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Co-occurring Posttraumatic Stress Disorder and Alcohol Use Disorders in Veteran Populations

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Abstract

Co-occurring posttraumatic stress disorder (PTSD) and alcohol use disorders have become increasingly prevalent in military populations. Over the past decade, PTSD has emerged as one of the most common forms of psychopathology among the 1.7 million American military personnel deployed to Iraq and Afghanistan in Operation Enduring Freedom (OEF), Operation Iraqi Freedom (OIF), and Operation New Dawn (OND). Among veterans from all eras, symptoms of PTSD have been highly correlated with hazardous drinking, leading to greater decreases in overall health and greater difficulties readjusting to civilian life. In fact, a diagnosis of co-occurring PTSD and alcohol use disorder has proven more detrimental than a diagnosis of PTSD or alcohol use disorder alone. In order to effectively address co-occurring PTSD and alcohol use disorder, both the clinical and research communities have focused on better understanding this comorbidity, as well as increasing treatment outcomes among the veteran population. The purpose of the present article is threefold: (1) present a case study that highlights the manner in which PTSD and alcohol use disorder co-develop after trauma exposure; (2) present scientific theories on co - occurrence of PTSD and alcohol use disorder; and (3) present current treatment options for addressing this common comorbidity.

CASE PRESENTATION

A 60 year-old, divorced, male Vietnam-era veteran was referred for substance use treatment following an alcohol-related arrest. He presented for outpatient treatment at a Veterans Affairs (VA) Medical Center with a chief complaint of longstanding anxiety symptoms and recent increase in heavy alcohol use after being laid off from his job. On the Alcohol Use Disorders Identification Test (AUDIT; Bush et al., 1998; WHO Brief Intervention Study Group, 1996), a brief screening tool for hazardous alcohol use, the veteran scored 10 out of 12 points, indicating that he was consuming alcohol at a level harmful to his health. The veteran scored a 50 on the PTSD Checklist for military populations (PCL-M; Weathers, Hushka, & Keane, 1991), indicating a positive screen and the need for a formal evaluation of PTSD.

During his initial psychological assessment, the veteran met criteria for alcohol dependence with physiological dependence, endorsing the following alcohol use disorder diagnostic criteria: tolerance, drinking more than he intended, spending a great deal of time drinking, and giving up important activities because of alcohol use. The veteran also met criteria for

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chronic posttraumatic stress disorder (PTSD), endorsing several traumatic events during his deployment to Vietnam, and subsequent re-experiencing, avoidance, and hyperarousal symptoms lasting for more than 40 years. The veteran reported that his PTSD and alcohol use disorder symptoms caused clinically significant distress in family relationships (estrangement from family members), occupational functioning (difficulty getting along with others), and social relationships (inability to maintain romantic relationships and close friendships).

With respect to his alcohol use, the veteran engaged in daily, heavy drinking (“at least six drinks each day”) since returning from Vietnam at age 19. The veteran acknowledged a recent increase in his drinking due to unemployment, stating “I have too much time on my hands.” He reported a desire to cut back on drinking due to recommendations from his doctors, and his last drink was 7 days prior to his initial assessment. The veteran denied any history of alcohol withdrawal symptoms (e.g. intense feelings of shakiness or nausea lasting longer than a hangover in the days following abstinence from alcohol), but he endorsed strong cravings to drink alcohol.

With regard to PTSD symptoms, the veteran described a long history of frequent nightmares, flashbacks, intrusive memories, and hyperarousal stemming from traumatic events that occurred during Vietnam. Namely, he witnessed the death of a close friend, was attacked and ambushed by the enemy, experienced frequent mortar attacks, and witnessed dead bodies and human remains of both enemy and U.S. troops. PTSD symptoms that bothered him the most included: psychological and physiological distress when triggered to memories of trauma (e.g. heart racing and intense fear in the presence of Asian people or hearing loud noises), feelings of detachment (“I don’t want to get too close to anyone”), and severe sleep disturbances (e.g. sleeping 1-2 hours per night, waking multiple times to disturbing nightmares).

