

# Interventions to Improve Psychological Functioning and Health Outcomes of HIV-Infected Individuals with a History of Trauma or PTSD

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**Abstract** The experience of early or later life trauma in HIV-positive adults can have devastating mental and physical health consequences. Women bear the brunt of this double burden. Depression, posttraumatic stress disorder, and alcohol and drug use disorders are among the most common psychiatric disorders documented, both in infected women and men, in high-, middle-, and low-income countries. Traumatized individuals, particularly those with childhood sexual abuse characterized by repeated traumatization, are at high risk of engaging in risky behaviors, including substance abuse and sexual promiscuity. These issues are further compounded by stigma, discrimination, poverty, and low social support. While there is a significant need to pay more attention to psychiatric and psychological outcomes in the context of HIV-trauma and improve screening for traumatic stress in HIV care settings, there are currently few treatment and secondary prevention studies. Group cognitive-behavioral strategies, including prolonged exposure, coping skills training, and stress management have, to date, shown some evidence for efficacy in HIV-positive individuals with childhood trauma and in those with PTSD.

**Keywords** Trauma · Childhood abuse · Posttraumatic stress disorder · PTSD · Common mental disorders · Substance use disorders · Depression · HIV disease · Interventions · Treatments · Behavioral issues of HIV management · HIV/AIDS

## Introduction

Psychological trauma exposure, in particular early life trauma, is highly prevalent in men and women with human immunodeficiency virus (HIV), and has been linked to a variety of adverse physical and mental health outcomes [1–4]. For many individuals living with HIV infection, traumatic experiences in childhood in the form of abuse or neglect are perpetuated in adulthood underscoring a pattern, across the lifespan, of repeated traumatization to multiple types of events [5, 6, 7]. Psychiatric disorders occurring at higher rates than in HIV negative samples include mood disorders, anxiety disorders, somatoform disorders, substance abuse and dependence, neurocognitive and personality disorders, among others [1, 2, 4]. Major depression, posttraumatic stress disorder (PTSD), and alcohol and drug use disorders are the most common presentations, in addition to increased rates of somatization and physical disorders [3, 4, 8, 9].

Mental and physical disorders, against the backdrop of trauma, compromise quality of life and functional outcomes in infected individuals [4, 9, 10]. Further, trauma, with its consequent negative health sequelae, accelerates disease progression in HIV-infected individuals by suppressing immune function [9, 11, 12]. The literature suggests an independent link between trauma, or cumulative stressful life event exposure, and declining CD4+ T lymphocyte counts, rapidly declining CD4+/CD8+ cell ratios, and increasing viral loads [4, 9]. These effects may be mediated by putative biological (eg, increase in cortisol and norepinephrine), and psychosocial mechanisms [6, 9], including excessive substance use, and poor social support. Trauma also compromises medication adherence and increases the likelihood of engaging in risky sex, which in turn increases the possibility of contracting other sexually transmitted infections that may compromise immune functioning [4, 9].

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This is notable given that addressing trauma and its mental health burden through effective and timely interventions may ‘be an opportunity to make a transformational impact on the HIV epidemic’ and on the lives of individual patients [7]. Despite the enormity of burden, there are currently few individual- and group-level interventions with empirical support for reducing traumatic stress and other mental health problems in trauma-exposed men and women with HIV disease. This review describes the impact of trauma in HIV and details potentially effective interventions for mental health problems in this population, focusing on treatment studies published in the last 2 years (2010–August 2012). PubMed, Cochrane Reviews, PsycARTICLES, and EMBASE were searched for citations relating to all published studies of trauma-recovery interventions in HIV-positive, trauma-exposed individuals through to 31 July 2012. The following search terms were initially employed: ‘trauma,’ ‘abuse,’ ‘HIV.’ These were intersected with ‘PTSD,’ ‘traumatic stress,’ ‘intervention,’ ‘treatment,’ ‘prevention,’ ‘trial,’ ‘outcome,’ ‘functioning,’ ‘coping,’ ‘cope,’ ‘psychological,’ ‘psychiatric,’ ‘physical,’ ‘mental,’ ‘health,’ using the ‘and’ function. Studies were selected if they (1) included participants who were HIV-positive, (2) examined current or past exposure to trauma and/or examined PTSD, and (3) included a medication and/or psychosocial intervention/prevention strategy designed to reduce trauma-related psychological sequelae and/or health outcomes and/or HIV risk behaviors (eg, unprotected sexual encounters). A total of 103 articles were identified of which 45 were found to be potentially relevant. Of these, 15 studies met the inclusion criteria and were fully abstracted.

