Published in final edited form as:

Mil Psychol. 2017 September ; 29(5): 359–369. doi:10.1037/mil0000169.

Improving Mental Health Treatment Utilization in Military Veterans: Examining the Effects of Perceived Need for Care and Social Support

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Abstract

Objective—Many veterans with mental health problems do not adequately utilize needed care. Research has focused on identifying barriers to mental health care in veterans.

Method—The current study adds to existing literature by examining whether perceived need for treatment and social support affect treatment utilization in a national longitudinal survey of Iraq and Afghanistan veterans ($n = 1090$).

Results—The Health Beliefs Model (HBM) postulates that a key reason why patients fail to obtain needed care is their belief "it's up to me to handle my own problems." This view was endorsed by 42% in the current national sample of veterans and was found in multivariate analysis to predict less treatment seeking in the next year. Mediation analysis revealed that veterans with higher ratings of social support were less likely to believe they needed to solve mental health problems on their own, indirectly equating to higher odds of treatment use. Simultaneously, findings indicated that posttraumatic stress disorder (PTSD) had a direct effect on more mental health visits but was also associated with higher endorsement that one needed to handle one's own problems and thus had an indirect effect of reducing mental health visits.

Conclusion—Both social support and PTSD affected veterans' perceptions of needing to solve one's own problems, significantly predicted follow-up with mental health care. As a result, the findings indicate that clinicians' should explore veterans' belief systems about perceived treatment need as well as investigate the role of social support to improve mental health treatment utilization.

Keywords

veterans; treatment utilization; posttraumatic stress disorder; social support

Vulnerability to mental illness in veterans has been well documented, as research shows deployments and combat to be predictive of high rates of PTSD, depression, and other mental health problems (Hoge et al., 2004; Kang & Hyams, 2005; Lapierre, Schwegler, & Labauve, 2007; Milliken, Auchterlonie, & Hoge 2007). Despite this, studies have shown veterans to be under accessing mental healthcare (Kim, Thomas, Wilk, Castro, & Hoge, 2010; Sareen et al., 2007; Hoge et al., 2004; Sudom, Zamorski, & Garber, 2012; Milliken et al., 2007).

There are many studies that have looked at barriers to accessing care on veterans. Pietrzak, Johnson, Goldstein, Malley, and Southwick (2009) found negative attitude towards mental health to be the biggest predictor of barriers to care, with other studies finding similar results (Sudom et al., 2012; Brown, Creel, Engel, Herrell, Hoge, 2011). Being emotionally ready for treatment is also a seemingly well-accepted barrier, as some studies have shown items like “not being able to ask for help” and “not being able to admit to a problem” (Stecker, Fortney, Hamilton, Ajzen, 2007), to be indicators of barriers to care. Perceived stigma towards seeing a mental health professional has received much attention with mixed results, as some studies show it to be a major barrier (Kim et al., 2010; Zinzow et al., 2013) while others do not (Ouimette et al., 2011; Sudom et al., 2012).

General issues with the procedure of treatment seem to be a common cause of dropout, as trust issues with the mental health professional (Hoerster et al., 2012; Hoge et al., 2014) and concerns about confidentiality (Hoge et al., 2014) have been identified as factors related to a lack of engagement. Though the effects of perceived stigma were somewhat unclear in barriers to veterans accessing care, this does not seem to be the case with utilization of care, as multiple studies have found it to be a major factor in a veteran’s choice to leave treatment (Hoerster et al., 2012; Hoge et al., 2014). Finally, concerns over the effectiveness of treatment and believing that they could handle their problems on their own were also shown to be barriers to engagement in care (Hoge et al., 2014). Hoge et al. (2014) found two external barriers: work interference and not having enough time with a mental health professional.

The Health Belief Model (HBM) is one of the most commonly used models to conceptualize what factors are relevant to a patient when he or she decides to engage in a health promoting behavior (Rosenstock, Stretcher, & Becker, 1988; Janz & Becker, 1984; Rosenstock et al., 1988; Carpenter, 2010). The HBM theorizes that patients weigh their own belief in needing to handle one’s own problems against their actual treatment need in the context of cues to action that either encourage or discourage health promoting behavior. As a result, HBM posits that to understand factors in treatment engagement, one must make a distinction between actual need for care and perceived need for care; namely, just because someone might require a medical intervention does not guarantee that this individual will agree. Further, HBM indicates that patients do not have these beliefs in a vacuum but in the context of social relationships, meaning that individuals who feel support from others could have different perceptions about the need for treatment.

The perspective of HBM therefore raises the following question: how do veterans’ actual and perceived need for treatment relate to later use of mental health treatment, and to what

extent does social support impact this relationship? Indeed, a recent study showed that U.S. Soldiers who said they preferred to manage problems on their own had worse treatment seeking in the next year (Adler et al., 2015). Another study of U.S. Soldiers found a similar result in that soldiers' feeling that they could handle problems on their own was a common reason for dropout (Hoge et al., 2014). Do veterans show the same pattern after separating from the military? Would stronger perceived social support affect one's preference to manage problems on one's own? Might it encourage an individual to seek help from others? In this case, would social support indirectly affect treatment utilization by encouraging a veteran to recognize a need to get help from others? This study aims to answer these questions and poses the following hypotheses. Based on the HBM and existing research, we hypothesize that although actual need for treatment will predict increased treatment utilization, lack of *perceived* need for treatment (i.e., belief one can solve problems on one's own) will predict reduced treatment utilization in the next year. Further, based on HBM, we hypothesize that veterans who perceive greater social support will endorse fewer barriers to utilizing care and demonstrate higher levels of treatment utilization.