The veteran’s social history revealed that he was married briefly in his early 20’s, which resulted in the birth of one child. He attributed his feelings of numbness and heavy drinking as reasons for his divorce and subsequent estrangement from his child. At the time of the assessment, the veteran lived alone in a basement apartment (“my bunker”), and despite being in close proximity to family members (mother, father, siblings), he visited them only on rare occasions. The veteran also had several romantic relationships since his divorce, but avoided becoming closely involved with anyone. He had a handful of friends, who he describes as “drinking buddies.” Up until recently, his employment as a consulting mechanic allowed for frequent travel and solo projects, which facilitated his detachment from others.

Course of Treatment

The veteran’s individual therapist recommended integrated treatment for both PTSD and alcohol use disorder, in addition to medication management by a psychiatrist. Given the veteran’s long history of both heavy alcohol use and PTSD symptoms, the therapist conceptualized that the veteran’s PTSD and alcohol use disorder symptoms were highly interrelated. The veteran expressed hesitancy in addressing his traumatic events directly at the onset of therapy, but he agreed to consider trauma-focused therapy once he felt more trusting of the therapeutic process.

Individual psychotherapy initially focused on relapse prevention for alcohol use and cognitive behavioral strategies for improving overall mental health. He maintained abstinence from alcohol for more than 4 months, and he noticed an improvement in his health and mood. The veteran practiced new coping skills for anxiety, such as walking, reading, and maintaining social activities that did not include alcohol use. The veteran attended group therapy sessions offered to veterans newly diagnosed with PTSD, with topics

such as Understanding PTSD, Anger Management, and Stress Reduction. He formed friendships with other combat veterans (“They know exactly how I feel”), and he looked forward to his appointments at the VA Medical Center.

After a few months of individual and group treatment, the reduced daylight during winter months triggered memories of nighttime mortar attacks in Vietnam. The veteran experienced increased PTSD symptoms, marked craving for alcohol, and new-onset depressive symptoms, including anhedonia and suicidal ideation. He relapsed to heavy drinking, spent more time alone in his basement apartment, and considered ending his life. Emergency services and safety precautions were set in place, including constant contact with a friend, family member, and/or treatment providers. At this point his treatment providers incorporated cognitive behavioral therapy for depression into his overall treatment plan. The veteran responded well to treatment, and he acquired mood-improving skills, such as behavioral activation and flexible thinking. He resumed abstinence from alcohol, and his symptoms of depression abated.

His treatment provider continued monitoring his PTSD symptoms across the course of treatment, and his scores on the PTSD Checklist indicated persistence in his PTSD symptoms. As the veteran felt more comfortable with the therapeutic process, he agreed to engage in PTSD-focused therapy in both individual and group settings. The veteran began attending Seeking Safety (Najavits, 2002), a coping-skills based group therapy for co-occurring PTSD and substance use disorders. He also began Cognitive Processing Therapy (Monson, et al., 2006), which focused on challenging and modifying maladaptive beliefs related to the trauma, and also includes a written exposure component. With marked anxiety, he revealed for the first time the details of his most traumatic experience while in Vietnam. Over the course of the 12-week cognitive processing protocol, his symptoms of PTSD, including nightmares, irritability, and physiological reactivity to triggers, decreased significantly. At the same time, he was able to maintain long periods of abstinence from alcohol despite addressing very painful memories.

Across the entire course of therapy, which lasted 18 months, the veteran experienced two additional short periods of relapse (lasting several days) to heavy alcohol use, and he also experimented with light drinking (one drink per week with friends) for a short period of time. By the end of treatment, the veteran acknowledged that his symptoms of PTSD and alcohol use disorder would never disappear, but he felt an increased mastery over his cravings for alcohol and reactions to PTSD triggers. He valued his strong connections with other veterans, maintained involvement in treatments offered by the VA, and he developed stronger bonds with friends and loved ones.