### Trauma in HIV

The relationship between HIV and trauma exposure is reciprocal. Factors associated with HIV, such as poverty and stigma, may increase the risk of exposure to potentially traumatic events [8, 9]. Trauma exposure, especially abuse occurring in childhood, has been associated with consequent risky sexual and drug use behaviors, which can increase the risk of contracting HIV [8, 13]. A number of studies have reported trauma prevalence rates that are far in excess of rates that have been documented in general population samples [7, 8]. These high rates among HIV infected individuals are regardless of gender, race, ethnicity, income, and sexual orientation [7, 8]. Women, however, bear the brunt of the co-occurring syndemic (HIV-trauma) worldwide and, where comparative data exists, estimates of trauma exposure are at least two fold higher in HIV infected women than in women from nationally representative samples [7, 14].

Trauma exposure is often of a repetitive nature and encompasses a broad range of event types, such as sexual

assault, incest, physical assault, and intimate partner violence [1, 5, 6, 7, 8, 15]. HIV-infected women are particularly vulnerable to intimate partner violence (IPV), both physical and sexual IPV [6, 7, 15, 16]. The bidirectional link between IPV and HIV risks may be mediated by a history of childhood sexual abuse and post-traumatic stress disorder [6, 16]. Violent traumas have been more widely documented than non-violent types, both in infected women and men. In studies that have focused exclusively on childhood trauma in infected adults, high rates of childhood sexual and physical abuse have been documented [6, 7]. A higher occurrence of violence exposure post-HIV diagnosis has been shown to be predicted by a number of historical, socio-demographic, and clinical variables, including younger age, marital status (single/widowed/divorced), history of drug dependence, previous physical or sexual abuse, depression, multiple sexual partners, and higher CD4 counts [7, 8, 12, 17].

Non-uniform definitions of psychological trauma, inconsistent delineation between childhood and adult exposures, and methodological heterogeneity in trauma measurement, among other factors, complicate the comparison of rates of trauma and health outcomes across studies. These limitations were noted in a recent meta-analysis of psychological trauma in HIV-positive women ( $n=5930$ ), covering 29 studies [7]. In the aforementioned review, intimate partner violence was among the most commonly occurring trauma type with an estimated prevalence of 55.3 % (95 % CI 36.1 %–73.8 %). Estimated prevalence rates of adult physical and sexual abuse were 53.9 % (95 % CI 30.2 %–76.8 %) and 35.2 % (95 % CI 20.1 %–51.45 %), while estimated prevalence rates of childhood physical abuse and childhood sexual abuse were 42.7 % (95 % CI 31.5 %–54.4 %) and 39.3 % (95 % CI 33.9 %–44.8 %), respectively [7].

Trauma exposure is, of itself, associated with risky unprotected sex, poor adherence to antiretroviral (ARV) treatment, faster disease progression, and faster all-cause and AIDS-related mortality [11, 12, 18]. The link between lifetime trauma exposure and treatment adherence may be dose dependent, with some data suggesting a significant association between the number of lifetime traumas and non-adherence, even after adjusting for substance abuse and current mental health symptoms [17]. Trauma histories can be complex and compounded by other negative life events and by experiences of stigma [8]. Stigma, in the context of HIV, may be directly experienced or perceived; both types are associated with a lower likelihood of disclosure of HIV status and with poorer medication adherence [8, 13]. In addition to stigma, other challenges include fears relating to disclosure of HIV status, social isolation, financial stressors, relationship difficulties, and reduced cognitive capacity resulting from infection. These challenges (collectively or individually) may have direct bearing on coping abilities.

