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Intersectional Stigma and Barriers to Engagement in Care among Haitian Women with HIV

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INTERSECTIONAL STIGMA AND BARRIERS TO ENGAGEMENT IN CARE AMONG HAITIAN WOMEN WITH HIV

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Edwine Valérie Daniel

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To: Dean Tomás R. Guilarte
Robert Stempel College of Public Health and Social Work

This dissertation, written by Edwine Valérie Daniel, and entitled Intersectional Stigma and Barriers to Engagement in Care among Haitian Women with HIV, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this dissertation and recommend that it be approved.

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The dissertation of Edwine Valérie Daniel is approved.

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Florida International University, 2021

DEDICATION

This dissertation is dedicated to my family.

To my grandfather, Emmanuel Fils-Aimé, “Papi Manno”, who passed away earlier this year. His own academic achievements and occupation as a Mathematics Professor inspired me to always continue with my education.

To my parents Romuald and Eveline Daniel, whose admirable strength and work ethic have always been an example to follow.

To my brothers Reginald and Rudolph for always supporting, protecting, and loving me.

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ABSTRACT OF THE DISSERTATION

INTERSECTIONAL STIGMA AND BARRIERS TO ENGAGEMENT IN CARE AMONG HAITIAN WOMEN WITH HIV

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Women account for about half of HIV infections globally. After sub-Saharan Africa, the Caribbean is the most HIV-affected region in the world, with half of the region's people living with HIV (PLHV) in Haiti and where the overwhelming majority of new HIV infections occur among adolescents and young women. Guided by Turan and colleagues' conceptual framework for HIV-related stigma, engagement in care, and health outcomes, this cross-sectional study examined the patterns of intersectional stigma and relationships with the ability and willingness of women to stay engaged in care when living with HIV.

This study is a secondary analysis of baseline data collected from 276 PLHV in Haiti. The measures included: Perceived HIV Stigma; Centers for Epidemiological Studies Depression (CES-D); HIV visits and treatment adherence; Sexual Relationship Power (SRP); Childhood Sexual Abuse (CSA); and sexual risk behaviors.

A total of 173 women living with HIV (WLHV) participated in the study, with 67% experiencing high levels of HIV stigma. Participants had high levels of consistent adherence, with 69% reporting zero missed doses in the past seven days. Mediation analyses revealed an indirect effect via depressive symptoms between history of CSA

and higher perceived stigma (β = 0.17, 95% CI: .015 - .40). However, we found no indirect effect of perceived stigma on treatment adherence or visits adherence in this sample. Our findings show that WLHV with high levels of perceived HIV stigma reported significantly lower levels of Sexual Relationship Power (β = -0.290; t = -2.998; p =.003; R^2 = .176). Additionally, statistically significant differences were found between participants with low and high levels of SRP and engagement in HV risk behaviors where those with low SRP engaged in higher levels of risk behaviors such as alcohol use (p<.0001), drug abuse (p=.017), sex exchange (p=.019) and having multiple sexual partners (p =.008).

The present study helps fill in the knowledge gap on the association between HIV-related stigma and multiple factors (interpersonal and sexual relationship power, risk behaviors and psychological/mental health), suggesting the importance of contextual factors when examining the relationship between HIV-related stigma and health among Haitian WLHV.

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ABBREVIATIONS AND ACRONYMS

ART	Antiretroviral Therapy
AUC	Access to and Utilization of Care
AUDIT	Alcohol Use Disorders Identification Test
CBSM-A	Cognitive-Behavioral Stress Management intervention
CES-D	Centers for Epidemiological Studies Depression Scale
CPCRA	Community Programs for Clinical Research on AIDS
CSA	Childhood Sexual Abuse
DMD	Decision-Making Dominance
DS	Drug and Sexual Risk Behavioral Assessment
GHESKIO	Groupe Haitien d'Etude du Sarcome de Kaposi et des Infections Opportunistes
HIV	Human Immunodeficiency Virus
IRB	Institutional Review Board
PLHV	People Living with HIV
PTSD	Post-Traumatic Stress Disorder
RC	Relationship Control
SPSS	Statistical Package for the Social Sciences
SRP	Sexual Relationship Power scale
SSA	Sub-Saharan Africa
STI	Sexually Transmitted Infections
UNAIDS	The Joint United Nations Programme on HIV/AIDS
VEE	Vaginal Episode Equivalent
WLHV	Women Living with HIV

CHAPTER I: INTRODUCTION

BACKGROUND AND SIGNIFICANCE

Human Immunodeficiency Virus (HIV) disproportionately affects women.[1–3] Globally, girls and women make up more than half of the 36.9 million people living with HIV.[1–3] Young women aged 15-24 are infected with HIV at rates twice that of young men, and young women alone account for nearly a quarter of all new HIV infections.[1–4] In addition, AIDS is still the leading cause of death for women aged between 15 and 49 years worldwide.[5] In sub-Saharan Africa (SSA) and African diaspora populations, there is a disproportionate burden of HIV infection along with high levels of HIV-related stigma and disparity between genders.[6–8]

After sub-Saharan Africa, the Caribbean is the most HIV-affected region in the world, with half of the region's persons living with the virus being in Haiti.[8–11] In 2018, UNAIDS reports showed that women are disproportionately affected by HIV in Haiti and of the 150,000 adults living with HIV, 58% were women.[9,11,12] Over 40% of new HIV infections in Haiti occur among adolescents and youth, 80% of which occur among young women.[9,11,12] Studies conducted in developing countries such as South Africa and other African countries show that detrimental traditional practices, intimate partner violence, childhood abuse, and discriminatory laws strengthen unequal power dynamics between men and women, with women particularly disadvantaged.[1–4,10,11,13,14] HIV is not only driven by gender inequality, but it also engrains gender inequality, leaving women more vulnerable to its impact.[1–4,10,11,13–15]

People living with HIV (PLHV) have been victims of stigmatization ever since the epidemic began in the 1980s.[16] Stigma is now considered a singular and often hidden driver of global burdens of disease, adversely affecting access and uptake of health care and medical innovation and undermining considerable public outlays to improve community health.[17] HIV-related stigma has been shown to undermine prevention, care, treatment, and the well-being of people living with HIV and is particularly lethal for Black women living with HIV.[17,18] Studies indicate that Black women experience higher morbidity and mortality when compared with their White counterparts.[19,20]

