Published in final edited form as:

Gen Hosp Psychiatry. 2016 ; 43: 38–45. doi:10.1016/j.genhosppsych.2016.09.001.

Predictors of treatment utilization and unmet treatment need among individuals with posttraumatic stress disorder from a national sample

Carrie J. Nobles, PhD^{a,b}, Sarah E. Valentine, PhD^{a,b}, Monica W. Gerber, MPH^a, Derri L. Shtasel, MD MPH^{b,c}, and Luana Marques, PhD^{a,b}

^aDepartment of Psychiatry, Massachusetts General Hospital, 70 Everett Ave. Suite 516, Chelsea MA 02150, USA

^bHarvard Medical School

^cDepartment of Psychiatry, Massachusetts General Hospital, 25 New Chardon St., Boston MA 02114, USA

Abstract

Objective—Posttraumatic stress disorder (PTSD) is a chronic psychiatric condition associated with significant disability that often remains untreated. Sociodemographic and family-level factors may serve as predictors of unmet treatment need, identifying groups that would most benefit from policies aimed at increasing access to the mental healthcare system.

Method—Data from the nationally-representative Collaborative Psychiatric Epidemiologic Surveys was used to identify predictors of mental health treatment utilization, both with a mental health specialist and with a general health practitioner, and self-reported unmet treatment need among individuals who endorsed past-year PTSD. We defined unmet treatment need as self-reporting a mental health problem and not accessing mental health care in the general or specialty mental health care system.

Results—Among 600 participants, predictors of unmet treatment need included being non-Latino black (OR 2.11, 95% CI 1.25–3.54), having a high school education versus some college (OR 2.45, 95% CI 1.34–4.48), and being employed or unemployed versus not being in the workforce (OR 1.74, 95% CI 1.00–3.02 and OR 4.95, 95% CI 1.60–15.34, respectively). Recursive partitioning identified younger age and being married as predictors of low treatment utilization.

Conclusions—Future research should elucidate barriers to accessing treatment among those with PTSD in these underserved groups.

Corresponding author: Dr. Carrie Nobles, Community Psychiatry PRIDE, Department of Psychiatry, Massachusetts General Hospital, 70 Everett Ave., Suite 516, Chelsea MA 02150. Tel: 617-887-4062. Fax: 617-887-3610. cnobles@mgh.harvard.edu.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Keywords

posttraumatic stress; treatment utilization; epidemiology; health disparities

Introduction

Posttraumatic stress disorder (PTSD) is a common mental health condition in the United States, affecting an estimated 6.8% of adults in their lifetime [1]. Despite the significant distress and impairment of functioning that can accompany PTSD [2, 3], an estimated 35% of those with PTSD will never seek treatment in their lifetime [4]. Among those who do seek treatment, the median delay in treatment seeking after onset is 12 years [4]. In defining prevalence of unmet need for mental health treatment for PTSD, it is important to incorporate two considerations: 1) the proportion of individuals who utilize treatment with a mental health specialist, and thereby access evidence-based treatment for PTSD [5, 6], and 2) the proportion of individuals with PTSD not receiving professional treatment who perceive themselves as having a mental health problem (have a self-reported unmet need), indicating those who would likely most benefit from policies and programs aimed at reducing barriers to accessing the mental health care system.

Among those with general mental health needs, many predictors of low treatment utilization have been identified. These include sociodemographic factors, such as younger age [7–10], being male [8, 9, 11], having less education [7, 12], having a lower income [8, 11, 12], being non-Latino black [7], being in the workforce [12, 13] or being unemployed [8] and being uninsured [7]. Family structure and social support predictors include being single or previously married [7, 8, 11] and having high perceived social support [12]. Additionally, not having comorbid mental [8, 9, 12] or physical [8] health conditions predicts low treatment utilization.

Given the variable age at onset for PTSD [1] and hallmark numbing and avoidance behaviors associated with PTSD [2], which may lead to avoidance of treatment and the associated disclosure of trauma history which is essential for evidence-based care, it is important to evaluate predictors of treatment utilization that may be unique for individuals with PTSD. The majority of past research in this area has focused on veteran and active military populations or survivors of man-made or natural disasters [14–16], groups with high trauma exposure and at high risk for PTSD, but from whom predictors may not be generalizable to other trauma-exposed populations. Five past studies have evaluated predictors of treatment utilization for PTSD in nationally-representative samples, reporting that, similar to research among those with general mental health needs, younger age [17], being male [18], having less education [4, 19], being non-Latino black [4, 17–19], being uninsured [19] and not having comorbid mental [17, 19] or physical [20] health conditions were predictors of low treatment utilization. However, dissimilar to research among those with general health mental health needs, these studies found that older age [4] and being married [17, 19] were also predictors of low treatment utilization.

While a few previous studies have evaluated predictors of treatment utilization among those with current PTSD, notably Sripada et al. [19], the majority of past research in this area has

been limited due to the evaluation of lifetime PTSD and lifetime treatment, which does not adequately capture an estimate of prevalence of unmet need for treatment. The evaluation of lifetime PTSD and treatment seeking also introduces the potential for important predictors, such as current employment, to occur years after initial treatment-seeking. Additional research is warranted to corroborate the predictors identified in Sripada et al. for predictors of current PTSD and current treatment in a separate population sample. Finally, past research has not captured whether individuals with PTSD who are not utilizing professional treatment have a perceived need for treatment, identifying the individuals who could most directly benefit from policy and program development targeting increased access to mental health services.

