Published in final edited form as:

Psychiatry Res. 2016 September 30; 243: 97–99. doi:10.1016/j.psychres.2016.06.011.

A 12-Month Prospective Study of the Effects of PTSD-Depression Comorbidity on Suicidal Behavior in Iraq/Afghanistan-Era Veterans

Nathan A. Kimbrel, PhD^{a,b,c,*}, Eric C. Meyer, PhD^{d,e,f}, Bryann B. DeBeer, PhD^{d,e,f}, Suzy B. Gulliver, PhD^g, and Sandra B. Morissette, PhD^h

^aDurham Veterans Affairs Medical Center, Durham, NC, USA

^bVA Mid-Atlantic Mental Illness Research, Education, and Clinical Center; Durham, NC, USA

^cDuke University Medical Center, Durham, NC, USA

^dVISN 17 Center of Excellence for Research on Returning War Veterans, Waco, Texas, USA

^eCentral Texas Veterans Health Care System, Temple, Texas, USA

^fTexas A&M University Health Science Center, College Station, Texas, USA

^gWarriors Research Institute, Baylor, Scott & White Healthcare System, Waco, TX, USA

^hThe University of Texas at San Antonio, San Antonio, TX, USA

Abstract

Prior findings concerning the association between comorbid posttraumatic stress disorder (PTSD) and depression and suicidal behavior in Iraq/Afghanistan-era veterans have been mixed and limited by reliance on cross-sectional designs and self-report measures. The present study used validated clinical interviews to prospectively assess the effect of comorbid PTSD-depression on suicidal behavior in Iraq/Afghanistan-era veterans. A total of 309 Iraq/Afghanistan-era veterans completed clinical interviews of PTSD and depression at a baseline assessment, and 277 completed a clinical interview of suicidal behavior at a 12-month follow-up assessment (89.6% retention rate). As expected, veterans with comorbid PTSD-depression reported high rates of passive suicidal ideation, active suicidal ideation, active suicidal ideation with specific intent and plan, aborted attempts, interrupted attempts, and actual attempts at the 12-month follow-up. In addition, logistic regressions revealed that comorbid PTSD-depression was the only significant predictor of actual attempts at 12-month follow-up in the total sample (OR=10.671, $p=0.007$) and in the subset of veterans with PTSD/depression (OR=20.727, $p=0.048$). Comorbid PTSD-depression was also the only significant predictor of aborted/interrupted suicide attempts at 12-month follow-up in the total sample (OR=37.751, $p < 0.007$) and in the subset of veterans with

*Correspondence concerning this article should be sent to: Dr. Nathan A. Kimbrel, Durham Veterans Affairs Medical Center, 508 Fulton Street, Durham, NC, 27705. Phone: (919) 286-0411, ext. 6759. Nathan.Kimbrel@va.gov.

Contributors

NAK, ECM, BBD, SBG, and SBM designed and conducted the study. NAK managed the literature searches, conducted the statistical analyses, and wrote a first draft of the manuscript. NAK, ECM, BBD, SBG, and SBM reviewed and revised the manuscript.

Conflicts of Interest

The authors have no conflicts of interest to declare.

PTSD/depression ($OR=10.276$, $p=0.013$). In contrast, gender, age, race, sexual orientation, and baseline history of attempts were not statistically significant in any of the models examined (all p 's $>.10$). Taken together, these findings suggest that clinicians should carefully monitor veterans with comorbid PTSD-depression, as this subset of veterans may be at particularly high risk for engaging in future suicidal behavior.

Keywords

Posttraumatic stress disorder; depression; comorbidity; suicide attempts; suicidal ideation; veterans

Introduction

Posttraumatic stress disorder (PTSD) and depression are highly comorbid (Kessler et al., 1995). Several studies have investigated whether comorbid PTSD-depression increases risk for suicidal behavior in Iraq/Afghanistan-era veterans. For example, Jakupcak et al. (2009) reported that Iraq/Afghanistan-era veterans with PTSD who screened positive for two or more additional comorbid disorders (including depression) were significantly more likely to report ideation than veterans with PTSD only. Guerra et al. (2011) reported that Iraq/Afghanistan-era veterans with comorbid PTSD-depression reported more suicidal ideation than veterans without PTSD or depression; however, veterans with comorbid PTSD-depression did not report more suicidal ideation than veterans with PTSD-only. Ramsawh et al. (2014) found that soldiers with comorbid PTSD-depression were significantly more likely to report suicidal ideation/attempts during the past year than soldiers with either diagnosis alone. Kimbrel et al. (2014) and DeBeer et al. (2014) found that a combined PTSD-depression factor predicted both suicidal ideation (DeBeer et al., 2014; Kimbrel et al., 2014) and suicide attempts (Kimbrel et al., 2014) cross-sectionally.

