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R. M. Schwartz

Hofstra Northwell School of Medicine

K. M. Weber


G. E. Schechter

N. C. Connors

Y. Gousse

See next page for additional authors

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Authors

R. M. Schwartz, K. M. Weber, G. E. Schechter, N. C. Connors, Y. Gousse, M. A. Young, and M. H. Cohen

Psychosocial Correlates of Gender-Based Violence Among HIV-Infected and HIV-Uninfected Women in Three US Cities

Rebecca M. Schwartz, PhD,¹ Kathleen M. Weber, BSN,² Gabrielle E. Schechter, BS,³ Nina C. Connors, BA,³ Yolene Gousse, MPH,⁴ Mary A. Young, MD,⁵ and Mardge H. Cohen, MD^{2,6}

Abstract

Gender-based violence (GBV) is common among women with and at risk for HIV, yet little is known about the GBV associated psychological factors that could be modifiable through behavioral interventions. The current study examined the associations between some of these psychological factors (i.e., hopelessness, consideration of future consequences, self esteem), mental health symptoms, substance abuse, and GBV among a sample of 736 HIV-infected and sociodemographically similar uninfected participants in the Women's Interagency HIV Study (WIHS). Results indicated high rates of lifetime GBV among the sample (58%), as well as high rates of childhood sexual abuse (CSA) (22.2%). HIV-infected women were more likely to be hopeless and to experience lower consideration of future consequences as compared to uninfected women. Multivariable analysis indicated that current non-injection drug use and a history of injection drug use were the main correlates of GBV and CSA, even when other psychosocial variables were included in analytic models. Being born outside of the US reduced the likelihood of GBV and CSA. Future research directions and intervention implications are discussed.

Introduction

WOMEN WITH HISTORIES OF GENDER-BASED VIOLENCE (GBV; a woman's experience of childhood or adult physical, sexual, or psychological abuse) are at significantly greater risk for acquiring HIV.¹⁻⁴ Women with such histories may lack self-efficacy over sexual practices and experience difficulty in negotiating condom use with high-risk partners, placing them at higher risk for acquiring HIV.^{5,6} Additionally, prevalence studies estimate that 50-75% of women who are already HIV-infected have experienced GBV in their lifetime, and this is especially true for ethnic minority women.^{2,4,7-9} It is important to examine how GBV impacts both HIV-infected and uninfected women to better understand the pathways that lead to risk behavior (e.g., risky sex, substance use) among both groups, as well as the pathways that lead to HIV transmission risk among HIV-infected women due to poor adherence to antiretroviral therapies and poor engagement in care.¹⁰⁻¹³

A significant correlation between history of GBV and increased use and abuse of psychoactive substances is well documented among both HIV-infected and at-risk women.^{1,3,14,15} Adult and childhood violence increases the likelihood that women will experience problem drinking, and an earlier onset as well as eventual diagnosis of alcohol abuse.¹⁶⁻¹⁸ GBV is also associated with higher rates of cocaine and injection drug use.^{1,19-21} These substances are hypothesized to be used as coping strategies and/or a form of self medication used to manage the emotional consequences of abuse.^{6,22} Gender-based violence, HIV, and substance use are co-occurring epidemics among low-income urban women, which impose an excess burden of disease on vulnerable populations.^{23,24}

Symptoms of mental health difficulties also play a role in the influence that GBV has on HIV. PTSD and depression are common among women with GBV histories.²⁵⁻³⁰ Women who have experienced GBV are four to seven times more likely to report experiencing minor and severe depressive

¹Department of Population Health, North Shore-LIJ Health System, Hofstra North Shore-LIJ School of Medicine, Great Neck, New York.

²Core Center, Cook County Health and Hospital System, Chicago, Illinois.

³STAR Health Center, Department of Medicine, and ⁴Department of Community Health Sciences, School of Public Health, SUNY Downstate Medical Center, Brooklyn, New York.

⁵Department of Medicine, Division of Infectious Diseases, Georgetown University Medical Center, Washington, District of Columbia.

