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Substance use disorders and PTSD: An exploratory study of treatment preferences among military veterans

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HIGHLIGHTS

- Almost all Veterans perceived a relationship between PTSD and substance use disorder symptoms.
- PTSD symptom exacerbation was typically (85.3%) associated with increased substance use.
- PTSD symptom improvement was typically (61.8%) associated with decreased substance use.
- Over half of Veterans indicated a preference for integrated psychotherapy.

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ABSTRACT

Background: Substance use disorders (SUDs) and Post Traumatic Stress Disorder (PTSD) frequently co-occur among Veterans and are associated with poor treatment outcomes. Historically, treatments for SUDs and PTSD have been delivered sequentially and independently. More recently, however, integrated treatments have shown promise. This study investigated Veterans' perceptions of the interrelationship between SUDs and PTSD, as well as treatment preferences.
Methods: Participants were 35 Veterans of recent military conflicts in Iraq and Afghanistan, and prior operations, who completed the Treatment Preferences Questionnaire as well as an in-depth interview.
Results: The majority (94.3%) perceived a relationship between their SUD and PTSD symptoms. Veterans reported that PTSD symptom exacerbation was typically (85.3%) associated with an increase in substance use, and PTSD symptom improvement was typically (61.8%) followed by a decrease in substance use ($p < .01$). Approximately 66% preferred an integrated treatment approach.
Conclusions: Although preliminary, the findings provide clinically-relevant information that can be used to enhance the development and provision of care for Veterans with SUDs and PTSD.

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1. Introduction

Substance use disorders (SUDs) and Post Traumatic Stress Disorder (PTSD) are frequently co-occurring conditions that affect a substantial proportion of military Veterans (Carlson et al., 2010; Erbes, Westermeyer, Engdahl, & Johnsen, 2007; Hoge, Auchterlonie, & Milliken, 2006; Hoge et al., 2004). The prevalence rate of current SUDs in Veterans age 18–53 (18.2%) is nearly five times that of the general population (SAMHSA, 2007). In Veterans of 18–25 years old, the rate of heavy alcohol use (i.e., consuming >5 drinks per occasion at least once a week) is 32.2%, almost twice as high as that of their civilian counterparts (Ames & Cunradi, 2004). Similarly, PTSD rates are more than twice as high in Veterans than civilians. Recent large-scale investigations demonstrate that approximately 15–17% of Veterans returning from Iraq and Afghanistan have PTSD (Hoge, Terhakopian, Castro, Messer, & Engel, 2007; Milliken, Auchterlonie, & Hoge, 2007; Smith et al., 2008; Tanielian et al., 2008), versus 6–8% in the civilian population (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Kessler et al., 2005). Seal, Bertenthal, Miner, Sen, and Marmar (2007) found that 25% of returning OEF/OIF Veterans ($N = 103,788$) received at least one mental health diagnoses, and the most common mental health diagnosis was PTSD, which represented 52% of cases. In both Veteran and non-Veteran samples, research demonstrates poorer treatment outcomes in SUD/PTSD patients as compared with patients with either disorder alone, including more social issues,

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legal problems, suicide attempts, and severity of substance use (Back et al., 2000, 2008; Dass-Brailsford & Myrick, 2010; Jacobsen, Southwick, & Kosten, 2001; Norman, Tate, Anderson, & Brown, 2007; Ouimette, Goodwin, & Brown, 2006; Young, Rosen, & Finney, 2005).

