were often exposed to traumatic events including improvised explosive devices, handling human remains, killing enemy combatants, and witnessing dead or injured people [11], which likely contributed to the higher rates of psychiatric disorders (e.g., PTSD, major depressive disorder) seen in this group relative to the general population [9]. For instance, one study found that approximately 14-28% of OIF/OEF veterans met criteria for PTSD and 13-14% for major depressive disorder [7]. This is compared to much lower rates of 3% for PTSD and 7% for major depressive disorder in the
general US adult population at the time of this study, indicating a 5-to-9-fold
greater rate of PTSD and a 2-fold greater rate of depression among OIF/OEF
veterans [6]. Despite this significant psychiatric burden, only half of the veterans
who screened positive for such disorders sought treatment [12]. Even when
these veterans were offered mental health treatment, only a minority pursued
care. For example, one study found that only 42% of those referred for mental
health treatment followed through with the referral [8]. Taken together, these
findings underscore the importance of understanding barriers to mental
healthcare and factors associated with them.

**Barriers to Mental Health Care**

Although reasons for the lack of engagement with mental health services are
becoming clearer [1, 2, 11], more research is needed to better identify and
explain the most salient barriers to mental health treatment, as well as the factors
associated with them. An important step in accomplishing this is a detailed study
of barriers to mental health care among population-based samples of veterans.
Once these barriers to care have been identified, practical solutions can be
developed and tested to mitigate them and improve access and willingness to
engage in treatment. To date, three overarching categories of barriers to mental
health care have been identified. They include stigma, instrumental barriers to
care, and negative beliefs about mental health treatment.
Stigma refers to the shame or embarrassment associated with seeking or receiving mental health care [13]. These negative perceptions are usually rooted in a belief that needing mental health treatment is a sign of weakness, and that leadership and peers may lose trust in military personnel who require this type of treatment [14]. Stigma has been shown to be a significant factor in decreasing engagement with mental health care [11]. For example, one study in a civilian population found that people who internalize stigmatizing beliefs (i.e., perceive these beliefs to be legitimate) had decreased self-esteem and were less likely to engage in mental health treatment [15]. A study by Hoge et al. [11] found that U.S. Army soldiers and Marines who screened positive for mental health disorders (e.g., PTSD, major depressive disorder, generalized anxiety disorder) were twice as likely to endorse beliefs of stigma [11]. This finding is concerning given the mental and emotional problems that can come from living with these conditions. A survey of U.S. service members returning from a peacekeeping mission in Bosnia found that there was a significantly greater worry about admitting a mental health problem compared to a medical problem [16]. Specifically, 61% of these military personnel believed admitting a psychological problem would harm their career relative to 43% for a medical problem and 45% believed admitting a mental health problem would cause their peers to have less confidence in them, compared to 22% for a medical problem [16]. Among OEF/OIF veterans, 70% were concerned about being labeled with a mental disorder adversely impacting their career opportunities and work relationships [14]. Underreporting of mental health symptoms may be especially heightened
among active-duty soldiers, as commanding officers have direct access to their soldiers’ health records and can remove soldiers from duty if they are deemed to be mentally or emotionally unfit for service [17]. Research also indicates that stigmatizing beliefs continue to impact access to mental health care among veterans who are no longer in the service. This idea is supported by a study of nationally representative veterans in 2020, which found that stigmatizing beliefs (e.g., “it would harm my reputation”) were associated with decreased likelihood of engagement in mental health treatment, even though most of these veterans had been out of military service for many years [2].

Instrumental barriers to care, also called logistical or practical barriers, refer to the logistical problems that may prevent veterans from accessing mental health care services [2, 6, 18, 19]. Such barriers include inadequate or unreliable transportation; insufficient free time or financial resources/health insurance; and limited understanding about availability of mental health resources [18]. A study of active duty US soldiers in 2004 found that respondents who screened positive for a mental health disorder (e.g., major depressive disorder, generalized anxiety disorder, or PTSD) were significantly more likely to endorse instrumental barriers to care than those who did not meet criteria [11]. For example, veterans who screened positive for a mental health disorder were more likely than those who did not to endorse statements such as “I don’t know where to get help” (22% vs 6%) and “I don’t have adequate transportation” (18% vs 6%) [11]. The most highly endorsed instrumental barriers in this sample were “It is difficult to
schedule an appointment” (45% vs 17%) and “There would be difficulty getting
time off work for treatment” (55% vs 22%) [11]. More recently, a 2011 study of
UK veterans found that 28.8% endorsed difficulty making appointments for
mental health treatment and 20.8% did not know where they could go to receive
such services [20].

Negative beliefs about mental health treatment may also prevent veterans from
seeking treatment. These often relate to a lack of trust in mental health providers
or the perceived lack of effectiveness of mental health treatment [11]. However,
this category of barriers to care also includes beliefs about minimizing mental
health problems and beliefs in self-sufficiency and grit, or being able to endure
distress without treatment [2, 21, 22]. These negative beliefs can be a significant
barrier in accessing mental health care, as they have been associated with a
decreased likelihood of engaging in mental health counseling and
psychopharmacotherapy [23]. A 2004 study found that negative beliefs regarding
mental health care that were endorsed by active-duty soldiers included a lack of
trust in mental health professionals and the belief that mental health care is
ineffective [11]. Other negative beliefs endorsed by active-duty soldiers include
the belief that treatment is only for extreme problems and that negative side
effects will be experienced in response to medication [13]. A 2009 study of
active-duty Air Force personnel with PTSD found that many believed they could
handle the symptoms themselves and did not want to “make a big deal” of their
symptoms [22]. Though these traits of personal toughness and self-sufficiency
are highly valued in military settings, they may have adverse impacts in increasing engagement with mental health treatment by leading to a decreased willingness to seek treatment even when it is truly needed. This idea was supported by a 2022 study, which found that among veterans with high mental dysfunction, those with high grit were less likely to use mental health services relative to those with low grit [2].

Limitations of Previous Research on Barriers to Mental Health Care

Current research on barriers to mental health care among veterans has resulted in greater understanding of the reasons soldiers and veterans may not be receiving necessary mental health treatment. However, there are three areas within this literature that require further work. First, most of the studies reviewed above focused on convenience samples of younger Iraq/Afghanistan-era soldiers, many of whom were active-duty and recently returned from deployment [7, 8, 11-14, 16, 20-22, 24]. The rates and types of barriers to care endorsed by these younger populations may not be the same as those endorsed by older populations of US veterans who are further removed from their time in the military and are more representative of the veteran population at large. For example, a study done in older, retired Americans with depression found that the elderly population has decreased economic security and increased comorbid medical conditions, making access to mental health treatment more difficult than in younger populations [25]. Similar differences in barriers to care between younger and older generations may exist within the veteran population as well.
Second, generational differences and experiences between younger Iraq/Afghanistan veterans and older veterans may lead to different types of stigma and beliefs regarding mental health treatment. Indeed, cultural differences between generations in the U.S. have been linked to differences in the types and degrees of mental health-related perceptions of stigma [26]. Third, previous studies that focused on veteran access to mental healthcare usually involved small sample sizes with primarily qualitative analysis [27, 28]. Often, these studies would follow a focus group format and investigate prominent themes and recurring problems endorsed by multiple veterans [27, 28]. Although these studies provide useful insights to guide future research, they may lack the sample size and quantitative analysis necessary to support policy changes that could help increase access to mental health treatment.

**Correlates of Barriers to Mental Health Care**

Although current research has provided significant insight into the barriers experienced by veterans on a national level, little is known about how various risk factors are associated with these barriers to care. A widely used model to understand the use of mental health services is the behavioral model of health service utilization (BMHSU), which divides risk factors for barriers to care into three categories: *predisposing* factors, *enabling* factors, and *need* factors [29]. Predisposing factors are defined as experiences or personal characteristics that affect the risk for a mental health disorder. Examples include trauma/combat exposure and sociodemographic variables, such as age, gender, and education.
Enabling factors include variables such as income, health insurance, and social support, which can affect an individual’s ability to access mental health services. Need factors are variables that modify an individual’s perception of their condition and the degree to which they perceive a need for treatment. Need factors include variables such as optimism, grit, and severity of psychiatric symptoms.