INTRODUCTION

The comorbidity of posttraumatic stress disorder (PTSD) and alcohol use disorders has become increasingly recognized among the U.S. veteran population. In the past decade more than 1.7 million American military personnel have been deployed to combat zones in Iraq and Afghanistan in Operation Enduring Freedom (OEF), Operation Iraqi Freedom (OIF), and Operation New Dawn (OND), and PTSD has emerged as one of the most prevalent forms of psychopathology for returning veterans (Bernhardt, 2009). Importantly, symptoms of PTSD and hazardous drinking were highly correlated in a recent study of returning veterans (McDevitt-Murphy et al., 2010). It has also been estimated that 30.9% of Vietnam era veterans, now representing the largest cohort of veterans in the U.S. (Holder, 2007), met criteria for PTSD upon returning stateside, with 70% of those also meeting criteria for an alcohol use disorder (Kulka et al., 1990). Across veterans of all eras, the co-occurrence of PTSD and alcohol use disorder has contributed to greater decreases in health functioning

and greater difficulties readjusting to civilian life (Sayer et al., 2010). As such, an emerging line of research has focused on the relationship between PTSD and alcohol use disorder and the development of interventions leading to better outcomes for both disorders. This paper reviews the current literature on comorbid PTSD and alcohol use disorder and identifies directions for future research.

MILITARY TRAUMA AND PTSD

According to the Diagnostic and Statistical Manual of Mental Health Disorders (DSMIV-TR; APA, 2000), a PTSD diagnosis necessitates that an individual has experienced “a life threatening event to which the individual responded with fear, helplessness, or horror” which then has led to persistence of re-experiencing, avoidance, and hyper-arousal symptoms related to the trauma. In a national, epidemiological survey of psychiatric conditions in the U.S., military combat was identified as one of the most common types of trauma leading to a diagnosis of PTSD (Pietrzak, Goldstein, Southwick, & Grant, 2011), along with life-threatening accidents, sexual assault, and being threatened with a weapon. Furthermore, 28% of men with PTSD rated military combat as the most distressing traumatic event experienced in their lifetime (Kessler, Sonnega, Bromet, & Hughes, 1995). As such, trauma research has long focused on military veterans with combat exposure as a unique population at high risk for developing PTSD.

Military personnel have been exposed to a wide range of potentially traumatic events related to combat, stressful environments, and unwanted sexual advances. Hoge and colleagues (2004) found that the most highly endorsed traumatic events among combat veterans included the following: being attacked or ambushed; incoming artillery, rocket or mortar fire; witnessing dead bodies or human remains; or knowing someone seriously injured or killed. A striking 94% of veterans deployed to Afghanistan and Iraq reported experiencing life-threatening, combat-related events (Hoge, et al., 2004). In peace-keeping missions in locations such as Somalia, an estimated 8-30% of soldiers experienced trauma related to witnessing death (Litz, Orsillo, Friedman, Ehlich, & Batres, 1997). In addition, at least 15% of women and 1% of men have reported sexually-based traumatic events during military service, likely an underestimate due to the stigma attached to military sexual trauma (Kimerling, Gima, Smith, Street, & Frayne, 2007).

Given the extensive exposure to traumatic events among military personnel, PTSD has emerged as the 3rd most prevalent diagnosis in veterans using VA services, after pain disorder and depression (Stecker, Fortney, Owen, McGovern, & Williams, 2010). Prevalence rates of PTSD among returning veterans have varied widely (estimates ranging from 5-50%), due to differences across study populations and diagnostic definitions used to determine PTSD status (Ramchand et al., 2010). Estimates stemming from the Post-Deployment Health Assessment, a self-report screening measure administered to all returning U.S. military personnel, indicated that roughly 6% of veterans screened positive for PTSD immediately upon returning from deployment (Milliken, Auchterlonie, & Hoge, 2007), and these rates doubled (range from 9.1% to 14.3%) after just 6 months. Given the stigma surrounding mental health status and the fact that relatively few veterans have sought services for PTSD (Hoge, 2004), the true prevalence of PTSD in the U.S. veteran population is likely higher than the current estimates.