To date, the *sequential treatment* model has been the standard of care for comorbid SUDs and PTSD (Killeen, Back, & Brady, 2011; van Dam, Vedel, Ehring, & Emmelkamp, 2012). The first sequence of this model addresses the SUD alone. Once the patient obtains a minimum length of abstinence (e.g., 3 to 6 months), the second sequence, which is generally delivered by another clinician, targets the PTSD. It is difficult, however, for SUD/PTSD patients to maintain abstinence from alcohol or drugs in the face of untreated PTSD symptoms. One possible reason for this difficultly is because many SUD/PTSD patients report using substances to "self-medicate" PTSD symptoms (e.g., sleep disturbances, intrusive memories) (Tomlinson, Tate, Anderson, McCarthy, & Brown, 2006). Untreated PTSD symptoms serve as salient triggers for cravings to use or relapse. More recently, *integrated treatments*, which address SUDs and PTSD concurrently, have been developed and the findings demonstrate significant improvements in both PTSD and SUD symptomatology (Back et al., 2012; Brady, Dansky, Back, Foa, & Carroll, 2001; Foa et al., 2013; Hien et al., 2009; McGovern et al., 2009; Mills et al., 2012; Najavits, 2002; Torchalla, Nosen, Rostam, & Allen, 2012).

The most extensively studied integrated treatment to date is Seeking Safety (SS), a 25-session, cognitive-behavioral intervention delivered in group format. SS is a non-trauma-focused intervention (van Dam et al., 2012), meaning the patient does not revisit the trauma memory (no exposure-based techniques utilized), and it focuses on present or past aspects of a patient's life other than the trauma. SS focuses on psychoeducation, cognitive restructuring, and developing interpersonal and self-control skills. Data from randomized controlled trials demonstrate that SS leads to significant improvement in PTSD and SUD symptoms; however, little evidence shows that SS is superior to treatments targeting SUDs only (van Dam et al., 2012).

Several trauma-focused, integrated treatments which involve exposure-based techniques to address PTSD have been developed and the findings are promising (Back et al., 2012; Brady et al., 2001; Mills et al., 2012). Prolonged Exposure (PE) is an evidence-based treatment for PTSD that involves two key components: (1) in-vivo exposure in which patients approach safe, but anxiogenic, situations in real life, and (2) imaginal exposure in which patients revisit the trauma memory repeatedly in session (Foa, Rothbaum, Riggs, & Murdock, 1991). Studies employing PE among individuals with SUDs demonstrate significant reductions in PTSD and SUD severity (Back et al., 2012; Brady et al., 2001; Mills et al., 2012; Najavits, Schmitz, Gotthardt, & Weiss, 2005; Triffleman, Carroll, & Kellogg, 1999). The most recent study conducted by Mills et al. (2012) was a randomized controlled trial ($N = 103$) comparing an exposure-based integrated SUD/PTSD treatment called "COPE" (Back et al., in press) with treatment as usual (TAU), which was generally substance abuse treatment. The findings indicate that the integrated therapy resulted in significantly greater reductions in PTSD symptoms as compared to TAU. Both groups evidenced significant reductions in SUD severity. Thus, while most integrated studies show promising outcomes the existing evidence base is still emerging and methodological limitations exist including, for example, small sample sizes and lack of control or comparison groups. Larger, randomized controlled trials of integrated treatments are needed to help inform treatment practice guidelines.

Given the ongoing conflicts in Iraq and Afghanistan and the anticipated influx of returning service members in the upcoming years, continued attention to development and refinement of evidenced-based interventions that effectively address co-occurring SUDs and PTSD is vitally needed. One important gap in the literature involves knowledge of Veterans' perceptions and preferences regarding treatment for SUDs and PTSD. Thus, the current study sought to expand on previous civilian-based research by exploring perceptions of SUD/PTSD symptom interplay, as well as treatment knowledge and preferences among Veterans. Given that previous research has documented differences in response to psychotherapy for PTSD among Veterans from different war eras (Chard, Schumm, Owens, & Cottingham, 2010), we explored differences by military cohort. Such information can be used to help inform patient care and the design of controlled trials of integrated treatments.