Methods

Study design and participants

Conducted as part of a US National Institute of Mental Health funded grant to develop risk assessment tools for veterans and drawn by the US Department of Veterans Affairs (VA) Environmental Epidemiological Service in May 2009, the study sample was taken from the National Post-Deployment Adjustment Study (Elbogen et al., 2013). The sample was randomly selected from 3000 veterans from a database of over one million US military service members who: 1) served after September 11, 2001 in Operation Iraqi Freedom (OIF) or Operation Enduring Freedom (OEF) and 2) either had left from active duty service or were in the Reserves/National Guard. After Institutional Review Board approval was obtained, veterans were surveyed using Dillman methodology (Dillman, Smyth, & Christian, 2009), utilizing multiple and varied contacts to maximize response rate. This study implemented two waves of data collection one-year apart with parallel procedures, with participants being reimbursed after completing each wave.

At each wave, participants were first sent an introductory letter about the upcoming survey. Four days later, they were sent an invitation by mail, which contained commemorative postage stamps as an incentive and instructions on how to complete a 35-minute confidential web-based survey. Sixteen days after the invitations were mailed, potential participants were sent postcards thanking them for completing the survey or reminding them to do so. Two weeks after the postcard mailing, those who had not taken the survey received a paper version with a postage-paid return envelope. Two months after the print survey had been mailed, a final letter was sent encouraging participation and explaining that the survey would close the following week. Wave 1 was conducted July 2009 to April 2010, yielding a 47% response rate, comparable to that achieved in other national surveys of veterans in the US (Vogt et al., 2011; Tanielian & Jaycox, 2008).

At Wave 2, participants were queried exactly one year after completing the Wave 1 survey over the period from July 2010 to April 2011. At conclusion, $n=1090$ veterans completed

Wave 2 yielding a 79% retention rate. The military branch breakdown as well as ethnicity of the final sample approximated the actual composition of the US Armed Forces and approximated the composition of the armed forces at the time of the survey (Defense Equal Opportunity Management Institute, 2010). Geographically, the final sample accurately corresponded to known military demographics with the 50 US states, Washington DC, and 4 territories represented in close approximation to reported military statistics (Defense Equal Opportunity Management Institute, 2010). To our knowledge, the National Post-Deployment Adjustment Study enrolled one of the most representative samples of US Iraq/Afghanistan Veterans to date.

Table 1 shows the descriptive data of the sample used in this study. Of the total sample, 84.05% ($n = 665$) were male with 26.37% ($n = 208$) identifying their race as non-white and 81.86% ($n = 648$) receiving an education past high school. About half of the sample reported high combat experience, with 34.17% reporting a service connected disability and 70.08% ($n = 554$) showing good social support. About a quarter of the sample said it had been a year since deployment, with 26.46% ($n = 209$) indicated they had completed multiple deployments when in the military. About half of the sample was reservists, while 18.68% ($n = 148$) were officers. Clinically, 23.75% ($n = 188$) met criteria for alcohol misuse and 17.88% ($n = 141$) met the standards for PTSD. Of those that accessed care ($n = 253$), the mean number of visits during the year was 9. Finally, when veterans were asked whether they think its up to them to handle their problems on their own, 21.95% strongly agreed ($n = 170$), 20.58% ($n = 159$) somewhat agreed, 40.92% ($n = 316$) somewhat disagreed, and 16.55% ($n = 128$) strongly disagreed.

Measures

At Wave 1, data attained included age, gender, race/ethnicity, marital status, employment, education, military branch, number/length/dates of deployments, and military rank. Additionally, service connection disabilities, or injuries that occurred over military service that normally warrant compensation and treatment, were also recorded. Combat exposure was measured by a subscale of 16 items within the Deployment Risk and Resilience Inventory (DRRI) (King, King, & Vogt, 2003), sample items include “I went on combat patrols or missions,” “I was part of a land or naval artillery unit that fired on the enemy,” and “I was wounded or injured in combat.” Two items were summed from the Quality of Life Index to measure social support, in which participants were asked to rate “the emotional support you get from family” and “the emotional support you get from friends” on a scale ranging from 0 “Very dissatisfied” to 5 “very satisfied” (Ferrans & Powers, 1992)

For mental health problems, we examined PTSD and alcohol misuse. Probable PTSD was measured with the Davidson Trauma Scale (DTS) (Davidson et al., 1997) which uses rating the past week frequency and severity of 17 DSM-IV PTSD symptoms of re-experiencing, avoidance/numbing, and hyperarousal related to a specific trauma. We utilized a DTS cut-off score of 48, which has demonstrated .82 sensitivity, .94 specificity, and .87 diagnostic efficiency with a Structured Clinical Interview of Diagnosis (SCID) diagnosis of PTSD in Iraq and Afghanistan War Veterans (McDonald, Beckham, Morey, & Calhoun, 2009). An Alcohol Use Disorder Identification Test (AUDIT) cut-off of 8 was used to identify probable

alcohol misuse (Bradley & Bush, 1998), sample items include “How often do you have a drink containing alcohol?” and “Have you or someone else been injured as a result of your drinking?”