Taken together, these studies suggest that comorbid PTSD-depression may increase Iraq/Afghanistan-era veterans' risk for suicidal behavior; however, prior studies are limited by cross-sectional designs and reliance on self-report assessments of suicidal behavior. The present study sought to address these limitations by conducting a prospective study of the effects of PTSD-depression diagnostic comorbidity on clinician-assessed suicidal behavior in a sample of Iraq/Afghanistan-era veterans over a 12-month period. Consistent with prior work, we hypothesized that Iraq/Afghanistan-era veterans with comorbid PTSD-depression would exhibit significantly higher rates of suicidal ideation and suicidal behavior at the 12-month follow-up compared to veterans with no diagnosis, PTSD-only, and depression-only.

Materials and Methods

A total of 345 Iraq/Afghanistan-era veterans were recruited to participate, of which 309 met full eligibility criteria (21 were ruled out due to bipolar/psychosis, 13 for failure to complete the baseline assessment, 1 was not an Iraq/Afghanistan-era veteran, and 1 planned to relocate in the near future). Nearly one-third (32.4%) of the participants were female; 57.0% were White/Caucasian; 33.3% were Black/African American; 19.4% were Latino; 93.9%

were heterosexual. On average, participants were 38.8 ($SD=9.8$) years of age and had 14.1 ($SD=2.1$) years of education. The majority (85.1%) had served in the Army.

At baseline, 31.7% ($n=98$) of the sample had a diagnosis of current PTSD or current depression. Among these individuals, 52.0% ($n=51$) had PTSD-only, 14.3% ($n=14$) had depression-only, and 33.7% ($n=33$) had comorbid PTSD-depression. Among the total sample, 9.7% ($n=30$) reported a lifetime history of attempts. During the 12-month follow-up period, 2.6% ($n=8$) reported 1+ actual attempts, 1.6% ($n=5$) reported 1+ aborted attempts, and 1.3% ($n=4$) reported 1+ interrupted attempts.

All procedures were approved by the Institutional Review Board prior to data collection. Following informed consent, participants completed a battery of clinical interviews at baseline, including the Clinician Administered PTSD Scale for DSM-IV (Blake et al., 1995), which was used to diagnose PTSD, and the Structured Clinical Interview for the DSM-IV (First et al., 1994), which was used to diagnose major depressive disorder. Approximately 12 months later, 277 participants (89.6% retention rate) completed the Columbia Suicide Severity Rating Scale interview (Posner, et al., 2011).

Data Analysis Plan

Chi-square tests examined the bivariate associations between baseline PTSD-depression status and suicidal ideation and behavior at the 12-month follow-up. Four logistic regression models assessed the effect of baseline PTSD-depression comorbidity on interrupted/aborted suicide attempts and actual suicide attempts at the 12-month follow-up in the total sample and in the subset of 98 veterans with PTSD/depression. In the total sample models, veterans with comorbid PTSD-depression were compared with all other veterans, whereas in the PTSD/depression models veterans with comorbid PTSD-depression were compared with veterans with PTSD- and depression-only. Sex (female=1), age, race (White/Caucasian=1), sexual orientation (non-heterosexual=1), and baseline history of suicide attempts (history of suicide attempts=1) were included as covariates. Interrupted and aborted suicide attempts were combined into a single dependent variable in order to increase statistical power.

Results

Chi-square tests showed that baseline comorbid PTSD-depression was associated with the highest overall rates of passive ideation [$\chi^2(3)=33.289$, $p<0.001$], non-specific active ideation [$\chi^2(3)=31.537$, $p<0.001$], active ideation with method [$\chi^2(3)=28.551$, $p<0.001$], active ideation with intent [$\chi^2(3)=27.026$, $p<0.001$], active ideation with specific plan and intent [$\chi^2(3)=34.519$, $p<0.001$], aborted attempts [$\chi^2(3)=25.851$, $p<0.001$], interrupted attempts [$\chi^2(3)=18.218$, $p<0.001$], and actual attempts [$\chi^2(3)=13.222$, $p=0.004$] during the subsequent 12 months (Figure 1).