A recent study by Kline, et al. utilized the BMHSU model to investigate veteran utilization of mental health treatment [2]. In this study, the BMHSU categories of predisposing, enabling, and needs factors were used to determine correlates for mental health care utilization in a nationally representative sample of veterans [2]. This study provided valuable insights into the predisposing, enabling, and needs characteristics of veterans who utilized mental health care resources compared to those who did not: need factors emerged as the strongest correlates of mental health care utilization among veterans [2]. Additionally, veterans with high levels of grit and mental dysfunction were significantly less likely to engage in mental health treatment relative to veterans who had similar mental dysfunction but lower grit scores [2]. Results of this study underscore the continued need to investigate how stigma, negative beliefs, and other barriers to care affect veterans’ ability and willingness to engage in mental health treatment.

The predisposing, enabling, and need factors that were examined by Kline and colleagues [2] were based largely on their relationships to known risk factors for mental illness. This is because veterans who screen positive for a mental health
disorder are more likely to endorse barriers to mental health care [11].
Predisposing factors were selected based on commonly included variables in previous barriers to mental health care studies to include age, gender, race, and education level, to evaluate if there is a meaningful relationship between these commonly collected data points and barriers to mental health care [6, 7, 11-13, 24, 30]. Number of deployments was also included as a predisposing factor, since trauma/combat exposure is a known risk factor for mental illness [31, 32]. Enabling factors investigated in this study include variables related to degree of social supports, financial resources, and presence of disabilities. These are factors consistent with the BMHSU that directly impact veterans’ abilities to access mental health resources [2, 31, 33]. Need factors investigated in this study include severity of current psychiatric and medical symptoms, such as psychological distress, substance use, presence of multiple medical conditions, and insomnia. These variables were included because the presence of more severe symptoms directly increases perceived need for treatment. Previous exposures to traumas, such as child abuse and military sexual trauma (MST), were also included as need factors because significant unresolved trauma usually presents with more severe mental and emotional symptoms, increasing the need for psychiatric treatment [2]. Some protective factors, such as resilience, functioning, and grit, were also included as needs factors since these variables may decrease the perceived need for treatment. Grit, specifically, is known to decrease veteran engagement with mental health, especially among veterans with lower mental functioning [2, 21, 22].
Limitations of Previous Research on Correlates of Barriers to Mental Health Care

Previous studies have included some of the BMHSU factors when examining barriers to mental health treatment [6-9, 11, 12, 30]. However, an investigation of how these factors relate to barriers to care was not a primary aim of prior studies in this area, so inclusion of these factors was limited [6-9, 11, 12, 30]. For instance, a 2004 study with Army and Marine populations after recent deployments to Afghanistan/Iraq obtained sociodemographic data on the population and reported barriers to care data by military group: Army population and Marine population [11]. This separation of Army and Marine populations allows one potential predisposing factor - branch of service - to be compared with respect to barriers to mental health care. However, these data were not directly related to endorsed barriers to mental health care as this was not a primary aim of the study, and sociodemographic and barriers to care data were collected separately [11]. Further investigation of these predisposing factors - such as age, race, gender, and education level - could be helpful in identifying service members at higher risk for endorsing specific barriers to care. Another study in 2010 similarly investigated barriers to mental health care in U.S. Army active-duty and National Guard soldiers recently deployed to Iraq/Afghanistan [6]. Similar to the 2004 study, this study collected sociodemographic data and reported barriers to mental health care by military group: active-duty and National Guard [6]. This study also surveyed veterans for barriers to mental health care at
3 and 12 months post-deployment [6]. The sociodemographic data from this study were not related to the endorsed barriers to care as this was not a primary aim of the study, though separation of the active duty and National Guard populations, as well as surveys at both 3 and 12 months post-deployment, allowed for comparisons by certain predisposing factors, such as branch of service and time post-deployment [6]. Similarly, a more recent study in 2019 with UK armed forces personnel and veterans collected sociodemographic data on its study population but did not relate this data to data on the endorsed barriers to mental health care [30]. However, this study did separate its sample by positive/negative screening for psychiatric diagnoses, allowing for a comparison with regard to an important psychosocial risk factor—current mental disorder [30]. Although prior studies allowed for limited comparisons by certain military and psychosocial factors, their primary aims were the identification of barriers to mental health care, not the identification of risk factors associated with these barriers [6-9, 11, 12, 30]. Therefore, they did not relate the sociodemographic data of their study populations to the endorsed mental health care barriers. Further, these studies did not collect any data on the various other military, health, and psychosocial factors that could be related to barriers to mental health care [6-9, 11, 12, 30].

STATEMENT OF PURPOSE

To address the aforementioned gaps in the literature, we analyzed data from a large, nationally representative sample of US veterans to evaluate the following
two aims: (1) Determine the most prevalent barriers to mental health care among current US veterans spanning numerous conflicts and generations of service and who have no history of mental health treatment; and (2) Identify predisposing, enabling, and needs factors associated with barriers to care. These aims were evaluated in the full sample of veterans with no history of mental health treatment and in the subsample of veterans who have both no history of treatment and who have a positive screen for at least one mental disorder. Narrowing the study population solely to veterans who have no history of mental health treatment, and further specifying this population in the subsample with only those veterans who have greater psychiatric need helps to target the most salient barriers to care and predisposing, enabling, and need factors associated with them. Gaining additional insight into predisposing, enabling, and need factors among veterans with no history of mental health treatment may help identify which veterans are at higher risk for experiencing specific barriers to care. This information could help inform population-based interventions to help reduce these barriers, improving veteran access to mental health treatment, and decreasing the burden of mental health disorders among veterans overall.

METHODS

Ethics and Contributions

This study analyzed data from the 2019-2020 National Health and Resilience Veterans Study (NHRVS), which surveyed a nationally representative sample of 4,069 U.S. military veterans. The survey was conducted from 11/18/19 to 3/8/20
(median completion date: 11/21/19). The Human Subjects Subcommittee of the VA Connecticut Healthcare System approved the study protocol, and all participants provided electronic informed consent.

Contributions to this work are outlined below:

- Connor Lewis, BS: formulation of study design, drafting of manuscript, critical revision
- Ian Fischer, PhD: critical revision
- Robert Pietrzak, PhD, MPH: formulation of study design, statistical analysis, drafting of manuscript, critical revision

