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PTSD Symptoms, Hazardous Drinking, and Health Functioning among U.S.OEF/OIF Veterans Presenting to Primary Care

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Abstract

Posttraumatic Stress Disorder (PTSD) and alcohol abuse both are negatively associated with health, and alcohol misuse may mediate the relationship between PTSD and functional health outcomes. The present study tested for such mediation using self-report measures of PTSD symptoms, hazardous alcohol use, and health functioning in 151 U.S. veterans (136 men and 15 women) of the wars in Iraq and Afghanistan recruited from a Veterans Affairs primary care clinic. On the basis of established cut scores, 39.1% screened positive for PTSD and 26.5% screened positive for hazardous drinking. PTSD symptoms and hazardous drinking were significantly correlated with each other and with health functioning. Hazardous drinking was found to partially mediate the relationship between PTSD and functional mental health, but not physical health.

Veterans of Operations Iraqi Freedom (OIF) and Enduring Freedom (OEF) are at risk for posttraumatic stress disorder (PTSD) and other adverse psychological and physical health outcomes. Epidemiological studies of OEF/OIF veterans have estimated the prevalence of PTSD to range from 11.2% to 24.5% depending on the instrument used, the time since returning from deployment and whether the sample was comprised of active duty or reserve troops (Hoge, Terhakopian, Castro, Messer, & Engel, 2007; Milliken, Auchterlonie, & Hoge, 2007). Studies of OEF/OIF veterans presenting to Veterans Affairs Medical Centers (VAMC) have reported even higher rates. For example, a study of OEF/OIF veterans recruited from an integrated medical/mental health clinic, found that 37% screened positive for PTSD and 23.4% endorsed at least one problem drinking item (Jakupcak, Luterek, Hunt, Conybeare, & McFall, 2008).

Evidence from traumatized samples indicates that PTSD is negatively associated with functional health or health-related quality of life (e.g., Malik et al., 1999; Berger et al., 2007). With regard to OEF/OIF troops in particular, an epidemiological study reported a number of statistically significant relationships between PTSD and aspects of health functioning even after controlling for physical injury (Hoge et al., 2007). There also is evidence of an association between alcohol misuse and functional health (e.g., Bridevaux, Bradley, Bryson, McDonnell, & Fihn, 2004). Given that PTSD is associated with high rates of alcohol use disorders (Jacobsen, Southwick, & Kosten, 2001), some have speculated that alcohol misuse may be responsible for the apparent link between PTSD symptoms and adverse health outcomes (Rheingold, Acierno, & Resnick, 2004). Although this model has intuitive appeal, empirical studies have, to date, not found evidence for mediation of the relationship between PTSD and functional health by alcohol misuse (e.g., Vasterling et al., 2008).

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This investigation examined the relations among PTSD symptoms, hazardous drinking, and functional health in a sample of OEF/OIF veterans presenting for primary care services. We hypothesized that PTSD symptoms and alcohol misuse would each be associated with functional health outcomes and expected that the relationship between PTSD and functional health would be partially mediated by alcohol misuse.

Method

Participants and Procedure

Participants (N = 151) were seeking primary care at a clinic that serves as the first point of contact within the Memphis VAMC system for OEF/OIF veterans. The present data were obtained from a screening procedure for a larger study. Nearly three-quarters (74%) of veterans who were invited to complete a screening packet gave informed consent and completed the questionnaires. The sample was predominately male (90.1%; n = 136), ranging in age from 21 to 62 years old (M = 34.5; SD = 9.4). A majority (62.3%) described themselves as White (n = 94), with 35.1% indicating they were Black or African-American (n = 53).

Measures

We used the PTSD Checklist, military version (PCL-M; Weathers et al., 1993), a 17-item instrument that corresponds to the DSM-IV-TR criteria (APA, 2001). The PCL has demonstrated excellent psychometric properties in a variety of populations (Weathers et al., 1993; Yeager, Magruder, Knapp, Nicholas, & Frueh, 2007). In the current study, the internal consistency of the PCL-M was high (alpha = .97).

Hazardous drinking was assessed with the Alcohol Use Disorders Identification Test (AUDIT; Babor, Higgins-Biddle, Saunders, & Monteiro, 2001), a self-report instrument with 10 items that are rated 0 – 4 to indicate quantity and frequency of alcohol use, symptoms of alcohol dependence, and alcohol related consequences. In the present study, the AUDIT yielded an alpha of .89.

