

Review Article

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Comorbid Posttraumatic Stress and Substance Use Disorders: Treatment Guidelines for Counselors

Cameron Lacy Ortega and Eva Miller*

University of Texas Rio Grande Valley, USA

***Corresponding author:** Eva Miller, School of Rehabilitation Services and Counseling, College of Health Affairs, The University of Texas Rio Grande Valley, TX 78539, USA.

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Abstract

The National Center for Posttraumatic Stress Disorder (PTSD) reported approximately seven to eight people out of 100 will develop PTSD at some point in their lives and an estimated eight million adults will develop PTSD during a given year. It is also estimated between 55-60% of persons diagnosed with PTSD are diagnosed with a substance-use disorder (SUD). However, despite clinical guidelines that increasingly recommend the use of psychotherapies within the same treatment episode for clients with comorbid SUD/PTSD and client preferences for combined PTSD/SUD treatment, clinicians tend to overlook comorbid trauma and substance issues and/or are inclined to provide separate treatment for comorbid trauma and substance-related issues. This review is designed to provide a synopsis of the most effective, evidence-based psychotherapeutic treatments for comorbid PTSD/SUD, with emphasis on recent advancements in mindfulness approaches. The review also discusses ketamine infusion therapy (KIT), a newly developed psychopharmacological approach for treatment-resistant PTSD and comorbid SUD.

Keywords: Posttraumatic stress disorder; Substance use disorder; Psychotherapeutic approaches; Mindfulness; Ketamine infusion therapy

Introduction

The National Center for Posttraumatic Stress Disorder (PTSD) reported approximately seven to eight people out of 100 will develop PTSD at some point in their lives and an estimated eight million adults will develop PTSD during a given year. It is also estimated between 55-60% of persons diagnosed with PTSD are diagnosed with a substance-use disorder (SUD) [1]. However, despite clinical guidelines that increasingly recommend the use of psychotherapies within the same treatment episode for clients with comorbid SUD/PTSD to maximize treatment outcomes [2] and the request from clients for combined treatment for PTSD/SUD, counselors often overlook comorbid trauma and substance issues among their clients and/or they are inclined to provide separate treatment for comorbid trauma and substance-related issues. This review is designed to provide a synopsis of the most effective, evidence-based psychotherapeutic treatments for comorbid PTSD/SUD, with emphasis on recent advancements in mindfulness approaches. The review also discusses ketamine infusion therapy (KIT), a newly developed psychopharmacological approach for treatment-resistant PTSD and comorbid SUD.

PTSD

PTSD symptoms can develop months to years after the traumatic event occurs and are often chronic, lasting a lifetime. In addition, PTSD frequently results in comorbid issues as a means of coping with the physical and emotional pain associated with PTSD [3], including increased risk for suicide and self [4], relational discord that includes difficulty in the development and maintenance of intimate and trusting relationships (APA), sexual risk-taking, and a range of substance and behavioral [5]. Not all persons exposed to traumatic events will develop PTSD; there are many factors that play a part in whether a person will develop PTSD. These factors include the duration and severity of the trauma, the age of the person at time of exposure to the trauma, as well as resilience factors such as the person's support system, previously developed coping strategies, and the way the person processes the traumatic [6]. In addition to risk and resilience factors, researchers are looking at genetics and neurobiology as factors associated with the development of PTSD. PTSD memories are stored throughout the brain and research indicates abnormalities in the glutamatergic

system in response to stress may be related to PTSD. Specifically, the glutamatergic system is believed to be related to stress/trauma-activated circuits that can lead to glutamate spillover and trigger pro-inflammatory processes and excitotoxicity which, in turn, leads to the onset of PTSD symptoms (e.g. fear reaction, avoidance) [7]. A traumatic experience engages most or all the senses (e.g., sight, hearing, touch/pain). In addition, PTSD affects emotions, speech, and thought. Humans are unique, complex individuals and PTSD manifests differently throughout the population [8] which is one of the myriad of reasons PTSD is hard to treat.