It is therefore prudent to offer interventions that not only target the underlying mental disorder but also target issues of stigma and coping. One qualitative investigation of HIV positive women with histories of childhood sexual abuse found that illicit substance use was a common coping strategy for dealing with emotionally distressing symptoms and sexual activity; however women were not easily able to make this connection [19]. These findings have implications for secondary prevention interventions with HIV-positive women who have experienced childhood sexual abuse. Providing women with early childhood trauma in HIV care settings with the appropriate resources to help them recognize healthier patterns of coping much earlier in the course of their illness may help to reduce psychological distress, limit the emergence of substance use disorders, and prevent further transmission of HIV [19].

### Trauma, PTSD, and Other Mental Health Outcomes in HIV

PTSD is perhaps the most extensively documented sequela of trauma exposure in HIV-infected adult samples. PTSD has also been documented as a disorder arising in response to receiving notification of HIV-seropositive status. A diagnosis of PTSD, irrespective of trauma type, requires a reaction of intense fear, helplessness, or horror. This reaction must follow exposure to a life-threatening event, one that is characterized by actual or threatened death to oneself or to another. Individuals with PTSD display distressing and functionally impairing symptoms, typically in the form of traumatic re-experiencing, avoidance, and hyperarousal [20].

Rates of PTSD, ranging from 15 % to 54 %, are consistent with the high rates of both childhood and adult abuse and assault in this population [2, 7–9]. Findings of the impact of PTSD and other common mental disorders on ARV adherence have been contradictory, with studies finding lower adherence, increased adherence, as well as no effect on adherence [9, 12]. As previously mentioned, greater lifetime trauma exposure is associated with a range of negative health outcomes, namely increased odds of hospitalization, ARV non-adherence, worse physical health, and unprotected sex [6•].

Core symptoms of PTSD, namely intrusion and avoidance have also been linked to sexual risk-taking behavior [21]. However, the causal pathways through which distal and proximal traumatic experiences influence adult mental illness and other behavioral parameters are poorly understood. These causal pathways are arguably multi-faceted and contributed to by a synergistic interaction of biological, behavioral, socio-demographic, and psychosocial variables [6•]. Recent evidence suggests that psychosocial characteristics such as coping, social support, self-efficacy, and

stressful life events do not provide much explanatory power for the relationship between lifetime trauma and HIV-related outcomes [6•, 22]. While this suggests that biological and physiologic mechanisms, including dysregulation of the limbic-hypothalamic-pituitary-adrenal axis and autonomic nervous system, may be more robust mediators, further investigation of the mechanisms by which trauma impacts on psychiatric and behavioral outcomes is needed.

In addition to the high rates of individual disorder, PTSD is highly co-occurrent with major depression, other anxiety disorders, and substance use disorders (SUDs), mirroring findings in non-infected samples [9, 14, 23]. This further impacts on HIV disease, overall health, and quality of life domains. In contrast to PTSD, depression and SUDs have been more consistently linked to poor ARV adherence and given the high rate of comorbidity between PTSD and these disorders, the risk of non-adherence may be heightened in trauma-exposed individuals with a diagnosis of PTSD and should be a particular focus of trauma-directed interventions [5, 9, 12].

High prevalence rates of other common mental disorders (eg, mood disorders, alcohol and drug abuse and dependence) exceeding rates in national prevalence samples, have also been reported in HIV-infected, trauma-exposed individuals [1, 2, 8, 23]. However, gender difference patterns for these common mental disorders have been poorly studied in HIV disease. Of the few studies in existence, findings have been inconsistent. Some studies have reported gender differences in the rates of PTSD (women>men), alcohol abuse and dependence (men>women), suicidal ideation (men>women), and health related quality of life (poorer in women than men), while other studies have shown no gender differences on these variables [2, 7, 9, 24, 25].