Functional health was assessed with the Medical Outcomes Study Short Form-36 health survey (SF-36; Ware & Sherbourne, 1992), a self-report instrument that measures health related quality of life on eight subscales: Physical Functioning, Role Limitations Due to Physical Health, Role Limitations Due to Emotional Problems, Energy and Fatigue, Emotional Well-Being, Social Functioning, Pain, and General Health. Subscale scores on this measure range from 0 to 100 (100 = *best functioning*) and may be transformed to *T*-scores based on population norms (with a mean of 50 and standard deviation of 10). In the present study, SF-36 scales evidenced good internal consistency (alpha values ranged from . 85 to .92). We also used the two composite scales based on a factor analysis of the SF-36: Physical Component Summary and Mental Component Summary (Taft, Karlsson, & Sullivan, 2001). Scores on the Physical Component Summary and Mental Component Summary are derived by a formula using raw scores for the eight primary subscales and are transformed to *T*-scores.

Results

The majority of participants reported having served 1 or 2 OEF/OIF deployments (64.9% and 27.8%, respectively) with the remaining 7.3% reporting three or more OEF/OIF deployments. The mean number of months deployed to a combat zone was 14.5 (SD = 6.8). We applied established cut scores to the PCL and the AUDIT. For the PCL, a conservative cut score of 50 (see Erbes et al., 2007; Weathers et al., 1993) resulted in 39.1% (n = 59) screening positive. Lower PCL cut scores have been used with primary care samples of

OEF/OIF veterans (see Bliese et al., 2008); in this sample 63.6% (n = 96) screened positive based on a cut score of 34. For the AUDIT, the widely used cut score of 8 resulted in 40 veterans (26.5%) screening positive for hazardous drinking. Twenty-four veterans (15.9%) screened positive for both PTSD and hazardous drinking based on cut scores of 50 and 8, respectively. Analyses examining racial/ethnic differences revealed no differences on the PCL, AUDIT, or any of the SF-36 scales.

As shown in Table 1, PCL score was significantly correlated with AUDIT total score and with all eight SF-36 scales. PTSD symptoms were positively associated with alcohol problem severity and negatively associated with functional health. AUDIT score was significantly correlated with six SF-36 scales (all except Physical Functioning, and Physical Role Limitation), indicating that alcohol problem severity was negatively associated with functional health.

We first established that the correlation between the PCL and the AUDIT was significant, and we determined that PCL and AUDIT each were significantly correlated with one or both of the SF-36 Component Scores (i.e., Mental Component Summary and Physical Component Summary; Taft et al., 2001). We then conducted Sobel tests of indirect effects to investigate the potential mediating effect of alcohol abuse on the relationship between PTSD and these composites. Sobel tests generate a Z score based on the magnitude of the indirect (i.e., meditated) path between the independent and dependent variables (Sobel, 1982; Preacher & Hayes, 2004). As shown in Table 2, hazardous drinking significantly mediated the relationship between PTSD symptoms and global ratings of mental health, but did not mediate the relationship involving physical health. Reverse mediation analyses that entered the Mental Component Summary and Physical Component Summary as the mediator variable and the AUDIT as the dependent variable showed a similar pattern. When PCS score was entered as a mediator between PCL and AUDIT score, the magnitude of the indirect effect was 0.00 and all path magnitudes were nearly identical to the values in the original mediation analysis for the PCS. When AUDIT was entered as a potential mediator for Mental Component Summary score, the magnitude of the indirect effect was marginally larger (absolute value of .09, compared to .03 in the specified model).

Discussion

Although the 39.1% rate of presumptive PTSD (using the more conservative cut score of 50) is high compared to some mixed primary care samples in VA (e.g., 18% in Norman et al., 2006; 11% in Yeager et al., 2007), it is similar to the 37% rate reported for another primary care sample of OEF/OIF veterans (Jakupcak et al., 2008). The rate of hazardous drinking (26.5%) in this sample of OEF/OIF veterans is comparable to other primary care samples (Hawkins et al., 2007). These findings suggest there is a higher rate of PTSD symptoms among OEF/OIF veterans, perhaps reflecting the relative recency of their exposure to combat. It also is possible that the context contributed to a higher PTSD screening rate because participants were seen in a clinic dedicated to OEF/OIF veterans, which may have mitigated concerns about reporting symptoms.