HIV stigma in Black women may be intensified by preexisting social inequities based on gender, age, and race.[19,20] Race and gender are strongly connected to health outcomes, including gaps along the HIV care continuum.[20,21] Still, much of the HIV prevention and intervention work for marginalized Black women have fallen short of focusing on the multilayered nature of health for women of color.[20,21] In much of the existing HIV work, class, race, sexuality, gender, and socioeconomic status are largely treated as disconnected categories rather than interconnected ones.[18,20–22] Consequently, gender is often secluded and treated as independent predictors to health outcomes.[19] Understanding HIV risk and HIV health outcomes may be particularly difficult among individuals who hold multiple identities or conditions simultaneously, including being black, being female, having HIV, being alcohol users, and having low SES. [18–21] Yet, the burden of the HIV epidemic on Black women, and the gender-related barriers to detection and treatment, are rarely addressed explicitly.[17]

Hazardous and harmful alcohol consumption is also adversely linked to several relevant HIV health behaviors and outcomes, including non-adherence to ART, risky sexual

behavior, HIV disease progression, childhood trauma, sexual relationship power and earlier death.[7,21,23–29] Given the documented link between alcohol use and increased risk for HIV transmission, women with alcohol use disorders are a particularly vulnerable population.[7,29–32] Risky alcohol consumption among women may often put them at further risk of being victimized as they potentially become easy targets for those who intend to engage in sex with them.[31,33]

Researchers within the fields of gender and alcohol have identified gender constructs (sexual relationship power) and alcohol constructs (alcohol use disorder) as significant determinants of unprotected sex. [4,7,34–39] Persistent power imbalances often limit women's abilities and willingness to engage in care and place them at higher risk for HIV infection.[36,37,40] To date, the sexual relationship power scale (SRP) has been examined in a handful of studies and results show that women with high SRP may conceivably pick sexually safer relationships than their counterparts with low SRP. [7,28,29,32,36,37,40]

Traumatic life experiences such as childhood sexual and physical abuse are characterized as having profound and lasting effects on health-related behaviors.[41,42] PLHV report disproportionately high levels of exposure to traumatic events in childhood as well as in adulthood.[28,41,43,44] Exposure to trauma is often associated with problematic drinking and mental health conditions such as depression, posttraumatic stress disorder (PTSD), and anxiety, which PLHV experience at disproportionately high rates. [28,41,43–51].Without proper treatment, living with HIV and being exposed to trauma resulting from childhood sexual abuse can have long-lasting, harmful effects on HIV outcomes.[28,52,53] While limited, evidence suggests that individuals who have experienced sexual trauma or interpersonal violence may interfere with a woman living with HIV's (WLHV) ability to

adhere to her medication and be retained in care over time.[21,28,40,45,52,54] Studies also show that nondisclosure of their HIV status to their sexual partners has been linked to risky sexual behavior, reduced medication adherence and poor engagement with healthcare among women.[7,55,56] While those studies have investigated the predictors of unprotected sex and condom use among women, very few have examined all of these other factors, relationship power, childhood trauma and alcohol use among a sample of Haitian women with HIV.[7,11,28,29,32,38,45,57,58]

Addressing current HIV-related stigma and the impact on multiple factors (interpersonal factors, psychological resources, mental health and stress processes) among Black women requires that intersectionality be taken into account. Our understanding of the factors that have an impact on the health of Black women is limited when we regard these categories as distinct or static identities.[22,59–62] Intersectionality conceptualizes these categories as mutually constructed and fluid, continually shaping and shaped by power dynamics.[22,59–62] HIV-related stigma is identified as a barrier to both HIV prevention and engagement in care. Still little is known about the mechanisms through which stigma leads to worse health behaviors or outcomes.[22,33,54,60,63]

There is little understanding of how stigma associated with multiple identities (i.e., being a female, having HIV and alcohol users) affects adherence to HIV treatment. This knowledge could help future interventions for groups at high risk for multiple stigmas and will have relevance beyond HIV, because intersectional stigma may amplify negative effects for a variety of health issues. The purpose of this study is to understand the role of such intersectional stigma in treatment experience and outcomes for women living

with or vulnerable to HIV infection and to identify the associated factors in low resource and HIV endemic settings.

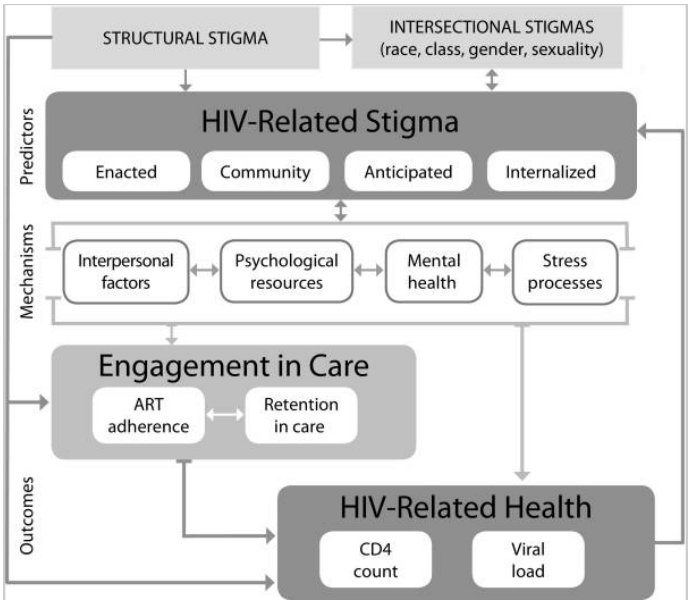
PURPOSE OF THE STUDY

Guided by the Conceptual Framework for HIV-Related Stigma, Engagement in Care, and Health Outcomes from Turan and colleagues, the proposed research examines the associations of intersectional stigma and interpersonal, psychological, mental health factors, and HIV-related health outcomes. [59,63,64]

THEORETICAL FRAMEWORK

Figure 1. Adapted Conceptual Framework for HIV-Related Stigma, Engagement in Care, and Health Outcomes

The proposed study's conceptual model is based on the HIV-related Stigma Framework developed by Turan and colleagues and modified to reflect their recent work incorporating an intersectional approach.[54,65] This model was chosen because it highlights the role of specific dimensions of HIV-related stigma in shaping engagement in HIV care and health outcomes of those living with HIV.[59,65] It also draws inspiration from the minority stress model, which was developed to understand the effects of minority sexual orientations on mental health.[59,66] The model posits that individuals who are characterized as members of marginalized



groups experience more social stress than do their counterparts because of their minority statuses and identities (e.g., gender, HIV serostatus) which may have a detrimental effect on their health. In terms of intersectional and structural stigmas, the conceptual framework proposes that individual-level dimensions of HIV-related stigma operate through interpersonal factors, psychological resources, mental health and biological stress processes.[54,59,65] We conceptualize concealment of one's HIV status as one of the downstream effects of these dimensions of stigma. In **Figure #1** there are four main quadrants representing 1) Structural stigma (public stigma) and intersectional stigma (internalized stigma like gender, identity/social position, intersecting), 2) predictors or dimensions (enacted, community, anticipated, internalized), 3) mechanisms for effects on health (interpersonal factors, psychological resources, mental health and stress processes) 4) engagement in care (ART adherence, retention in care) and clinical health outcomes (disease progression, CD4 counts, and viral loads).[54,59,65`]

RESEARCH AIMS

The current study examines the associations between HIV-related stigma, interpersonal (e.g., sexual relationship power, sexual risk behaviors) and psychological/ mental health variables (depressive symptoms, history of childhood trauma) and their impact on HIV health outcomes (HIV care visits and medication adherence).