The veteran described in our case study experienced combat-related trauma while deployed in Vietnam, including mortar attacks, witnessing the deaths of fellow soldiers, and firefights with the enemy. The veteran endured severe PTSD symptoms throughout the 40 years since returning from Vietnam, and his primary coping strategy was alcohol use. After witnessing the death of his friend in Vietnam, he avoided forming close attachments with friends or

family, stating, “Vietnam taught me to never get too close to anyone.” His vivid nightmares, which often frightened intimate partners, made living alone seem the best option. He described a feeling of “invincibility” after surviving Vietnam, and he frequently engaged in risk-taking or adrenalin-seeking activities (such as dirt bike riding). This case study highlighted the long-lasting, chronic effects of combat-related trauma on multiple aspects of one’s life, including social, occupational, and psychological functioning.

COMORBID PTSD AND ALCOHOL USE DISORDER

Trauma exposure and PTSD diagnosis have both been associated with the subsequent development of alcohol use disorders across a wide range of populations (Kessler, Crum, Warner, & Nelson, 1997). A national, epidemiological survey revealed that more than 40% of U.S. men and women with PTSD also met criteria for an alcohol use disorder (Pietrzak, Goldstein, Southwick, & Grant, 2011), indicating a strong relationship between alcohol use and trauma. In comparisons between military and civilian populations, heavy drinking behavior consistent with alcohol use disorders was significantly greater among military personnel, particularly among those deployed to combat zones (Bray et al., 2006), suggesting that the risk for comorbid alcohol use disorder and PTSD may be greater within military populations. Combat trauma, in particular, has been linked to significant increases in heavy alcohol use post-deployment, when compared to alcohol use pre-deployment (Hoge, 2004).

In fact, roughly 25% of OEF/OIF/OND infantry teams reported alcohol misuse post-deployment, and the experience of direct threat of death and injury while deployed was highly predictive of alcohol-related problems upon returning home (Wilk et al., 2010). Another recent study found that members of the Reserves and National Guard who were deployed and exposed to combat reported new onset of problematic drinking (9%), binge drinking (53%), and alcohol-related problems (15%) upon returning stateside, and these rates were double those incurred by military personnel not deployed (Jacobson et al., 2008). Interestingly, location of deployment and the likelihood of exposure to enemy hostility appeared to be more related to severity of PTSD symptoms (Allison-Aipa, Ritter, Sikes, & Ball, 2010), while multiple deployments were more related to increased alcohol related problems (Fontana & Rosenheck, 2010).

The recognition and prevalence of both PTSD and alcohol use disorder diagnoses among veteran populations has been increasing over time (Seal, Bertenthal, Miner, Sen, & Marmar, 2007), with estimated rates of comorbid PTSD and substance use disorders jumping significantly from 1990 to 2006 (Lemke & Schaefer, 2010). This increase has been linked to a combination of several factors: more thorough assessment of mental health post-deployment; the development of outreach programs for underserved veterans; and the reintroduction of Vietnam era veterans who were long mistrustful of VA healthcare.

The veteran described in the case study had distrusted the VA system for many years. He briefly sought treatment for anxiety in the 1970s, but his experience involved a “five minute meeting with a shrink who gave [him] a bag full of pills.” The veteran coped with nightmares, hypervigilance, and feelings of detachment with active avoidance of trauma-related triggers (e.g. living in his “bunker”) and heavy alcohol use. While his non-veteran peers settled into marriage and fatherhood, the veteran became estranged from close relationships and had frequent altercations while drinking that led to legal problems. Despite a long history of both anxiety symptoms and alcohol use, the veteran did not seek treatment again until the age of 60, when he felt ready to make changes in his life. It was only then that he was diagnosed with PTSD and an alcohol use disorder.