PTSD symptoms were significantly correlated with all eight functional health scores, and hazardous drinking was significantly correlated with six of the scores. These findings indicate that veterans who endorse more PTSD symptoms and hazardous drinking indicators rate their functional health status as worse than veterans with fewer of these mental health concerns. Mediation analysis findings suggest that alcohol misuse does not mediate the relationship between PTSD symptoms and the physical dimension of functional health, but does mediate for the mental dimension. These findings are broadly consistent with literature suggesting that the relation between PTSD and health may be mediated by behavioral

factors like substance abuse (Rheingold et al., 2004), but also with a growing literature that suggests that PTSD symptoms are associated with unique effects on physical health status, independent of alcohol abuse (e.g., Vasterling et al., 2008).

Strengths of this study include an ethnically diverse sample and a relatively high response rate. Limitations include the absence of an interview-based measure of PTSD and objective data from participants' medical records. In addition, the cross-sectional nature of our data makes it impossible to explore the temporal sequence of these constructs in order to rule out alternative models of causation. Yet, despite the comparable outcome based on reverse mediation analyses, our hypothesized model is consistent with prior studies suggesting that alcohol impacts functional health (e.g., Adams, Boscarino, & Galea, 2006). Prospective research is needed to address this important question.

Overall, these findings indicate that OEF/OIF veterans presenting to primary care are at risk for PTSD and hazardous drinking, and that both of these problem types are negatively associated with health functioning. These results underscore the importance of screening for PTSD and alcohol misuse in VA primary care settings, and the need to address psychological and behavioral problems as part of efforts to improve the general health and functioning of OEF/OIF veterans.

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Table 1

Descriptive Statistics and Correlations between Measures of PTSD and Hazardous Drinking with Functional Health Scales (N = 151).

	M (SD)	Correlations with PCL-M	Correlations with AUDIT
PCL-M	42.9 (18.6)	____	____
AUDIT	5.6 (7.1)	.29**	____
SF-36 Scales			
Physical Functioning	43.8 (11.6)	−.44**	−.11
Role Limitation - Physical	44.1 (11.9)	−54**	−.11
Role Limitation - Emotional	43.8 (13.6)	−.60**	−.31**
Energy/Fatigue	43.6 (12.4)	−.76**	−.24**
Emotional Well-Being	41.4 (14.2)	−.83**	−.25**
Social Functioning	39.6 (13.9)	−.76**	−.29**
Pain	41.7 (11.2)	−.57**	−.17*
General Health	39.9 (11.0)	−.58**	−.22**
Physical Component Summary	43.1 (10.2)	−.39**	−.11
Mental Component Summary	42.0 (14.3)	−.81**	−.36**

Note. PCL-M = PTSD Checklist; AUDIT = Alcohol Use Disorders Identification Test; SF-36 = Medical Outcomes Study Short Form–36. SF-36 scale scores are reported as T scores, based on population norms, with a mean of 50 and standard deviation of 10.

* $p < .05$.

** $p < .01$.

Table 2

Results of Sobel tests of indirect effects of PCL on SF-36 composite scales, mediated by AUDIT score (N = 146).

	β					
Mediated path IV→ MV→ DV	**IV→ MV**	**MV→ DV/IV**	**IV→ DV**	**IV→ DV/MV**	**Indirect effect**	**Z**
PCL→ AUDIT→ MCS	.11**	−.27*	−.62**	−.60**	.03	−2.00*
PCL → AUDIT→ PCS	.11**	.03	−.21**	−.22**	.00	−.20

Note: IV = independent variable; MV: mediator variable; DV: dependent variable. MV→ DV/IV: relationship between MV and DV, when IV has also been accounted for. IV→ DV/MV: relationship between the IV and DV controlling for MV. PCL = PTSD Checklist; AUDIT = Alcohol Use Disorders Identification Test; SF-36 = Medical Outcomes Study Short Form–36; PCS = Physical Component Summary from the SF-36; MCS = Mental Component Summary from the SF-36.

* $p < .05$

** $p < .01$.

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