⁶Departments of Medicine, Stroger Hospital and Rush University, Chicago, Illinois.

symptoms compared to nonabused women.^{23,31} Compared to uninfected women, some studies have found higher depression rates among women living with HIV.³² Furthermore, meta-analyses have estimated PTSD prevalence rates ranging between 31–84% among women with histories of GBV, significantly higher than women in the general population.²⁵ Evidence suggests that mental health disorders increase both risk for substance abuse and inconsistent condom use.^{1,33,34} Studies have found that women with GBV-related PTSD and depression have four times greater odds of having unprotected sex with a risky partner (i.e., HIV-infected, injection drug user and/or non-monogamous).^{25,34}

Among HIV-infected and at-risk women, rates of childhood (i.e., prior to age 18) sexual abuse in particular (CSA; a form of GBV when perpetrated against girls) are extremely high, ranging from 32 to 76%.^{35–38} Studies indicate that CSA is the type of trauma most associated with PTSD symptoms among women.^{39–42} Additionally, the impact of CSA on mental health and functioning is associated with increased likelihood of engaging in both HIV acquisition and transmission risk behavior including substance abuse (particularly, injection drug use) and risky sex.^{15,38,43–45} One study found that CSA was associated with an over 7-fold increase in HIV risk behaviors among women.¹⁵ Furthermore, it is important to include CSA in definitions of GBV, as well as independently, as it is an important indicator for engagement in care and confers increased risk for poor antiretroviral adherence among HIV-infected women.^{43,44}

Despite this knowledge, HIV risk reduction interventions using traditional models of behavioral intervention have not been very effective for women at-risk for HIV with GBV histories, as well as among HIV-infected women with GBV histories.^{4,46} Researchers have recognized the need to employ more comprehensive, context driven, syndemic models to examine and then modify the complex web of associations between poverty, GBV, substance use, mental health symptom burden, and sexual risk behavior.^{23,24} Intervention design incorporating these simultaneous epidemics should address potentially modifiable psychological risk factors that are cognitive and behavioral in nature, that are directly and indirectly associated with GBV including feelings of hopelessness, the ability to consider future consequences, self-esteem, and self-efficacy, among others.^{8,19}

This study aims to identify possible psychological variables to target for HIV risk reduction interventions and improved psychosocial well-being among both HIV-infected and uninfected women with GBV histories including childhood sexual abuse.

Methods

Participants and procedure

Data for the current study were generated from a Gender-Based Violence (GBV) substudy of the Women's Interagency HIV Study (WIHS). The WIHS, a longitudinal multicenter cohort study of HIV-infected and demographically comparable HIV-uninfected women, enrolled 2060 active participants enrolled either during 1994–1995 or 2001–2002 in six cities across the United States. Women attend WIHS core study visits every 6 months and they complete an interviewer-assisted questionnaire in English or Spanish, in addition to a clinical exam and provision of biological

specimens. The methodology, training, quality assurance activities, and cohort characteristics of the WIHS have been published elsewhere.^{47,48}

A total of 736 WIHS participants from three sites (i.e., Brooklyn, Chicago, and Washington, DC) who provided written informed consent were enrolled in the GBV substudy from October 1, 2009 to September 30, 2010. The majority of participants completed the substudy questionnaires following their WIHS core visit.

Measures

The current study included supplemental measures completed for the GBV substudy, specifically, and select measures from the corresponding WIHS core study visit. Measures administered as part of the GBV substudy have been widely used with similar populations and retain strong psychometric properties as described below. They include an indicator of GBV history, and measures of PTSD symptoms, consideration of future consequences, hopelessness, and self-esteem. The WIHS core visit measures included all demographic information, depressive symptoms, substance use, and childhood sexual abuse history.