### Interventions for HIV and Trauma

The ramifications of high rates of trauma exposure, PTSD and other psychiatric disorders in HIV-infected adults underscores the need for effective treatments that beneficially impact health outcomes and psychosocial functioning. In HIV-negative trauma survivors there is good evidence for the effectiveness of cognitive-behavior therapy (CBT) (in particular prolonged exposure therapy [PE]), selective serotonin reuptake inhibitors, and eye movement desensitization and reprocessing (EMDR) [26]. To date, the evidence-base supporting the effectiveness of different types of interventions for the improvement of psychiatric and psychological outcomes in trauma-exposed, infected individuals is small. Yet, there is a high level of unmet need with one study estimating that more than half of women with full PTSD (and more than two-thirds with partial PTSD) are not in receipt of treatment [22].

There are currently no published pharmacological intervention studies for HIV-positive individuals with trauma exposure. Two of the early psychological intervention studies in HIV-positive trauma survivors were confined to gay men. These studies employed group interventions involving coping skills training, cognitive behavioral strategies, and education. Antoni and colleagues [27] compared the effectiveness of a 5-week cognitive behavioral stress management (CBSM) intervention (comprising cognitive restructuring, relaxation and assertiveness training), relative to an assessment control condition, on psychological and immune status. Participants ( $n=47$ ) were HIV-infected healthy gay men with a potentially traumatic stressor in the form of pending notification of their HIV status. The findings indicated that the CBSM group, compared with the control group, was more likely to engage in adaptive coping strategies and retain their social support after becoming aware of their HIV status. Another randomized controlled study that examined coping effectiveness training (CET) for improvement of adherence in HIV-infected trauma survivors, also in gay men, reported that CET was associated with increased coping efficacy, greater reduction in perceived stress, lower levels of distress, and improved adherence, compared with the HIV information (control) group [28]. A third study examined supportive therapy. Koopman and colleagues [29] reported that supportive group therapy plus education was no more effective than education alone in reducing stress in HIV-seropositive men and women, nearly a third of whom reported levels of acute stress reactions to recent life events that met criteria for acute stress disorder.

A far more recent qualitative study examined in post-conflict Rwanda examined whether support groups would be a feasible and acceptable treatment approach in HIV-infected women with multiple traumas encompassing genocidal violence, rape, and family losses. Four focus groups were conducted with 18 women randomly selected from 10 support groups for HIV-infected trauma survivors in Kigali, Rwanda [30]. The weekly support groups were facilitated by para-professionals trained in trauma counseling. Findings revealed that the support groups were associated with improvement in psychological functioning, behavioral empowerment, and physical health. There were other additional benefits. Those on ART reported an increase in adherence since attending the support groups, and were more comfortable disclosing their HIV status. These data, while qualitative, are encouraging and suggest that para-professional led psychosocial support groups may be a useful strategy to consider in HIV-infected trauma survivors in resource-limited settings.

The high rate of comorbidity between PTSD and SUDs in both HIV infected and uninfected individuals and the adverse impact of this dual diagnosis on overall treatment

outcomes, underscores the importance of aggressively addressing both disorders in treatment. Exposure-based treatments for PTSD administered in conjunction with treatment for the SUD have thus far yielded the most promise, with emerging data for the utility of PE for co-occurring PTSD and SUD. Seeking Safety (SS), a manualized cognitive-behavioral therapy for comorbid substance use disorders (SUD) and post-traumatic stress disorder (PTSD) has demonstrated efficacy in improving drug use outcomes but its efficacy in reducing traumatic stress symptoms has been equivocal [31]. New findings on the efficacy of SS from the field of HIV prevention research are encouraging. Hien and colleagues [32] examined the benefit of 12-session group SS in women with SUD and PTSD. SS was significantly more effective in reducing HIV sexual risk for women with higher levels of unprotected sex when compared with an attention control psychoeducational group for HIV risk reduction. In secondary analysis [33], the authors noted that PTSD severity reductions were more likely to be associated with substance use improvement, with little evidence that reduction in substance use symptoms improved PTSD symptoms. Further, trauma-focused treatment was significantly more effective than health education in achieving substance use improvement. These findings emphasize the importance of integrating interventions for improved SUD outcomes.