Regarding perceived need for treatment, participants were asked: “Veterans may face obstacles getting or using mental health services for a number of reasons. Please rate how much you agree or disagree with each statement as it applies to you” and then prompted to rate perceptions, as based on empirical research in military personnel (Elbogen et al., 2013; Hoge et al., 2004). Specifically, we examined responses to “It’s up to me to work out my own problems” scored on a 4 point Likert Scale (1=Strongly Disagree, 2=Somewhat Disagree, 3= Somewhat Agree; 4=Strongly Agree). This item is closely aligned with recently published research demonstrating that preference for self-management of mental health care related to nearly 50% lower use of treatment in the next year in a sample of U.S. Soldiers (Adler et al., 2015).

At Wave 2, mental health utilization data was obtained the number of visits made to a psychiatrist, psychologist, counselor, or other mental health professional in the past year; specifically, participants were asked: “How many times in the past year have you seen a psychiatrist (mental health person who can prescribe medicine)? How many times in the past year have you talked with a psychologist, counselor, or any other mental health professional?” For the current study, number of visits were summed and for multivariate analyses, if the participant indicated 1 or more visit, this was operationalized as the veteran as having utilized mental health treatment in the past year.

Statistical Analysis

SAS 9.3 was used for all statistical analyses. Analyses were weighted by gender to adjust for oversampling. Women represented 33% of the NPDAS sample in contrast to 15.6% (approximately one-seventh) of the military based on September 2009 Defense Manpower Data Center figures (Defense Equal Opportunity Management Institute, 2010). Data were weighted to reflect the latter proportion, adjusting the sampled $n = 1090$ to a weight-adjusted $n = 866$. Chi-square analyses were used to analyze categorical data for differences in diagnosis, treatment use, and perceptions about treatment.

Logistic Regression was conducted to analyze factors related to veterans’ pursuing mental health treatment at Time 2. Mental health visits at time 2 was dichotomized as either pursuing treatment or not. Logistic Regression was first conducted on the entire sample, and then on a “clinical subsample” composed of individuals who were beyond the respective cutoff scores for PTSD on the DTS (≥ 48) and/or for alcohol misuse on the AUDIT (≥ 8).

A mediation analysis was run to analyze the connection between need to handle one’s own problems and social support with PTSD as a predictor of the number of visits on the entire sample. Mediation analysis was conducted using SAS PROCESS MACRO developed by Hayes (2012). Mediation analysis explores the existence of multiple casual pathways by testing for an indirect effect that some variable may have on another variable, namely that one variable is influencing another through a third variable (Hayes & Scharkow, 2013). In

addition, this procedure provides bootstrapping on the sample, a resampling method that relies on random sampling with replacement to increase validity.

Results

Factors Related to Mental Health Beliefs and Visits

Correlational data using Spearman Correlations for the entire sample are listed Table 2. Not perceiving a need for treatment was positively (dichotomized here as agree vs. disagrees) associated with PTSD severity, alcohol misuse, combat experience, and officer rank and negatively associated with social support. Number of visits to a mental health provider in the following year were positive associated with PTSD severity, alcohol abuse, combat experience, over a year of deployments, multiple deployments, and female gender and negatively associated with age and social support.

Factors Related to Mental Health Visits

Table 3 shows a multivariate analysis of a number of factors and their ability to predict a visit to a mental health professional at time 2 for the entire sample. PTSD symptoms was the strongest predictor of seeking a visit to mental health professionals. Service connection was also significantly positively associated with seeking a visit to mental health professionals. Contrastingly, good social support and not perceiving a need for treatment were negative predictors of seeking treatment.

Table 4 shows a multivariate analysis of a number of factors and their ability to predict a visit to a mental health professional at time 2 for the clinical sample. Similar to the entire sample, PTSD symptoms and service connection were positively associated with seeking treatment from a mental health professional in the clinical population. Meanwhile, not perceiving a need for treatment was a negative predictors of seeking treatment. Social support was not a predictor of seeking treatment in the clinical population.

Mediation Analysis

Mediation analysis was conducted on the entire sample. PTSD showed a positive direct effect on seeking treatment ($\beta=1.188$, $SE=0.1653$, $p<0.001$), with an increase in PTSD symptomology associated with an increase in visits. In regards to the association between PTSD and belief in needing to handle one's own problems, PTSD also showed a positive relationship ($\beta=0.351$, $SE=0.070$, $p<0.001$) with the belief of needing to handle one's own problems, meaning that an increase in PTSD showed an increase in the frequency at which veterans believed they could handle it on their own. Finally, there was a negative association between a belief of needing to handle one's own problems individually and utilizing care longitudinally ($\beta=-0.235$, $SE=0.075$, $p=0.002$), indicating that increased belief in needing to handle one's own problems was related to a decrease in the number of visits. Looked at holistically, this means that while PTSD was directly, positively related to seeking mental health treatment, it also was indirectly correlated with not seeking care through an increased belief of needing to handle one's own problems.