This study addresses the above limitations by evaluating fifteen demographic, social support and comorbidity predictors of past-year treatment utilization and self-reported unmet treatment need, defined as self-report of a mental health problem but not having received professional treatment, among individuals with past-year PTSD in the nationally-representative Collaborative Psychiatric Epidemiological Surveys (CPES). We evaluated predictors using both regression and nonparametric recursive partitioning analyses, to compare findings across analytic techniques employing differing assumptions.

Methods

The CPES were comprised of 3 population-based household surveys of non-institutionalized adults aged 18 or older conducted between 2001–2003, and included the National Comorbidity Survey-Replication (NCS-R), the National Latino and Asian American Survey (NLAAS) and the National Survey of American Life (NSAL) [21]. Each survey utilized a 4-stage national area probability sampling frame, consisting of nested samples conducted in the following order: 1) US Metropolitan Statistical Areas (MSAs) and counties, 2) area segments within each selected MSA or county, 3) housing units within each selected area segment, and 4) eligible respondents in each selected housing unit [22]. Each survey included comparable content for the assessment of prevalence of mental health conditions, utilization of mental health services and sociodemographic factors. Surveys were administered in the participant's home when possible, utilizing a computer assisted personal interview (CAPI) format. All participants in the CPES provided informed consent after the study procedures had been explained. This secondary analysis of de-identified data was determined to not constitute human subjects research by the Partners Healthcare Institutional Review Board.

Study Group: Participants with Past-Year PTSD

Participants were selected into the analysis if they met criteria for past-year PTSD. Past-year PTSD was assessed in the CPES using the World Health Organization's World Mental Health Survey update to the Composite International Diagnostic Interview (WMH-CIDI), a structured clinical interview assessing past-year presence of mental health conditions using DSM-IV criteria [21, 23]. The WMH-CIDI was designed to be administered by trained lay interviewers [21], has shown good test-retest [24] and inter-rater [25] reliability, and shows good agreement with the PTSD Checklist (PCL) [26] and low to moderate agreement with

clinical diagnoses [27] and with the clinician-administered World Mental Health Structured Clinical Interview (SCID) [1, 28, 29].

Outcome: Mental Health Treatment Utilization and Unmet Treatment Need

Treatment utilization—Treatment utilization was categorized in two ways: 1) having received treatment from a mental health specialist in the past year, and 2) having received any treatment for a mental health problem from a health professional in the past year, including mental health specialists. Categorization of mental health specialists followed previous research in the NCS-R [7], and included psychiatrists, psychologists and other mental health specialists, as well as social workers and counselors practicing in mental health specialty settings. Health professionals who were not mental health specialists included non-psychiatrist medical doctors, nurses and other non-medical doctor general health professionals, as well as social workers and counselors practicing in non-mental health specialty settings and spiritual advisors.

Unmet treatment need—To evaluate unmet treatment need, we compared participants who self-reported a current psychological problem and did not reporting seeking professional treatment in the past year to participants who sought treatment from a health professional for a mental health problem, as defined above. Among participants not reporting any treatment utilization in the past year, self-report of a past-year mental health problem was assessed using two questions: 1) “Was there ever a time during the past 12 months when you felt that you might need to see a professional because of problems with your emotions or nerves?”, or 2) if when asked why they didn’t want to see a professional, a participant selected either “you had a problem, but you thought you could handle it on your own” or “you thought that you needed help but didn’t believe professional treatment would be helpful”. We additionally included individuals who did not report seeking care with medical professionals but did report seeking complimentary or alternative treatment for a mental health problem (including non-medical professional healers and participating in self-help groups or internet support groups) in the unmet treatment need group.

Some variation exists in the literature regarding the definition of unmet treatment need, ranging from including all individuals endorsing a mental problem who have not accessed treatment [30] to including only individuals who have a self-identified mental health problem and a stated need for mental health care [31, 32]. Our definition of unmet need, which includes individuals who self-identify as having mental health problem but express multiple reasons for not seeking treatment (including wanting to seek treatment but being unable, not believing treatment would be helpful and thinking he/she could handle a problem on his/her own) is consistent with previously published research [33]. By retaining all participants who report a past-year mental health problem, regardless of their current belief about the utility or efficacy of treatment, we identify those individuals who could be reached through policy changes addressing both access to and dissemination of information about the efficacy of evidence-based care.

Predictors

Sociodemographic covariates evaluated as predictors of treatment utilization and unmet treatment need included age (years), sex, race/ethnicity (Latino, non-Latino black, non-Latino white and other race/ethnicity), household income (\$<15,000, \$15–<\$35,000, \$35–<\$75,000, \$75,000), highest level of education (less than high school, completed high school, at least some college), work status (employed, unemployed, not in workforce) and insurance status (uninsured vs. insured). Predictors related to family structure and social support included partner status (married/cohabitating, divorced/separated/widowed, never married), having children or adolescents in the household (yes vs. no), frequency of visiting with relatives, frequency of visiting with friends and frequency of attending religious services (≥ 1 time per week vs. <1 time per week). Predictors related to comorbid mental and physical health conditions included having past-year MDD, a past-year axis 1 health condition (other than MDD), and having a chronic health condition.