Participants, Procedures, and Variables

Data were drawn from the 2019-2020 National Health and Resilience Veterans Study (NHRVS), a nationally representative survey of 4,069 U.S. military veterans. The mean age of the sample was 62.2 (SD=15.7, range=22-99; 90% male). Participants were mostly non-Hispanic Caucasian (78%), with 11% non-Hispanic Black, 7% Hispanic, and 4% other/mixed race. Veterans of all military branches were represented (Army: 47%; Navy: 20%; Air Force: 19%; Marines: 6%; National Guard, Reserves, or Coast Guard: 8%), with 35% being combat veterans. The median number of years of service was 4-5 years. Nearly the entire sample (98%) reported having health insurance, mostly through Medicare (47%), current/former employer (41%), or VHA (33%); 21% of the sample reported VHA as their primary source of healthcare.
The survey was conducted from 11/18/19 to 3/8/20 (median completion date: 11/21/19). The NHRVS sample was drawn from KnowledgePanel, a research panel of more than 50,000 households that is maintained by Ipsos, a survey research firm. KnowledgePanel® is a probability-based, online non-volunteer access survey panel of a nationally representative sample of U.S. adults that covers approximately 98% of U.S. households. Panel members are recruited through national random samples, originally by telephone and now almost entirely by postal mail. Households are provided with access to the Internet and computer hardware if needed. KnowledgePanel® recruitment uses dual sampling frames that include both listed and unlisted telephone numbers, telephone and non-telephone households, and cell-phone-only households, as well as households with and without Internet access. The target population for the NHRVS was non-institutionalized adults age 18 and older residing in the United States who are U.S. military veterans. A total of 7,860 panel members who reported having served in the U.S. military received an email invitation to complete the survey and 4,069 completed it (51.8% participation rate). To generalize study results to the entire population of U.S. veterans, Ipsos statisticians calculated post-stratification weights from the following benchmark distributions of U.S. military veterans from the most recent (August 2019) Current Veteran Population Supplemental Survey of the U.S. Census Bureau’s American Community Survey: age, gender, race/ethnicity, Census Region, metropolitan status, education, household income, branch of service, and years in service.
Final post-stratification weights were produced via an iterative proportional fitting (raking) procedure. The Human Subjects Subcommittee of the VA Connecticut Healthcare System approved the study protocol, and all participants provided informed consent.

**Measures**

Perceived stigma related to mental healthcare. The Perceived Stigma and Barriers to Care Scale (60) was used to assess six items related to perceived stigma related to mental healthcare. Sample item: “Would the following be a reason to not seek mental health services if you ever had a problem? It would be too embarrassing.” Response options were “No” and “Yes.”

Instrumental barriers to mental healthcare. The Perceived Stigma and Barriers to Care Scale (60) was used to assess five items related to instrumental barriers to mental healthcare. Sample item: “Would the following be a reason to not seek mental health services if you ever had a problem? - I do not know where to get help.” Response options were “No” and “Yes.”

Negative beliefs about mental healthcare. Two items drawn from Hoge et al (2004) were used to assess negative beliefs about mental healthcare. These included: Would the following be a reason to not seek mental health services if you ever had a problem? - Mental healthcare does not work; I do not trust mental health” [11]. Response options were “No” and “Yes.”
Data Analysis

Analyses proceeded in three steps and were conducted in the full sample and among veterans with psychiatric need. First, descriptive statistics were computed to summarize the prevalence of endorsed barriers to care. Second, we conducted a series of multivariable binary logistic regression analyses to identify independent predisposing, enabling, and need variables associated with endorsement of any stigma, instrumental barrier to care, and negative belief about mental healthcare item. Third, we conducted relative importance analyses to determine the variance in endorsement of any stigma, instrumental barrier to care, and negative belief about mental healthcare item that was explained by each significant independent variable. These analyses partition the explained variance among multiple predictors to quantify the variance in a dependent variable that is explained by each independent variable [34].

RESULTS

Prevalence of Barriers to Mental Healthcare

Figure 1 shows the prevalence of endorsed barriers to mental health care among the full sample of veterans without a history of mental health treatment. In the full sample, 33.7% endorsed any barrier to care, with 22.2% endorsing any instrumental barrier to care (most prevalent: Getting treatment costs too much money, 15.0%), 19.1% endorsing any perceived stigma item (most prevalent: It
would be too embarrassing, 12.0%), and 13.9% any negative belief about mental healthcare (most prevalent: I do not trust mental health professionals, 12.8%).

In the subsample with psychiatric need, 47.1% endorsed any barrier to care, with 38.7% endorsing any instrumental barrier to care (most prevalent: Getting treatment costs too much money, 25.9%), 28.8% endorsing any perceived stigma item (most prevalent: It would be too embarrassing, 20.7%), and 22.0% any negative belief about mental healthcare (most prevalent: I do not trust mental health professionals, 20.3%).

Table 1 shows results of multivariable logistic regression analyses examining predisposing, enabling, and need-based correlates of stigma, instrumental barriers to care, and negative beliefs about mental healthcare in the full sample of veterans. Table 2 shows this data in the subsample of veterans who screened positive for a psychiatric disorder.

**Full sample**

In the full sample, male sex, college graduate or higher education, and psychological distress were positively associated with endorsement of any stigma item, while lifetime suicide attempt, dispositional optimism, and grit were negatively associated with this measure. Results of a relative importance analysis revealed that grit (30.4%), dispositional optimism (28.6%), and greater severity of PTSD symptoms (26.2%) explained the majority of the variance in
endorsement of any stigma item; greater severity of GAD symptoms (10.7%),
education (2.6%), male sex (1.1%), and lifetime suicide attempt (0.4%) explained
the remainder of the variance in this measure.

When analyzing correlates for instrumental barriers in the full sample, ADL or
IADL disability and MST were positively associated with endorsing these barriers.
Protective factors against instrumental barriers included age, annual household
income >$60,000, health insurance, social support, purpose in life, dispositional
optimism, and grit. A relative importance analysis revealed that purpose in life
(21.5%), age (21.4%), having received social support (16.1%), grit (13.5%), and
optimism (12.6%) explained the majority of the variance in endorsement of any
instrumental barrier item. ADL or IADL disability (6.2%), health insurance (3.4%),
MST (3.0%), and household income >$60,000 (2.3%) explained the remainder of
the variance in this measure.

Factors that were positively associated with the endorsement of any negative
belief about mental health care in the full sample included male sex, being
currently employed, adverse childhood experiences, MST, and number of
medical conditions. Protective factors against negative beliefs included age,
having two or more deployments, having received social support, purpose in life,
dispositional optimism, and grit. A relative importance analysis revealed that
having received social support (19.6%), purpose in life (16.9%), adverse
childhood experiences (15.8%), grit (12.1%), and dispositional optimism (11.9%)
explained the majority of the variance in endorsement of any negative belief about mental health care. Age (10.3%), MST (5.7%), being currently employed (3.4%), number of medical conditions (3.2%), male sex (1.0%), and having two or more deployments (0.1%) explained the remainder of the variance in this measure.

**Subsample with psychiatric need**

In the subsample of patients with psychiatric need, male sex and psychological distress were positively associated with the endorsement of any stigma item. Factors that were negatively associated with endorsement of a stigma item included having received social support, lifetime suicide attempt, and grit. A relative importance analysis revealed that psychological distress (38.5%), grit (27.6%), and having received social support (21.6%) explained the majority of the variance in endorsement of any stigma item in the subsample; lifetime suicide attempt (8.3%) and male sex (3.9%) explained the remainder of the variance in this measure.

Factors that were negatively associated with the endorsement of any instrumental barriers in the subsample included age, having health insurance, having received social support, purpose in life, and grit. A relative importance analysis revealed that age (32.3%), purpose in life (25.0%), and health insurance (18.1%) explained the majority of the variance in the endorsement of any
instrumental barrier in the subsample. Grit (13.3%) and having received social support (11.3%) explained the remainder of the variance in this measure.

Factors that increased the endorsement of any negative belief about mental health care in the subsample included being currently employed and having experienced MST. Protective factors against negative beliefs included two or more deployments, having received social support, purpose in life, and grit. A relative importance analysis revealed that purpose in life (29.8%), having received social support (24.0%), and MST (22.9%) explained the majority of the variance in endorsement of any negative belief item in the subsample. Being currently employed (14.6%), grit (8.1%), and two or more deployments (0.6%) explained the remaining variance in this measure.

DISCUSSION
Using data from a nationally representative sample of U.S. veterans, this study examined the prevalence of barriers to mental health care, and identified predisposing, enabling, and needs factors associated with three categories of barriers to care (i.e., stigma, instrumental barriers, and negative beliefs about mental healthcare). Results revealed that, among veterans with no history of mental health treatment, there is a significant perception of barriers to mental health care, though there are important risk and protective factors that can influence veterans’ perceptions of these barriers and how likely they may be to endorse them. Instrumental barriers were the most commonly endorsed type of
barrier to mental healthcare (22.2% in the full sample; 38.7% in the psychiatric need subsample), with stigma being the second-most endorsed type of barrier (19.1% in the full sample; 28.8% in the subsample) and negative beliefs being the least endorsed type of barrier (13.9% in the full sample; 22.0% in the subsample).