PTSD Treatment

Guidelines have been developed to inform clinicians as to which psychotherapeutic treatments should be considered in clinical practice for PTSD, including the APA (APA, 2017). Said methods are recommended based on strength of evidence, treatment outcomes, patient values and preferences, and applicability of the evidence to various treatment options. The APA panel strongly recommends cognitive processing therapy (CPT) or cognitive behavioral therapy (CBT), prolonged exposure therapy (PET), and eye movement desensitization and reprocessing (EMDR) for treating PTSD. While these recommended treatments have shown efficacy for the treatment of PTSD, neurofeedback and mindfulness therapy are also showing increased efficacy in the treatment of PTSD and comorbid diagnoses such as SUD and depression.

The recommended medications for the treatment of PTSD include fluoxetine, paroxetine, sertraline, and venlafaxine (APA). According to [9], "medications for comorbid PTSD and SUD include the PTSD treatment sertraline, often used in combination with anticonvulsants, antipsychotics, and adrenergic blockers. When PTSD is comorbid with alcohol use disorder (AUD), naltrexone, acamprosate or disulfiram may be combined with PTSD treatments. For PTSD combined with opiate use disorder methadone or buprenorphine are most commonly used with sertraline".

However, when persons who have PTSD do not respond to psychotherapeutic and/or pharmacological treatments, the risk for development of a chronic course of illness and poor long-term outcomes increase [10]. Individuals diagnosed with PTSD who have failed to respond to established treatment regimens are at risk for the development of a chronic disability and treatment-resistant PTSD (TR-PTSD) is a common barrier in clinical treatment [10]. Emerging research for alternative approaches for TR-PTSD and SUD with the use of ketamine (an analgesic) in conjunction with psychotherapy is beginning to show promising outcomes. The following sections will address current efficacy-based treatments for comorbid PTSD/SUD followed by an overview of new evidence on the efficacy of mindfulness therapy and ketamine therapy for the treatment of comorbid PTSD/SUD.

PTSD/SUD Treatment

Eye movement desensitization and reprocessing (EMDR) treatment suggests pathologies are represented by dysfunctional

information that is physiologically stored and can be accessed and transformed directly as opposed to addressing the client's *reaction* to the disturbing event as seen in biofeedback, exposure therapies, and relaxation training [11]. EMDR therapy facilitates the accessing and processing of traumatic memories and other adverse life experience to bring these to an adaptive resolution. [12] conducted a study to assess the benefits of a combined trauma-focused (TF) and addiction-focused (AF) EMDR intervention among 40 patients with PTSD/SUD. Of the 40 patients, 20 received treatment as usual (TAU), which consisted of individual and group counseling and psychoeducation on SUD; the other 20 patients were treated with TAU plus EMDR. While both the TAU and the TAU/EMDR groups had a significant effect in reducing post-traumatic symptoms, the EMDR group showed better pre- posttest outcomes. Similarly, [13] added EMDR to a substance abuse treatment program and found the graduation rate for individuals who participated in EMDR was 91% compared to 57% for those who did not participate in the EMDR treatment. [14] also demonstrated efficacy for EMDR over TAU among patients with PTSD/SUD.

Cognitive processing therapy (CPT) typically consists of a 12-session treatment that emphasizes the restructuring of dysfunctional trauma-related cognitions (stuck points) that are postulated as maintaining PTSD symptoms [15] conducted a CPT-based treatment program among 72 veterans and showed veterans reported significant reductions in PTSD symptomatology and significant reductions in trauma-cued cravings and depressive symptoms following the CPT-based treatment. [16] evaluated whether adding trauma-focused treatment following an initial group-based integrated cognitive behavioral treatment improved outcome among 123 veterans with trauma, depression, and SUD. The results were similar for both groups, suggesting CPT is effective in the treatment of comorbid PTSD symptoms, SUD, and depressive symptoms. [17] conducted a case study with a 53-year-old African American female with comorbid PTSD/SUD using an integrated cognitive processing therapy for the PTSD with cognitive-behavioral therapy approach to address SUD (cocaine and alcohol) issues over 12 sessions. The results showed a "clinically significant change" in PTSD symptoms...as well as significant decreases in both cocaine and alcohol use."