Aim 1: To understand the associations between HIV-related stigma, depressive symptoms, HIV care visits and treatment adherence.

Hypothesis1a: Women with higher levels of perceived stigma of HIV/AIDS will have lower levels of HIV care visits and treatment adherence compared to those with lower levels of perceived stigma.

Hypothesis1b: Women with higher levels of perceived stigma of HIV/AIDS will have higher level of depressive symptoms compared to lower levels of perceived stigma.

Hypothesis1c: Depressive symptoms mediate the relationship between HIV-related stigma and HIV care visits and treatment adherence.

Aim 2: To examine the associations between HIV-related stigma, sexual relationship power and risk behaviors.

Hypothesis 2a: Women with lower levels of perceived stigma will have higher sexual relationship power than women with high levels of perceived stigma.

Hypothesis 2b: Women with high levels of perceived stigma will have increased likelihood of engaging in HIV risk behaviors (e.g., unprotected sexual occasions, alcohol consumption) than women with low levels of perceived stigma.

Hypothesis 2c: Women with low sexual relationship power will have increased likelihood of engaging in HIV risk behaviors (e.g., unprotected sexual occasions, alcohol consumption) than women with high sexual relationship power.

Aim 3: **To examine the associations between HIV-related stigma, psychological variables such as depressive symptoms and history of childhood sexual abuse.**

Hypothesis 3a: Women with a greater number of childhood trauma events will have higher levels of depressive symptoms compared to women with lesser number of childhood trauma events.

Hypothesis3b: Women with higher levels of depressive symptoms will have higher level of perceived stigma of HIV/AIDS compared to women with lower levels of depressive symptoms.

Hypothesis 3c: Women with a greater number of childhood trauma events will have higher levels of perceived stigma compared to women with lesser number of childhood trauma events.

Hypothesis 3d: Depressive symptoms meditate the relationship between history of childhood sexual abuse and perceived stigma.

METHODOLOGY SUMMARY

Study Design and Population

The current study used data from a randomized controlled trial that examined the effectiveness of an adapted Cognitive-Behavioral Stress Management intervention (CBSM-A) in simultaneously reducing risk behaviors, and improving ART adherence and other psychological factors. Data collection for the parent study occurred at the GHESKIO (Groupe Haitien d'Etude du Sarcome de Kaposi et des Infections Opportunistes) Centers in Port-au-Prince, Haiti.

A total of 276 Haitian men and women living with HIV completed baseline data collection between 2009 and 2013 as part of the longitudinal clinical trial study conducted in Port-au-Prince, Haiti. For the current study, data from a subgroup of 173 WLHV were used for the analyses, thereby, allowing an opportunity to examine HIV-related stigma among Haitian WLHV, the population of interest.

To be eligible, participants had to be 18–60 years old, be fluent in Haitian Creole, had a documented HIV diagnosis, reported at least one episode of unprotected anal or vaginal sex in the past 90 days, reported recent alcohol consumption in the past 90 days, not display cognitive impairment at the time of recruitment, and did not show symptoms of major psychiatric disorder. All participants gave written voluntary informed consent for

participation. Our study was approved by the Florida International University Institutional Review Board.

Measures

The measurement instruments were translated into Creole from English then back translated. The data collection instruments were culturally adapted and translated from English to Creole from validated questionnaires. This study was approved by the Institutional Review Board of Florida International University and the Ethics Committee of the GHESKIO Centers.

Table 1 below provides brief descriptions of the measures by domain.

Domain	*Variable description*	*Instrument/Properties*
DEMOGRAPHIC VARIABLES		
Socio-demographic & background characteristics	Gender; Age; Year diagnosed with HIV; Marital status; Partner's HIV status; Number of children; Religion; Educational level; Employment status; and current housing.[67]	• Adapted from CDC Interventions for HIV-Seropositive IDUs-Research and Evaluation, which assesses general questions about the participant's life.[67]
STIGMA & INTERPERSONAL FACTORS, PSYCHOLOGICAL RESOURCES, MENTAL HEALTH AND BIOLOGICAL STRESS PROCESSES ABOUT HIV VARIABLES		
Perceived Stigma of HIV/AIDS [68–70] **Personal View Subscale**	24-item questionnaire measuring stigma items that reflect shame, guilt, blame, embarrassment, and poor self-worth because of HIV.	•HIV-related Stigma Scale-Good psychometric properties (Cronbach's alphas 0.869).[68–70] •Subscale questions are both positively and negatively phrased to increase specificity of responses. Both subscales had 24 questions measured on a four-point Likert-type scale (1=strongly agree to 4=strongly disagree). Total score of each subscale ranged between 24 and 96; higher scores represent more stigma.
Perceived Stigma of HIV/AIDS [68–70] **Public View Subscale**	24-item questionnaire measuring stigma items including participants' perception of social stigma (i.e., respondent's view of others' attitudes & beliefs about HIV).	
Alcohol Use Disorders Identification Test (AUDIT) [71]	10-item survey measuring alcohol consumption, dependence symptoms, and drinking-related harm over the past 30 days. [71]	•Offers good content, criterion and construct validity and reliability (alphas from .77 to .83).[72] • Responses range from 0 to 4, where 0 indicates infrequent drinking behaviors or less severe alcohol-related consequences. Total score ≥8 suggests potential hazardous drinking.[73]