Several correlates were identified for each category of barriers to mental health care. The correlates most strongly associated with increased endorsement of stigma in the full sample were greater severity of PTSD symptoms, and lower dispositional optimism and grit; in the subsample, dispositional optimism was replaced by lower levels of received social support. The correlates most strongly associated with the endorsement of instrumental barriers in the full sample were lower age, lower purpose in life, and lower levels of received social support; in the subsample, the strongest correlates were lower age, lower purpose in life, and not having health insurance. The correlates most strongly associated with endorsing negative beliefs in the full sample were not having received social support, lower purpose in life, and adverse childhood experiences; in the subsample, military sexual trauma replaced adverse childhood experiences as one of the strongest correlates.

**Prevalence of Barriers to Mental Health Care**

The most prevalent type of barriers to mental health care were instrumental barriers, with concerns about finances (“Getting treatment costs too much
money”) or getting time off (“Difficult to get time off work or school for treatment”) endorsed by 22.2% of the full sample and 38.7% of the sample with psychiatric need. Most veterans reported their primary source of healthcare as being outside the VA (79%). The second most endorsed category of barriers to mental health care was stigma, with the primary concerns in this category focusing on embarrassment (“It would be too embarrassing”) and being perceived as weak if seeking mental health treatment (“I would be seen as weak”). The least commonly endorsed type of barriers were negative beliefs about mental health care (13.9% in the full sample; 22.0% in the subsample), with the primary concern being lack of trust in mental healthcare providers (“I do not trust mental health professionals” – 12.8% in the full sample; 20.3% in the subsample).

Comparisons of these data to previous research on the prevalence of barriers to mental health care in nationally representative samples of U.S. veterans remains limited. In fact, only one known study on older veterans focused on barriers to care and their relationship to mental healthcare utilization [19]. However, this study did not report prevalence on specific barriers to care, but instead focused on how these barriers related to utilization of mental health resources [19]. Additionally, this study focused solely on older veterans, which may limit generalizability to the broader veteran population, which is more sociodemographically diverse [19]. Other studies that focused on veteran access to mental healthcare usually involved small sample sizes with primarily qualitative analyses [27, 28]. Consequently, direct comparisons between previous studies
and the current prevalence data from a nationally representative sample cannot be made.

Most previous studies on prevalence of barriers to mental health care focused on different military populations, such as active-duty service members or reservist and National Guard OEF/OIF veterans [11, 20, 23, 35]. When compared to studies in the active-duty population, the prevalence data on barriers to mental healthcare in this study differs. For instance, the results of the study by Hoge, et al. in 2004 demonstrate significantly higher rates of stigma barriers among active-duty service members, with particular concern regarding how unit leadership may treat the individual differently (63%) and how it may negatively affect the individual’s military career (50%) [11]. Presumably, these specific stigma concerns do not apply to our population-based sample of veterans, most of whom are many years-removed from their time in service and are no longer active members of military units. Additionally, concerns about the cost of mental health treatment (10-25%) were lower in studies done on active-duty populations [11], with instrumental barriers as a whole being endorsed at a lower level (4.4-28.8%) than in our study [20]. The lower prevalence of instrumental barriers among active-duty populations may in part reflect the effects of free healthcare and an increased accessibility to health resources in the active-duty military relative to the veteran population, but more research is needed to evaluate this possibility.
A similarity between the current study and previous studies in active duty populations is that both veterans and active duty service members with psychiatric need endorsed all barriers to mental health care at higher rates than those without psychiatric need. This is consistent with prior work illustrating that individuals with greater severity of psychiatric symptoms or who screen positive for a psychiatric disorder are more likely to endorse barriers to care [11, 20, 30]. This result was also supported in a study on National Guard and reservist veterans of OEF/OIF, which found that these veterans who met screening criteria for a psychiatric disorder were more likely to perceive increased stigma and barriers to mental health care [23]. This study of OEF/OIF veterans additionally found that perceptions of unit support had a significant impact on the endorsement of stigma and barriers to care [23]. Although unit support is not an applicable measure in the non-active-duty veteran population, it may highlight the importance of receiving social support more generally. Indeed, in the current study, greater perceptions of received social support were negatively associated with barriers to mental health care. Further research is needed to make more specific comparisons with the current data and other study populations.

**Correlates of Perceived Stigma**

In both the full sample and subsample with psychiatric need, PTSD symptoms and grit emerged as the strongest correlates of perceived stigma. Optimism additionally emerged as a strong correlate of stigma in the full sample, and perceptions of received social support in the subsample with psychiatric need.
A positive association between PTSD symptoms and stigma is consistent with previous studies, which similarly observed that individuals who endorsed psychiatric symptoms associated with PTSD, anxiety, depression, and alcohol abuse are more likely to endorse stigma as a barrier to care [11, 20, 23, 30]. Addressing stigma in this psychiatrically vulnerable population is especially important to maximize access to mental health treatment. Indeed, one study found that individuals with PTSD who endorsed higher levels of stigma were less likely to engage in cognitive processing therapy (CPT) office visits with mental health providers due to visibility concerns, instead preferring tele-therapy or home appointments [36]. However, individuals who received home or tele-therapy appointments had higher rates of logistical complications, such as technological difficulties or distractions in the home [36]. These complications not only led to less favorable perceptions of treatment and increased patient frustration, but also required additional time from the therapists [36]. These frustrations and unfavorable perceptions could decrease future treatment adherence and could lead to negative beliefs about mental health care.

Increasing psychoeducation before engaging patients in treatment by providing additional outside resources (e.g., handouts or online videos) could help increase a patient's perceptions of credibility and expectations of positive treatment outcomes [36]. Such strategies may also help decrease stigma, optimize access to mental health care, and maximize treatment efficacy in psychiatrically
vulnerable populations struggling with stigma. Further research is needed to evaluate this possibility.

The inverse relationship between grit and stigma may reflect its relationship with a growth mindset, which is an implicit belief held by an individual that personal abilities are changeable, rather than fixed and immutable [37]. One study in American adolescents found a reciprocal relationship between grit and a growth mindset [38]. Specifically, grit systematically predicted rank-order increases in growth mindset, while growth mindset also predicted rank-order increases in grit over four consecutive six-month intervals [38]. These results were replicated in another large study performed with Chinese adolescents [39]. Overall, this data indicates that grit and growth mindset are personal traits that are positively associated with one another. Therefore, veterans with higher levels of grit may be less likely to interpret psychiatric symptoms as unchangeable or indicators of personal weaknesses, but instead may view these symptoms as temporary problems that require work and perseverance to change. This outlook may in turn lead to lower perceptions of stigma since the changeable nature of the psychiatric symptoms does not reflect an inherent and immutable character flaw. Further research is needed to elucidate mechanisms underlying this association.

Higher levels of dispositional optimism were inversely associated with the endorsement of stigma in the full sample. Numerous studies have shown that optimism is positive associated with mental and emotional well-being, increasing
the utilization of appropriate coping strategies and improving future outlook [40]. Optimism is inversely associated with negative mood symptoms, such as depression, hopelessness, and suicidal ideation [40]. Optimism’s positive association with mood may explain the negative association between optimism and perceptions of stigma in this study. Elevated mood has been shown to decrease negative perceptions overall, to include perceptions about discrimination and stigma [41]. Conversely, individuals with depressed mood were far more likely to endorse concerns about stigma and discrimination [41]. Therefore, veterans with higher levels of optimism may also have better mood and would therefore be less sensitive to negative treatment or stigmatization by others, making these individuals less likely to endorse stigma as a barrier to care in this study.