PSYCHOSOCIAL FUNCTIONING

Veterans with PTSD have reported more severe symptoms and greater psychopathology than their civilian counterparts (Amir, Kaplan, & Kotler, 1996; Naifeh et al., 2008). In particular, Naifeh and colleagues (2008) found that U.S. veterans endorsed significantly higher PTSD-related symptoms than civilian crime victims. Furthermore, combat exposure was associated with greater re-experiencing, avoidance, and hyperarousal symptoms than other types of traumatic events, including sexual assault, physical assault, and accidents (Ullman, 1995). The heightened levels of PTSD symptoms among veteran populations have also been associated with anger problems, heavy alcohol use, divorce or separation, legal problems, and job loss (Sayer et al., 2010).

With regard to symptom severity and biopsychosocial functioning, co-occurring PTSD and alcohol use disorder have proven more detrimental than a diagnosis of PTSD or alcohol use disorder alone. In a cohort of Vietnam veterans, mortality (controlling for other medical diagnoses) was 55% higher among psychiatric patients with co-occurring substance use disorders, such as alcohol use disorder, than those who did not have a co-occurring substance use disorder (Rosen, Kuhn, Greenbaum, & Drescher, 2008). Individuals with comorbid PTSD and alcohol use disorder were more likely to have attempted suicide and to report lower quality of life (Leeies, Pagura, Sareen, & Bolton, 2010). Further, veterans exposed to traumatic war zone experiences and who also met criteria for alcohol use disorder were more likely to display pervasive, declining effects on social functioning and had lower rates of employment (Fontana & Rosenheck, 2010). The detrimental effects appeared to be reciprocal, such that poor quality of life led to a more chronic course of PTSD and alcohol use disorder.

The veteran in the case study experienced a significant decline in social functioning after returning from Vietnam, as evidenced by his lack of close relationships and estrangement from family members. He was able to maintain employment, but his position required frequent travel and limited interaction with other people, which supported his avoidance symptoms. Further, his alcohol use caused legal problems, including alcohol-related assault and battery charges, and health problems stemming from alcohol-related vehicular accidents.

MECHANISMS OF ACTION

Self-medication

The mechanisms by which PTSD and alcohol use disorder co-occur, reciprocally influence the course and chronicity of each other, and lead to poor outcomes in veterans have remained unclear. Researchers have largely endorsed a self-medication hypothesis, which posits that individuals with PTSD and other anxiety disorders develop cooccurring alcohol use disorders after using alcohol to alleviate symptoms of PTSD (Robinson, Sareen, Cox, & Bolton, 2009) and reduce negative emotions (Waldrop, Back, Verduin, & Brady, 2007). Additionally, increased anxiety related to alcohol withdrawal symptoms has been shown to exacerbate PTSD arousal symptoms, thereby reinforcing the cycle of substance use to ameliorate anxiety (Jacobsen, Southwick, & Kosten, 2001). In a recent national epidemiological survey, approximately 20% of Americans with PTSD indicated that they used alcohol and illicit drugs to self-medicate symptoms of PTSD (Leeies, Pagura, Sareen, & Bolton, 2010), providing face validity to the self-medication theory.

Laboratory research has provided further evidence supporting the self-medication theory of comorbid PTSD and alcohol use disorder. Studies have found that physiological arousal in general, both within and without the context of trauma cues, led to increased craving for

alcohol and other substances (Coffey et al., 2002; Steindl, Young, Creamer, & Crompton, 2003). In a cue-reactivity experiment among dually diagnosed individuals, severity of PTSD predicted increased craving during exposure to personalized trauma-related and substance cues (Saladin et al., 2003). Interestingly, individuals with PTSD and alcohol use disorder experienced high levels of craving in response to both trauma and alcohol cues and were more likely to endorse craving for alcohol in response to negative emotions (Coffey, et al., 2002), indicating alcohol may self-medicate symptoms of PTSD differently than other substances.