PTSD and social support were inversely correlated ($\beta = -1.945$, $SE = 0.164$, $p < 0.001$), with the latter predicting not using care ($\beta = -0.132$, $SE = 0.028$, $p < 0.001$). In this way, it appears veterans with greater social support may have less of a need for treatment. However, veterans with more social support showed less belief in needing to handle one's own problems ($\beta = -.062$, $SE = 0.011$, $p < 0.001$), which, as already mentioned, was found to relate utilizing treatment ($\beta = -.235$, $SE = 0.075$, $p = 0.002$). In other words, better social support directly lessened treatment utilization, but indirectly increased treatment utilization by decreasing the belief that one needs to handle problems without help.

Discussion

In sum, this study found data to support some of our hypotheses. First, as predicted by HBM (Rosenstock, Stretcher, & Becker 1988) and previous literature (Hoge et al., 2014), this study found veterans who had greater need for treatment (e.g., PTSD symptoms) were more likely to utilize treatment in both samples. Second, this study identified that a lack of perceived need for treatment, shown to be a key barrier to accessing care in veterans (Elbogen et al., 2013), actually related to lower treatment use in the future. This study builds upon previous findings (Adler et al., 2015) that a proclivity towards self-management is a barrier towards seeking mental health support. To our knowledge, this is the first study to find this effect in a veteran sample. Third, when looking at the entire sample, this study found social support and PTSD symptomology to have mixed effects on treatment use in veterans. Specifically, both factors showed an indirect effect, that differed from their direct effect, on treatment use via their relationship with veterans' beliefs they could handle problems on their own.

Clinical Implications of the Dual Role of PTSD

While this study does not explore the exact casual nature of the dual pathway of PTSD symptoms, one can certainly make conjectures as to the why PTSD has such different effects. One of the symptoms of PTSD is emotional numbness, which can make individuals feel isolated from society. It's possible that veterans who feel this symptom more significantly may feel more secluded from the rest of society, as they may take more upon themselves to handle their own problems. Additionally, many studies (Hoerster et al., 2012; Hoge et al., 2014; Hoge et al., 2004; Kim et al., 2010; Stecker et al., 2007) have found a correlation between PTSD and stigma, and stigma's negative effect on treatment use. It's possible that stigma and perceived need may interact, in that negative stigma influences veterans to believe they do not have anywhere to go with their issues. The results of this study point to the effects of PTSD on treatment use to be more complicated than what clinicians may currently be aware of. This is especially true considering PTSD symptoms were found to be predictive of seeking care in both samples

Another set of implications of these findings concerns provision of mental health care for veterans. Clinicians may be concerned with how to get their veterans with PTSD or other mental health disorders to return to care. The current findings attest to the need for clinicians to address patients' belief systems, preferably in the very first meeting. This could potentially help ensure that veterans do not drop out of treatment because they do not believe

they need help. It is likely that this is less relevant if a veteran endorses an extreme level of PTSD symptomology, as PTSD was not found to be related to the belief in needing to handle one's own problems in the clinical sample. However, perceived need on its own was predictive of seeking care in both samples, and thus its importance in therapy should not be overlooked.

Clinical Implications of Social Support

Similar to the pathway with PTSD, social support was found in the entire sample to have multiple effects on whether a veteran seeks out a mental health professional. In terms of social support leading to less need for services, it's possible that social support may serve as a substitute for treatment or as a proxy for veterans who simply were functioning better and did not need additional mental health attention. The fact that social support was not directly related to seeking care in the clinical sample further solidifies that veterans with stronger social support likely showed better mental health (and thus less visits). Contrastingly, having a greater social support could lead to peers encouraging veterans to seek out help, thus increasing perceived need and explaining the indirect increase in visits. This effect was found in both samples, which further emphasizes the relationship between social support and this belief. Both of these latter two explanations would be in line with the Health Belief Model, which has a "cues to action" factor that includes items like social support.

In terms of implications, efforts should be made to incorporate social support into mental health care of veterans. Once in the door, the findings do suggest that clinicians should be more aware of the role social support can play in getting veterans to treatment, and be more candid in talking about its importance. Similar to with PTSD, this should also be a subject that is broached upon in the first session. In this way, a clinician will be able to better assist with equipping their veteran patient to harness their social support, thus leading them back to treatment.

Policy Implications

The results of this study may suggest that research with veteran mental health use should possibly shift to other focuses, with emphasis on issues in addition to stigma. Put differently, it is important that policymakers do not solely pay attention to whether a veteran feels embarrassed by mental illness, but also aim to encompass more of the cognitive schema within veterans' decision making to use mental healthcare, especially in accordance with HBM. The current data points to two such schemas to focus on in veterans' perceived need for help from others and the impact of social support. In sum, the findings imply that military policy makers would do well to not only address stigma as they currently do, but also add campaigns to specifically focus on veterans' belief systems and engaging veteran's support network in a way that facilitates veterans seeking the help they may need.

There are several limitations that should be noted. First, the effect sizes for the mediation analysis were not always large, and never large enough to come close to fully mediating the direct effect between PTSD and number of visits. For this reason, one should not look at these results and believe that the indirect effects found lessen the importance of the direct effect between PTSD and number of visits. Rather, they are meant to supplement that

already well-established direct effect. Additionally, seeking out mental health care is an imperfect dependent variable, as it is possible that some patients may attend more sessions than others. Future research could focus on the number of sessions attended.