Back et al. (2019) implemented prolonged exposure therapy (PET) involving imaginal and in vivo exposure to trauma-associated stimuli for PTSD among 54 veterans with co-occurring PTSD/SUD. A control group comprised of 27 veterans received cognitive behavioral therapy (CBT) and relapse prevention (RP) educational training. Results showed a significantly higher proportion of veterans (83%) in the PET group no longer met criteria for PTSD following the training and substance use decreased significantly in both groups, underscoring the efficacy of PET for co-occurring SUD/PTSD. [18] implemented a similar trauma-focused PET treatment among 71 veterans and CBT/RP educational training among 49 veterans who served as the control group. The results suggested trauma-focused, exposure-based therapy does not increase the

risk of symptom exacerbation as compared to non-exposure-based therapy, supporting the efficacy of a combined treatment for PTSD/SUD. However, studies [19] suggest exposure-based therapy is contraindicated for PTSD and research with populations other than veterans are needed to better understand the efficacy of PTE.

Despite results underscoring the utility of PET, a growing number of studies suggest PET can be deleterious in the treatment of PTSD. For example [19] noted "...exposure to traumatic stimuli is so aversive that a significant number of patients drop-out of therapy during the course of treatment." (p. 1) Instead, Chiba et al. advocated for the use of neurofeedback "where patients can unconsciously self-regulate brain activity via real-time monitoring and feedback of the EEG or fMRI signals" (p.1) Other studies also provide support for neurofeedback to treat PTSD. For example, [20] conducted a systematic review on the effectiveness of neurofeedback in treating PTSD which was designed specifically for mental health professionals to assess behavioral outcomes. Of the 10 studies that met the criteria for inclusion in the review, the authors concluded neurofeedback demonstrated noteworthy results in at least one outcome measure for many participants across all studies. However, studies on the efficacy of neurofeedback for the treatment of comorbid PTSD/SUD are needed.

To summarize, research shows EMDR, CPT, PET, and neurofeedback are some of the leading psychotherapeutic approaches used to effectively treat of comorbid PTSD/SUD. However, despite client requests for integrated treatment for PTSD/SUD, many clinicians are reluctant to simultaneously treat the two disorders. For example, [21] examined perceptions of 31 experienced clinicians on the integrated treatment of PTSD/SUD to better understand their views regarding treatment for the two disorders. While the majority (86%) of clinicians preferred integrated PTSD/SUD treatment even in highly complex cases, many indicated the need for inpatient supports (e.g., for clients who lack a support system or those requiring close monitoring for substance withdrawal) and a lack of clinical expertise were the two greatest barriers to providing integrated treatment. Similarly, [22] reviewed existing literature on common barriers that prevent integrated treatments for PTSD/SUD among substance abuse community treatment programs. The primary barriers were the limited training/expertise required for implementing an integrated approach, concerns about the timing of initiating trauma work (e.g., among clients currently using substances), clinicians systematically referring clients with co-occurring psychiatric disorders to mental health clinicians and vice versa, and inadequate screening and assessment for comorbidity in PTSD and addictions.

Overall, it appears while many clients are requesting integrated treatment for their PTSD/SUD and many clinicians are in agreement on the efficacy of integrated treatment for the two disorders, barriers need to be rectified (namely clinician training) in order for integrated treatment to become the norm. It is also important for clinicians to screen for both PTSD and SUD and to ascertain whether

an integrated psychotherapeutic approach for comorbid PTSD/SUD is appropriate as integrated treatment may be contraindicated for some clients (e.g., those currently using substances and clients with PTSD-related dissociative symptoms).