Greater perceptions of social support were associated with lower likelihood of perceived stigma in the subsample with psychiatric need. One study of Canadian veterans across different service branches found that experiencing support and acceptance by one’s peers, in the context of significant PTSD symptoms, decreased perceptions of stigma [42]. In this study, secure emotional expression in a group psychotherapy setting allowed for normalization of patients’ psychiatric symptoms and other distresses, thus reducing the stigma patients had toward their mental health [42]. This study highlighted the importance of having a trusting and cohesive social support network where veterans with PTSD symptoms could engage in emotional expression and acceptance in a safe
environment. These effects of social support on stigma likely explain the results in the current study, where having received social support was particularly protective against stigma for veterans with psychiatric need. Together this study and the current results highlight the importance of creating safe, accepting environments where veterans can engage in emotional expression with individuals who can help normalize their symptoms and, thus, decrease veterans’ perceptions of stigma.

**Correlates of Instrumental Barriers to Care**

The strongest correlates of instrumental barriers to care in both the full sample and subsample were greater age and purpose in life. Perceptions of received social support emerged as the third strongest correlate in the full sample, while having health insurance emerged as the third strongest correlate in the psychiatric need subsample.

Older individuals are known to endorse instrumental barriers less than intrinsic barriers, such as motivation for treatment or desire for change [43]. One study of adults >65 years of age with substance abuse disorders found that “lack of readiness to stop using” was the most cited reason for not engaging with mental health treatment - not cost or transportation [44]. Similarly, a study of elderly, lower-income Medicaid-Medicare dual-enrollees found that cost and transportation were less commonly cited as reasons for non-compliance with a mental health care referral [45]. The most cited reason for non-compliance with
such referrals was a “lack of perceived need” [45]. In both these studies of elderly patients, instrumental barriers were endorsed significantly less than intrinsic beliefs as reasons for not engaging with mental health care [44, 45]. This lack of endorsement of instrumental barriers across these studies indicates that elderly patients generally choose not to endorse instrumental barriers. Instead, this patient group tends to endorse intrinsic reasons and motivations for a lack of mental health care engagement [43-45]. Another explanation for this phenomenon is that elderly individuals (over age 65) have access to Medicare insurance, which offers some mental health benefits, decreasing the cost of engaging in such treatment [43]. This increased access to financial assistance for healthcare could be especially true of the veteran population described in the current study, many of whom have varying levels of service connection to VA treatment.

Being able to clearly identify a purpose in life is known to significantly contribute to psychological and emotional well-being. Victor Frankl famously proposed that having a purpose in life enables individuals to better endure life’s hardships, improving perseverance and effort in the face of adversity [46]. Erikson similarly noted that purpose is crucial in the lives of people in order to help them successfully navigate and resolve identity crises [46]. Higher levels of purpose in life may increase one’s ability to persevere through adversity, which could explain the inverse association of purpose in life and instrumental barriers to care in this study. Veterans who are able to clearly identify a purpose in life may be
more likely to work towards achieving their goals with greater perseverance, not allowing logistical complications (such as cost or transportation) to stop them in this pursuit. Alternatively, purpose in life could act as an indicator of overall mental well-being, which impacts the endorsement of instrumental barriers. For example, one study of Chinese young adults found that purpose in life was significantly negatively associated with stress, anxiety, and depression, and positively with gratitude, school-belonging, and grit [47]. Another study of older US veterans (average age of 62 years) across service branches found that high purpose in life was associated with 42%-94% reduced odds of screening positive for major depressive, generalized anxiety, posttraumatic stress, and substance use disorders, as well as suicide attempts, ideation, and future intent [48]. Additionally, a meta-analytic review found a significant inverse association between meaning in life (of which purpose in life is a component) and PTSD symptoms in US veterans [49]. This inverse relationship between purpose in life and psychiatric disorders may in part explain its association with the endorsement of instrumental barriers. Specifically, veterans with higher purpose in life may experience lower severity of psychiatric symptoms and be less likely to screen positive for psychiatric disorders [47-49]. In turn, individuals who screen positive for a psychiatric disorder are more likely to endorse instrumental barriers to care [11, 20]. Given that veterans with high purpose in life are less likely to screen positive for psychiatric disorders, they may also have a correspondingly lower overall endorsement of instrumental barriers to care.
The third-strongest correlate of instrumental barriers in the full sample of veterans was having greater received social support. The protective effect of received social support may be partially explained by the practical benefits of having supportive friends and family. Having a strong social support network may increase a veteran’s ability to get help in the transportation to appointments, complete ADLs and IADLs, and address other instrumental barriers to care. Additionally, the act of receiving social support is known to be associated with psychological benefits. For example, a meta-analysis of the mental health effects of social support found that a high level of social support protects against mental illness, decreases anxiety and discomfort, and increases tolerance for stressful life events [50]. The decreased rates of psychiatric diagnoses and increased tolerance for stressful events may have an especially strong effect on veterans who receive high levels of social support, which may help protect them against the lack of motivation and extreme stress commonly seen in depression and anxiety, while improving their tolerance to address and overcome stressful logistical obstacles. Overall, this could result in higher levels of social support leading to decreased endorsement of instrumental barriers.

The third-strongest correlate of the endorsement of instrumental barriers in the subsample with psychiatric need was having health insurance. Veterans with psychiatric need were significantly more likely to endorse lack of health insurance as a significant instrumental barrier. The effect of health insurance on instrumental barriers in this population is likely driven by the lower socioeconomic status of these veterans relative to those without psychiatric need.
disorders have long been overrepresented among individuals with lower socioeconomic status [51]. Therefore, the veteran subsample with psychiatric need in this study is likely to have less financial and logistical resources than veterans who did not have psychiatric need. This lack of financial resources may explain the increased importance of health insurance within this group. The lack of other financial resources could make accessing mental health care impractical or even impossible without health insurance. The association between lack of health insurance and the endorsement of instrumental barriers in this study highlights the continued need for improving access to health insurance and awareness of the freely available mental health services (e.g., VA) among veterans with psychiatric disorders.

**Correlates of Negative Beliefs About Mental Health Care**

The strongest correlates of the endorsement of negative beliefs about mental healthcare in both the full sample and subsample were lower perceptions of received social support and purpose in life. The third-strongest correlate in the full sample was adverse childhood experiences (ACES), while the third-strongest correlate in the subsample was military sexual trauma (MST).

As discussed above, having a clear purpose in life and being engaged in a strong social support network both have numerous mental and emotional health benefits. When analyzing negative beliefs specifically, the protective effects of purpose in life and social support may be related to their ability to increase
emotional recovery and resilience. For example, one study found that higher levels of purpose in life predicted better recovery from a negative emotional stimulus, measured with the eyeblink startle response [52]. People with greater life purpose exhibited faster recovery via smaller eyeblink startle response magnitude after picture offset [52]. Results of this study align with other descriptive studies showing that purpose in life can help improve resilience and increase perseverance in the face of emotional adversity [46]. Likewise, individuals who have higher levels of social support have been shown to have an increased tolerance for stressful life events and an improved ability to find meaning in such events [50]. Veterans with a clear purpose in life and strong social support may thus be better able to endure negative emotional experiences relating to mental health treatment without forming negative beliefs about mental health treatment overall. Notably, the current study focused solely on veterans with no history of mental health treatment. Therefore, these veterans have had no direct negative experiences with mental health providers. However, negative experiences communicated to these veterans by peers who are perceived to be trustworthy and credible may still impact their formation of negative beliefs about mental healthcare [53]. Therefore, veterans without a clear purpose in life or who lack social support may be more prone to developing negative beliefs about mental health care through secondary sources, such as trustworthy peers and friends, despite never having engaged in mental health treatment. Likewise, veterans with higher levels of social support and purpose in life may be less likely
to develop negative beliefs about mental health treatment, despite what they may see or hear from other sources.

