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The Effects of Childhood Sexual Abuse: The Role of Anxiety and Alcohol Use among Haitian Women Living with HIV

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ABSTRACT

Childhood abuse has been linked to problematic drinking in adulthood. It is also documented that people living with HIV have higher rates of alcohol use than the general population. In Haiti, a total of 25% of women living with HIV have experienced childhood sexual abuse (CSA), which puts them at an increased risk for alcohol abuse. CSA has also been associated with anxiety disorders in adulthood. Therefore, it is critical to understand the relationship between CSA, anxiety, and alcohol use among women living with HIV. A total of 244 women living with HIV participated in this study, with 35% reporting CSA. Alcohol abuse was measured with the AUDIT, anxiety with the State-Trait Anxiety Inventory test, and sexual abuse with the Childhood Trauma Questionnaire. Compared to participants who did not experience childhood sexual abuse, participants who experienced childhood sexual abuse reported greater levels of alcohol use [(17.0, SD = 9.1) (11.9, SD = 8.6) $p = .001$] and anxiety [(55.8, SD = 9.8) (48.9 SD = 8.3) $p = .001$] respectively. The indirect effect of anxiety on the association between CSA and alcohol use was significant [($\beta = .19$ $p = .05$) 95% bootstrap CI.019 -.13] Thus, women who reported being sexually abused as children reported anxiety, which in turn, was associated with an increased risk for alcohol abuse. Results demonstrate that alcohol may be used as a negative coping mechanism to alleviate anxiety symptoms triggered by CSA. These findings elucidate the need for further research examining the impact that sexual trauma has on mental health.

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HIV; women; sexual trauma; risk behaviors; childhood sexual abuse; anxiety; alcohol abuse

Introduction

Haiti has the second highest rate in the Caribbean (1.94%), with heterosexual transmission accounting for 90% of its HIV cases (De Binu et al., 2014; USAID, 2017). According to the 2017 UNAIDS Report, 57% of people living with HIV (PLWH) in Haiti are women (USAID, 2017). Childhood sexual abuse (CSA) is prevalent among PLWH, and it is estimated that between 30% to 53% of women living with HIV have experienced sexual violence during their childhood and adolescence (Henny et al., 2007; Markowitz et al., 2011).

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The Center for Disease Control and Prevention (CDC), in partnership with UNICEF, have reported that in Haiti, one in four females have experienced sexual abuse prior to age 18 (CDC, 2014). CSA can be highly traumatic, resulting in negative short- and long-term physical, emotional, and behavioral problems (Semb et al., 2011; Willie et al., 2016a, 2016b).

Extensive evidence has linked childhood abuse to later problematic drinking, particularly adults with a history of CSA are more likely to abuse drugs and alcohol than adults without a history of CSA (Malow et al., 2013; Malow et al., 2006; Shin et al., 2009). One theory suggests that women who suffered sexual trauma use alcohol as a mean to escape aversive emotional symptoms, subsequently reinforcing alcohol use as a primary motivational goal in a negative reinforcement self-regulation model leading to alcohol abuse (Garey et al., 2015). It is also well documented that PLWH have higher rates of alcohol use than the general population (Galvan et al., 2002; Willie et al., 2016a). Alcohol abuse has been associated with severe problems, including HIV medication non-adherence (Hendershot et al., 2009) sexual risk behavior (Ehrenstein et al., 2004), smoking (Vidrine et al., 2012), psychological disorders (Garey et al., 2015; Malow et al., 2013) and premature death (Galvan, 2002). Studies focusing on childhood sexual trauma and alcohol abuse in Haiti are limited. A study conducted by Malow et al. (2013), found that alcohol abuse was a main driver for the HIV epidemic in Haiti. While another revealed a significant increase in sexual violence against women after the 2010 earthquake (Rahill et al., 2016).

Studies on childhood abuse suggest that sexual abuse creates lasting effects on brain development that may lead to internalizing disorders (Hibbard et al., 2012; Teicher et al., 2006). Childhood abuse, including the severity and the length of the abuse, increases the risk for developing anxiety in adulthood (Cogle et al., 2010; Hiem & Nemeroff, 2001; Trickett et al., 2011). One study demonstrated that adults with social anxiety disorder who experienced sexual abuse as children showed increased interpersonal problems compared to adults who did not experience sexual abuse (Cogle et al., 2010). While another showed that CSA influenced distinct symptoms of anxiety dimensions, including state-trait anxiety and anxiety sensitivity (Huh et al., 2014). Additionally, it has been suggested that PLWH may engage in alcohol abuse to help relieve HIV anxiety symptoms (Chander et al., 2006). Furthermore, HIV may increase the risk of developing anxiety symptoms and disorders, and at the same time, anxiety may influence the severity of HIV/AIDS (Brandt et al., 2017). Increasingly studies have shown that the trend for anxiety disorders among PLWH is higher (median = 22.8%) than the general population (median = 18%) (Kessler et al., 2005).