Mindfulness and PTSD/SUD

The mindfulness approach exposes an individual to all experienced phenomena, even issues typically avoided among persons with PTSD. Mindfulness-based approaches for the treatment of PTSD encourage the focusing of a person's attention to the present moment and underscores, without judgment, the person's thoughts, feelings, and emotions. In addition, mindfulness has been shown to affect both SUD and PTSD. For example, [5] examined the association between PTSD symptoms, mindfulness, and severity of substance abuse among 286 individuals with PTSD and SUDs who were part of a mindfulness-based relapse prevention outpatient program. The results showed mindfulness was a significant mediating factor in the relationship between symptoms of PTSD and severity of substance dependence. The authors suggested there exists a bidirectional effect in that substance use exacerbates PTSD symptoms and PTSD symptoms increase the risk of problematic substance use. [23] provided support for this bidirectional effect through their premise that mindfulness-based treatment reduces substance misuse and cravings by modulating cognitive, affective, and psychophysical processes. The reduced cravings, in turn, modify trauma-based processes.

Yoga, a technique that incorporates mindfulness, has proven to be a beneficial intervention and alternative treatment option for persons with SUD (a frequent comorbid diagnosis of PTSD). [24] noted yoga are beneficial in two stages of SUD; the first being the time of cessation or after detoxification and the second being during the treatment phase for SUD both of which are stressful times for the individual. Discontinuation of certain substances like alcohol, benzodiazepines, and opiates is associated with sympathetic discharge (i.e., withdraws, triggers, cues, and cravings), a phenomenon that can be accompanied by increased heart rate and blood pressure. The integration of yoga, through breathing exercises, may assist in the reduction of these circulatory issues. The second stage of substance use treatment where yoga shows benefit for SUD is during the actual treatment phase which is designed to assist in the prevention of relapse from substance-using behavior. Relapse can occur when the individual is exposed to cues that trigger relapse behavior. The regular practice of yoga reduces stress levels and helps a person to deal with negative emotions that trigger relapse and may reduce relapse episodes of substance use in persons diagnosed with SUDs.

As noted, cortisol is released when a person is exposed to stressful events. Additionally, persons with a SUD may exhibit high levels of cortisol when experiencing cravings for a mood-altering substance (e.g., alcohol, opiates, cocaine) or when the person is exposed to triggers that stimulate negative emotions that lead

to relapse. Individuals who are diagnosed with SUDs who have engaged in yoga have experienced a reduction of stress noted by a decrease in cortisol levels [24]. Although the primary recommended course of treatment for persons with SUD is psychotherapy and medication, the integration of yoga to augment psychotherapy may assist in the reduction of stress and, in turn, reduce relapse in persons who have SUD (Sarkar & Varshney). However, while the use of yoga, psychotherapy, and pharmacological interventions have been effective for treating PTSD, for individuals with treatment-resistant-PTSD (TR-PTSD) who fail to respond to established protocols may require alternative types of treatment.

Mindfulness has also been shown to reduce symptoms of depression and anxiety which are frequent comorbid symptoms of PTSD. [25] conducted a study that used mindfulness-based stress reduction (MBSR) to treat veterans with PTSD. The study examined cortisol levels pre- and post- intervention. Cortisol, a stress hormone released when a person is exposed to stressful events, plays an important role in the central nervous system function (e.g., learning, memory, and emotions) and creates increased amounts of the glutamate neurotransmitter in stressful situations. High levels of cortisol are pathophysiological indicators of PTSD. In this study, veterans engaged in four sessions of MBSR to cultivate cognitive skills that enable one to objectively reappraise stressors, thereby interrupting psychological symptoms associated with PTSD. The study showed a significant reduction in cortisol levels among the veterans who engaged in four sessions of MBSR (Bergencico), providing further evidence for the efficacy for the use of mindfulness in the treatment of PTSD. However, treatment resistant PTSD remains an issue that needs to be addressed.