Statistical Analysis

All analyses were weighted to account for sampling probabilities, except for unweighted totals where indicated and the recursive partitioning analyses. All fifteen predictors identified above were chosen *a priori* based on previous research in barriers to accessing mental health care [14, 17–20]. For each potential predictor, bivariate logistic regression was used to compare the odds of 1) treatment utilization with any health professional vs. no treatment utilization with any health professional, 2) treatment utilization with a mental health specialist vs. no treatment utilization with a mental health specialist, and 3) unmet treatment need vs. treatment utilization with any health professional among the subset describing themselves as having a mental health problem. Binary recursive partitioning was utilized as a non-parametric alternative to logistic regression to model the potentially complex interactions that may exist between predictors for each of the three outcomes of interest [34]. A conditional inference tree framework was used to assess variable importance, utilizing hypothesis testing in variable selection and as stopping criteria [35]. Advantages of identification of predictive factors through recursive partitioning include placing no assumptions of a linear relationship between predictors and the outcome of interest, as well as the ability to investigate potential complex interactions between variables that may be of interest in future research, for which a parametric model may be underpowered to observe. Descriptive and logistic regression analyses were conducted in SAS 9.3 (SAS Industries, Cary, SC) and recursive partitioning analyses were conducted using the partykit package in R [35–37].

Given our sample size of 600 participants, we were powered to observe a range of odds ratios from 1.6 for 50% of participants having a predictor and 50% of participants seeking treatment to 3.0 for a case where 10% of participants had a predictor and 10% sought treatment.

Although our study evaluates the association of 15 predictors (comprising 21 individual comparisons) with three outcomes, we chose not to adjust our findings for multiple comparisons. We *a priori* selected our predictors of interest based on previous literature [14, 17–20] and, as this study is exploratory, did not wish to inflate our type II error for

individual comparisons [38, 39]. To facilitate transparency and aid readers in weighing the importance of the inflation of our type I error in the entire set of predictors, we affirm that the findings for all predictors assessed in this study are presented in table 2.

Results

Out of 20,013 participants in the Collaborative Psychiatric Epidemiological Surveys, 600 participants with past-year PTSD were included in this study. Mean age was 40.5 (SD 0.8) years and the majority (73.4%) were female (Table 1). Weighted race/ethnicity of participants was 9.9% Latino, 12.9% non-Latino black, 70.9% non-Latino white and 6.3% of another race/ethnicity. Approximately half of participants had household incomes below \$35,000/year (49.7%) and reported less than a college education (49.6%). Comorbidities were common, with one-third having past-year MDD (30.8%), one-half having a past-year axis 1 condition other than MDD (50.6%), and one-quarter reporting a serious chronic health condition (25.3%).

Overall, 158 (30.4%) of participants with past-year PTSD reported that their highest level of treatment utilization in the past year was with a mental health specialist, and 95 (18.2%) reported that their highest level of treatment utilization was with a non-mental health specialist health professional (Table 1). Additionally, 239 (41.8%) of the 492 participants who reported a mental health problem reported an unmet need for treatment. Within these individuals, 19 (4.5%) reported seeing a non-professional for a mental health need, 102 (15.3%) reported that they had a mental health problem, did not seek treatment and wanted to see a professional, and 118 (16.4%) reported that they had a mental health problem, did not seek treatment and did not want to see a professional. Reasons provided for not wanting to see a health professional included wanting to handle the problem on their own (n=84) and not believing professional treatment would be helpful (n=29). Finally, 76 (12.7%) reported that they did not have a mental health problem. Data was missing for unmet need for 32 (4.3%) participants.

Predictors of treatment utilization and unmet treatment need

The results of bivariate logistic regression models are presented in table 3. Being non-Latino black versus non-Latino white was significantly associated with a 56% lower odds of receiving any treatment, a 61% lower odds of receiving treatment from a mental health specialist, and a 2-fold higher odds of having an unmet need for treatment (OR 2.11, 95% CI 1.25, 3.54). Having a high school education versus at least some college was significantly associated with a 59% lower odds of treatment utilization with any professional, a 62% lower odds of treatment utilization with a mental health specialist, and a 2.5-fold greater odds of reporting unmet treatment need (OR 2.45, 95% CI 1.34, 4.48). Age, sex and income were not significantly associated with treatment utilization or unmet need.

Being employed versus not being in the workforce was associated with a significant 44% lower odds of treatment utilization with a mental health specialist and a 74% greater odds of unmet treatment need (OR 1.74, 95% CI 1.00, 3.02). Being unemployed versus not being in the workforce was associated with a significant 81% lower odds of treatment utilization with any health professional, an 88% lower odds of treatment utilization with a mental health

specialist, and a 5-fold greater odds of unmet treatment need (OR 4.95, 95% CI 1.60, 15.34). Being uninsured was not significantly associated with treatment utilization with any health professional or a mental health specialist, but was borderline-significantly associated with an almost 2-fold increase in unmet treatment need.