2. Material and methods

Participants ($N = 35$) were 21 Operation Enduring Freedom (OEF) and/or Operation Iraqi Freedom (OIF) Veterans and 14 non-OEF/OIF Veterans (e.g., Persian Gulf War, Vietnam). Participants were primarily recruited through newspaper advertisements and referrals from community treatment clinics from February 2010 to April of 2011. Interested individuals contacted the study team by telephone. Potential participants were screened over the telephone for current DSM-IV diagnostic criteria for substance abuse or dependence and PTSD using a measure created for this study. The telephone screen also included questions regarding inclusion criteria (e.g., 18 or older, a military veteran, able to refrain from alcohol or drug use on the day of the scheduled appointment, literate). Eligible participants were then scheduled to come into the clinic, and read and sign an informed consent form approved by the Institutional Review Board at the Medical University of South Carolina. Participants were then interviewed in individual or group format for 60–90 min. A trained doctoral-level clinician facilitated the interviews. Participants received $25 for their time.

During the interview, clinicians used several open-ended and close-ended questions to engage Veterans in a discussion regarding their thoughts and opinions regarding treatment for PTSD and SUDs. Examples of questions include, "What do you think of integrated treatments where both the alcohol/drugs and the PTSD are targeted together in treatment by the same provider?", "Have you heard of prolonged exposure therapy?" and "How much, if any, clean time do you think is needed before working on the PTSD/trauma?" In addition to the interview, Veterans completed the Treatment Preference Questionnaire (TPQ), adapted from questionnaires developed by Brown, Stout, and Gannon-Rowley (1998), Brown and Wolfe (1994) and Najavits (2000). The utilized TPQ is a 32-item, self-report questionnaire that assesses (a) the perceived relationship between SUDs and PTSD symptoms,

Table 1
Demographic and military background characteristics ($N = 35$).

Demographics	
Age, mean (SD)	39.4 (11.6)
Gender, male	94.3%
Race	
Caucasian	48.6%
African American	51.4%
Relationship status	
Married	34.3%
Single, never married	40.0%
Separated/divorced	22.8%
Engaged	2.9%
Employment status	
Unemployed	62.9%
Employed full-time	22.9%
Employed part-time	2.9%
Full-time student	8.6%
Retired	1.9%
Years of education, mean (SD)	13.6 (1.6)
Military background	
Years served, mean (SD)	6.2 (4.0)
Military branch	
Army	61.8%
Marines	14.7%
Navy	11.8%
National Guard	5.9%
Coast Guard	2.9%
Air Force	4.8%

(b) preferred therapy format, and (c) preferences regarding psychotherapy and pharmacotherapy. Items included multiple choice, yes/no and open-ended questions. Examples of TPQ items include, "Do you believe that your alcohol/drug use and PTSD symptoms are related?", "If your alcohol/drug use improves (e.g., you cut down or stop drinking/using), what happens to your PTSD symptoms (e.g., do they get worse, get better, or stay the same)?" and "If you were to seek treatment for alcohol/drug use and PTSD symptoms, would you prefer to have: psychotherapy (i.e., talk therapy) only, medication only, or both psychotherapy and medication combined?"

3. Results

3.1. Demographic and baseline characteristics

As shown in Table 1, almost all participants were male and unemployed with an average age of 39 years. The average number of years served in the military was 6.2 and over half were Army Veterans. The majority endorsed current (past 6 months) alcohol use (94.3%, $N = 33$) and over half (60.0%, $N = 21$) endorsed current illicit drug use (i.e., marijuana, cocaine).

3.2. Symptom connectedness

Almost all participants (94.3%, $N = 33$) perceived their SUD and PTSD symptoms to be related. Two-variable chi-square tests revealed that the majority (85.3%) reported that an increase in PTSD symptoms was associated with an increase in SUD symptoms, and (61.8%) reported that a decrease in PTSD symptoms was associated with a decrease in SUD symptoms ($\chi^2 = 10.47$, $p = .005$). Fifty-three percent of participants reported that an increase in SUD symptoms was associated with a decrease in PTSD symptoms ($\chi^2 = 6.90$, $p < .05$). Only a small percentage (11.4%) reported that when SUD symptoms decreased, PTSD symptoms decreased. Two-tailed correlational analyses revealed a significant relationship between change in PTSD symptoms (improvement or deterioration) and subsequent SUD symptoms ($r = .52$, $p = .002$), but no significant relationship was observed between change in SUD symptoms (improvement or deterioration) and subsequent PTSD symptoms ($r = .14$, $p = .43$)