Ketamine Infusion Therapy

Ketamine (brand name Ketalar) is an anesthetic that has approved for the use in hospitals and other medical settings. Ketamine is considered a safe anesthetic as it does not reduce blood pressure or lower breathing rates [26,27] described a case study where a 23-year-old veteran diagnosed with severe, chronic PTSD and depression secondary to combat trauma following exposure to traumatic events in Afghanistan. The veteran engaged in a trauma recovery program, exposure therapy, a residential program, EMDR, and mediation to treat PTSD. Each approach caused intense anxiety and emotionality and the veteran terminated treatment. Still seeking relief, the veteran engaged in ketamine infusion therapy (KIT) and had immediate and dramatic results, including a report of profound personality changes that led to improved function. His mood was euthymic, and he became motivated and interested in his family. However, 15 days after the KIT, the previous severe symptoms of PTSD re-manifested and included suicidal ideation (SI), irritability, and difficulty sleeping. The use of KIT appeared to be effective for only a limited amount of time and the use of KIT along with psychotherapy appears to be more effective treatment for TR-PTSD than KIT alone.

[4] noted ketamine, an N-methyl-D-aspartate (NMDA) receptor antagonist, is an analgesic and glutamate modulator that can quickly and effectively relieve the symptoms of PTSD. Ketamine targets the glutamate NMDA (receptor is implicated in fear extinction mechanisms. Currently, none of the current APA-recommended medications target the glutamate system. The APA (2017) recommended pharmacological medication for the treatment of PTSD that targets the brain monoamine systems (serotonin, norepinephrine, or dopamine) but does not include the NMDA receptor that targets symptoms associated with PTSD.

Hartberg J, et al. [28] found the use of ketamine for treatment-resistant depression and PTSD to be effective in the largest retrospective review of patients receiving long-term oral ketamine. All study participants were over the age of 18 and were diagnosed with PTSD, treatment resistant major depressive disorder (MDD), or severe anxiety disorder. In addition, many of the participants reported SI or had a history of suicide attempts [28]. also noted the use of oral ketamine to be a promising pharmacological adjunct to depression treatment. Specifically, patients on a regimen of oral doses of ketamine administered over three years were stable, with no evidence of tolerance development, no serious adverse effects, and no long-term ketamine-associated side effects [28]. concluded patients on oral ketamine in this course of treatment reduced psychiatric hospital admissions by 65%.

Another advantage of ketamine is its ability to be administered intravenously which results in rapid action (less than 48 hours for beneficial effects) as compared to the use of antidepressant medications that can take up to two weeks to reach therapeutic levels. However, despite the rapidity after a single administration, a hindrance to intravenous (IV) ketamine administration is the rate of relapse. Participants who did not engage in psychotherapy in addition the to the IV ketamine reported the symptoms associated with PTSD and comorbid diagnosis returned approximately 14 days after infusion. In studies that only implemented KIT, participants relapsed after 15 to 18 days post-infusion [29]. Therefore, the integration of psychotherapy is recommended to augment the effects of the ketamine treatment. Although KIT has shown promising results in the treatment of PTSD, depression, and SUD, additional studies are needed to demonstrate its efficacy. In addition, clinical reports have indicated ketamine may have addictive properties and patients on ketamine have reported hallucinations and dissociation and depersonalization [30]. Therefore, studies on the safety of KIT are further warranted.

Ketamine Infusion Therapy with Psychotherapy

The significant limitations of the use of ketamine (notably short-term efficacy) provides a strong rationale for the combined use of ketamine with other treatment approaches. Pradhan B, et al. [4] explored yoga and trauma interventions using a mindfulness intervention as two common symptoms of PTSD are depersonalization and dissociation, both of which present as the