While neither measure of household composition (partner status or children in the household) was associated with treatment seeking or unmet need, visiting or talking with relatives outside the household was associated with a significant 46% lower odds of treatment utilization with any professional (OR 0.54, 95% CI 0.34, 0.88). Visiting or speaking with friends and attending religious services were not significantly associated with treatment utilization or unmet need.

Finally, both past-year MDD and a past-year axis 1 condition (other than MDD) were associated with a higher odds of treatment utilization. Having a serious chronic health condition was not associated with treatment utilization or unmet need.

Recursive partitioning

Table 3 and figure 1 present the results of the recursive partitioning analyses. For the analysis of predictors of treatment utilization with any health professional, non-Latino black participants who were less than age 44 had the lowest proportion of treatment utilization at 22.4%. For all other race/ethnicities, not being married or cohabitating with a partner predicted the subgroup with the highest proportion of treatment utilization at 55.9%. Results were similar for the model for treatment utilization with a mental health specialist, with non-Latino black participants overall having the lowest proportion of treatment utilization at 15.3%. For the model predicting unmet treatment need, the subgroup with the highest unmet treatment need were young adults aged 38 or less who did not have a comorbid axis 1 condition other than MDD (67.1%). The subgroup with the lowest treatment need included adults older than 38 who were not in the workforce (29.8%).

Discussion

In this study of predictors of PTSD treatment utilization and self-reported unmet treatment need among adults with past-year PTSD in a nationally-representative sample, we found that being non-Latino black, having a high school education versus at least some college and being either employed or seeking work versus not being in the workforce were significantly associated with lower treatment utilization and higher unmet treatment need. Additional predictors of lower treatment utilization include visiting or speaking with family members outside the household at least once per week and not having comorbid past-year MDD or another axis 1 condition. Younger age and being married or cohabitating with a partner also appeared as predictors of lower treatment utilization and higher unmet need in the recursive partitioning analyses. These findings add to past literature by demonstrating that several key predictors of treatment utilization, including being non-Latino black, having lower education and being in the workforce or seeking work, are additionally associated with a self-reported unmet need for mental health treatment.

Findings that being non-Latino black and having less education were associated with a lower odds of treatment utilization among adults with past-year PTSD are similar to the findings for lifetime PTSD and lifetime treatment-seeking in the NCS-R by Wang et al. [4] and in other nationally-representative studies [15, 17, 19]. The disparity in access to mental health treatment for PTSD for non-Latino blacks is reflective of a wide body of research documenting differential access to mental and general health services due to racial disparities [40, 41], and further emphasizes the need for policies and programs that address the social inequalities, such as differential access to housing and educational resources, that may underpin these and other findings [42]. Similar to findings from Sripada et al. in the National Epidemiological Survey of Alcohol and Related Conditions (NESARC) [19], we found that being in the workforce or seeking work as compared to not being in the workforce were associated with both a lower odds of treatment utilization and a higher odds of unmet treatment need. That individuals in the workforce were both less likely to utilize treatment and more likely to report an unmet need for treatment suggests that structural barriers related to being in the workforce, rather than a lower perception of need, may be underlying reasons for differential utilization of mental health resources for this group.

In our evaluation of family structure and social support predictors, only visiting or speaking with relatives at least once per week was a significant predictor of lower treatment utilization. Boscarino et al., in a study of treatment utilization in New York City following the World Trade Center disaster of 2001, similarly found that a higher level of social support was associated with lower treatment utilization [15]. While it is possible that having more social support resources confers some resiliency to level of distress and interference caused by PTSD, it is also possible that family networks may confer stigma related to mental health that could inhibit treatment utilization, which our borderline-significant findings for higher extended family social support and more unmet treatment need may suggest.

Our evaluation of unmet treatment need focuses on those who not only endorse PTSD but additionally self-identify as having a mental health problem. The consistency of our findings for both overall treatment utilization and unmet treatment need, particularly for risk factors for low access to treatment such as non-Latino black ethnicity, high school vs. college education and being employed versus not being in the workforce, suggests that these disparities are unlikely to be fully explained by between-group differences in experience of mental distress among those endorsing PTSD. Therefore, increasing access to care for PTSD and disseminating information on the efficacy of treatment for PTSD may help to reduce disparities in treatment utilization. Seeking mental health care at appropriate referral points is a first step for individuals to access evidence-based specialty care for complex disorders such as PTSD. Although there are many barriers that may prevent receipt of evidence-based care for individuals after they initially access the general health care system [43], helping individuals initially access care is an important issue in improving receipt of evidence-based treatment, and a barrier that larger local, state and federal policies are best poised to address.

This study has several limitations. Lack of information on PTSD-specific treatment seeking resulted in a reliance on past-year treatment seeking for any mental health need as a proxy for access to PTSD-appropriate services. Additionally, unmet treatment need was evaluated as expressing any mental health problem, rather than a PTSD-specific problem. Due to these

limitations, our findings can only be interpreted as reflecting initial access to a potential network of mental health providers, and not as indicating whether an individual received PTSD-specific care. Other studies have employed different definitions of “unmet need”, and therefore our set of predictors may not be directly comparable.