Sexual Relationship Power Scale (**SRP**) [36,37]	23-item scale used to measure relationship power among women in intimate and sexual relationships. SRP consists of two subscales: **Relationship Control** subscale (**RC**; 15 items) and **Decision-Making Dominance** subscale (**DMD**; 8 items). [36,37]	• **SRP-**Internal consistency rating of 0.935. • Items on **RC** subscale scored on 4-point Likert-type scale (1=strongly agree, 4=strongly disagree). Items on **DMD** subscale scored as: 1=your partner, 2=both of you equally, 3=you.[36,37] • Items are scored such that higher values indicated more sexual relationship power. The **RC** subscale ranges from 15 to 60 and the **DMD** subscale ranges from 8 to 24.[36,37]
Depression (**CES-D**) [74]	15-items to detect possible depression and assess severity of depression from Center for Epidemiologic Studies Depression scale[74]	• The **CES-D**-coefficient alpha = .80. • Items will be scaled from 0 (never) to 4 (Always). [74,75]
Drug and Sexual Risk Behavioral Assessment (**DS Measure**) [67]	72 items for females used to measure history and current alcohol and substance use, as well as sexual behaviors and relationships (i.e., sexual partners, activities, history).	• Internal consistency rating of **DS** Measure in parent study, among Haitian men and women, is 0.848.
Childhood Trauma Questionnaire (**CTQ**).[76]	5-items on participants' experiences with sexual abuse during childhood, including emotional, physical, and sexual abuse, and emotional and physical neglect.	• Questions utilize a five-point Likert-type scale yielding a maximum score of 25. • The 5-item version utilized for the parent study has an internal consistency rating of 0.832.[76]
ENGAGEMENT IN CARE AND TREATMENT OUTCOME VARIABLES		
Access to and Utilization of Care (AUC) [67]	Scale assesses number and proportion of people who receive minimal level of medically indicated HIV care visits and who are offered and take medically indicated medications.[67]	• **HIV Care Visits**: self-reported HIV care visits and other service use assessed at baseline and 6- and 12-month follow-up visits. • **Medication adherence:** assesses self-reported adherence to antiretroviral medicine.[77]

Statistical Analyses

The data gathered from the completed questionnaires were imported into the Statistical Package for the Social Sciences (SPSS version 26) for data analysis. Descriptive statistics were used to describe the demographic characteristics of the study participants. Frequencies, means, standard deviations and independent t-tests were used to describe the demographic characteristics. The following demographic and clinical variables were included in all analyses: gender, age, year diagnosed with HIV, marital status, partner's HIV status, number of children, religion, educational level, employment status, and current housing.

Aim 1: To understand the associations between HIV-related stigma, depressive symptoms, HIV care visits and treatment adherence.

Data Analysis: The data gathered from the completed questionnaires of Perceived Stigma of HIV/AIDS measures, the Access to and Utilization of Care measures (**AUC**) and the Center for Epidemiological Studies - Depression (**CES-D**) questionnaire were imported for data analysis.

Hypothesis1a: Linear regression analysis was used to examine associations between perceived HIV-related stigma and depressive symptoms.

Hypothesis1b: Linear regression analysis was used to find associations the associations between depressive symptoms and HIV treatment and HIV care visits adherence.

Hypothesis1c: Mediation analysis to test the indirect effects of HIV-related stigma on HIV care visits and treatment adherence via depressive symptoms.

Aim 2: To examine the associations between HIV-related stigma, sexual relationship power and risk behaviors.

Data Analysis: The data gathered from the completed questionnaires of Perceived Stigma of HIV/AIDS measures, Sexual Relationship Power Scale (**SPR**), Alcohol Use Disorders Identification Test (**AUDIT**) and Drug and Sexual Risk Behavioral Assessment (**DS Measure**) were imported for data analysis.

Hypothesis 2a: Linear regression analysis was used to measure the associations between HIV-related stigma and sexual relationship power.

Hypothesis 2b: Linear regression analysis was used to explore the associations between HIV-related stigma and sexual risk behaviors.

Hypothesis 2c: Independent samples t-tests and linear regression analysis were used to compare sexual risk behaviors variables between those reporting low versus high SRP.

Aim 3: To examine the associations between HIV-related stigma, psychological variables such as depressive symptoms and history of childhood sexual abuse.

Data Analysis: The data gathered from the completed questionnaires of the Perceived Stigma of HIV/AIDS measures, Childhood Sexual Abuse (**CSA**) and the Center for Epidemiological Studies - Depression (**CES-D**) Questionnaire) were imported for data analysis.

Hypothesis 3a: Linear regression and Mediation analyses were used to examine associations with childhood sexual abuse and depressive symptoms.

Hypothesis3b: Linear regression and Mediation analyses were used to find associations between depressive symptoms and the domains of perceived stigma.

Hypothesis 3c: Linear regression and Mediation analyses were used to measure the associations between history of childhood sexual abuse and perceived stigma.

Hypothesis 3d: We used a mediation analysis to examine the indirect effects of childhood sexual abuse on HIV-related stigma via depressive symptoms.

EXPECTED OUTCOMES AND IMPACT

The findings of this proposed study hold promise for informing and stimulating further attention and research on gaps in the literature and how intersecting stigmas may limit WLHV's ability and willingness to stay engaged in care, thus impacting treatment outcomes. The study results may shed light on factors related to engagement/retention in care and treatment outcomes that can be addressed by the health system and health professionals to increase the reach and impact of HIV screening among Haitian women. The proposed study may help increase our understanding of stigma in low and middle-income countries, guide future stigma interventions, and facilitate monitoring and evaluation of new stigma reduction programs in areas with a high HIV/AIDS burden.

REFERENCES

1. UNAIDS. Women and HIV: A spotlight on adolescent girls and young women. 1–20 (2019).

2. UNAIDS. When women lead, change happens. 36 (2017).

3. Dellar, R. C., Dlamini, S. & Karim, Q. A. Adolescent girls and young women: Key populations for HIV epidemic control. *J. Int. AIDS Soc.* **18**, 64–70 (2015).

4. Richardson, E. T. *et al.* Gender inequality and HIV transmission: A global analysis. *J. Int. AIDS Soc.* **17**, 1–5 (2014).

5. Unaids. Forty years into the HIV epidemic, AIDS remains the leading cause of death of women of reproductive age-UNAIDS calls for bold action. (2020).

6. Mihan, R., Kerr, J., Maticka-Tyndale, E. & Team, T. A. HIV-related stigma among African, Caribbean, and Black youth in Windsor, Ontario. *AIDS Care* **28**, 758–763 (2016).

7. Conserve, D. F., King, G., Dévieux, J. G., Jean-Gilles, M. & Malow, R. Determinants of HIV serostatus disclosure to sexual partner among HIV-positive alcohol users in haiti. *AIDS Behav.* **18**, 1037–1045 (2014).

8. UNAIDS. Forty years into the HIV epidemic, AIDS remains the leading cause of death of women of reproductive age-UNAIDS calls for bold action. (2020).