The findings indicate clinicians working with veterans should address the roles of PTSD and social support in their initial clinical encounters and identify how these factors may play a role in whether the veteran returns to treatment, especially in relationship to veterans' belief in needing to handle one's own problems. Focusing on this barrier, in addition to other internal barriers such as stigma, could significantly assist veterans in overcoming whatever obstacles may prevent them from treatment and reduce treatment dropout. Thus, clinicians can better assure veterans follow-up with mental health by exploring veterans' belief systems, employing conceptual models like HBM, and investigating the role of social support in veterans' lives.

Acknowledgments

We would like to extend our sincere thanks to the participants who volunteered for this study. The views expressed in this article are those of the authors and do not necessarily represent the views of the Department of Veterans Affairs or the National Institutes of Health. Please note there are no conflicts of interest. Preparation of this manuscript was supported by the Mid-Atlantic Mental Illness Research, Education and Clinical Center, the Office of Research and Development Clinical Science, Department of Veterans Affairs, and the National Institute of Mental Health (R01MH080988).

References

- Adler AB, Britt TW, Riviere LA, Kim PY, Thomas JL. Longitudinal determinants of mental health treatment-seeking by US soldiers. *The British Journal of Psychiatry*. 2015; 207(4):346–350. [PubMed: 25858176]
- Bradley KA, Bush KR. Screening for problem drinking: comparison of CAGE and AUDIT. *Journal of General Internal Medicine*. 1998; 13:379–388.
- Brown MC, Creel AH, Engel CC, Herrell RK, Hoge CW. Factors associated with interest in receiving help for mental health problems in combat veterans returning from deployment to Iraq. *Journal Of Nervous And Mental Disease*. 2011; 199(10):797–801. DOI: 10.1097/NMD.0b013e31822fc9bf [PubMed: 21964275]
- Carpenter CJ. A meta-analysis of the effectiveness of health belief model variables in predicting behavior. *Health Communication*. 2010; 25(8):661–669. DOI: 10.1080/10410236.2010.521906 [PubMed: 21153982]
- Clement S, Schauman O, Graham T, Maggioni F, Evans-Lacko S, Bezborodovs N, ... Thornicroft G. What is the impact of mental health-related stigma on help-seeking? A systematic review of quantitative and qualitative studies. *Psychological Medicine*. 2014 Advance online publication. Retrieved from link.
- Corrigan PW, Druss BG, Perlick DA. The impact of mental illness stigma on seeking and participating in mental health care. *Psychological Science In The Public Interest*. 2014; 15(2):37–70. DOI: 10.1177/1529100614531398 [PubMed: 26171956]
- Davidson JT, Book SW, Colket JT, Tupler LA, Roth S, David D, ... Feldman ME. Assessment of a new self-rating scale for post-traumatic stress disorder. *Psychological Medicine*. 1997; 27(1):153–160. [PubMed: 9122295]
- Defense Equal Opportunity Management Institute. FY2009 Annual Demographic Profile of Military Members in the Department of Defense and US Coast Guard (Statistical Series Pamphlet 08–10). Satellite Beach, Fla: 2010.
- Dillman, DA., Smyth, JD., Christian, LM. Internet, mail, and mixed-mode surveys: The tailored design method. 3. New York: Wiley; 2009.