Although the CIDI has been demonstrated to have good reproducibility, findings related to its validity suggest good agreement with the PCL and poor to moderate agreement with clinician diagnoses and the SCID [27–29]. The participants included in this study may represent a different catchment of PTSD symptom expression than those that would be captured using clinician diagnoses. Although this study was based in 3 large nationally-representative surveys, only 600 participants met the inclusion criteria of having past-year PTSD. Due to our sample size and the potential for non-differential misclassification through self-report, lack of significant findings should not be interpreted as evidence of no meaningful associations.

Our analysis was limited to the predictors included in the CPES, and therefore the set of predictors identified are not exhaustive and may fail to include important predictors for treatment utilization. Our findings were also dependent on self-report of treatment utilization, and it is unclear whether self-report of treatment utilization is a strong proxy for actual treatment received. Additionally, due to the cross-sectional nature of the data, the associations reported in this study cannot be interpreted as causal relationships. Future research is needed to identify whether the factors associated with poor treatment utilization in this and other studies are true barriers to care or whether they may serve as proxies for other potential barriers. Finally, findings from this study should be interpreted in light of multiple comparisons, as each predictor assessed conferred a higher chance for detecting false positive findings in the overall set of predictors.

In this nationally-representative survey of adults with past-year PTSD, we found that being non-Latino black, having a high school education versus at least some college and being in the workforce or seeking work versus not being in the workforce were associated with a significantly lower odds of treatment utilization and higher odds of perceived unmet treatment need. These results support the findings from past research for treatment utilization, and further add that these predictors are related to a greater expressed need for mental health services. Future research should better identify and address the structural barriers that may limit access to mental health care among adults with past-year PTSD in the subgroups with identified disparities in unmet need.

Acknowledgments

Time for this manuscript was funded in part by a grant from the National Institute of Mental Health (NIMH K23 MH096029-01A1) awarded to Dr. Luana Marques.

References

1. Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR, Walters EE. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of general psychiatry*. 2005; 62:593–602. [PubMed: 15939837]

2. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders (DSM-5®). American Psychiatric Pub; 2013.
3. Schnurr PP, Friedman MJ, Bernardy NC. Research on posttraumatic stress disorder: epidemiology, pathophysiology, and assessment. *Journal of clinical psychology*. 2002; 58:877–89. [PubMed: 12115712]
4. Wang PS, Berglund P, Olfson M, Pincus HA, Wells KB, Kessler RC. Failure and delay in initial treatment contact after first onset of mental disorders in the National Comorbidity Survey Replication. *Archives of general psychiatry*. 2005; 62:603–13. [PubMed: 15939838]
5. Difede J, Olden M, Cukor J. Evidence-based treatment of post-traumatic stress disorder. *Annual review of medicine*. 2014; 65:319–32.
6. Ruzek JI, Rosen RC. Disseminating evidence-based treatments for PTSD in organizational settings: A high priority focus area. *Behaviour research and therapy*. 2009; 47:980–9. [PubMed: 19632668]
7. Wang PS, Lane M, Olfson M, Pincus HA, Wells KB, Kessler RC. Twelve-month use of mental health services in the United States: results from the National Comorbidity Survey Replication. *Archives of general psychiatry*. 2005; 62:629–40. [PubMed: 15939840]
8. Mills V, Van Hooff M, Baur J, McFarlane AC. Predictors of mental health service utilisation in a non-treatment seeking epidemiological sample of Australian adults. *Community mental health journal*. 2012; 48:511–21. [PubMed: 21994023]
9. Hundt NE, Barrera TL, Mott JM, Mignogna J, Yu HJ, Sansgiry S, et al. Predisposing, enabling, and need factors as predictors of low and high psychotherapy utilization in veterans. *Psychological services*. 2014; 11:281–9. [PubMed: 24841513]
10. Kessler RC, Berglund PA, Bruce ML, Koch JR, Laska EM, Leaf PJ, et al. The prevalence and correlates of untreated serious mental illness. *Health services research*. 2001; 36:987–1007. [PubMed: 11775672]
11. Judd F, Jackson H, Komiti A, Murray G, Fraser C. Service utilisation by rural residents with mental health problems. *Australasian psychiatry : bulletin of Royal Australian and New Zealand College of Psychiatrists*. 2007; 15:185–90. [PubMed: 17516178]
12. Fleury MJ, Ngui AN, Bamvita JM, Grenier G, Caron J. Predictors of healthcare service utilization for mental health reasons. *International journal of environmental research and public health*. 2014; 11:10559–86. [PubMed: 25321874]
13. DeViva JC, Sheerin CM, Southwick SM, Roy AM, Pietrzak RH, Harpaz-Rotem I. Correlates of VA Mental Health Treatment Utilization Among OEF/OIF/OND Veterans: Resilience, Stigma, Social Support, Personality, and Beliefs About Treatment. *Psychological trauma : theory, research, practice and policy*. 2015
14. Fikretoglu D, Liu A. Prevalence, correlates, and clinical features of delayed-onset posttraumatic stress disorder in a nationally representative military sample. *Social psychiatry and psychiatric epidemiology*. 2012; 47:1359–66. [PubMed: 22124662]
15. Boscarino JA, Adams RE, Figley CR. Mental health service use 1-year after the World Trade Center disaster: implications for mental health care. *General hospital psychiatry*. 2004; 26:346–58. [PubMed: 15474634]
16. den Ouden DJ, van der Velden PG, Grievink L, Morren M, Dirkzwager AJ, Yzermans CJ. Use of mental health services among disaster survivors: predisposing factors. *BMC public health*. 2007; 7:173. [PubMed: 17650339]
17. Koenen KC, Goodwin R, Struening E, Hellman F, Guardino M. Posttraumatic stress disorder and treatment seeking in a national screening sample. *Journal of traumatic stress*. 2003; 16:5–16. [PubMed: 12602647]
18. Roberts AL, Gilman SE, Breslau J, Breslau N, Koenen KC. Race/ethnic differences in exposure to traumatic events, development of post-traumatic stress disorder, and treatment-seeking for post-traumatic stress disorder in the United States. *Psychological medicine*. 2011; 41:71–83. [PubMed: 20346193]
19. Sripada RK, Pfeiffer PN, Rauch SA, Bohnert KM. Social support and mental health treatment among persons with PTSD: results of a nationally representative survey. *Psychiatric services (Washington, DC)*. 2015; 66:65–71.