Temporal Ordering

Other research has suggested that the temporal ordering of PTSD and alcohol use disorder development infers important etiologic and prognostic information (e.g., Back, Jackson, Sonne, & Brady, 2005; Brady, Dansky, Sonne, & Saladin, 1998), especially when considering various populations. For instance, outpatient, treatment-seeking women were more likely to develop an alcohol use disorder simultaneously to trauma exposure (Cottler, Nishith, & Compton, 2001) or after the development of PTSD (Sonne, Back, Zuniga, Randall, & Brady, 2003) than their male counterparts. Another study pointed out that women were also more likely to develop an alcohol use disorder after repeated physical and/or sexual assault, while combat exposure was the strongest predictor of co-occurring alcohol use disorder and PTSD among men (Najavits, Weiss, & Shaw, 1997). The directionality in the development of PTSD and alcohol use disorder among military personnel, however, has remained unclear, but the general consensus among researchers has been that military trauma is a strong risk factor for both alcohol use disorder and PTSD (Bray et al., 2006)

Common Factor

Another theory has suggested two possible common factors that drive the co-occurrence of PTSD and alcohol use disorder: 1) a lack of awareness and understanding of emotions, and 2) the inability to control behaviors when experiencing emotional distress (Bornova, Ouimette, Crawford, & Levy, 2009; Brady, Killeen, Brewerton, & Lucerini, 2000). The first factor suggests that individuals at risk for PTSD and alcohol use disorder fear intense negative emotions, resulting in an effort to avoid emotional experiences by using drugs or alcohol (Krystal, 1984). The second factor suggests that high risk individuals had difficulty controlling impulsive behaviors when feeling distressed, and impulsivity has been strongly linked to both PTSD symptom severity and the development of alcohol use disorders (Tull, Barrett, McMillan, & Roemer, 2007; Lejuez et al., 2010).

Taken together, these theories accounting for the development of co-occurring PTSD and alcohol use disorder suggest that dually diagnosed individuals experience high rates of craving triggered by trauma-related cues, a lack of emotional understanding and awareness, and diminished ability to control impulsive behaviors. Not surprisingly, relapse rates have been high among veterans in treatment for PTSD and alcohol use disorder. In abstinence based treatment programs, PTSD diagnosis and trauma exposure predicted relapse, and dually diagnosed individuals relapsed for different reasons than alcohol use disorder-only populations (Norman, Tate, Anderson, & Brown, 2007). Specifically, alcohol use disorder-only individuals were more likely to relapse in high-temptation situations, and those with PTSD diagnosis and/or history of trauma exposure were more likely to relapse due to negative physiological states and/or negative intrapersonal context situations. Overall, veterans with comorbid PTSD and alcohol use disorder have fared worse during the course of alcohol use disorder treatment than alcohol use disorder-only individuals (Rosen, Kuhn, Greenbaum, & Drescher, 2008), suggesting the need for more effective treatments for this population.

The veteran described in the case example experienced relapse to heavy drinking during treatment for PTSD and alcohol use disorder. Consistent with the research literature, his relapse was prompted by increased trauma-related triggers and related negative affect rather than high-temptation situations. Throughout the course of treatment, the veteran learned to link his urges for alcohol use to increased negative affect and/or trauma-related triggers. In time, he was able to recognize his symptoms of PTSD as they emerged and utilized healthy coping skills as an alternative to alcohol use. The specific mechanism by which his PTSD and alcohol use disorder developed over time is unclear, given the close proximity of heavy drinking and trauma exposure. The veteran was 18 years old when he was drafted to Vietnam, and he experimented with heavy alcohol use both prior, during, and after his deployment. Although we know his alcohol use was not the direct cause of his trauma, given the nature of combat, it remains unclear as to whether combat exposure was a direct cause of his alcohol use disorder. It is possible that an underlying, common mechanism contributed to the development of co-occurring PTSD and alcohol use disorder, and it is also possible that combat exposure directly led to both PTSD and alcohol use disorder.

TREATMENT OPTIONS

Given the poor biopsychosocial outcomes associated with co-occurring PTSD and alcohol use disorder, clinicians and researchers alike have been searching for better treatments for heavy drinkers who have been exposed to trauma. The consensus reached by the Institute of Medicine's Committee on Treatment of PTSD in its recent systematic review (IOM, 2007) was that the scientific evidence for treatment options was not sufficient for "such a common and serious condition among veterans." The VA recently initiated a national dissemination of empirically supported treatments for PTSD (Karlin et al., 2010), and future findings will hopefully lend insight into effective treatments for veterans who have PTSD and a co-occurring alcohol use disorder. In the meantime, several existing approaches have included sequential treatment, parallel treatment, and, more recently, integrated treatment for co-occurring PTSD and alcohol use disorder.