opposite of mindfulness. The integration of mindfulness to get in touch with oneself in the present moment with an awareness of one's existence, associations, and sensations is recommended with KIT as mindfulness promotes dis-association from the experiences, which ensures the participant calm observation in an attentive manner [31]. Specifically, GABA, dopamine, and glutamate neurotransmitters are implicated in both PTSD and interventions involving yoga and mindfulness; therefore, empirical and biological rationale supports the use of yoga and mindfulness for the treatment of PTSD. Pradhan et al. noted trauma interventions using mindfulness-based extinction and reconsolidation (TIMBER) for trauma memories as a novel, integrated, and trauma-specific psychotherapy. TIMBER is a specific mindfulness-based cognitive therapy. TIMBER entails elements of graded exposure and cognitive reprocessing, both of which target attempt to change the traumatic memories and expressions. Additionally, TIMBER attempts to alter expression of the memory using protocol that causes cognitive-emotive restructuring using cognitive-behavioral-model and standardized mediation interventions. The combined used of TIMBER and KIT has shown promising results for the treatment of PTSD.

Pradhan B, et al. [31] conducted a study that combined ketamine and TIMBER psychotherapy among participants diagnosed with PTSD in a randomized, double-blind study consisting of two groups. The TIMBER-K group received KIT (single ketamine infusion) and 12 sessions of TIMBER; the TIMBER-P group received a placebo (single infusion of normal saline) and 12 sessions of TIMBER. All participants, prior to the initiation of the study, had engaged in traditional treatments such as CBT and had taken antidepressants for at least six months without a significant reduction of PTSD symptomology. The results of the Pradhan et al. study revealed participants who received the ketamine treatment in conjunction with TIMBER psychotherapy had prolonged therapeutic effects whereas the placebo group relapsed after 14 days. In the study, there was no reported drop-out among the participants. It is estimated that 50-70% of persons who engage in traditional treatments for PTSD drop out of treatment [32]. Therefore, the use of KIT combined with TIMBER may provide a valuable treatment option for persons with PTSD who have not responded well to traditional models of treatment.

In another study Duek O, et al. [33], the use prolonged exposure (PE) with ketamine was used as a treatment for TR-PTSD. The study included 17 participants with TR-PTSD who were randomly selected for KIT or midazolam (a benzodiazepine that targets the central nervous system). Each group received seven days of PE and one infusion of ketamine or midazolam. Both groups, at the 30-day follow-up, reported significant reduction of PTSD symptoms. However, at the 90-day follow up, the ketamine group showed reduced PTSD symptoms compared to the midazolam group. Therefore, the efficacy of the use of ketamine for TR-PTSD is arguably a viable alternative form of treatment.

Ketamine Infusion Therapy for Comorbid PTSD/SUD

A positive correlation exists between the severity of addiction and the severity of life trauma. According to the APA (2013), a criterion in the DSM-5, which entails avoidance of distressing memories, thoughts, or feelings associated with the traumatic is evidence by excessive alcohol use [34]. The data suggests a direct relationship between the severity of SUD and PTSD symptomology [5,35-37]. However, despite the benefits, there are limited treatment approaches that address comorbid PTSD/SUD.

The preliminary results of KIT along with psychotherapy are promising for the treatment of PTSD and comorbid SUD. Nunes E, et al. [38] conducted a study utilizing KIT and mindfulness for the treatment of SUD in a five-week study that included a single dose ketamine infusion treatment with a combination of mindfulness-based psychotherapy. The researchers found the combination of ketamine and mindfulness-based psychotherapy was more effective than midazolam and psychotherapy in limiting craving and maintaining abstinence among individuals with cocaine use disorders. At the end of the five-week intervention, participants were referred for ongoing treatment and were reevaluated at six months posttreatment, at which time 44% of the participants reported abstinence from the use of cocaine.

Although research is limited on the use of ketamine for the treatment of SUD in humans, studies indicate ketamine improves dopamine signaling in rodents experiencing withdrawal from amphetamines and reduces cocaine self-administration [39,40] conducted a study with persons who were diagnosed with and alcohol use disorder. In the study, the participants were assigned to KIT and psychotherapy or a control group that used saline and psychotherapy. The study found that 65.8% of the participants that engaged in KIT and psychotherapy reported sobriety at one year. This is significantly higher than the control group that was treated with saline and psychotherapy which reported 24% abstinence at one year. The participants in the KIT and psychotherapy group reported improvement in self-concept and emotional attitudes in various aspects of themselves and in others. The change in psychological perspectives are shown to support a sober lifestyle.