20. Sripada RK, Pfeiffer PN, Valenstein M, Bohnert KM. Medical illness burden is associated with greater PTSD service utilization in a nationally representative survey. *General hospital psychiatry*. 2014; 36:589–93. [PubMed: 25304762]
21. Pennell BE, Bowers A, Carr D, Chardoul S, Cheung GQ, Dinkelmann K, et al. The development and implementation of the National Comorbidity Survey Replication, the National Survey of American Life, and the National Latino and Asian American Survey. *International journal of methods in psychiatric research*. 2004; 13:241–69. [PubMed: 15719531]
22. Heeringa SG, Wagner J, Torres M, Duan N, Adams T, Berglund P. Sample designs and sampling methods for the Collaborative Psychiatric Epidemiology Studies (CPES). *International journal of methods in psychiatric research*. 2004; 13:221–40. [PubMed: 15719530]
23. Kessler RC, Ustun TB. The World Mental Health (WMH) Survey Initiative Version of the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI). *International journal of methods in psychiatric research*. 2004; 13:93–121. [PubMed: 15297906]
24. Wittchen HU, Lachner G, Wunderlich U, Pfister H. Test-retest reliability of the computerized DSM-IV version of the Munich-Composite International Diagnostic Interview (M-CIDI). *Social psychiatry and psychiatric epidemiology*. 1998; 33:568–78. [PubMed: 9803825]
25. Wittchen HU. Reliability and validity studies of the WHO–Composite International Diagnostic Interview (CIDI): a critical review. *Journal of psychiatric research*. 1994; 28:57–84. [PubMed: 8064641]
26. Lang AJ, Laffaye C, Satz LE, Dresselhaus TR, Stein MB. Sensitivity and specificity of the PTSD checklist in detecting PTSD in female veterans in primary care. *Journal of traumatic stress*. 2003; 16:257–64. [PubMed: 12816338]
27. Komiti AA, Jackson HJ, Judd FK, Cockram AM, Kyrios M, Yeatman R, et al. A comparison of the Composite International Diagnostic Interview (CIDI-Auto) with clinical assessment in diagnosing mood and anxiety disorders. *The Australian and New Zealand journal of psychiatry*. 2001; 35:224–30. [PubMed: 11284905]
28. Kessler RC, Santiago PN, Colpe LJ, Dempsey CL, First MB, Heeringa SG, et al. Clinical reappraisal of the Composite International Diagnostic Interview Screening Scales (CIDI-SC) in the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS). *International journal of methods in psychiatric research*. 2013; 22:303–21. [PubMed: 24318219]
29. Alegria M, Shrout PE, Torres M, Lewis-Fernandez R, Abelson JM, Powell M, et al. Lessons learned from the clinical reappraisal study of the Composite International Diagnostic Interview with Latinos. *International journal of methods in psychiatric research*. 2009; 18:84–95. [PubMed: 19507168]
30. Demyttenaere K, Bruffaerts R, Posada-Villa J, Gasquet I, Kovess V, Lepine JP, et al. Prevalence, severity, and unmet need for treatment of mental disorders in the World Health Organization World Mental Health Surveys. *Jama*. 2004; 291:2581–90. [PubMed: 15173149]
31. Roll JM, Kennedy J, Tran M, Howell D. Disparities in unmet need for mental health services in the United States, 1997–2010. *Psychiatric services (Washington, DC)*. 2013; 64:80–2.
32. Urbanoski KA, Cairney J, Bassani DG, Rush BR. Perceived unmet need for mental health care for Canadians with co-occurring mental and substance use disorders. *Psychiatric services (Washington, DC)*. 2008; 59:283–9.
33. Walker ER, Cummings JR, Hockenberry JM, Druss BG. Insurance status, use of mental health services, and unmet need for mental health care in the United States. *Psychiatric services (Washington, DC)*. 2015; 66:578–84.
34. Strobl C, Malley J, Tutz G. An introduction to recursive partitioning: rationale, application, and characteristics of classification and regression trees, bagging, and random forests. *Psychological methods*. 2009; 14:323–48. [PubMed: 19968396]
35. Torsten, Hothorn KHAZ. Unbiased Recursive Partitioning: A Conditional Inference Framework. *Journal of Computational and Graphical Statistics*. 2006; 15:651–674.
36. Team RC. R: A language and environment for statistical computing. Vienna, Austria: R Foundation for Statistical Computing; 2015.
37. Torsten, Hothorn AZ. partykit: A Modular Toolkit for Recursive Partytioning in R. *Journal of Machine Learning Research*. 2015 accepted 2015-02-20.