- Edlund MJ, Wang PS, Berglund PA, Katz SJ, Lin E, Kessler RC. Dropping out of mental health treatment: Patterns and predictors among epidemiological survey respondents in the United States and Ontario. *The American Journal Of Psychiatry*. 2002; 159(5):845–851. DOI: 10.1176/appi.ajp.159.5.845 [PubMed: 11986140]
- Eftekhari A, Ruzek JI, Crowley JJ, Rosen CS, Greenbaum MA, Karlin BE. Effectiveness of national implementation of prolonged exposure therapy in veterans affairs care. *JAMA Psychiatry*. 2013; 70(9):949–955. DOI: 10.1001/jamapsychiatry.2013.36 [PubMed: 23863892]
- Elbogen EB, Wagner HR, Johnson SC, Kinneer P, Kang H, Vasterling JJ, ... Beckham JC. Are Iraq and Afghanistan veterans using mental health services? New data from a national random-sample survey. *Psychiatric Services*. 2013; 64(2):134–141. DOI: 10.1176/appi.ps.004792011 [PubMed: 23475498]
- Ferrans CE, Powers MJ. Psychometric assessment of the Quality of Life Index. *Research in Nursing & Health*. 1992; 15(1):29–38. [PubMed: 1579648]
- Goodson JT, Lefkowitz CM, Helstrom AW, Gawrysiak MJ. Outcomes of prolonged exposure therapy for veterans with posttraumatic stress disorder. *Journal Of Traumatic Stress*. 2013; 26(4):419–425. DOI: 10.1002/jts.21830 [PubMed: 23934939]
- Hamilton AB, Poza I, Hines V, Washington DL. Barriers to psychosocial services among homeless women veterans. *Journal Of Social Work Practice In The Addictions*. 2012; 12(1):52–68. DOI: 10.1080/1533256X.2012.647584 [PubMed: 26617471]
- Hayes, AF. SAS PROCESS macro (Software). 2012. Available from: <http://www.processmacro.org/>
- Hayes AF, Scharkow M. The relative trustworthiness of inferential tests of the indirect effect in statistical mediation analysis: Does method really matter? *Psychological Science*. 2013; 24(10):1918–1927. DOI: 10.1177/0956797613480187 [PubMed: 23955356]
- Hoerster KD, Malte CA, Imel ZE, Ahmad Z, Hunt SC, Jakupcak M. Association of perceived barriers with prospective use of VA mental health care among Iraq and Afghanistan veterans. *Psychiatric Services*. 2012; 63(4):380–382. DOI: 10.1176/appi.ps.201100187 [PubMed: 22476304]
- Hoge CW, Castro CA, Messer SC, McGurk D, Cotting DI, Koffman RL. Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. *The New England Journal of Medicine*. 2004; 351(1):13–22. [PubMed: 15229303]
- Hoge CW, McGurk D, Thomas J, Cox AL, Engel CC, Castro CA. Mild traumatic brain injury in U.S. soldiers returning from Iraq. *The New England Journal Of Medicine*. 2008; 358(5):453–463. DOI: 10.1056/NEJMoa072972 [PubMed: 18234750]
- Hoge CW, Grossman SH, Auchterlonie JL, Riviere LA, Milliken CS, Wilk JE. PTSD treatment for soldiers after combat deployment: Low utilization of mental health care and reasons for dropout. *Psychiatric Service in Advance*. 2014; 65(8):997–1004. DOI: 10.1176/appi.ps.201300307
- Kang HK, Hyams KC. Mental health care needs among recent war veterans. *New England Journal of Medicine*. 2005; 352(13):1289. doi: 10.1056/NEJMp058024 [PubMed: 15800224]
- Kessler RC, Berglund PA, Bruce ML, Koch JR, Laska EM, Leaf PJ, ... Wang PS. The prevalence and correlates of untreated serious mental illness. *Health Service Research*. 2001; 36:987–1007.
- Kessler RC, Demler O, Frank RG, Olfson M, Pincus HA, Walters EE, ... Zaslavsky AM. US prevalence and treatment of mental disorders: 1990–2003. *New England Journal of Medicine*. 2005; 352(24):2515–2523. DOI: 10.1056/NEJMsa043266 [PubMed: 15958807]
- Kim PY, Thomas JL, Wilk JE, Castro CA, Hoge CW. Stigma, barriers to care, and use of mental health services among active duty and National Guard soldiers after combat. *Psychiatric Services*. 2010; 61(6):572–588. DOI: 10.1176/appi.ps.61.6.582
- King, DW., King, LA., Vogt, DS. *Manual for the Deployment Risk and Resilience Inventory (DRRI): A Collection of Measures for Studying Deployment Related Experiences of Military Veterans*. Boston, MA: 2003.
- Lapierre CB, Schwegler AF, LaBauve BJ. Posttraumatic stress and depression symptoms in soldiers returning from combat operations in Iraq and Afghanistan. *Journal Of Traumatic Stress*. 2007; 20(6):933–943. DOI: 10.1002/jts.20278 [PubMed: 18157882]
- Lu MW, Duckart JP, O'Malley JP, Dobscha SK. Correlates of utilization of PTSD specialty treatment among recently diagnosed veterans at the VA. *Psychiatric Services*. 2011; 62(8):943–949. DOI: 10.1176/appi.ps.62.8.943 [PubMed: 21807835]