Numerous studies have established the relationship between anxiety and alcohol abuse. However, there is limited work examining the relationship between CSA, anxiety, and alcohol use, and none among women living with HIV. A recent study showed that childhood abuse increased the risk of subsequent anxiety and alcohol abuse; physical and sexual abuse during childhood

were associated with alcohol abuse and anxiety in adult women but not in men (Rehan et al., 2017). These results suggest that women may be more sensitive than men to the traumatic effects of abuse in childhood (Rehan et al., 2017). One study on a representative community sample showed a significant association between childhood abuse and risk for adult psychopathology. The study demonstrated elevated risk for substance use, depression, and suicidal behavior among adults with a history of childhood abuse (Collishaw et al., 2007).

This study builds on previous evidence describing the relationship between sexual trauma, anxiety disorders, and alcohol abuse. With this in mind, the present study sought to expand this body of literature via the following aims: (a) examine the direct association of CSA on alcohol use among women living with HIV, and (b) examine the indirect association of CSA on alcohol use via anxiety symptomatology. We hypothesize that CSA is indirectly associated with alcohol use via anxiety symptomatology. Thus, we proposed that women who were sexually abused as children would report anxiety, which in turn, would increase their risk for alcohol abuse. In this study, we measured trait anxiety which is characterized by predispositional behavior that is latent until the cues of a situation activate it (Leal et al., 2017).

Materials and methods

Study population

This study utilized a cross-sectional design, with baseline data gathered between 2009 and 2013 as part of a longitudinal study using Cognitive-Behavioral Stress Management intervention to improve safer sex practices, adherence to ARV medication, and reduce alcohol use among PLWH in Haiti. A total of 393 men and women completed baseline data collection; however, for this study a subgroup of 243 of HIV-positive women was used for the analyses. The recruitment site was the GHESKIO Centers located in Port Au Prince, Haiti. To be eligible, participants had to be 18–60 years old, be fluent in Haitian Creole, provide documentation of HIV seropositivity, report recent alcohol consumption in the past 90 days, and not display cognitive impairment. This study was approved by the Institutional Review Board of Florida International University and the Ethics Committee of the GHESKIO Centers. All survey instruments used were translated into Creole then, back-translated and reviewed by a cultural, linguistic group to ensure cultural appropriateness and relevance.

Measures

Demographics

Self-reported sociodemographic information included age, education level include 6th grade or less, some high school, completed high school, and

some college; marital status included single, married, separated, and cohabitation. The HIV measures included ever having AIDS diagnoses (yes/no), and are you currently taking ART medication (yes/no).

Childhood sexual trauma

The sexual abuse subscale of the Childhood Trauma Questionnaire (CTQ) was used to assess childhood sexual trauma. The scale has been validated with illicit drug-using populations and shown to provide excellent convergent and discriminant validity with measures of antecedent trauma (Fink et al., 1995). Participants were asked about their experiences with sexual abuse during their childhood, including: *if someone touched the participant in a sexual way or made her touch them; if the participant was threatened into doing something sexual with someone; if someone made the participant do or watch sexual things; if the participant was molested; and if the participant believes she was sexually abused.* All questions utilized a five-point Likert scale with responses ranging from “never true” to “very often,” yielding a maximum possible score of 25 with higher scores reflecting higher anxiety. Scores were dichotomized into moderate/severe (“CSA History,” 8–13) versus all others (“No CSA History,” 0–7). This was previously done in studies among drug-using populations (Braitstein et al., 2003; Medrano et al., 2002). Cronbach’s alpha for this scale in the present sample was .88.

Anxiety

The level of anxiety was measured with the Trait Anxiety Inventory-Form Y, which has excellent psychometric qualities (Spielberger, 1993). This scale has been used extensively in clinical and research settings for trauma and abuse (Mundy et al., 2015). The measure (20 items), assesses the intensity of the respondent’s general feelings from 1 (almost never) to 4 (almost always) Likert-type scale, with higher scores reflecting higher anxiety (total score range: 20–80). Cronbach’s alpha for this scale in the present sample was .90.