38. Greenland S. Multiple comparisons and association selection in general epidemiology. *International journal of epidemiology*. 2008; 37:430–4. [PubMed: 18453632]
39. Rothman KJ. No adjustments are needed for multiple comparisons. *Epidemiology (Cambridge, Mass)*. 1990; 1:43–6.
40. Neighbors HW, Caldwell C, Williams DR, Nesse R, Taylor RJ, Bullard KM, et al. Race, ethnicity, and the use of services for mental disorders: results from the National Survey of American Life. *Archives of general psychiatry*. 2007; 64:485–94. [PubMed: 17404125]
41. Harris KM, Edlund MJ, Larson S. Racial and ethnic differences in the mental health problems and use of mental health care. *Medical care*. 2005; 43:775–84. [PubMed: 16034291]
42. Alegria M, Perez DJ, Williams S. The role of public policies in reducing mental health status disparities for people of color. *Health affairs (Project Hope)*. 2003; 22:51–64. [PubMed: 14515881]
43. Graves RE, Freedy JR, Aigbogun NU, Lawson WB, Mellman TA, Alim TN. PTSD treatment of African American adults in primary care: the gap between current practice and evidence-based treatment guidelines. *Journal of the National Medical Association*. 2011; 103:585–93. [PubMed: 21999033]

Highlights

- We assessed predictors of treatment utilization and unmet treatment need
- Data was drawn from a large nationally-representative psychiatric survey
- Being non-Latino black and low education were associated with unmet treatment need
- Additionally, being currently employed was associated with unmet need for treatment
- Research on effective policies reducing disparities in access to PTSD care is needed

Figure 1.

Predictors of mental health treatment utilization with any professional (A), treatment utilization with a mental health specialist (B) and unmet treatment need (C) among participants with past-year PTSD; recursive partitioning analyses

Table 1

Characteristics of participants in the Collaborative Psychiatric Epidemiological Surveys (CPES) with past-year PTSD (n=600)

Covariates	n (weighted %)
<i>Sociodemographic factors</i>	
Age (years) (weighted mean, SD)	40.5 (0.8)
Sex	
Female	462 (73.4)
Male	138 (26.6)
Race/ethnicity	
Latino	118 (9.9)
Non-Latino white	226 (70.9)
Non-Latino black	209 (12.9)
Other race/ethnicity	47 (6.3)
Income	
<\$15,000	196 (25.1)
\$15,000–<\$35,000	151 (24.6)
\$35,000–<\$75,000	160 (32.1)
\$75,000	93 (18.2)
Education	
Less than high school	151 (20.6)
High school	180 (29.0)
Greater than high school	269 (50.4)
Work status	
Employed	341 (60.3)
Unemployed	39 (3.1)
Not in workforce	220 (36.5)
Insurance status	
Have insurance	489 (84.5)
Do not have insurance	105 (15.5)
<i>Family structure and social support</i>	
Partner status	
Married/cohabitating	261 (46.3)
Divorced/separated/widowed	183 (32.0)
Never married	156 (21.7)
Children/adolescents in household	
Yes	231 (32.6)
No	369 (67.4)
Frequency visit relatives	
1+ times per week	323 (51.6)
<1 time per week	260 (48.4)
Frequency visit friends	

Covariates	n (weighted %)
1+ times per week	313 (53.3)
<1 time per week	272 (46.7)
Frequency attend religious services	
Once per week or more	152 (24.0)
Less than once per week	391 (76.0)
<i>Comorbidities</i>	
Past-year MDD	
Yes	175 (30.8)
No	425 (69.2)
Past-year axis 1 (not MDD)	
Yes	200 (50.6)
No	400 (49.4)
Chronic health condition	
Yes	154 (25.3)
No	446 (74.7)
<i>Treatment utilization and unmet need</i>	
Treatment with any professional	
Yes	253 (48.6)
No	347 (51.4)
Treatment with a mental health specialist	
Yes	158 (30.4)
No	442 (69.6)
Unmet treatment need ^a	
Yes	239 (41.8)
No	253 (58.2)

^a Subset with perceived need for treatment (n=492)

Table 2

Predictors of mental health treatment utilization and unmet need among participants with past-year PTSD in the Collaborative Psychiatric Epidemiological Surveys, bivariate logistic regression analyses (n=600)