To date, the efficacy of PE and other cognitive behavioral interventions (eg, cognitive processing therapy, SS) have not been evaluated in HIV samples and there remains an urgent need to evaluate these interventions in this population, as well as evaluate the secondary preventive benefits of trauma-focused interventions on HIV risk reduction.

#### Interventions for Childhood Sexual Abuse (CSA) in HIV

There have been 4 intervention trials of group-based therapeutic approaches in HIV-infected samples with childhood sexual abuse. Two earlier randomized, intervention studies specifically addressed CSA in the context of HIV. The first of these studies tested an 11-session cognitive behavioral approach (an *Enhanced Sexual Health Intervention* [ESHI]) that was culturally congruent [34] against an attentional control condition (that is, existing services for infected women with CSA), with the aim of reducing sexual risks and increasing HIV medication adherence in HIV-positive women with histories of CSA. ESHI is an intervention that includes trauma writing, problem solving strategies, and communication skills training. Women in the cognitive behavioral group reported a 75 % reduction in risk-taking behavior vs a 50 % reduction in the attention control group, although there were no differences in medication adherence between the conditions. The second randomized controlled trial was a 15-session HIV and trauma coping group intervention or a 15-session support group intervention

compared with a wait-list control for traumatic stress symptom reduction in infected men and women with CSA [35]. All men in the latter study reported having sex with men. Additionally, 40 % of participants met criteria for PTSD. In these studies, active treatments (namely, cognitive behavioral and HIV/trauma coping interventions) were associated with significantly greater improvement in measured outcomes relative to the control condition, including reductions in traumatic stress symptoms [35] and sexual risk behaviors [34].

Two studies in HIV-positive adults with CSA that employed a coping skills intervention, published over the last 2 years, deserve mention. The first of these was a 15-session coping skills group intervention, *Living in the Face of Trauma* (LIFT), developed by Sikkema and colleagues and employed in their earlier studies [36•]. LIFT combines psychoeducational components with exposure-based and coping strategies. Two-hundred forty-seven HIV-positive men and women were randomly assigned to LIFT delivered in group format or to a supportive group intervention, with a 12-month follow-up period. The primary outcome assessed was the effect of LIFT on alcohol, cocaine, and marijuana use. The average age of first abuse was 8.8 years. Sexual abuse histories were characterized by repeated incidents with multiple perpetrators. The group receiving the coping intervention had significantly greater reductions in the quantity of alcohol and cocaine use but there were no group differences in the frequency of marijuana use. Moreover, the HIV and trauma coping group intervention has reduced unprotected anal and vaginal sex with all partners (HIV-positive, HIV-negative, and unknown serostatus) at 1 year post-treatment, by an average of 54 % compared with the support group intervention [37]. There were also no differences in completer status by treatment condition at the 1 year follow up.

The most recent of these studies for CSA in HIV-positive women randomized 52 women to LIFT or to a comparison support group intervention [38•]. Of these women, 34.6 % met screening criteria for a PTSD diagnosis. Clinical observation indicated that LIFT was effective in addressing trauma symptoms and increasing adaptive coping and high levels of satisfaction with the intervention were expressed. An incidental finding was a reduction in high risk behavior despite the intervention not including any specific risk reduction training.

#### Interventions for HIV-Infected Individuals with PTSD

Prolonged exposure therapy, one of the first-line treatments for PTSD, involves reliving of the trauma related memories and anxiety-inducing situations through imaginal and in vivo exposure [39]. In the first study to evaluate the efficacy of PE in men and women with HIV/AIDS published this year (2012) [40••], 65 adult participants with HIV (average time since diagnosis=13 years) and PTSD were randomly assigned either to 10 sessions of group PE conducted twice a

week for 5 weeks ( $n=40$ ) or a weekly monitoring control group ( $n=25$ ). The average number of different types of prior trauma in the sample was 4.91 ( $SD=1.78$ ), both HIV and non-HIV traumas, with about a third of participants reporting that their most distressing trauma was related to their HIV diagnosis. PE was significantly better than the control condition in reducing HIV- and non-HIV related posttraumatic stress symptoms at 3 months post-intervention and these gains were maintained at 6 months. Improvement in negative posttraumatic cognitions and depression showed a trend toward significance on PE treatment with these gains also maintained over 6 months. However, there were no differences between the groups in substance use. It is noteworthy that there was a significant difference in dropout rate (32 % for PE vs 0 % for the control group) at the post-intervention assessment. While the dropout rate for PE is in keeping with dropout rates for exposure therapy in non-HIV samples, the differential dropout noted in the aforementioned study warrants more fine-grained exploration in future HIV studies.