Lifetime history of gender-based violence (GBV) was reassessed at the time of the GBV substudy visit via a self-report question. Each participant was queried as to whether she experienced any physical or sexual abuse occurring at any point in her lifetime. Psychological/emotional abuse alone was not re-assessed as a distinct primary exposure of interest for this study and therefore not included in our definition of GBV. We categorized a participant as having a lifetime GBV history if she answered “yes” to that question. Childhood (prior to age 18) sexual abuse was included both as part of the definition of GBV and separately in the analytic models, as it is considered an independent predictor of mental health difficulties above and beyond other types of GBV.^{46,49} We used the historical core WIHS visit data to categorize CSA. Each participant was asked at a previous WIHS visit as to whether she had experienced sexual coercion (including any forced/unwanted sexual act) at any point in her lifetime. If a participant responded “yes” then the age/s of sexual coercion was asked. For the purposes of the current study, any “yes” responses that were associated with an age less than 18 was coded as affirmative for having experienced childhood sexual abuse.

Depressive symptoms and substance use were assessed during the WIHS core interview. All other independent variables were assessed as part of the GBV substudy. All variables were dichotomized. Depression symptoms were measured using the Center for Epidemiologic Studies-Depression Scale.⁵⁰ Sum scores above 16/60 were considered indicative of depressive symptoms (Cronbach's alpha = 0.91). Substance use variables included current non-injection drug use (NIDU; (any non-injection drug use over the past 6 months, excluding tobacco), current moderate/heavy alcohol use (\geq three drinks per week⁵¹), and any history of injection drug use (IDU). Self-esteem was assessed using the Rosenberg Self-Esteem Scale⁵² with sum scores less than 15/30 indicative of low self-esteem (Cronbach's alpha = 0.87). Hopelessness was assessed using the Beck Hopelessness Scale⁵³ with sum scores greater than 3/20 indicative of greater hopelessness (Cronbach's alpha = 0.86). The

Consideration of Future Consequences Scale⁵⁴ was used to assess the degree to which a person considered the future when making decisions about current behavior. A mean score of less than 3/5 was indicative of lower consideration of future consequences⁵⁴ (Cronbach's alpha=0.67).

PTSD symptoms were assessed among the subset of sub-study participants who reported a history of GBV. Women cited the abuse experience that they considered "most stressful" and answered questions regarding PTSD symptoms specific to that abuse experience. PTSD symptoms were measured using the PTSD Checklist-Specific (PCL-S).⁵⁵ Participants with sum scores above 44 (range is 17–85) were considered as "probable PTSD"⁵⁶ (Cronbach's alpha=0.93).

Participants' demographic data was collected as part of the current or baseline WIHS core interview. Demographic variables included in the current study were: HIV status, self-reported age at time of substudy data collection (younger than age 45, or 45 and older), education (high school graduate or not), current employment status, annual household income (\$18,000 per year or less), US-born, race/ethnicity (African American, Hispanic, White, other), and marital status (married/living with partner or not).

Data analysis

Bivariate associations were examined using Pearson Chi-square analyses including differences in psychosocial variables by HIV status and differences in psychosocial variables by GBV history and by CSA history. Multivariate associations between demographic, psychosocial, and GBV variables were examined using logistic regression. Significance was determined using *p* values of <0.05 and 95% confidence intervals. SPSS version 21 (IBM) was used for data analysis.

Results

Demographic data indicated that almost three quarters of the sample identified as African American, 13% Hispanic, 10% White, and 3% other. Twenty-one percent were not born in the US. The sample also represented a low socioeconomic status (SES) group as 57% were unemployed, 53% earned less than \$18,000 annually, and 33% had not finished high school. Sixty-nine percent were not married nor living with a partner. The mean age at the substudy visit was 45.17 (SD=9.29). Seventy-three percent were HIV-infected and 27% were uninfected.

Overall, 58% of participants (total *n* = 735, one participant did not answer) reported experiencing any lifetime GBV (physical or sexual abuse only) in their lifetime and 22.2% (total *n* = 698, 39 people did not answer) reported a history of CSA. Mental health burden was relatively high with 30.1% of the sample reporting probable depression, 4.4% reporting low self-esteem, 20.9% reporting high levels of hopelessness, and 19.4% reporting low consideration of future consequences. In terms of substance use, 16.5% reported current NIDU and 12.3% reported current problem drinking. Rates of current injection drug use were too low to examine, however, 13.6% reported a lifetime history of IDU. Among those with a lifetime GBV history, 15.3% reported probable PTSD.