3.3. Treatment status and preferences

As can be seen in Table 2, a majority of participants expressed a preference for integrated SUD/PTSD treatment (65.7%, $N = 23$), yet less than one-quarter (22.9%; $N = 8$) were receiving treatment for both disorders. Regarding PE, relatively few participants (17.1%, $N = 6$) were familiar with the intervention (i.e., had heard of prolonged exposure treatment), but, most (80.0%, $N = 28$) were amendable to participating in the intervention once described.

Participants commented on how much "clean time" from substances would be necessary before commencing trauma work in therapy. Forty percent reported that no clean time was needed before the introduction of trauma work. On average, participants indicated 3–4 weeks of abstinence preceding trauma work would be ideal (M = 18.9 days, SD = 24.0, two outliers excluded; M = 32.6 days, SD = 58.3, full data set).

Table 2
Substance use treatment status and preferences ($N = 35$).

Current treatment status[a]	
No treatment	25.7%
SUD treatment	34.3%
PTSD treatment	17.1%
SUD/PTSD integrated treatment	22.9%
Treatment order preferences	
SUD/PTSD integrated treatment	65.7%
Treat the SUD first	20.0%
Treat the PTSD first	8.6%
Psychotherapy and pharmacotherapy preferences[b]	
Both psychotherapy and pharmacotherapy	47.1%
Psychotherapy only	44.1%
Pharmacotherapy only	8.8%

[a] Significant cohort differences: more OEF/OIF Veterans enrolled in PTSD treatment and more non-OEF/OIF Veterans enrolled in SUD treatment ($p < .05$).
[b] More OEF/OIF Veterans preferred combined psychotherapy and pharmacotherapy, while more non-OEF/OIF Veterans preferred psychotherapy alone ($p < .05$).

3.4. Cohort comparison

Differences by military cohort (i.e., OEF/OIF vs. previous operations) were examined. One-way analysis of variance (ANOVA) revealed that OEF/OIF Veterans, as compared with non-OEF/OIF Veterans, evidenced significantly younger age of drug use initiation (M = 15.8, SD = 2.9 vs. M = 20.0, SD = 6.8; $F = 4.35$, $p < .05$, respectively). Two-variable chi-square tests revealed that OEF/OIF Veterans were more likely to be enrolled in PTSD treatment and non-OEF/OIF Veterans were more likely to be enrolled in SUD treatment ($\chi^2 = 8.38$, $p < .05$). When asked whether they preferred psychotherapy, pharmacotherapy, or a combination of both, more OEF/OIF Veterans preferred the combination (61.9% vs. 23.1%; $\chi^2 = 7.87$, $p = 0.02$).

4. Discussion

This study explored Veterans' perceptions of SUD/PTSD symptom interplay and treatment preferences. Consistent with civilian-based investigations (Back, Brady, Jaanimägi, & Jackson, 2006; Brown et al., 1998; Najavits et al., 2005), almost all (94.3%) Veterans perceived a relationship between SUD and PTSD symptoms. The strongest relationship observed was between exacerbation of PTSD symptoms and subsequent increase in substance use. Congruent with the self-medication hypothesis (Khantzian, 1985) that individuals may use alcohol or drugs in an attempt to mitigate distressing symptoms (e.g., nightmares, intrusive trauma memories), 85.3% of participants reported that when PTSD symptoms increased, so did their substance use. Notably, only 11.4% of participants reported an improvement in PTSD symptoms secondary to decreased substance use. Indeed, most Veterans (56.5%) reported a worsening of PTSD symptoms secondary to decreased substance use. A significant relationship between change in PTSD symptoms and subsequent SUD symptoms was revealed, but no significant relationship between change in SUD symptoms and subsequent PTSD symptoms was observed. The findings highlight the importance of assessing and addressing the PTSD symptoms among SUD/PTSD patients. Integrated treatments aim to include trauma work early in the treatment process in order to improve PTSD and SUD outcomes. Recent studies among civilians and Veterans provide support for integrated interventions (Back et al., 2012; Brady et al., 2001; Hien et al., 2009; Mills et al., 2012; Torchalla et al., 2012). More work is needed, however, to better understand which patients will respond more favorably to an integrated treatment, which type of integrated treatments is more effective, and for whom non-integrated treatments are sufficient.