9. UNIAIDS, HIV. 'AIDS estimates, 2018.' URL http://www. unaids. org/en/regionscountries/countries/Haiti/.

10. UNAIDS. 2019-global-AIDS-update. *Communities Cent.* 121–138 (2019) doi:10.2307/j.ctt1t898kc.12.

11. Seo, G. *et al.* The FANMI ('my FAMILY' in Creole) study to evaluate community-based cohort care for adolescent and young women living with HIV in Haiti: Protocol for a randomized controlled trial. *BMC Public Health* **19**, 1–10 (2019).

12. Reif, L. K. *et al.* Impact of a youth-friendly HIV clinic: 10 years of adolescent outcomes in Port-au-Prince, Haiti. *J. Int. AIDS Soc.* **19**, 20859 (2016).

13. Brown, L., Macintyre, K. & Trujillo, L. Interventions to reduce HIV/AIDS stigma: What have we learned? *AIDS Educ. Prev.* **15**, 49–69 (2003).

14. Mihan, R., Kerr, J., Maticka-Tyndale, E. & Team, T. A. HIV-related stigma among African, Caribbean, and Black youth in Windsor, Ontario. *AIDS Care* **28**, 758–763 (2016).

15. World Health Orgnaization (WHO). Consolidated guideline on sexual and reproductive health and rights of women living with HIV Executive summary. (2015).

16. Herek, G. M., Capitanio, J. P. & Widaman, K. F. HIV-related stigma and knowledge in the United States: Prevalence and trends, 1991-1999. *Am. J. Public Health* **92**, 371–377 (2002).

17. Kane, J. C. *et al.* A scoping review of health-related stigma outcomes for high-burden diseases in low- and middle-income countries. *BMC Medicine* vol. 17 (2019).

18. Kemp, C. G. *et al.* HIV stigma and viral load among African-American women receiving treatment for HIV. *AIDS* **33**, 1511–1519 (2019).

19. Rao, D., Andrasik, M. P. & Lipira, L. HIV stigma among black women in the United States: Intersectionality, support, resilience. *Am. J. Public Health* **108**, 446–448 (2018).

20. Cederfjäll, C., Langius-Eklöf, A., Lidman, K. & Wredling, R. Gender Differences in Perceived Health-Related Quality of Life Among Patients with HIV Infection. *AIDS Patient Care STDS* **15**, 31–39 (2001).

21. Pitpitan, E. V. *et al.* Gender-based violence, alcohol use, and sexual risk among female patrons of drinking venues in Cape Town, South Africa. *J. Behav. Med.* **36**, 295–304 (2013).

22. Turan, J. M. *et al.* Challenges and opportunities in examining and addressing intersectional stigma and health. *BMC Med.* **17**, (2019).

23. Kalichman, S. C., Simbayi, L. C., Kaufman, M., Cain, D. & Jooste, S. Alcohol use and sexual risks for HIV/AIDS in sub-Saharan Africa: systematic review of empirical findings. *Prev. Sci.* **8**, 141–151 (2007).

24. Cook, R. L. & Clark, D. B. Is there an association between alcohol consumption and sexually transmitted diseases? A systematic review. *Sex. Transm. Dis.* **32**, 156–164 (2005).

25. Eaton, L. A. *et al.* HIV microaggressions: a novel measure of stigma-related experiences among people living with HIV. *J. Behav. Med.* (2019) doi:10.1007/s10865-019-00064-x.

26. Pulerwitz, J., Amaro, H., Jong, W. De, Gortmaker, S. L. & Rudd, R. Relationship power, condom use and HIV risk among women in the USA. *AIDS Care* **14**, 789–800 (2002).

27. Pulerwitz, J., Gortmaker, S. L. & DeJong, W. Measuring Sexual Relationship Power in HIV/STD Research. *Sex Roles* **42**, 637–660 (2000).

28. Villalba, K., Attonito, J., Jean-Gilles, M., Rosenberg, R. & Devieux, J. G. Gender differences in the association between childhood sexual abuse and risk behaviors among people living with HIV in Haiti. *AIDS Care* 1–7 (2020) doi:10.1080/09540121.2020.1757022.

29. Rubens, M. *et al.* HIV-Related Stigma, Quality of Care, and Coping Skills: Exploring Factors Affecting Treatment Adherence Among PLWH in Haiti. *J. Assoc. Nurses AIDS Care* **29**, 570–579 (2018).

30. Wingood, G. M. & DiClemente, R. J. Partner influences and gender-related factors associated with noncondom use among young adult African American women. *Am. J. Community Psychol.* **26**, 29–51 (1998).

31. Nkosi, S., Rich, E. P. & Morojele, N. K. Alcohol use, sexual relationship power, and unprotected sex among patrons in bars and taverns in rural areas of North West province, South Africa. *AIDS Behav.* **18**, 2230–2239 (2014).

32. Dévieux, J. G. *et al.* Depression, Abuse, Relationship Power and Condom Use by Pregnant and Postpartum Women with Substance Abuse History. *AIDS Behav.* **20**, 292–303 (2016).

33. Rice, W. S. *et al.* Perceptions of intersectional stigma among diverse women living with HIV in the United States. *Soc. Sci. Med.* **208**, 9–17 (2018).

34. Closson, K. *et al.* Measuring sexual relationship power equity among young women and young men South Africa: Implications for gender-transformative programming. *PLoS ONE* vol. 14 (2019).

35. Campbell, A. N. C., Tross, S., Hu, M. C., Pavlicova, M. & Nunes, E. V. Predictors of relationship power among drug-involved women. *AIDS Behav.* **16**, 1532–1541 (2012).

36. Pulerwitz, J., Amaro, H., Jong, W. De, Gortmaker, S. L. & Rudd, R. Relationship power, condom use and HIV risk among women in the USA. *AIDS Care* **14**, 789–800 (2002).

37. Pulerwitz, J., Gortmaker, S. L. & DeJong, W. Measuring Sexual Relationship Power in HIV/STD Research. *Sex Roles* **42**, 637–660 (2000).

38. Malow, R., Rosenberg, R., Lichtenstein, B. & Dévieux, J. G. The Impact of Disaster on HIV in Haiti and Priority Areas Related to the Haitian Crisis. *Journal of the Association of Nurses in AIDS Care* vol. 21 283–288 (2010).

39. Dévieux, J. G., Rosenberg, R., Saint-Jean, G., Bryant, V. E. & Malow, R. M. The Continuing Challenge of Reducing HIV Risk among Haitian Youth: The Need for Intervention. *J. Int. Assoc. Provid. AIDS Care* (2013).