Until recently, the traditional approach to treatment of patients with PTSD and alcohol use disorder has been to offer substance abuse treatment first and then move toward PTSD treatment once the patient has maintained sobriety for a period of time. This *sequential* approach was largely based on the rationale that addressing trauma at the outset would cause the patient to become unstable and lead to relapse. However, this approach has proven problematic in that many patients are unable to maintain abstinence from alcohol or other substance use due to debilitating anxiety symptoms and therefore often relapse before ever being offered PTSD treatment. Evidence supporting the effectiveness of the sequential approach has been modest at best. For example, among dually diagnosed veterans (N = 100) who successfully engaged in an empirically-supported alcohol use disorder intervention, symptoms of PTSD and alcohol use disorder improved at a rate directly related to the amount of PTSD intervention following alcohol use disorder treatment (Ouimette, Moos, & Finney, 2000). Consistent with the self-medication theory, however, high dropout and relapse rates persisted.

Another strategy involved treating PTSD as the primary diagnosis. Within the PTSD treatment literature, exposure-based interventions have been considered the most effective treatment approach and have been empirically supported to effectively reduce intrusive symptoms of PTSD by reducing the fear and anxiety responses to trauma-related triggers (Foa, Hembree, & Rothbaum, 2007). In line with self-medication theory, reduction in PTSD symptoms would also lead to reductions in craving for alcohol. However, most large-scale trials of exposure treatments have excluded participants with comorbid substance use disorders, leading to a significant gap in our knowledge regarding the efficacy of these

treatments with the sizable portion of patients with co-occurring alcohol use disorder. Further, many clinicians have considered exposure-based treatments unsafe for patients with comorbid PTSD and alcohol use disorder, such that triggering negative affect may lead to even riskier substance use behaviors.

An alternative strategy has been to treat PTSD and alcohol use disorder simultaneously. This approach, referred to as *parallel* treatment, has been frequently employed in settings such as VA Medical Centers where there are specialized clinics for treatment of PTSD and substance use disorders. While preferable to sequential treatment, patients typically receive PTSD and alcohol use disorder treatment from different providers and clinics, which can result in an uneven and confusing approach. In recent years, there has been a movement toward the development of truly integrated treatments that address the interrelatedness of PTSD and substance use (Karlin et al., 2010). This push has been driven in part by the recognition of the needs of newly returning veterans, some of whom had been denied access to PTSD treatment due to current substance use. Accordingly, the U.S. Department of Veterans Affairs launched an initiative toward more integrated care in 2008 that included hiring a PTSD-substance use specialist for every VA medical center.

One integrated approach is to combine alcohol use disorder-focused treatments, such as coping skills training (Monti, Abrams, Kadden, & Cooney, 1989) with PTSD-focused treatments, such as Prolonged Exposure (Foa, Hembree, & Rothbaum, 2007) or Cognitive Processing Therapy (Monson et al., 2006). The purpose is to provide interventions targeting PTSD symptoms while concurrently teaching coping skills for relapse prevention during the course of treatment. An experimental study (N = 43) measuring craving before and after exposure-based, integrated treatment revealed that extinction of negative responses to trauma cues led directly to reductions in PTSD and alcohol use disorder symptoms among individuals seeking outpatient treatment for substance abuse (Coffey, Stasiewicz, Hughes, & Brimo, 2006).