Logistic regressions revealed that comorbid PTSD-depression was the only statistically significant ($p<0.05$) predictor of actual attempts at 12-month follow-up in the total sample ($OR=10.671$, $p=0.007$) and in the subset of veterans with PTSD/depression ($OR=20.727$, $p=0.048$). Comorbid PTSD-depression was also the only statistically significant predictor of aborted/interrupted suicide attempts at 12-month follow-up in the total sample ($OR=37.751$,

$p < 0.007$) and in the subset of veterans with PTSD/depression ($OR=10.276$, $p=0.013$). Gender, age, race, sexual orientation, and baseline history of attempts were not statistically significant predictors in any of the models examined (all p 's $\geq .10$).

Discussion

The current study substantially advances the literature by demonstrating for the first time that PTSD-depression comorbidity is prospectively associated with suicidal behavior in Iraq/Afghanistan-era veterans. Most notably, we found that comorbid PTSD-depression prospectively predicted suicide attempts in both the total sample as well as in the subset of veterans who were diagnosed with PTSD and/or depression at baseline, even after accounting for demographic variables and the participants' baseline history of suicide attempts.

Several limitations should be considered when interpreting these findings. First, our sample size was relatively small to study a behavior that occurs as infrequently as suicide attempts. A related limitation concerns the follow-up timeframe, as a longer follow-up period would be ideal to study a phenomenon as complex as suicidal behavior. Finally, since random selection was not used to select participants, the current sample is not representative of the larger Iraq/Afghanistan-era veteran population. Despite these limitations, our findings suggest that additional research on PTSD-depression comorbidity and suicidal behavior in Iraq/Afghanistan-era veterans is needed, and that Iraq/Afghanistan-era veterans with comorbid PTSD-depression should be closely monitored by treating clinicians.

Acknowledgments

This work was also supported by the VA VISN 17 Center of Excellence for Research on Returning War Veterans, the Central Texas Veterans Health Care System, and the Research & Development and Mental Health Services of the Durham VA Medical Center. The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of the Department of Veterans Affairs or the United States government.

Role of the Funding Source

This work was supported by a Merit Award (I01RX000304) to Dr. Morissette from the Rehabilitation Research and Development (RR&D) Service of the Department of Veterans Affairs (VA) Office of Research and Development (ORD) and a Career Development Award (IK2 CX000525) to Dr. Kimbrel from the Clinical Science Research and Development (CSR&D) Service of VA ORD. VA CSR&D and VA RR&D played no role in study design, data collection, data analysis, manuscript preparation, or the decision to submit this article for publication.

References

- DeBeer BB, Kimbrel NA, Meyer EC, Gulliver SB, Morissette SB. Combined PTSD and depressive symptoms interact with post-deployment social support to predict suicidal ideation in Operation Enduring Freedom and Operation Iraqi Freedom veterans. *Psychiatry Res.* 2014; 216:357–362. [PubMed: 24612971]
- Guerra VS, Calhoun PS, Mid-Atlantic Mental Illness Research, Education and Clinical Center Workgroup. Examining the relation between posttraumatic stress disorder and suicidal ideation in an OEF/OIF veteran sample. *J Anxiety Disord.* 2011; 25:12–18. [PubMed: 20709493]
- Jakupcak M, Cook J, Imel Z, Fontana A, Rosenheck R, McFall M. Posttraumatic stress disorder as a risk factor for suicidal ideation in Iraq and Afghanistan war veterans. *J Trauma Stress.* 2009; 22:303–306. [PubMed: 19626682]

- Kessler RC, Sonnega A, Bromet E, Hughes M, Nelson C. Post-traumatic stress disorder in the National Comorbidity Survey. *Arch Gen Psychiatry*. 1995; 52:1048–1060. [PubMed: 7492257]
- Kimbrel NA, Calhoun P, Elbogen E, Brancu M, VA Mid-Atlantic MIRECC Registry Workgroup. Beckham JC. The factor structure of psychiatric comorbidity among Iraq/Afghanistan-war veterans and its relationship to violence, incarceration, suicide attempts, and suicidality. *Psychiatry Res*. 2014; 220:397–403. [PubMed: 25169889]
- Ramsawh HJ, Fullerton CS, Mash HB, Ng TH, Kessler RC, Stein MB, Ursano RJ. Risk for suicidal behaviors associated with PTSD, depression, and their comorbidity in the U.S. Army. *J Affect Disord*. 2014;116–122.

Highlights

- This study examined comorbid PTSD-depression and suicidal behavior over time.
- Comorbid PTSD-depression predicted suicide attempts at 12-month follow-up.
- This effect was found in the total sample and in the subset of veterans with PTSD/depression.
- Veterans with comorbid PTSD-depression should be carefully monitored.

Figure 1. Rates of suicidal ideation and behavior at 12-month follow-up by baseline PTSD-depression status