When lifetime GBV, mental health, psychosocial and demographic variables were examined by HIV status, there were a number of significant differences (Table 1). Chi-square analyses indicated that HIV-infected women were

TABLE 1. DESCRIPTIVE INFORMATION BY HIV STATUS

	HIV-uninfected (n = 202)	HIV-infected (n = 534)	<i>p</i> Value
Ever experienced GBV	55.9%	58.8%	0.478
Ever experienced CSA	19.0%	23.3%	0.220
Probable depression	27.2%	31.0%	0.324
PTSD symptoms (n = 421 ^a)	12.7%	16.4%	0.360
Low consideration of future consequences*	13.9%	21.7%	0.018
High hopelessness*	12.6%	24.1%	0.001
Low self esteem	4.0%	4.5%	0.750
Problem drinking*	17.8%	10.5%	0.007
Non-injection drug use*	21.8%	14.6%	0.019
History of injection drug use	10.4%	15.1%	0.109
Married/living with partner*	38.7%	27.8%	0.006
Age 45 and older*	42.1%	51.3%	0.025
Did not graduate high school	29.9%	34.1%	0.270
Unemployed*	45.5%	61.6%	0.000
Low income*	44.9%	56.0%	0.010
Born outside US*	26.2%	18.5%	0.021
Race:			
White	5.9%	11.4%	0.100
African American	76.7%	73.4%	
Hispanic	12.9%	12.5%	
Other	4.5%	2.6%	

**p* < 0.05; ^aOnly those with GBV histories completed PTSD symptom measure.

significantly more likely to have a lessened ability to consider future consequences when making decisions, were more likely to be hopeless, were older, and were more likely to be unemployed and lower income. Conversely, HIV-uninfected women were more likely to engage in moderate to heavy drinking, were more likely to engage in current non-injection drug use, were more likely to be married or living with a partner, and were more likely to have been born outside the US.

Given the nonsignificant differences between HIV-infected and uninfected women on lifetime GBV and CSA in the current study, we examined differences between those who experienced lifetime GBV and CSA and those who did not, without stratifying by HIV status. Chi-square analyses indicated significant differences between individuals who experienced lifetime GBV and those that did not on both psychosocial and demographic variables (Table 2). Women who experienced GBV had higher rates of probable depression (Chi Square = 10.30), higher rates of current NIDU (Chi Square = 25.62), and were more likely to have a history of IDU (Chi Square = 19.95). Results of multivariate logistic regression indicated that current NIDU was associated with over a 2.6 times increased likelihood of having experienced lifetime GBV, and having a history of IDU was also associated with over a 2.6 times increased likelihood of having experienced lifetime GBV. In addition, being born outside

TABLE 2. PSYCHOSOCIAL AND DEMOGRAPHIC ASSOCIATIONS WITH GENDER-BASED VIOLENCE HISTORY

	No GBV history (n=308)	GBV history (n=427)	p Value
Probable depression*	23.4%	34.6%	0.001
Low consideration of future consequences	21.5%	17.9%	0.275
High hopelessness	19.5%	21.8%	0.456
Low self esteem	2.9%	5.5%	0.104
Problem drinking	10.4%	13.7%	0.136
Non-injection drug use*	8.4%	22.5%	0.000
History of injection drug use*	6.8%	18.3%	0.000
Married/living with partner	30.9%	30.9%	0.969
Age 45 and older*	42.9%	52.5%	0.008
Did not graduate high school	35.4%	31.1%	0.226
Unemployed*	51.3%	61.5%	0.006
Low income*	47.1%	56.8%	0.012
Born outside US*	29.9%	14.2%	0.000
Race			
White	8.1%	11.3%	0.382
African American	76.0%	73.3%	
Hispanic	12.0%	12.8%	
Other	3.9%	2.6%	
HIV-infected	71.1%	73.3%	0.515

*p<0.05

the US reduced the odds of experiencing lifetime GBV by half (Table 3).