The strong positive correlation between childhood abuse, childhood neglect, MST and the endorsement of negative beliefs about mental health care is likely due to the damaging effects of such trauma on an individual’s ability to trust others. Individuals who were abused or neglected as children have been shown to have higher levels of distrust, with weaker decreases in distrust following positive feedback when compared to individuals who did not experience childhood abuse or neglect [54]. This decrease in trust has also been observed MST survivors. For example, one study found that as many as one in three women veterans in the VA have experienced MST, and that many of these women had to endure a military culture where they lacked support or resources [55]. As a result, a sense of “institutional betrayal” and a lack of trust in military institutions became a significant barrier for many of these women to access mental health care [55]. The lack of trust caused by both ACES and MST likely increases the endorsement of negative beliefs by increasing mistrust in mental health providers. Individuals who have experienced ACES are likely to have lower baseline levels of trust in all relationships, which includes mental health providers [54]. Similarly, service members who have experienced MST and harbor a sense of institutional betrayal may be less likely to trust mental health providers due to their association with the military, if these providers are part of the VA system. This situation may be improved by allowing individuals who have
experienced ACES or MST to select therapists with whom they feel most comfortable and with whom they can form lasting therapeutic relationships.

**CHALLENGES AND LIMITATIONS**

The present study has three notable limitations. First, the study is cross-sectional, preventing insight into causal relationships between correlates and barriers to care. Although such relationships may exist, additional studies will be required to establish such causality. Second, while the veteran sample utilized in this study is nationally representative results may not generalize to more heterogeneous sub-populations of veterans. Additional research into veteran populations stratified by sociodemographic and military variables such as by age, race/ethnicity, or combat exposures may help to more accurately describe correlates and barriers to care within these specified veteran populations. Third, analysis of the subsample with psychiatric need may be of limited clinical utility since screening positive for a disorder is not the same as a formal diagnosis ascertained via a clinical interview. Positive screening for a given disorder indicates a higher likelihood of being diagnosed with the disorder, but some individuals who screen positive may not meet diagnostic criteria or have functional impairment warranting need for formal mental health treatment. Therefore, some of the conclusions drawn from this subsample may not be applicable to patient populations with diagnoses of the disorders that were screened for in this study.
DISSEMINATION

We plan to submit our findings to *Administration and Policy in Mental Health and Mental Health Services Research* or another similar peer-reviewed, PubMed-indexed journal to contribute to the broader scientific literature.

CONCLUSION

Results of this study provide the first known data on the prevalence and key predisposing, enabling, and need-based correlates of barriers to mental health care in a current, nationally representative sample of U.S. veterans. Results can be used to inform resource allocation, as well as prevention, psychoeducation, and treatment efforts designed to mitigate barriers to care and promote engagement with mental health care services among veterans. Further research is needed to address these same questions in specific sub-populations of veterans, investigate causal relationships between correlates and barriers, and investigate the accuracy of these findings in veteran populations with official psychiatric diagnoses.
FIGURES/TABLES REFERENCES AND LEGENDS

Figures

Figure 1. Prevalence of Barriers to Care in the Full Sample (N=3,115) and Subsample (N=531) of Veterans
Tables

Table 1. Correlates of barriers to care among U.S. veterans without a history of mental health treatment (N=3,115)

<table>
<thead>
<tr>
<th></th>
<th>Any Perceived Stigma</th>
<th>Any Instrumental Barrier to Care</th>
<th>Any Negative Belief about MH Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nagelkerke R²</td>
<td>0.15</td>
<td>0.26</td>
<td>0.19</td>
</tr>
<tr>
<td>Mean (SD) or N (%)</td>
<td>OR (95%CI)</td>
<td>OR (95%CI)</td>
<td>OR (95%CI)</td>
</tr>
<tr>
<td><strong>Predisposing factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>64.2 (15.2)</td>
<td>1.01 (1.00-1.02) <strong>0.98 (0.97-0.99)</strong>***</td>
<td>0.98 (0.97-0.99)**</td>
</tr>
<tr>
<td>Male sex</td>
<td>2,836 (92.9%)</td>
<td><strong>1.94 (1.20-3.15)</strong>**</td>
<td>1.47 (0.97-2.23)</td>
</tr>
<tr>
<td>Race/ethnicity (reference: white)</td>
<td>2,561 (78.4%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>219 (11.3%)</td>
<td>1.13 (0.80-1.61)</td>
<td>0.99 (0.70-1.41)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>230 (6.5%)</td>
<td>0.99 (0.65-1.52)</td>
<td>1.21 (0.82-1.79)</td>
</tr>
<tr>
<td>Other</td>
<td>105 (3.8%)</td>
<td>1.33 (0.81-2.19)</td>
<td>0.85 (0.50-1.46)</td>
</tr>
<tr>
<td>College graduate or higher education</td>
<td>1,383 (32.3%)</td>
<td><strong>1.35 (1.08-1.68)</strong>**</td>
<td>1.12 (0.89-1.41)</td>
</tr>
<tr>
<td>Number of deployments (reference: 0)</td>
<td>2,120 (67.9%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>611 (19.6%)</td>
<td>1.05 (0.81-1.36)</td>
<td>0.84 (0.65-1.09)</td>
</tr>
<tr>
<td>≥2</td>
<td>361 (12.5%)</td>
<td>1.28 (0.94-1.74)</td>
<td>0.81 (0.58-1.13)</td>
</tr>
<tr>
<td><strong>Enabling factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married or partnered</td>
<td>2,300 (74.9%)</td>
<td>1.02 (0.80-1.31)</td>
<td>0.84 (0.66-1.08)</td>
</tr>
<tr>
<td>Annual household income &gt;$60,000</td>
<td>1,835 (59.3%)</td>
<td>1.06 (0.84-1.33)</td>
<td><strong>0.76 (0.60-0.95)</strong>*</td>
</tr>
<tr>
<td>Currently employed</td>
<td>1,211 (47.6%)</td>
<td>1.19 (0.92-1.55)</td>
<td>1.23 (0.94-1.60)</td>
</tr>
<tr>
<td>Health insurance</td>
<td>3,065 (97.9%)</td>
<td>1.49 (0.70-3.21)</td>
<td><strong>0.41 (0.21-0.79)</strong>*</td>
</tr>
<tr>
<td>VA is primary source of health care</td>
<td>459 (15.2%)</td>
<td>1.12 (0.84-1.47)</td>
<td>0.76 (0.57-1.02)</td>
</tr>
<tr>
<td>ADL or IADL disability</td>
<td>360 (11.6%)</td>
<td>1.23 (0.89-1.70)</td>
<td><strong>1.89 (1.38-2.59)</strong>***</td>
</tr>
<tr>
<td>Received social support</td>
<td>19.1 (5.0)</td>
<td>0.99 (0.97-1.01)</td>
<td><strong>0.96 (0.94-0.98)</strong>***</td>
</tr>
<tr>
<td><strong>Need factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adverse childhood experiences</td>
<td>1.2 (1.7)</td>
<td>1.05 (0.99-1.11)</td>
<td>1.02 (0.96-1.08)</td>
</tr>
<tr>
<td>Number of traumas</td>
<td>8.0 (7.8)</td>
<td>1.01 (1.00-1.02)</td>
<td>1.01 (0.99-1.02)</td>
</tr>
<tr>
<td></td>
<td>Count (Percentage)</td>
<td>Estimate (95% CI)</td>
<td>Estimate (95% CI)</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------------</td>
<td>-------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Military sexual trauma</td>
<td>148 (4.3%)</td>
<td>1.58 (0.95-2.60)</td>
<td><strong>1.85 (1.15-2.98)</strong></td>
</tr>
<tr>
<td>Psychological distress</td>
<td>0 (1.0)</td>
<td><em>1.43 (1.19-1.73)</em>*</td>
<td>1.14 (0.94-1.38)</td>
</tr>
<tr>
<td>Current alcohol or drug use disorder</td>
<td>393 (15.2%)</td>
<td>1.10 (0.84-1.44)</td>
<td>0.99 (0.76-1.28)</td>
</tr>
<tr>
<td>Number of medical conditions</td>
<td>2.7 (2.1)</td>
<td>0.98 (0.93-1.04)</td>
<td>0.94 (0.89-1.00)</td>
</tr>
<tr>
<td>Insomnia severity</td>
<td>6.0 (4.8)</td>
<td>0.99 (0.96-1.01)</td>
<td>1.01 (0.99-1.04)</td>
</tr>
<tr>
<td>Lifetime suicide attempt</td>
<td>30 (1.6%)</td>
<td><strong>0.19 (0.06-0.62)</strong>***</td>
<td>0.85 (0.40-1.80)</td>
</tr>
<tr>
<td>Functioning</td>
<td>0 (1.0)</td>
<td>0.90 (0.73-1.09)</td>
<td>0.84 (0.69-1.03)</td>
</tr>
<tr>
<td>Resilience</td>
<td>40.1 (6.2)</td>
<td>0.98 (0.96-1.02)</td>
<td>1.01 (0.99-1.04)</td>
</tr>
<tr>
<td>Purpose in life</td>
<td>21.9 (4.3)</td>
<td><strong>0.93 (0.90-0.96)</strong>***</td>
<td>0.96 (0.93-0.99)*</td>
</tr>
<tr>
<td>Dispositional optimism</td>
<td>5.2 (1.3)</td>
<td><strong>0.85 (0.78-0.92)</strong>***</td>
<td>0.83 (0.76-0.90)*****</td>
</tr>
<tr>
<td>Grit</td>
<td>3.8 (0.6)</td>
<td><strong>0.60 (0.49-0.74)</strong>***</td>
<td>0.63 (0.51-0.78)*****</td>
</tr>
</tbody>
</table>
Table 2. Correlates of barriers to care among U.S. veterans with a positive screen for a mental and/or substance use disorder and without a history of mental health treatment (N=531)