Predictors	Treatment utilization with any health professional		Treatment utilization with a mental health specialist		Unmet treatment need (n=492)	
	OR (95% CI)	P	OR (95% CI)	P	OR (95% CI)	P
Demographic factors						
Age (years)	1.01 (0.99–1.03)	0.22	1.01 (0.99–1.02)	0.62	0.99 (0.97–1.01)	0.15
Sex (reference: male)						
Female	1.12 (0.66–1.91)	0.68	0.90 (0.52–1.58)	0.72	0.97 (0.53–1.76)	0.91
Race/ethnicity (reference: non-Latino white)						
Latino	0.66 (0.37–1.16)	0.15	0.72 (0.39–1.33)	0.29	1.08 (0.58–2.04)	0.80
Non-Latino black	0.44 (0.27–0.72)	0.001	0.39 (0.22–0.69)	0.001	2.11 (1.25–3.54)	0.005
Asian or other	0.88 (0.37–2.13)	0.78	0.42 (0.12–1.44)	0.17	1.06 (0.39–2.86)	0.92
Income (reference: >\$75,000)						
<\$15,000	1.04 (0.54–2.01)	0.90	1.09 (0.53–2.24)	0.81	1.01 (0.49–2.08)	0.98
\$15,000–<\$35,000	1.03 (0.52–2.05)	0.94	0.83 (0.40–1.72)	0.61	0.83 (0.39–1.73)	0.61
\$35,000–<\$75,000	1.32 (0.68–2.55)	0.41	0.85 (0.42–1.73)	0.66	0.84 (0.41–1.75)	0.64
Education (reference: some college)						
Less than high school	0.70 (0.38–1.26)	0.23	0.69 (0.35–1.36)	0.28	1.34 (0.68–2.65)	0.40
High school	0.41 (0.23–0.72)	0.002	0.38 (0.21–0.72)	0.003	2.45 (1.34–4.48)	0.004
Work status (reference: not in workforce)						
Employed	0.63 (0.39–1.03)	0.06	0.56 (0.33–0.94)	0.028	1.74 (1.00–3.02)	0.048
Unemployed	0.19 (0.07–0.53)	0.002	0.12 (0.03–0.55)	0.006	4.95 (1.60–15.34)	0.006
Insurance status (reference: insured)						
Uninsured	0.57 (0.30–1.07)	0.08	0.59 (0.27–1.26)	0.17	1.91 (0.98–3.73)	0.056
Family structure and social support						
Partner status (reference: never married)						
Married/cohabitating	0.83 (0.47–1.47)	0.53	0.87 (0.46–1.67)	0.68	1.39 (0.74–2.61)	0.30
Divorced/separated/widowed	1.15 (0.61–2.18)	0.67	1.15 (0.57–2.34)	0.69	0.99 (0.50–1.97)	0.98
Children in household (reference: No)						

Predictors	Treatment utilization with any health professional		Treatment utilization with a mental health specialist		Unmet treatment need (n=492)	
	OR (95% CI)	P	OR (95% CI)	P	OR (95% CI)	P
Yes	0.76 (0.46–1.26)	0.28	0.81 (0.46–1.45)	0.48	1.50 (0.87–2.59)	0.15
Frequency visit relatives (reference: <1 time/week)						
1+ times/week	0.54 (0.34–0.88)	0.012	0.81 (0.48–1.36)	0.42	1.64 (0.98–2.77)	0.062
Frequency visit friends (reference: <1 time/week)						
1+ times/week	0.75 (0.47–1.20)	0.23	1.12 (0.67–1.87)	0.66	1.25 (0.74–2.09)	0.40
Frequency attend religious services (reference: <1 time/week)						
1+ times/week	0.90 (0.53–1.53)	0.68	1.06 (0.60–1.87)	0.85	0.94 (0.52–1.72)	0.84
Comorbidities						
Past-year MDD (reference: no)						
Yes	1.95 (1.18–3.22)	0.010	1.79 (1.04–3.08)	0.037	0.63 (0.36–1.08)	0.09
Past-year axis 1 (not MDD) (reference: no)						
Yes	1.89 (1.18–3.03)	0.009	2.39 (1.45–3.94)	0.001	0.66 (0.40–1.09)	0.11
Chronic health condition (reference: no)						
Yes	1.10 (0.64–1.89)	0.73	1.22 (0.68–2.21)	0.51	0.96 (0.54–1.72)	0.89

Table 3

Proportions utilizing treatment with any professional, with a mental health specialist and reporting unmet need by subgroup; recursive partitioning analyses

Subgroup	Predicted probability of treatment/unmet need (%)
<i>Treatment utilization with any professional</i>	
Race/ethnicity other than non-Latino black, not married or cohabitating	55.9
Race/ethnicity other than non-Latino black, married or cohabitating	40.3
Non-Latino black, age ≤44	22.4
Non-Latino black, age >44	50.0
<i>Treatment utilization with a mental health specialist</i>	
Race/ethnicity other than non-Latino black, in workforce or looking for work	26.2
Race/ethnicity other than non-Latino black, not in workforce, no axis 1 condition other than MDD or PTSD	28.6
Race/ethnicity other than non-Latino black, not in workforce, axis 1 condition other than MDD or PTSD	55.4
Non-Latino black	15.3
<i>Unmet treatment need</i>	
Age ≤38, no axis 1 condition (other than MDD)	67.1
Age ≤38, axis 1 condition (other than MDD)	43.2
Age >38, in workforce or looking for work	48.5
Age >38, not in workforce	29.8