Alcohol abuse

The Alcohol Use Disorders Identification Test (AUDIT) is a 10-item survey that measures alcohol consumption, dependence symptoms, and personal and social harm reflective of drinking over the past 30 days (Saunders et al., 1993). It covers the areas of alcohol consumption, drinking behavior, and alcohol-related problems. Responses are scored from 0 to 4, with a maximum possible score of 40 with higher scores indicating problematic drinking. A score of 8 or more is associated with harmful or hazardous drinking, a score of 13 or more in women, and 15 or more in men, is likely to indicate alcohol dependence. For this study, alcohol abuse was defined as a score of ≥ 8 . Cronbach’s alpha for this scale in the present sample was .91.

Analysis

The data analytic plan included four steps. First, women with a history of CSA and without a history of CSA were compared, second descriptive statistics were computed, third bivariate correlations were estimated for all variable used in the mediation analyzes, and fourth using PROCESS v3.203 we conducted a mediation analyzes to examine the indirect association of CSA on alcohol use via anxiety symptomatology. Statistical analyzes were performed using SPSS Statistics pack version 25.0. Since we did not use the entire sample, Pearson's X^2 , Student's t-test (for means), to compare characteristics between women with a history of CSA and women without a history of CSA. All statistical tests were two tailed and the threshold for statistical significance was set at $p < .05$. Direct and indirect effects of CSA on alcohol abuse via the mediating mechanism of anxiety were assessed with multiple ordinary least-squares (OLS) regressions through the SPSS macro PROCESS version 3.203 (Hayes & Preacher, 2014). This method simultaneously estimates the direct association of X on Y (c'-path), the direct association of X on M (a-path), the direct association of M on Y (b-path), and the indirect association of X (CSA) on Y (alcohol use) via M (anxiety). The indirect effect (i.e., mediation) was tested using 10,000 resampling bias-corrected bootstrap confidence intervals (95% CI). Results were controlled for demographic variables including age, education, marital status, antiretroviral therapy, and ever been diagnosed with AIDS. We chose the OLS regression as a preferred method as it offers the least Type I and Type II errors (Preacher & Hayes, 2004), and it has greater power to detect mediational effects than similar approaches (MacKinnon et al., 2002).

Results

Descriptive analyzes

No significant differences were found across demographic characteristics between participants who experience and did not experienced CSA. However, there were significant differences in alcohol use and trait anxiety with sexual abuse among participants who experienced CSA reporting greater alcohol use consumption and trait anxiety [(mean alcohol use = 17.0, SD = 9.1); mean trait anxiety = 55.8, SD = 9.8)] compared to their counterparts [(mean alcohol use = 11.9, SD = 8.6, $p = .001$; mean trait anxiety = 48.9 SD = 8.3, $p = .001$)] as shown in Table 1.

Approximately 35% of women experienced one or more sexual abuse events (i.e., touching in a sexual manner, threatened if not performed a sexual act, and ever been sexually abused). The mean age for women who experienced sexual abuse as children was 34 (SD = 8.4) years. Levels of education for this group were relatively low with approximately 67% of the women having a 6th grade education or less, followed by 30% with some high school education and

Table 1. Demographic characteristics among women living with HIV.

Characteristics	Experienced Childhood Sexual Abuse (n = 85)	Not experienced Childhood Sexual Abuse (n = 158)	<i>p</i>
Demographic Characteristics			
Age, mean (SD)	34 (8.4)	34 (7.8)	.947
Marital Status No (%)			.512
Single	18 (21)	41 (26)	
Married	6 (7)	14 (8)	
Separated	13 (15)	18 (11)	
Co-habitation	48 (56)	85 (54)	
Education No (%)			.069
6 th grade or less	57 (67)	94 (59)	
Some High School	26 (30)	48 (30)	
High School Diploma	2 (2)	7 (4)	
Some College	0	2 (1)	
HIV Characteristics No (%)			
Have you even had AIDS			
Yes	49 (57)	77 (49)	.186
Currently on ART			
Yes	61 (72)	106 (67)	.450
Construct mean (SD)			
AUDIT	17.0 (9.1)	11.9 (8.6)	.001
Anxiety	55.8 (9.8)	48.9 (8.3)	.001

Table 2. Study variables correlation analysis.

	1	2	3	4	5	6	7	8
(1) Age	.							
(2) education	-.145*	.						
(3) Marital Status	.215**	-.203**	.					
(4) ART	.133	.041	.030	.				
(5) AIDS diagnosis	.144	-.038	-.003	.298**	.			
(6) AUDIT	.035	.070	.058	-.078*	.025	.		
(7) STAI	-.012	.043	.003	-.083	-.009	.294**	.	
(8) CSA	-.009	-1.00	.052	.046	.113	.205**	.148**	.

p* <.05; *p* <.01 (2-tailed)

STAI = State Trait of Anxiety; AUDIT = Alcohol; CSA = Childhood sexual abuse.