<table>
<thead>
<tr>
<th></th>
<th>Any Perceived Stigma</th>
<th>Any Instrumental Barrier to Care</th>
<th>Any Negative Belief about MH Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nagelkerke R²</td>
<td>0.24</td>
<td>0.37</td>
<td>0.21</td>
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<td></td>
<td>Mean (SD) or N (%)</td>
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</tr>
<tr>
<td>Predisposing factors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>58.3 (15.6)</td>
<td>0.99 (0.97-1.01)</td>
<td><strong>0.96 (0.94-0.98)</strong></td>
</tr>
<tr>
<td>Male sex</td>
<td>473 (91.5%)</td>
<td><strong>3.66 (1.31-10.25)</strong></td>
<td>1.13 (0.47-2.70)</td>
</tr>
<tr>
<td>Race/ethnicity (reference: white)</td>
<td>413 (74.4%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>43 (13.7%)</td>
<td>1.64 (0.79-3.39)</td>
<td>0.76 (0.35-1.63)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>55 (8.2%)</td>
<td>0.60 (0.25-1.45)</td>
<td>1.26 (0.57-2.77)</td>
</tr>
<tr>
<td>Other</td>
<td>20 (3.7%)</td>
<td>1.15 (0.34-3.92)</td>
<td>0.58 (0.17-1.94)</td>
</tr>
<tr>
<td>College graduate or higher education</td>
<td>198 (28.7%)</td>
<td>1.31 (0.80-2.14)</td>
<td>0.85 (0.51-1.41)</td>
</tr>
<tr>
<td>Number of deployments (reference: 0)</td>
<td>362 (65.6%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>97 (21.4%)</td>
<td>1.30 (0.75-2.24)</td>
<td>1.40 (0.80-2.44)</td>
</tr>
<tr>
<td>≥2</td>
<td>68 (13.0%)</td>
<td>1.01 (0.50-2.02)</td>
<td>1.08 (0.54-2.16)</td>
</tr>
<tr>
<td>Enabling factors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married or partnered</td>
<td>371 (70.1%)</td>
<td>1.24 (0.73-2.12)</td>
<td>0.90 (0.54-1.50)</td>
</tr>
<tr>
<td>Annual household income &gt;$60,000</td>
<td>287 (52.8%)</td>
<td>1.25 (0.74-2.10)</td>
<td>0.86 (0.51-1.44)</td>
</tr>
<tr>
<td>Currently employed</td>
<td>242 (54.0%)</td>
<td>0.90 (0.52-1.58)</td>
<td>1.41 (0.80-2.48)</td>
</tr>
<tr>
<td>Health insurance</td>
<td>517 (95.7%)</td>
<td>1.80 (0.44-7.30)</td>
<td><strong>0.11 (0.03-0.45)</strong></td>
</tr>
<tr>
<td>VA is primary source of health care</td>
<td>90 (18.2%)</td>
<td>1.17 (0.66-2.09)</td>
<td>1.10 (0.62-1.96)</td>
</tr>
<tr>
<td>ADL or IADL disability</td>
<td>93 (19.4%)</td>
<td>0.91 (0.50-1.67)</td>
<td>1.60 (0.88-2.91)</td>
</tr>
<tr>
<td>Received social support</td>
<td>17.4 (5.5)</td>
<td><strong>0.94 (0.91-0.98)</strong></td>
<td><strong>0.94 (0.90-0.98)</strong></td>
</tr>
<tr>
<td>Need factors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adverse childhood experiences</td>
<td>1.8 (2.0)</td>
<td>1.01 (0.90-1.13)</td>
<td>1.05 (0.93-1.17)</td>
</tr>
<tr>
<td>Number of traumas</td>
<td>9.9 (9.5)</td>
<td>1.00 (0.98-1.03)</td>
<td>1.00 (0.98-1.03)</td>
</tr>
<tr>
<td>Military sexual</td>
<td>52 (7.5%)</td>
<td>2.13 (0.86-5.29)</td>
<td>1.28 (0.53-3.11)</td>
</tr>
<tr>
<td></td>
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<tr>
<td>------------------------------</td>
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<td>-------</td>
<td>-----------</td>
</tr>
<tr>
<td>trauma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychological distress</td>
<td>0 (1.0)</td>
<td>1.32</td>
<td>(1.07-1.62)**</td>
</tr>
<tr>
<td>Current alcohol or drug use disorder</td>
<td>393 (77.2%)</td>
<td>0.85 (0.45-1.60)</td>
<td>0.98 (0.52-1.87)</td>
</tr>
<tr>
<td>Number of medical conditions</td>
<td>2.8 (2.1)</td>
<td>0.96 (0.84-1.09)</td>
<td>0.98 (0.85-1.11)</td>
</tr>
<tr>
<td>Insomnia severity</td>
<td>8.5 (5.8)</td>
<td>1.03 (0.98-1.07)</td>
<td>1.01 (0.96-1.06)</td>
</tr>
<tr>
<td>Lifetime suicide attempt</td>
<td>16 (4.0%)</td>
<td><strong>0.03 (0.01-0.73)</strong>*</td>
<td>0.77 (0.25-2.45)</td>
</tr>
<tr>
<td>Functioning</td>
<td>0 (1.0)</td>
<td>0.92 (0.65-1.31)</td>
<td>1.20 (0.82-1.74)</td>
</tr>
<tr>
<td>Resilience</td>
<td>38.2 (6.6)</td>
<td>0.97 (0.93-1.01)</td>
<td>0.97 (0.93-1.01)</td>
</tr>
<tr>
<td>Purpose in life</td>
<td>19.8 (4.8)</td>
<td>0.98 (0.92-1.04)</td>
<td><strong>0.93 (0.87-0.98)</strong>*</td>
</tr>
<tr>
<td>Dispositional optimism</td>
<td>4.8 (1.4)</td>
<td>0.93 (0.79-1.10)</td>
<td>1.04 (0.88-1.23)</td>
</tr>
<tr>
<td>Grit</td>
<td>3.6 (0.6)</td>
<td><strong>0.48 (0.33-0.68)</strong>***</td>
<td><strong>0.49 (0.31-0.76)</strong>**</td>
</tr>
</tbody>
</table>
## Supplemental Tables