40. Panchanadeswaran, S. *et al.* Intimate partner violence and consistent condom use among drug-using heterosexual women in New York City. *Women Heal.* **50**, 107–124 (2010).

41. Whetten, K., Reif, S., Whetten, R. & Murphy-McMillan, L. K. Trauma, mental health, distrust, and stigma among HIV-positive persons: implications for effective care. *Psychosom. Med.* **70**, 531–538 (2008).

42. Weiss, E. L., Longhurst, J. G. & Mazure, C. M. Childhood sexual abuse as a risk factor for depression in women: psychosocial and neurobiological correlates. *Am. J. Psychiatry* **156**, 816–828 (1999).

43. Villalba, K. *et al.* The Effects of Childhood Sexual Abuse: The Role of Anxiety and Alcohol Use among Haitian Women Living with HIV. *J. Child Sex. Abus.* 1–14 (2020) doi:10.1080/10538712.2020.1801939.

44. LeGrand, S. *et al.* A Review of Recent Literature on Trauma Among Individuals Living with HIV. *Curr. HIV/AIDS Rep.* **12**, 397–405 (2015).

45. Dévieux, J. G. *et al.* Post-traumatic stress disorder symptomatology and alcohol use among HIV-seropositive adults in Haiti. *AIDS Care - Psychol. Socio-Medical Asp. AIDS/HIV* **25**, 1210–1218 (2013).

46. Saxena, A. *et al.* Association between intimate partner violence and HIV status among Haitian Women. *Glob. Public Health* **14**, 1557–1568 (2019).

47. Brief, D. J. *et al.* Understanding the interface of HIV, trauma, post-traumatic stress disorder, and substance use and its implications for health outcomes. *AIDS Care* **16 Suppl 1**, S97-120 (2004).

48. Sledjeski, E. M., Speisman, B. & Dierker, L. C. Does number of lifetime traumas explain the relationship between PTSD and chronic medical conditions? Answers from the National Comorbidity Survey-Replication (NCS-R). *J. Behav. Med.* **31**, 341–349 (2008).

49. Pence, B. W. *et al.* Childhood trauma and health outcomes in HIV-infected patients: an exploration of causal pathways. *J. Acquir. Immune Defic. Syndr.* **59**, 409–416 (2012).

50. Briere, J. N. & Elliott, D. M. Immediate and long-term impacts of child sexual abuse. *Futur. Child.* **4**, 54—69 (1994).

51. Brezing, C., Ferrara, M. & Freudenreich, O. The Syndemic Illness of HIV and Trauma: Implications for a Trauma-Informed Model of Care. *Psychosomatics* **56**, 107–118 (2015).

52. Evens, E. *et al.* Experiences of gender-based violence among female sex workers, men who have sex with men, and transgender women in Latin America and the Caribbean: A qualitative study to inform HIV programming. *BMC Int. Health Hum. Rights* **19**, (2019).

53. Flentje, A., Heck, N. C., Brennan, J. M. & Meyer, I. H. The relationship between minority stress and biological outcomes: A systematic review. *J. Behav. Med.* (2019) doi:10.1007/s10865-019-00120-6.

54. Turan, B. *et al.* How Does Stigma Affect People Living with HIV? The Mediating Roles of Internalized and Anticipated HIV Stigma in the Effects of Perceived Community Stigma on Health and Psychosocial Outcomes. *AIDS Behav.* **21**, 283–291 (2017).

55. Lyimo, R. A. *et al.* Stigma, disclosure, coping, and medication adherence among people living with HIV/AIDS in Northern Tanzania. *AIDS Patient Care STDS* **28**, 98–105 (2014).

56. Beck-Sagué, C. M. *et al.* Depression in caregivers of status-naïve pediatric HIV patients participating in a status disclosure study in haiti and the dominican Republic: Preliminary report. *J. Trop. Pediatr.* **61**, 65–68 (2015).

57. Magee, E. M., Small, M., Frederic, R., Joseph, G. & Kershaw, T. Determinants of HIV / AIDS Risk Behaviors in Expectant Fathers in Haiti. **83**, 625–636 (2006).

58. Dévieux, J.G., Deschamps, M.M., Malow, R.M., Pape, J.W., Rosenberg, R., Jean-Gilles, M., Saint-Jean, G., & Metsch, L. Barriers to care among HIV-positive Haitians: An examination of socio-cultural factors. in *HIV/AIDS: Global Frontiers in Prevention/Intervention* (2009).

59. Turan, B. *et al.* Framing mechanisms linking HIV-related stigma, adherence to treatment, and health outcomes. *American Journal of Public Health* vol. 107 863–869 (2017).

60. Whittle, H. J. *et al.* Precarity and health: Theorizing the intersection of multiple material-need insecurities, stigma, and illness among women in the United States. *Soc. Sci. Med.* **245**, (2020).

61. Pantelic, M., Steinert, J. I., Park, J., Mellors, S. & Murau, F. 'Management of a spoiled identity': Systematic review of interventions to address self-stigma among people living with and affected by HIV. *BMJ Glob. Heal.* **4**, (2019).

62. Tesfaye, B. *et al.* The twin epidemics: Prevalence of TB/HIV coinfection and its associated factors in Ethiopia; A systematic review and meta-analysis. *PLoS One* **13**, (2018).

63. Turan, J. M. & Nyblade, L. HIV-related stigma as a barrier to achievement of global PMTCT and maternal health goals: A review of the evidence. *AIDS and Behavior* vol. 17 2528–2539 (2013).

64. Mukerji, R. & Turan, J. M. Exploring manifestations of tb-related stigma experienced by women in Kolkata, India. *Ann. Glob. Heal.* **84**, 727–735 (2018).

65. Earnshaw, V. A., Smith, L. R., Chaudoir, S. R., Amico, K. R. & Copenhaver, M. M. HIV stigma mechanisms and well-being among PLWH: a test of the HIV stigma framework. *AIDS Behav.* **17**, 1785–1795 (2013).

66. Meyer, I. H. Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: conceptual issues and research evidence. *Psychol. Bull.* **129**, 674–697 (2003).

67. CDC. *INSPIRE*. (2001).

68. Westbrook, L. E., and Bauman, L. J. Perceived Stigma of HIV/AIDS Scale. *Albert Einstein College of Medicine* (1996).

69. Bauman, L. J., Silver, E. J., and Camacho, S. Stigma among mothers with HIV/AIDS. in *Presented at the XIII International AIDS Conference* (2000).

70. Bauman, L. J., Camacho, S., Westbrook, L. E., and Forbes-Jones, E. Correlates of personal stigma and social stigma among mothers with HIV/AIDS. in *Presented at the National Conference on Women and HIV*.