Several key questions remain regarding optimal SUD/PTSD treatment. One question involves using either exposure-based or non-exposure based treatments. PE is considered one of the most effective interventions for PTSD (Ballenger et al., 2000; IOM, 2008) and, in 2007, the VA began disseminating PE to VA centers across the U.S. (Karlin et al., 2010). Despite the rollout, most Veterans in this study were unaware of PE. Once informed about PE, 80% were interested in receiving the treatment. Another question is when to introduce trauma work. This examination of perceptions regarding the ideal amount of clean time necessary before commencing trauma work revealed that Veterans, on average, recommend 3–4 weeks of clean time. In our experience, approximately one month of abstinence, or significantly reduced substance use, affords sufficient time for the therapist to

develop an alliance with the patient, provide psychoeducation regarding the SUDs and PTSD, and teach the patient healthy coping skills to manage cravings to use and PTSD symptoms without using substances.

The findings revealed significant cohort differences in the type of treatment being received, with more OEF/OIF Veterans receiving PTSD treatment and more non-OEF/OIF Veterans receiving SUD treatment. One potential explanation for this difference is OEF/OIF Veterans' concerns regarding the potential negative impact of an SUD diagnosis on their military career, as many OEF/OIF Veterans were planning to re-deploy or continue other involvement in the armed services. In addition, this difference may also speak to the chronic and relapsing nature of SUDs, which may require some veterans to remain in treatment longer, or periodically re-engage in treatment following relapse(s). To date, comparisons between OEF/OIF Veterans and Veterans from other eras are limited. One study by Chard et al. (2010) examined differences between OEF/OIF Veterans ($n = 51$) and Vietnam Veterans ($n = 50$) receiving Cognitive Processing Therapy, a 12-session cognitive-behavioral intervention for PTSD. Findings revealed a stronger relationship between pre- and post-treatment PTSD scores for Vietnam as compared with OEF/OIF Veterans, suggesting that the more chronic PTSD symptoms among Vietnam Veterans may be more treatment resistant. The authors suggest that for Vietnam Veterans with PTSD, effective treatments may need to include additional techniques (e.g., motivational enhancement) and address additional issues (e.g., retirement, decline with physical health). Further comparisons of Veterans with PTSD and SUDs from different cohorts are needed as the information provided from such comparisons may help clinicians tailor treatment to address the specific needs of Veterans.

Several limitations warrant consideration. The sample size was small and generalizability is limited. However, all indications point toward demographical parity (i.e., gender, race, marital status) with other large-scale investigations among Veterans (Adler et al., 2011; Petrakis, Rosenheck, & Desai, 2011; Seal et al., 2007, 2010, 2012). Findings are based on self-report and may be subject to recall bias. In addition, the data are retrospective in nature. Despite these limitations, this study provides clinically-relevant information that may help to inform the development and implementation of integrated treatments for SUDs and PTSD among military Veterans.

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Contributors

Authors Back and Killeen designed the study and wrote the protocol. Author Hartwell conducted literature searches. Authors Back, Killeen, Beylotte and Federline assisted with data collection. Authors Hartwell, Federline and Cox assisted with transcription of the interviews. Authors Back and Teer conducted statistical analyses. Authors Back and Teer wrote the manuscript. All authors have approved the final version.

Conflict of interest

No authors have any conflict of interest to disclose.

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