### Supplemental Table 1. Descriptions of Variables Examined as Potential Correlates of Barriers to Care

<table>
<thead>
<tr>
<th>Variable</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current probable PTSD</td>
<td>PTSD Checklist for DSM-5 (47), where a positive screen was defined as a score ≥33 (α = 0.96; 45).</td>
</tr>
<tr>
<td>Current probable major depressive disorder</td>
<td>Patient Health Questionnaire-4 (46), where scores of ≥3 on the depression items (α = 0.87) are indicative of a positive screen for major depressive disorder.</td>
</tr>
<tr>
<td>Current probable GAD</td>
<td>Patient Health Questionnaire-4 (46), where scores of ≥3 on the anxiety items (α = 0.86) are indicative of a positive screen for GAD.</td>
</tr>
<tr>
<td>Current probable drug use disorder</td>
<td>Screen of Drug Use (48), a brief validated measure of probable drug use disorder. Response of ≥ 7 days to the following question is indicative of a positive screen for drug use disorder: “How many days in the past year have you used non-prescription drugs?”; if the response to this question is 6 or fewer days, a response of ≥ 2 days to the question “How many days in the past 12 months have you used drugs more than you meant to?” is indicative of a positive screen for drug use disorder.</td>
</tr>
<tr>
<td>Current probable alcohol use disorder</td>
<td>Alcohol Use Disorders Identification Test (49); score of ≥8 indicates a positive screen.</td>
</tr>
<tr>
<td>Sociodemographic characteristics</td>
<td>A general sociodemographic questionnaire was used to assess age (continuous), gender (male vs. female), race/ethnicity (non-Hispanic Caucasian vs. not), and education (≥college graduate vs. &lt;college graduate), marital status (married/partnered vs. not), employment status (currently employed vs. not), annual household income (&lt;$60k vs. &gt;$60k), and health insurance status.</td>
</tr>
<tr>
<td>Combat exposure</td>
<td>Assessed via number of deployments: “How many times did you deploy to a combat or war zone?” (0 vs. 1 vs. ≥2).</td>
</tr>
<tr>
<td>Disability</td>
<td>Any disability in activities of daily living. The following question was asked: “At the present time, do you need help from another person to do the following?” (e.g., bathe; walk around your home or apartment; get in and out of chair). Endorsement of any of these activities was indicative of having a disability with an activity of daily living (50).</td>
</tr>
<tr>
<td>Received social support</td>
<td>Score on 5-item version of the Medical Outcomes Study Social Support Scale (51).</td>
</tr>
<tr>
<td>Lifetime trauma burden</td>
<td>Count of potentially traumatic events on the Life Events Checklist for DSM-5 (52).</td>
</tr>
<tr>
<td>Adverse childhood experiences</td>
<td>Score on Adverse Childhood Experiences Questionnaire (53), which assesses for seven types of childhood maltreatment (e.g., physical abuse, emotional neglect), occurring between</td>
</tr>
</tbody>
</table>
birth and age 18 years. Items were summed for a total score, with higher scores indicating greater maltreatment.

**Military sexual trauma**
Positive endorsement of the following dichotomous item: “When you were in the military, did you have sexual contact against your will or when you were unable to say no (for example, after being forced or threatened or to avoid other consequences)?”

**Current psychological distress factor**
To attenuate potential multicollinearity among variables, a composite psychological distress factor score was computed using an exploratory factor analysis of scores on measures of depressive and anxiety symptoms (PHQ-4) (46) and posttraumatic stress symptoms (PCL-5) (47). This regression-weighted factor score provides a standardized measure of psychological distress, with 0=mean and 1=standard deviation, and higher scores indicating greater distress.

**Depression symptoms**
Score on the Patient Health Questionnaire-2 (46), which assess the 2 core symptoms of depression.

**GAD symptoms**
Score on the Generalized Anxiety Disorder-2 (46), which assess the 2 core symptoms of GAD.

**PTSD symptoms**
Score on past-month version of the PTSD Checklist for DSM-5 (47), which assessed PTSD symptoms related to veterans’ ‘worst’ event endorsed on the Life Events Checklist for DSM-5.

**Number of medical conditions**
Sum of number of medical conditions endorsed in response to question: “Has a doctor or healthcare professional ever told you that you have any of the following medical conditions?” (e.g., arthritis, cancer, diabetes, heart disease, asthma, kidney disease). Range: 0-24 conditions.

**Insomnia severity**
Score on the Insomnia Severity Index (54).

**Lifetime suicide attempt**
Positive endorsement of dichotomous item: “Have you ever tried to kill yourself?”

**Functioning composite score**
To attenuate potential multicollinearity among variables, a composite functioning factor was computed using an exploratory factor analysis of scores on the physical and mental functioning component summary scores of the Short Form Health Survey-8 (55), the Medical Outcomes Study Cognitive Functioning Scale (56), and the Brief Inventory of Psychosocial Functioning (57). This regression-weighted factor score provides a standardized measure of functioning, with 0=mean and 1=standard deviation, and higher scores indicating better functioning.

**Physical functioning**
Score on the Physical Component Summary on the Short Form Health Survey-8 (55), capturing pain, general health, and the degree to which physical health affects physical activities and daily activities.

**Mental functioning**
Score on the Mental Component Summary on the Short Form Health Survey-8 (55), capturing vitality/energy, social functioning, emotional problems (i.e., depression, anxiety), and the degree to which mental health affects work, school, and daily activities.
<table>
<thead>
<tr>
<th>Metric</th>
<th>Description</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive functioning</td>
<td>Score on the Medical Outcomes Study Cognitive Functioning Scale (56), capturing impairment across various cognitive functions, such as memory, reasoning, confusion, and attention/concentration.</td>
<td>.835</td>
</tr>
<tr>
<td>Psychosocial functioning</td>
<td>Score from the Brief Inventory of Psychosocial Functioning (reverse-scored) (57), capturing functional impairment in several domains: romantic relationships, family relationships, work, friendships and socializing, parenting, education, and self-care.</td>
<td>.853</td>
</tr>
<tr>
<td>Purpose in life</td>
<td>Score on Purpose in Life Test-Short Form (58), assessing meaning and purpose in life.</td>
<td>-</td>
</tr>
<tr>
<td>Dispositional optimism</td>
<td>Score on single-item measure of optimism from Life Orientation Test-Revised (59); “In uncertain times, I usually expect the best”); rating 1=strongly disagree to 7=strongly agree.</td>
<td>-</td>
</tr>
<tr>
<td>Grit</td>
<td>Score on the Short Grit Scale (34),[MOU1] Grit refers to trait perseverance extending to one’s decision/commitment to address needs on their own.</td>
<td>-</td>
</tr>
<tr>
<td>Current mental healthcare use</td>
<td>Positively endorsing either of the following two dichotomous items: “Are you currently receiving psychotherapy or counseling for a psychiatric or emotional problem?”, “Are you currently taking prescription medication for a psychiatric or emotional problem?”</td>
<td>-</td>
</tr>
</tbody>
</table>

Note. DSM-5 = Diagnostic and Statistical Manual of Mental Disorders, 5th Edition; GAD = generalized anxiety disorder; PTSD = posttraumatic stress disorder.
REFERENCES