71. Saunders, J. B., Aasland, O. G., Babor, T. F., de la Fuente, J. R. & Grant, M. Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO Collaborative Project on Early Detection of Persons with Harmful Alcohol Consumption--II. *Addiction* **88**, 791–804 (1993).

72. Bohn, M. J., Babor, T. F. & Kranzler, H. R. The Alcohol Use Disorders Identification Test (AUDIT): validation of a screening instrument for use in medical settings. *J. Stud. Alcohol* **56**, 423–432 (1995).

73. Maisto, S. A., Carey, M. P., Carey, K. B., Gordon, C. M. & Gleason, J. R. Use of the AUDIT and the DAST-10 to identify alcohol and drug use disorders among adults with a severe and persistent mental illness. *Psychol. Assess.* **12**, 186–192 (2000).

74. Radloff, L. S. The CES-D Scale: A Self-Report Depression Scale for Research in the General Population. *Appl. Psychol. Meas.* **1**, 385–401 (1977).

75. Stein, J. A., Dixon, E. L. & Nyamathi, A. M. Effects of psychosocial and situational variables on substance abuse among homeless adults. *Psychol. Addict. Behav.* **22**, 410–416 (2008).

76. Bernstein, D.P, & Fink, L. Childhood Trauma Questionnaire: A retrospective self-report manual. (1998).

77. Hope, P., Visit, H. & Version, H. D. U. NIDA CTN Protocol 0049 Prevention and Engagement for HIV-Infected Drug. (2013).

CHAPTER II: Relationship between HIV-related Stigma, Depressive Symptoms, HIV Treatment and Care Visit Adherence among Haitian Women Living with HIV (WLHV)

ABSTRACT

Women account for about half of all HIV infections globally. After sub-Saharan Africa, the Caribbean is the most HIV-affected region in the world, with half of the region's people living with HIV (PLHV) in Haiti. Over 40% of new HIV infections in Haiti occur among adolescents and youth, 80% of which occur among young women. Perceived HIV-related stigma acts as a barrier to antiretroviral therapy (ART) adherence and HIV visit adherence, but its effects on other HIV care continuum outcomes is unclear among Haitian women living with HIV (WLHV). This cross-sectional study examined the direct and indirect effects of HIV-related stigma, depressive symptoms and medication and visit adherence among a sample of Haitian women. The current study is a secondary analysis of baseline data collected from 276 PLHV from Haiti. The questionnaires included: Perceived Stigma scale; Centers for Epidemiological Studies Depression Scale (CES-D); and HIV visit and treatment adherence measures. Descriptive statistics were used for demographic characteristics. Mediation analyses were used for estimating the strength of associations and mediating effects. A total of 173 WLHV participated in this study with 66% experiencing high levels of perceived related stigma. Results show that participants showed high levels of consistent adherence, with 69% showing zero doses missed in the past seven days. Regarding engagement to HIV primary care and medical care, 44% were adherent to both healthcare services, 46% were adherent to one type of care and only 10% were considered non-adherent or non-engagers. However, mediation analysis showed that the indirect effect of perceived stigma was not associated with HIV treatment adherence via the indirect effects of depressive symptoms. Additionally,

mediation analysis yielded no effect by depression in the association between perceived HIV stigma and HIV visit adherence in the whole sample. Results highlight the importance for future intervention studies to use longitudinal study designs to examine these associations to further elucidate causal relationships between stigma, depressive symptoms and HIV visit and treatment adherence. Future intervention studies or longitudinal study designs should perhaps examine these associations to further elucidate causal relationships between stigma, depressive symptoms and HIV visit and treatment adherence.

INTRODUCTION

Human Immunodeficiency Virus (HIV) disproportionately affects women.[1–3] After sub-Saharan Africa, the Caribbean is the most HIV-affected region in the world, with half of the region's HIV-infected persons living in Haiti.[4–7] In 2018, UNAIDS reports show that women are disproportionately affected by HIV in Haiti and of the 150,000 adults living with HIV, 58% were women.[5,7,8] Over 40% of new HIV infections in Haiti occur among adolescents and youth, 80% of which occur among young women. [5,7,8] People living with HIV (PLHV) have been stigmatized victims ever since the epidemic began in the 1980s.[9] Stigma is the perception of an undesirable attribute that causes individuals to be devalued by others.[10] There is extensive literature that identifies HIV-related stigma as a barrier to HIV prevention, care, treatment and the wellbeing of people living with HIV.[11–18] HIV stigma may be intensified in marginalized groups experiencing multiple and intersecting forms of stigmatized identities (e.g., race, class, gender, sexuality, etc.).[12,14–16,19,20] In addition, the literature also suggests that WLHV have poorer HIV treatment outcomes than men with the disease, particularly lower antiretroviral therapy (ART) adherence, and greater morbidity and mortality.[11,21–28] These risks appear to be deeply

rooted in social drivers of HIV such as racial and gender inequality, and cultural norms that undervalue women's identities and limit their chances.[15,16,18,28–30] To effectively address racial and gender disparities in HIV prevention, treatment and related sequelae, it is essential to recognize unique barriers to optimal HIV care outcomes among women, specifically in the Caribbean.

HIV-related morbidity and mortality have been significantly reduced globally since the availability of new HIV treatments in the late 1990s.[31] Engagement in HIV care is key in providing and maintaining ART treatment adherence.[32] However, there is still evidence of associated factors and adverse health outcomes of poor engagement in HIV care.[19,27,32,33] Inadequate commitment to HIV treatment and HIV care visits among PLHV remains a considerable public health challenge.[19,27,32,33] PLHV who miss HIV care visits are at increased risk for early deaths, including those who fail to engage in regular primary care soon after the initial HIV diagnosis.[32,34] Failure to remaining or staying engaged in care is a strong indicator for delayed ART receipt and nonadherence, reduced treatment benefits, and increased HIV transmission, all essential elements of a successful approach to reducing HIV incidence.[19,32–35] In addition, HIV-related stigma, interpersonal factors (sexual relationship power, sexual risk behaviors), substance abuse, lack of health insurance, mental illness and unmet service needs for HIV prevention through health care, including screening and counseling for risk behaviors, have been constantly linked with poor HIV care engagement.[11,19,32–34] A retrospective study done at the University of Alabama at Birmingham shows that among 543 participants, 60% failed to attend a clinic visit in the first year. The study also indicates that White women, and minority men and women were statistically significantly more likely to be "no shows" compared with white men.[34]

Similarly, engagement in care has been a major contributor to racial disparities in health outcomes and plays an important role in HIV transmission.[32,34,35] Studies also show that linkage and retention in HIV care have generally worsened when it comes to younger persons, females, and racial/ethnic minorities.[7,8,33,36] Findings from a randomized controlled trial study conducted at the GHESKIO (Groupe Haitien d'Etude du Sarcome de Kaposi et des Infections Opportunistes) Centers in Haiti among PLHV with early WHO Stage 1 and 2 disease indicate that ART initiation right after HIV testing may be more beneficial for clinically stable patients.[37] In addition, the study demonstrated that same-day HIV testing and ART initiation in low resource and HIV endemic settings like Haiti, as compared to standard care, improves retention in care.[37] This issue must be tackled in order to continue to impact the HIV epidemic, particularly among vulnerable populations such as women of color.