Conclusion

This review provides an overview of some of the most effective, evidence-based psychotherapeutic treatments for comorbid PTSD/SUD, specifically EMDR, CPT, PET, neurofeedback, mindfulness, and KIT. As we have seen, while traditional psychotherapies can be effective for the treatment of PTSD, they do not necessarily provide effective outcomes for all who experience PTSD, especially individuals with trauma-resistant PTSD (TR-PTSD). It is believed 33% of persons diagnosed with PTSD are resistive to treatment with a non-response rate to psychotherapy as high as 50%, while the use of APA approved pharmacological therapies are reported to have a non-response rate as high as 20-40% [41]. The novel approach of

KIT combined with psychotherapy such as mindfulness and yoga, EMDR and other forms of treatment may be a viable alternative treatment for comorbid TR-PTSD and comorbid disorders such as SUD; however, further research is needed to determine the long-term side effects of KIT. Additionally, extreme caution when combining KIT and SUD treatment should be exercised and further explored due to the inherent risk of dependency on ketamine in those who present with SUD. It is promising to note preliminary research shows KIT, when paired with psychotherapy, provides symptom reduction in both PTSD and SUD. As such, it follows that a person with comorbid disorders may benefit from KIT and psychotherapy as an alternative treatment when traditional psychotherapies have failed to bring healing.

Implications for Clinical Practice

The short-term efficacy of combined treatments for PTSD/SUD is evident and can reduce the need for clients having to participate in separate treatments for each disorder; however, the logistical implications of integrated PTSD/SUD treatment are still being examined. To that end, researchers and clinicians are encouraged to conduct research that examines the long-term outcomes of integrated interventions to ascertain the overall effects of such treatment for PTSD/SUD. Clinicians are also encouraged to assess clients for trauma-related symptoms as well substance-related issues during initial intake to ascertain if clients will benefit from an integrated treatment approach. Indeed, clinicians will want to ascertain factors that can influence the efficacy of an integrated treatment approach (e.g., whether the client is currently using substances, whether the client is experiencing dissociative symptoms, if the client is involved in ongoing domestic violence). Clinicians are further encouraged to enhance their clinical acumen by becoming certified in various trauma-related treatment interventions (e.g., EMDR, CPT, PET, neurofeedback, and mindfulness) and SUD interventions to enable them to provide efficacious treatments for clients with comorbid PTSD/SUD. In some parts of the U.S., there are considerable differences in mental health and substance use treatment, with little crossover of services [42]. As such, in order for integrated training to become the norm, agencies will need to support an integrated treatment approach (e.g., offer workshops/trainings for their employees and encourage collaboration between addictions centers and mental health clinics) to promote understanding of the utility of an integrated approach.

Clinicians also need to ascertain whether agencies adhere to treatment approaches that promote harm reduction vs. abstinence as this will also influence treatment planning. Research specific to client preferences regarding integrated treatment for PTSD/SUD needs to be further explored and client preferences need to be emphasized at the onset of treatment. This process should include providing clients with a clear and comprehensive overview of the benefits of separate vs. integrated treatment (e.g., efficacy

of psychotherapeutic treatment modalities, pharmacological treatments, duration of treatment) so they are well informed and able to fully understand and participate in their recovery and healing. Because an estimated 55-60% of persons diagnosed with PTSD are also diagnosed with a substance-use disorder (SUD) [1], the use of integrated treatment for the two disorders can have a profound impact on treatment outcomes and patients' well-being. An integrated approach can not only reduce treatment costs but can reduce drop-out rates due to not having to attend two separate treatment programs that may be cost and time prohibitive. Indeed, an integrated approach can have a profound impact on treatment outcomes and patients' well-being for those deemed appropriate for integrated PTSD/SUD treatment [43,44].

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Conflict of Interest

Author declare no conflict of interest.

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