- McCarthy JF, Blow FC, Valenstein M, Fischer EP, Owen RR, Barry KL, ... Ignacio RV. Veterans Affairs health system and mental health treatment retention among patients with serious mental illness: Evaluating accessibility and availability barriers. *Health Services Research*. 2007; 42(3 part 1):1042–1060. DOI: 10.1111/j.1475-6773.2006.00642.x [PubMed: 17489903]
- McDonald SD, Beckham JC, Morey RA, Calhoun PS. The validity and diagnostic efficiency of the Davidson Trauma Scale in military veterans who have served since September 11, 2001. *Journal of Anxiety Disorders*. 2009; 23:247–255. [PubMed: 18783913]
- Mott JM, Sutherland R, Williams W, Lanier S, Ready DJ, Teng EJ. Patient perspectives on the effectiveness and tolerability of group-based exposure therapy for posttraumatic stress disorder: Preliminary self-report findings from 20 veterans. *Psychological Trauma: Theory, Research, Practice, And Policy*. 2013; 5(5):453–461. DOI: 10.1037/a0029386
- Milliken CS, Auchterlonie JL, Hoge CW. Longitudinal assessment of mental health problems among active and reserve component soldiers returning from the Iraq War. *Journal of the American Medical Association*. 2007; 298(18):2141–2148. DOI: 10.1001/jama.298.18.2141 [PubMed: 18000197]
- Mojtabai RR, Olfson MM, Sampson NA, Jin RR, Druss BB, Wang PS, ... Kessler RC. Barriers to mental health treatment: Results from the National Comorbidity Survey Replication. *Psychological Medicine*. 2011; 41(8):1751–1761. DOI: 10.1017/S0033291710002291 [PubMed: 21134315]
- Ouimette P, Vogt D, Wade M, Tirone V, Greenbaum MA, Kimerling R, ... Rosen CS. Perceived barriers to care among veterans health administration patients with posttraumatic stress disorder. *Psychological Services*. 2011; 8(3):212–223. DOI: 10.1037/a0024360
- Owens GP, Herrera CJ, Whitesell AA. A preliminary investigation of mental health needs and barriers to mental health care for female veterans of Iraq and Afghanistan. *Traumatology*. 2009; 15(2):31–37. DOI: 10.1177/1534765609336361
- Pietrzak RH, Goldstein MB, Malley JC, Rivers AJ, Johnson DC, Southwick SM. Risk and protective factors associated with suicidal ideation in veterans of Operations Enduring Freedom and Iraqi Freedom. *Journal of Affective Disorders*. 2010; 123(1–3):102–107. DOI: 10.1016/j.jad.2009.08.001 [PubMed: 19819559]
- Sareen J, Cox BJ, Afifi TO, Stein MB, Belik SL, Meadows G, Asmundson GJ. Combat and Peacekeeping Operations in relation to prevalence of mental disorders and perceived need for mental health care: findings from a large representative sample of military personnel. *Archives of General Psychiatry*. 2007; 64:843–52. [PubMed: 17606818]
- Seal KH, Metzler TJ, Gima KS, Bertenthal D, Maguen S, Marmar CR. Trends and risk factors for mental health diagnoses among Iraq and Afghanistan veterans using Department of Veterans Affairs health care. 2002–2008. *American Journal Of Public Health*. 2009; 99(9):1651–1658. DOI: 10.2105/AJPH.2008.150284 [PubMed: 19608954]
- Seal KH, Maguen S, Cohen B, Gima KS, Metzler TJ, Ren L, ... Marmar CR. VA mental health services utilization in Iraq and Afghanistan veterans in the first year of receiving new mental health diagnoses. *Journal of Traumatic Stress*. 2010; 23(1):5–16. DOI: 10.1002/jts.20493 [PubMed: 20146392]
- Stecker T, Fortney JC, Hamilton F, Ajzen I. An assessment of beliefs about mental health care among veterans who served in Iraq. *Psychiatry Services*. 2007; 58(10):1358–1361.
- Substance Abuse and Mental Health Services Administration. Results from the 2011 National Survey on Drug Use and Health: Mental health findings. Rockville, MD: Author; 2012. (NSDUH Series H-45, HHS Publication No. [SMA] 12-4725)
- Sudom K, Zamorski M, Garber B. Stigma and barriers to mental health care in deployed Canadian forces personnel. *Military Psychology*. 2012; 24(4):414–431. DOI: 10.1080/08995605.2012.697368
- Tanielian, T., Jaycox, LH., editors. *Invisible wounds of war: Psychological and cognitive injuries, their consequences, and services to assist recovery*. Santa Monica, CA: RAND Cooperation; 2008.
- Tuerk PW, Yoder M, Grubaugh A, Myrick H, Hamner M, Acierno R. Prolonged exposure therapy for combat-related posttraumatic stress disorder: An examination of treatment effectiveness for veterans of the wars in Afghanistan and Iraq. *Journal Of Anxiety Disorders*. 2011; 25(3):397–403. DOI: 10.1016/j.janxdis.2010.11.002 [PubMed: 21131170]

- Vogt D, Vaughn R, Glickman M, Schultz M, Drainoni M, Elwy R, Eisen S. Gender differences in combat-related stress exposure and postdeployment mental health in a nationally representative sample of servicemembers deployed to Iraq and Afghanistan. *Journal of Abnormal Psychology*. 2011; 120(4):797–806. [PubMed: 21639595]
- Wang PS, Gruber MJ, Powers RE, Schoenbaum M, Speier AH, Wells KB, Kessler RC. Mental health service use among Hurricane Katrina survivors in the eight months after the disaster. *Psychiatric Services*. 2007; 58(11):1403–1411. DOI: 10.1176/appi.ps.58.11.1403 [PubMed: 17978249]
- Washington DL, Bean-Mayberry B, Riopelle D, Yano EM. Access to care for women veterans: Delayed healthcare and unmet need. *Journal Of General Internal Medicine*. 2011; 26(Suppl 2): 655–661. DOI: 10.1007/s11606-011-1772-z [PubMed: 21989618]
- Wong EC, Schell TL, Jaycox LH, Marshall GN, Tanielian T, Miles JV. Mental health treatment experiences of U.S. service members previously deployed to Iraq and Afghanistan. *Psychiatric Services*. 2013; 64(3):277–279. DOI: 10.1176/appi.ps.201200240 [PubMed: 23280427]
- Zinzow HM, Britt TW, Pury CS, Raymond M, McFadden AC, Burnette CM. Barriers and facilitators of mental health treatment seeking among active-duty army personnel. *Military Psychology*. 2013; 25(5):514–535. DOI: 10.1037/mil0000015

Figure 1.
Mediation Analysis of Effects on Obtaining Mental Health Treatment in the Next Year.
Note: * $p < .01$; ** $p < .001$.