3% with a high school diploma. A total of 56% of the women lived with a partner (co-habitation; common in Haiti), 24% were single, and 21% were either married or separated. Table 2 shows the bivariate correlation for variables used in the mediation analysis.

Mediation analysis

Figure 1 illustrates the results of the mediation analysis, which indicated that CSA was significantly associated with increased anxiety ($\beta = .41$ *p* = .001) and alcohol use ($\beta = .57$ *p* = .0001). Similarly, anxiety was significantly associated with increased alcohol use ($\beta = .47$ *p* = .001). The indirect effect of anxiety on the association between CSA and alcohol use was significant [$(\beta = .19$ *p* = .05) 95% bootstrap CI .019 - .13]. Thus, women who reported being sexually abused as children also reported anxiety, which in turn, was associated with

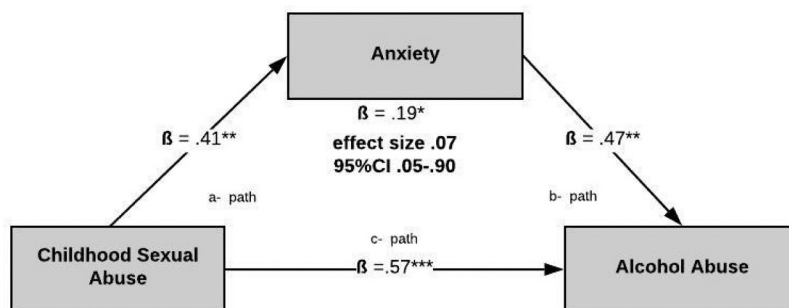


Figure 1. Mediation model. Note: $*p = .05$; $**p = .01$; $***p = .001$ Mediation model controlled for age, education, marital status, antiretroviral therapy and AIDS diagnosis.

a greater risk for alcohol abuse. The ratio of indirect total effect of CSA on alcohol use indicates that anxiety carried 7% of the sexual abuse effect [$\Delta R^2 = 9.6$, $F(5, 290) = 3.75$, $p < .001$].

Discussion

Recent studies have indicated significant associations between anxiety disorders and alcohol abuse (B.E Gibb et al., 2003; B. Gibb et al., 2007; Schacht et al., 2010). However, few have examined CSA as a component and none among HIV-positive Haitian women. To our knowledge, this is the first study to examine associations between anxiety and alcohol abuse among HIV-positive women who reported CSA. In this study, women who experienced CSA reported higher levels of anxiety and alcohol use than women who did not experience CSA. These results are consistent with our hypothesis and in line with a recent study showing an association between all types of severe childhood maltreatment (emotional, physical and sexual abuse, and physical and emotional neglect) with depression and anxiety symptoms in adulthood, with these associations being a predictor for problematic alcohol abuse (Rehan et al., 2017). Similarly, Strine et al. (2012) analyzed the relationship between childhood abuse and alcohol abuse and assessed whether psychological distress mediated the relationship by gender (Strine et al., 2012). They found that alcohol problems were associated with physical and sexual abuse among women (Strine et al., 2012). They also found that psychological distress mediated the relationship between alcohol problems and childhood abuse in men but not in women (Strine et al., 2012). Psychological distress covers a wide spectrum of psychological factors including anxiety. In this study, we measured anxiety as the indirect effect for alcohol problems, which suggests that anxiety increases the risk for alcohol abuse in women who suffered CSA. This is a significant finding because PLWH who report panic and social anxiety symptoms are also more likely to report higher rates for alcohol abuse (Garey et al., 2015). Results from the present study build on existing research to show that

among HIV positive Haitian women, CSA was significantly associated with alcohol abuse via the mediating mechanism of anxiety. These results can have important public health implications among this particularly vulnerable and marginalized population.