Similar patterns were found in those who experienced childhood sexual abuse, specifically, in that participants who experienced CSA had higher rates of probable depression (Chi Square=5.81), higher rates of hopelessness (Chi Square=5.49), higher rates of current NIDU (Chi Square=13.28), and were more likely to have a history of IDU (Chi Square=27.78), in addition to a number of demographic factors (Table 4). Multivariate logistic regression indicated that, similar to overall lifetime GBV, current NIDU was associated with over a 2.1 times greater likelihood of having experienced CSA, and having a history of IDU was associated with over a 2.5 times increased likelihood of having experienced CSA. In addition, being born in the US, and White race increased the odds of having a history of childhood sexual abuse (Table 5).

Given the increased rates of low consideration of future consequences and hopelessness among HIV-infected women

TABLE 3. LOGISTIC REGRESSION MODEL OF CORRELATES OF GENDER-BASED VIOLENCE HISTORY

	Odds ratio	95% Confidence interval	p Value
Probable depression	1.39	0.96–2.01	0.083
Non-injection drug use*	2.65	1.61–4.34	0.000
History of injection drug use*	2.58	1.46–4.54	0.001
Age 45 and older	1.07	0.76–1.52	0.685
Unemployed	1.06	0.73–1.54	0.770
Low Income	1.15	0.79–1.66	0.476
Born outside US*	0.52	0.35–0.78	0.002

*p<0.05

TABLE 4. PSYCHOSOCIAL AND DEMOGRAPHIC ASSOCIATIONS WITH CHILDHOOD SEXUAL ABUSE HISTORY

	No CSA history (n=544)	CSA history (n=154)	p Value
Probable depression*	27.4%	37.3%	0.016
Low consideration of future consequences	18.1%	24.2%	0.110
High hopelessness*	18.9%	27.8%	0.019
Low self esteem	4.1%	6.5%	0.198
Problem drinking	11.1%	15.6%	0.163
Non-injection drug use*	14.0%	26.6%	0.000
History of injection drug use*	9.4%	26.5%	0.000
Married/living with partner	32.0%	28.9%	0.500
Age 45 and older*	44.5%	64.3%	0.000
Did not graduate high school	33.0%	28.8%	0.325
Unemployed	56.7%	55.8%	0.832
Low income	52.4%	53.4%	0.843
Born outside US*	24.6%	7.1%	0.000
Race*			
White	7.0%	21.4%	0.000
African American	77.3%	67.6%	
Hispanic	12.4%	8.4%	
Other	3.3%	2.6%	
HIV-infected	70.8%	76.0%	0.207

*p<0.05

as compared to the uninfected women and the significant impact of lifetime GBV and CSA on NIDU among all participants, we conducted post hoc analyses to determine whether there was any interaction between lifetime GBV and the aforementioned psychosocial variables on NIDU, as well as any interaction between CSA and the psychosocial variables on NIDU among the HIV-infected women in the study. Unadjusted analyses indicated a significant interaction between lifetime GBV and hopelessness on NIDU (OR=2.45, 95% CI=1.37, 4.38) and a significant interaction between CSA and hopelessness on NIDU (OR=2.35, 95% CI=1.04, 5.31) among the HIV-infected participants. Specifically, NIDU was most common among those HIV-infected participants with a lifetime GBV history and high hopelessness (26.3% engaged in NIDU) as compared to those with no

TABLE 5. LOGISTIC REGRESSION MODEL OF CORRELATES OF CHILDHOOD SEXUAL ABUSE HISTORY

	Odds ratio	95% Confidence interval	p Value
Probable depression	1.03	0.66–1.63	0.888
High hopelessness	1.44	0.88–2.36	0.148
Non-injection drug use*	2.12	1.32–3.42	0.002
History of injection drug use*	2.59	1.52–4.40	0.000
Age 45 and older	1.52	0.99–2.33	0.058
Born outside US*	0.38	0.19–0.76	0.006
Race*			
White			
African American	0.31	0.18–0.53	0.000
Hispanic	0.27	0.12–0.60	0.001
Other	0.31	0.08–1.24	0.099

*p<0.05.

lifetime GBV history and low hopelessness (8.0% engaged in NIDU). Similarly, NIDU was most common among HIV-infected participants with a CSA history and high hopelessness (28.1% engaged in NIDU) as compared to those with no CSA history and low hopelessness (11.9% engaged in NIDU). However, in adjusted analyses, being unemployed was the strongest variable associated with current engagement in NIDU (OR = 2.24, 95% CI = 1.13, 4.41) and the interactions became non-significant.