Variable	Unstandardized Regression Coefficient	Standard Error	t-value	p-value
<i>Effects on Social Support $R^2 = 0.0947$, $F(1, 1340) = 140.100$, $p < 0.001$</i>				
PTSD	-1.945	0.164	-11.836	0.000
<i>Effects on Perceiving Need to Handle Problems on Own $R^2 = 0.043$, $F(2, 959) = 21.539$, $p < 0.001$</i>				
PTSD	0.350	0.070	5.013	0.000
Social Support	-0.061	0.011	-5.566	0.000
<i>Final Model</i>				
PTSD	1.188	0.165	7.193	0.000
Social Support	-0.132	0.028	-4.694	0.000
Perceive Need to Handle Problems on Own	-0.235	0.075	-3.112	0.002
<i>Indirect Effects of Mediation Paths on Number of Visits (with 95% CI)</i>				
PTSD → Social Support → Number of Visits	0.256 (0.146,0.385)			
PTSD → Social Support → Perceived need to handle problems on one's own → Number of Visits	-0.028 (-0.054, -0.012)			
PTSD → Perceived need to handle problems on one's own → Number of Visits	-0.082 (-0.161, -0.033)			

Table 1

Sample Description

	Weighted % (<i>n</i>) or <i>median</i>
Demographics	
Male gender	84.05% (665)
Female gender	15.95% (126)
Race non-white	26.37% (208)
Education beyond high school	81.86% (648)
Reserves	49.30% (390)
Officer	18.68% (148)
Clinical	
Alcohol Misuse (AUDIT>7)	23.75% (188)
PTSD (DTS>48)	17.88% (141)
Social	
Positive Social Support	70.08% (554)
Service Connected Disability	34.17% (268)
Combat	
High Combat Experience	49.28% (390)
Over a Year Since Deployment	25.63% (203)
Multiple Deployments	26.46% (209)
“It’s up to me to work out my own problems”	
• Strongly Agree	21.95% (170)
• Somewhat Agree	20.58% (159)
• Somewhat Disagree	40.92% (316)
• Strongly Disagree	16.55% (128)

Table 2

Correlations with Health Beliefs and Number of Mental Health Visits in Next Year

<i>Factors</i>	Perceives a Need to Handle Problems on One's Own		Mental Health Visits in Next Year	
	Correlation Coefficient	p-values	Correlation Coefficient	p-values
Demographics				
Gender (0=female/1=male)	.038	.2280	-.094	.0031 *
White	.060	.0628	.001	.9749
Reserves	-.028	.3840	-.014	.6669
Officer	.066	.0410 *	-.062	.0504
Age	-.050	.1182	-.080	.0118 *
Clinical				
PTSD (DTS>48)	.169	<.0001 *	.309	<.0001 *
Alcohol Misuse (AUDIT>7)	.134	<.0001 *	.088	.0057 *
Social				
Positive Social Support	-.120	.0001 *	-.165	<.0001 *
Service Connection	-.045	.1586	.160	<.0001 *
Combat				
High Combat Experience	.120	.0002 *	.124	<.0001 *
Over a Year of Deployments	.027	.3921	.099	.0018 *
Multiple Deployments	.029	.3711	.084	.0081 *

* denotes significance at .05 level

Table 3

Logistic Regression of Factors Associated with Veterans' Obtaining Mental Health Treatment in the Next Year (Whole sample)

Variable	Point Estimate	95% CI	p-value
Demographics			
Gender (0=female/1=male)	0.053	0.322–0.871	.0122 *
White	1.321	0.854–2.042	.2105
Reserves	1.220	0.818–1.819	.3299
Officer	1.032	0.590–1.805	.9129
Age	0.986	0.965–1.007	.1831
Clinical			
PTSD (DTS>48)	3.911	2.444–6.260	<.0001 *
Alcohol Misuse (AUDIT>7)	1.066	0.685–1.661	.7766
Social			
Positive Social Support	0.576	0.385–0.861	.0072 *
Service Connection	2.311	1.543–3.461	<.0001 *
Perceives need to handle problems on one's own	0.803	0.663–0.974	.0258 *
Combat			
High Combat Experience	1.297	0.835–2.015	.2471
Over a Year Since Deployment	1.479	0.884–2.473	.1357
Multiple Deployments	1.426	0.868–2.342	.1611

Likelihood Ratio =135.785, $df=15$, $p<.0001$;

* denotes significance at .05 level

Table 4

Logistic Regression of Factors Associated with Veterans' Obtaining Mental Health Treatment in the Next Year (Clinical Subsample)

Variable	Point Estimate	95% CI	p-value
Demographics			
Gender (0=female/1=male)	0.405	0.182–0.900	.0266 [*]
White	1.187	0.645–2.183	.5813
Reserves	1.471	0.813–2.663	.2025
Officer	1.285	0.489–3.377	.6106
Age	0.999	0.966–1.033	.9543
Clinical			
PTSD (DTS>48)	1.018	1.010–1.026	<.0001 [*]
Alcohol Misuse (AUDIT>7)	0.961	0.921–1.003	.0671
Social			
Social Support	1.031	0.592–1.795	.9141
Service Connection	2.157	1.177–3.950	.0128 [*]
Perceives Need to Handle Problems On One's Own	0.652	0.486–0.874	.0043 [*]
Combat			
High Combat Experience	0.973	0.479–1.975	.9395
Over a Year Since Deployment	1.374	0.668–2.827	.3878
Multiple Deployments	1.944	0.965–3.914	.0627

Likelihood Ratio =82.7071, $df=15$, $p<.0001$;

^{*} denotes significant by .05 p-value