Future research will need to investigate whether PE, other exposure-based interventions, and coping skills interventions are effective as individual therapeutic approaches in heterosexually infected individuals, as well as whether these approaches can be effectively adopted as part of couples-based therapy. With regards to the latter, it is notable that a recent study has found that 15 sessions of couples-based cognitive behavior therapy decreased PTSD symptom severity and increased patient relationship satisfaction, compared with wait-list control, in non-HIV patients with PTSD [41].

#### Conclusion

There is a pressing need for more efficacy and effectiveness trials of interventions to improve PTSD and other outcomes, in particular alcohol and drug use disorders, in trauma-exposed HIV-positive adults. Future efficacy and effectiveness studies of pharmacological and psychological interventions for HIV-positive persons should attempt to improve on the numerous methodological limitations that are evident in RCTs that have been conducted to date. These effectiveness studies should ideally be conducted in heterogeneous trauma samples in low- and middle-income countries, where the burden of HIV disease is greatest. While there is preliminary evidence that PE therapies and stress management interventions may be efficacious in HIV-positive individuals with PTSD, further confirmatory studies of their effectiveness are required before these treatment modalities can be recommended as a first-line treatment in HIV-positive, trauma-exposed populations. More data are also required on the long-term effectiveness of PE and other cognitive-behavioral interventions, as well as research to identify

which trauma-exposed HIV patients benefit most from which type of intervention. In addition, there are questions of the clinical utility of these treatments in culturally diverse HIV samples in hospital and community settings, and their potential cost-effectiveness. In line with this, a better understanding of gender in relation to various interventions and health-related outcomes is needed.

Healthcare providers in HIV settings need to be cognizant of the complex mental health needs of infected, trauma-exposed patients. In this regard, implementing improved screening for trauma and mental health problems is a necessary first step. Identifying coping needs and styles and incorporating techniques to enhance coping skills are also key, particularly as the majority of studies of interventions to enhance coping in HIV-positive individuals (16 out of 28 studies in a recent review) have found a significant intervention effect [42]. A recent study has also shown that the relationship between PTSD symptoms and HIV medication adherence is moderated by dissociative symptoms. In participants with high levels of dissociation [43], there was a significant association between PTSD symptoms and a lower odds of medication adherence. As dissociative symptoms can complicate the treatment of PTSD, the authors suggest that treatment be ‘phased,’ consisting first of skills training in affective and interpersonal regulation, and then coping skills to deal with triggers that activate dissociative symptoms, as this may enhance healthy behaviors and target non-adherence in HIV-positive individuals with histories of trauma.

Considering that women and men are more likely to seek health care for their HIV disease than for their trauma or mental health problems, providers of HIV care could be the optimal triage point for identifying HIV-positive patients with trauma histories and emotional and/behavioural difficulties and making the appropriate referrals. It is important to bear in mind that PTSD stemming from an HIV diagnosis may be very similar in terms of symptom presentation, severity and impact on adherence and disease markers, to PTSD resulting from other traumatic events, [12]. This, therefore, necessitates heightened vigilance on the part of healthcare providers engaged in HIV testing and counseling, to ensure that adequate support and information relating to effects of traumatic stress is provided. Finally, interventions need to be simple enough such that they can be incorporated into existing standard packages of care in HIV treatment settings. Interventions also need to be brief, culturally adaptable, and scalable to those settings (eg, community and rural settings) where task-shifting/task-sharing models of care are currently being employed or where they are being planned.

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