While it is well-established that anxiety disorders are more strongly associated with alcohol dependence than alcohol abuse, the results from this study add to the body of literature by showing that anxiety is a significant pathway linking CSA and alcohol abuse. There are two established models for comorbid anxiety and alcohol abuse the Common-Factor Model and the Self-Medication Model. The Common-Factor Model presumes that no direct causal relationship exists between alcohol dependence and anxiety; instead, a third variable, which may be a genetic factor or a personality trait such as anxiety sensitivity, accounts for their relationship (Smith & Randall, 2012). The Self-Medication Model is more suitable to explain the links between CSA, alcohol use, and anxiety found in this study. This model proposes that people with anxiety disorders tend to self-medicate to alleviate the negative consequences of these conditions, such as traumatic experiences, or HIV related symptoms. Drinking alcohol may help a trauma victim cope with their symptoms, eventually leading to the later onset of more hazardous degrees of alcohol use (Smith & Randall, 2012).

Biologically, it also important to note that childhood sexual traumatic experiences put the brain in a heightened state of stress and activates the body's sensory systems through the brain's thalamus, which then activates the amygdala, a central component of the brain's fear detection and anxiety circuits (De Bellis & Zisk, 2014). Although stress is a normal part of life, when a child is exposed to chronic trauma, such as sexual abuse, the brain remains in this heightened pattern. Over time, these traumatic experiences can significantly influence a child's future behavior, emotional development, and mental health (Hiem & Nemeroff, 2001). Finally, women who have experienced sexual abuse as children are at a higher risk for developing anxiety sensitivity. Anxiety sensitivity has both heritable and developmental (e.g., childhood trauma) origins (Scher & Stein, 2003; Stein et al., 1999). Women with anxiety sensitivity have the tendency to view anxiety-related sensations as dangerous or threatening, and they are prone to certain kinds of anxiety disorders such as panic disorders (Bouton et al., 2001; Paulus & Stein, 2006).

Although substance abuse treatment programs and mental health services are common in many parts of the world, it is important to recognize the significant absence of formal mental health services in Haiti (Raviola et al., 2012). Cultural norms and beliefs may influence how mental health is perceived. In Haiti, psychological problems are distinguished between problems of the *head* and of the *heart* (Auguste & Rasmussen, 2019). According to Haitian beliefs, anxiety and depression are categorized as problems of the *head* and people usually seek family and social support before contacting a mental health professional (Auguste & Rasmussen, 2019). Recently organizations have begun

to develop culturally appropriate interventions. For example, the organization's Partner in Health and Zanmi Lasante, in collaboration with the Haitian government, developed a comprehensive community mental health intervention after the 2010 earthquake offering mental health services in underserved and rural communities (Raviola et al., 2020). Another study developed a community based medical care system, which provided medical and mental health treatments for people suffering mental health problems with lack of access to care (Rupinder et al., 2015). However, interventions targeting women living with HIV who experienced sexual trauma have not been developed.

Results from this study showed that CSA is a contributing factor for anxiety and alcohol abuse in adulthood. Thus, a longitudinal study measuring anxiety as a mediator at different time points may provide evidence on the causal effect or directional order of these associations, paving the way for the development of interventions targeting anxiety and alcohol abuse. In the future, trauma-informed interventions addressing violence, mental health problems, cultural norms, and HIV risk are especially important in Haiti, where women are at greater risk for HIV seroconversion due to sexual abuse, intimate partner violence, rape, and other related sexual traumatic events (Devieux et al., 2016; Gage, 2005; Panchanadeswaran et al., 2007).

The present study findings should be interpreted in light of certain limitations. First, due to the cross-sectional design, a causal effect of the associations found cannot be made. Although this is a cross-sectional study, it provides an insight into the pathway between traumatic experiences and alcohol abuse. Second, the sample was relatively small. A larger sample may provide further information on other risk factors associated with anxiety and alcohol abuse. Third, these findings may be limited in generalizability since we only analyzed sexual abuse and no other types of abuse. Fourth, the data collected was based on self-report; participants may have been uncomfortable with disclosing information about CSA, antiretroviral medication, and alcohol use. Participants may have responded to questions in a manner that reflected social-desirability bias. Finally, since participants were asked to recall events dating back to their childhood, these responses were subject to recall bias.

Conclusions

To our knowledge, this is the first study that analyzed the relationships between anxiety and alcohol use among HIV-positive women who suffered CSA in Haiti. We found a significant mediating effect between CSA and alcohol use through the indirect pathway of anxiety. Thus, understanding the role that anxiety plays on alcohol use among women living with HIV who have experienced CSA has the potential to contribute to more targeted care and better health outcomes for this population. Findings from this study lay the foundation for future research informing the development of culturally

tailored psychosocial and substance use prevention interventions targeting women living with HIV who have experienced CSA. This knowledge can be particularly relevant for global public health initiatives in regions with high prevalence of PLWH, such as Haiti.

Declaration of interest statement

All authors declare no conflict of interest

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