Two other integrated treatments, Combined Therapy for PTSD and Cocaine Dependence (Back, Dansky, Carroll, Foa, & Brady, 2001) and Substance Dependence PTSD therapy (Triffleman, Carroll, & Kellogg, 1999) have been considered well tolerated, and alcohol use did not appear to escalate during the exposure portion of the treatment (Coffey, Schumacher, Brimo, & Brady, 2005). However, despite a strong theoretical base, integrated, exposure-based treatments for comorbid PTSD and alcohol use disorder have not been widely disseminated, given that attrition rates were higher than 50% (Coffey et al., 2010). Further, veterans with multiple traumas, anger management difficulties, alcohol use disorder-related cognitive impairments, and severe dissociative symptoms displayed worse outcomes and high rates of relapse in exposure-based therapies (Coffey, et al., 2010).

Cognitive-based integrated treatments have emerged as an alternative to exposure-based treatments for co-occurring PTSD and alcohol use disorder, and thus far, treatment outcomes have been mixed. In a clinical trial of veterans (N = 178) in treatment for substance use disorders, Integrated Cognitive Behavioral Therapy proved more effective among veterans (N = 178) with a substance use disorder and no PTSD, such that individuals with comorbid substance use disorder and PTSD had fewer percent days abstinent than their substance use disorder-only cohort (Norman, Tate, Wilkins, Cummins, & Brown, 2010). Seeking Safety (Najavits, 2002), a coping-skills based group therapy for co-occurring PTSD and substance use disorders, has demonstrated some efficacy in reducing PTSD and substance use (Norman, Wilkins, Tapert, Lang, & Najavits, 2010). However, a large multisite trial (Hien et al., 2009) did not find better outcomes for Seeking Safety versus a health education condition and a recent pilot trial of Seeking Safety with returning veterans yielded significant engagement and retention difficulties (42% attrition; Norman, Wilkins,

Tapert, Lang, & Najavits, 2010). A third integrated treatment, Cognitive Behavioral Therapy for PTSD, has been shown to be better tolerated by patients than exposure based therapies and resulted in reductions in both PTSD and alcohol use disorder symptoms (McGovern et al., 2009). In sum, cognitive-based integrative treatments have shown potential in providing an effective treatment modality for veterans with comorbid PTSD and alcohol use disorder, and research in this area is ongoing.

The veteran described in the case participated in integrated Cognitive Behavioral Therapy treatment for PTSD and alcohol use disorder. A strong focus on the relationship between his PTSD symptoms and alcohol use was maintained throughout the course of treatment. The veteran began Cognitive Processing Therapy, which included both cognitive and exposure elements of treatment, after building trust in the therapeutic process, and he became increasingly more amenable to various treatment modalities, including Seeking Safety. The veteran maintained a high level of motivation for change throughout the process, which enhanced his ability to resume progress even after relapsing to heavy alcohol use. The integrated treatment approach led to a good outcome for this particular veteran.

SUMMARY AND CONCLUSION

To summarize the literature to date, comorbid PTSD and alcohol use disorder has emerged as a highly prevalent and increasingly recognized problem in U.S. veteran populations. Although advances have been made in both exposure-based and cognitive-based treatments, veterans with comorbid PTSD and alcohol use disorder continue to fare worse in treatment than their PTSD-only and alcohol use disorder-only counterparts. Several theories regarding the mechanism of action by which PTSD and alcohol use disorder co-occur have been posited in the literature, and the research on effective treatments has been mixed. Trends in research and clinical practice have been to offer integrated treatments for alcohol use disorder and PTSD, but treatment providers have yet to reach consensus for the best approach.

Future directions for PTSD and alcohol use disorder research would do well to include strategies for more direct, prospective assessment of the process by which alcohol use and PTSD symptoms interact and contribute to subsequent development of comorbidity, as the majority of literature is retrospective in nature. Improved assessment strategies will serve to inform the mechanisms by which PTSD and alcohol use disorder develop in veteran populations after trauma exposure. A better understanding of the mechanisms by which these disorders co-occur, and the relationships between specific PTSD symptoms and alcohol use, is necessary for the continued development of effective treatment modalities for veterans with comorbid PTSD and alcohol use disorder. In addition, further descriptive research on how individual differences, such as gender and the nature of the trauma (combat vs. assault), affect the mechanism by which PTSD and alcohol use disorder co-occur and impact treatment outcomes will also serve to advance this ongoing and important field of research.

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