Discussion

The findings of the current study underscore that substance use is a recognized, but essential and undertreated correlate of lifetime GBV. Current non-injection drug use and a history of injection drug use were most strongly associated with lifetime GBV above and beyond the other psychosocial variables of interest in the current study. Although the current study sought to understand modifiable psychosocial correlates of lifetime GBV such as self-esteem, hopelessness, and consideration of future consequences, in addition to mental health difficulties, these findings suggest that the modifiable factor of non-injection drug use may be the most salient factor to target in interventions. This is especially important given the strong associations between substance use and sexual risk, as well as between substance use and antiretroviral adherence among HIV-infected women.^{20,27,43,44,49} Preliminary research of the efficacy of trauma focused interventions among substance abusing women indicate that these interventions reduce PTSD symptoms and have a modest impact on substance use.⁵⁷ Future research is imperative in order to understand the most effective treatment approaches for low income, ethnic minority women with histories of GBV and substance use. It is possible that engagement in substance abuse treatment alone would mitigate PTSD symptoms, but it is more likely that researchers need to consider syndemic models of interventions that are culturally relevant for the population.

Contrary to prior studies, there were no statistically significant differences by HIV status in terms of rates of lifetime GBV, CSA, depression or PTSD symptoms. However, there were significant differences on psychosocial variables such that HIV-infected women were more likely to have low consideration of future consequences and higher levels of hopelessness. Further analysis indicated that hopelessness was particularly important among the HIV-infected women and, in the unadjusted model, the interaction between hopelessness and both lifetime GBV and CSA conferred a significant impact on engagement in current NIDU. Although this interaction was not significant when employment was considered, it again points to the fact that there are aspects of mental health specific to women with HIV infection that need to be considered in syndemic approaches to trauma and substance use intervention. We may need to consider focusing on reducing hopelessness in behavioral interventions that involve HIV-infected women as it is a modifiable variable that can be effectively targeted in cognitive behavioral interventions and, in particular, new therapy techniques that focus on future orientation.^{58,59} Further, the fact that the HIV-infected women had a diminished ability to consider future consequences as compared to their HIV-uninfected counterparts indicates that this modifiable factor may also be

important to include in behavioral interventions targeted toward HIV-infected women. Community-level interventions based on empowerment models have been successful in reducing GBV incidence among at-risk women and in decreasing HIV risk behaviors.^{60,61} Perhaps these models can be applied to HIV-infected women grappling with substance use issues as well, particularly if community empowerment impacts individual-level hopelessness and consideration of future consequences. Further, targeting economic empowerment as indicated by the strong effect of unemployment on non-injection drug use among the HIV-infected women in the study is also likely an important construct to target at the macro-level.

The HIV-infected women did have higher rates of lifetime GBV and CSA in the current study although the differences were not statistically significant. The lack of significance may be due to sample size issues or it could indicate that the two groups are particularly well matched demographically and that perhaps demographic factors placed all the women at equally higher risk for GBV/CSA histories as compared to their HIV status. Prospective research designs following young women at risk for GBV would be useful in clarifying some of the pathways that place both HIV-infected and uninfected women at risk for violence exposure. Further, given the clear risk for GBV among low SES women across HIV status, it is possible that family-based intervention during youth and adolescence among uninfected/at-risk individuals and families may be most beneficial. Future intervention development among HIV-uninfected women with GBV histories may benefit from initially focusing on the impact of GBV on substance use to determine whether substance use treatment is enough to reduce trauma symptoms given the strong association between GBV and substance use among the uninfected women in this sample.

There were unexpected demographic findings in the current research that warrant discussion. Results indicated that being born outside of the US was possibly protective in terms of GBV and CSA given the lower rates among non-US born participants (GBV: 62.9% of the US born participants vs. 39.5% of the non-US born; CSA: 25.8% of the US born participants vs. 7.6% of the non-US born participants). Literature typically points to immigrant women being at particularly high risk for victimization, particularly intimate partner violence, due to many factors including the stress of immigration, the experience of discrimination and marginalization in the US, loss of social networks, and increased financial stress.⁶²⁻⁶⁶ Also, there is often under-reporting of IPV, in particular, among immigrant women, largely having to do with structural barriers, cultural barriers, and fears of the US justice system, including possible fears of deportation.⁶⁷⁻⁶⁹ Given this information, it is possible that we were seeing an under-reporting of abuse among our non-US born participants. However, it is also possible that among the current study participants, there is something protective about being born outside of the US, perhaps having to do with social networks and support that do exist among the immigrant women in our study. This possibility is augmented by the fact that, in the current study, White race was a risk factor for history of childhood sexual abuse and White race was also highly correlated with non-immigrant status. Further, the majority (62%) of women who identified as non-US born also identified as being from the West Indies. More research with

West Indian immigrants is needed, but initial studies indicate that the pathways between GBV and mental health issues differ between African Americans and those of West Indian descent (both immigrants and non-immigrants).⁷⁰

The study has a number of limitations. First, we used a general definition of lifetime GBV and CSA that did not take into account psychological abuse, threats of abuse, severity of abuse, duration of abuse, or perpetrator. Previous research has indicated differences in outcomes due to such factors, so it is possible that results may have varied should we have incorporated an ordinal scale of abuse.^{38,43,44} Further, the GBV variable and CSA variable overlapped in that CSA was part of the definition of GBV, thereby preventing us from analyzing the relative contribution of physical violence, physical violence during childhood, or violence only in adulthood. Second, our psychosocial variables were collected at one time point and it is possible that a longitudinal review of psychosocial variables would indicate fluctuations that were congruous with current abuse. Our rates of current GBV (not lifetime) were too small to examine in data analysis. Similarly, due to the cross-sectional nature of the psychosocial variables, we were unable to determine causality, particularly in terms of the associations between HIV status and hopelessness and between HIV status and consideration of future consequences. Third, we relied on self-report data regarding violence experience, mental health, and substance use. As mentioned earlier, this may have resulted in under-reporting, particularly among more marginalized groups such as immigrant women, but most of the women in the current study have been in the WIHS for at least 10 years and, as such, are generally comfortable responding to questions of a sensitive nature. Finally, the WIHS participants in the current study have been in the WIHS cohort for either 10 or 15 years. As such, they have been more exposed to routine follow-up exams and data collection as compared to women living with HIV in the general population. Therefore, results of the current study may not be generalizable to the population of women living with HIV or at risk for HIV in the US.

Future research should examine the impact of substance use treatment on PTSD symptoms among women with GBV and/or CSA histories, as well as to expand trauma focused mental health services to women with substance use issues. Preliminary intervention trials have had moderate success in PTSD symptom reduction among HIV-uninfected women in substance use treatment.⁵⁷ Further, the current study underscores that, among women with HIV infection, it may be important to target factors such as hopelessness and decreased ability to consider future consequences in interventions whether they have to do with substance use reduction, sexual risk reduction, or promoting adherence to HIV medical care. Finally, multi-level interventions and interventions coordinated across multiple settings such as clinics, homes, schools, and communities are likely to have the greatest impact on the syndemic, co-occurring nature of HIV, poverty, violence, substance use, and mental health issues among women.

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Address correspondence to:

Rebecca Schwartz, PhD

Department of Population Health

North Shore-LIJ Health System

Hofstra North Shore-LIJ School of Medicine

175 Community Drive

Great Neck, NY 11021

E-mail: rschwartz3@nshs.edu