Individuals living with HIV often have complicated histories, including negative experiences such as traumatic events, mental illness, and stigma.[11,38–41] The literature has shown that perceived and internalized stigma play a critical and direct role in mental health problems. [11,38–41] Depression is common among PLHV throughout the world.[11,21,39,42–45] A cross-sectional study of 362 PLHV in Haiti reported that HIV-related stigma was associated with lower levels of treatment adherence, and higher levels of depression and anxiety.[11] Another study of PLHV in Haiti found that HIV-related stigma has been consistently associated with increased anxiety, depression, post-traumatic stress disorder (PTSD), alcohol abuse, drug use and other psychiatric disorders.[38] Depression is also associated with increased HIV transmission risk, increased morbidity, and a higher risk of HIV-related death among WLHV.[21,39,42,45]

The current study will examine the association between HIV-related stigma, depressive symptoms, HIV care visits and medication adherence. These four aspects of health have not been studied simultaneously among this population, and growing rates of HIV/AIDS among Black Caribbean women indicate a need to better understand risk and protective factors within this group. We hypothesize that WLHV with lower levels of HIV care visits and medication adherence events will have higher levels of perceived stigma, and higher levels of depressive symptoms compared to women with higher levels of HIV care visit and medication adherence. Finally, we hypothesize that depressive symptoms will mediate the relationship between HIV-related stigma and HIV medication adherence and between HIV-related stigma and HIV visit adherence. Improved understanding of intersecting stigmas in Haitian WLHV who have poor HIV care visits and medication adherence and depressive symptoms is critical to designing more effective HIV prevention, testing and treatment programs both regionally and globally.

METHODS

Study Design and Population

This cross-sectional study design used data from a randomized controlled trial that examined the effectiveness of an adapted Cognitive-Behavioral Stress Management intervention (CBSM-A) in simultaneously reducing risk behaviors, and improving ART adherence and other psychological factors. Participants were provided with information on HIV disease and its treatment, including currently available ART medications, the negative effects of substance use and high-risk sexual behavior on the immune system and health status, and the nature of depressive symptoms. Data collection for the parent study occurred at the GHESKIO Centers in Port-au-Prince, Haiti.

A total of 276 Haitian men and women living with HIV completed baseline data collection between 2009 and 2013 as part of a longitudinal study conducted in Port-au-Prince, Haiti. For this study, a subgroup of 173 WLHV was used for the analyses. Women who reported having experienced HIV-related stigma or any psychological problems such as depression and history of sexual abuse were eligible population for this study. 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, had a documented HIV diagnosis, reported at least one episode of unprotected anal or vaginal sex in the past 90 days, reported recent alcohol consumption in the past 90 days, not display cognitive impairment at the time of recruitment, and not show symptoms of major psychiatric disorder.

Measures

The survey instruments used were translated into Creole from English then back translated and reviewed by a Cultural Linguistic Group to ensure cultural appropriateness and relevance.[46] This study was approved by the Institutional Review Board of Florida International University and the Ethics Committee of the GHESKIO Centers.

Socio-demographic characteristics

Participants provided socio-demographic characteristics including age (measured continuously in years); marital status (single/living single, married/cohabitated), education level (1=6th grade or less, 2=some high school or higher); religion (1=religious, 2= not religious); current housing (own house/family's/friends'); employment status (1=employed full time, 2=employed part-time, 3=unemployed, 4=student, 5=other);

income level (1=less than 150, 2=150-1000, 3=1001-5000, 4=5001-10000, 5=10001-20000); children (1=No, 2=Yes); health insurance (1=No, 2=Yes); AIDS diagnosis (1=No, 2=Yes); ART medication adherence (1=No, 2=Yes); alcohol use (1=low-risk consumption, 2=hazardous drinking) and partner's HIV status (1=has HIV, 2=don't have HIV, 3=don't know, 4=has not been tested yet).

Stigma of HIV/AIDS

To assess the participant's perceptions of HIV/AIDS related stigma, the Perceived Stigma of HIV/AIDS scale was used.[47–49] This scale contains two subscales- personal view (internalized stigma) and public view (externalized stigma). The personal view subscale has items that assess whether the PLHV had experienced shame, guilt, blame, embarrassment, or poor self-worth due to HIV. The public view subscale includes items that assessed whether PLHV had experienced social stigma, for instance what the respondent thinks about other people's attitudes and beliefs towards her disease condition. Sample items include "Most people are afraid to be around a person with HIV, "Most people think you should be embarrassed about having HIV". The questions in the subscales are both positively and negatively formulated to increase the specificity of the responses. Each subscale contains 24 items measured by four-point Likert-type scale (1 = strongly agree to 4 = strongly disagree); scores were summed for each subscale. The total score of each subscale ranges between 24 and 96 and higher scores represent higher levels of stigma. The Cronbach's alpha (α) of the instrument was 0.87.[47–49] The Perceived HIV-related stigma was analyzed as a continuous variable. Binary variables were also created to present cross tabulated distributions across key study variables with cut-off scores at the mean.

Depressive Symptoms

Depressive symptoms were assessed using the Center for Epidemiological Studies Depression Scale (CES-D), a widely used measure in HIV research.[50] The CES-D includes few somatic indicators, thus reducing the likelihood of elevated depression scores due to the physical symptoms.[51] Depressive symptoms have been shown to be sensitive to CBSM-associated changes in symptomatic HIV+ individuals.[52] For the present study, participants used a rating scale ranging from 0 (never) to 4 (always) to rate how frequently they were affected by depressive symptoms. An example item is: "Feeling sad, depressed, or lonely."[50] Responses were summed (range 0–60) with higher scores indicating greater severity of depression.[53] The measure demonstrated good internal consistency in the present study sample (α = .75). A score of 27 and higher was used to indicate a high likelihood of current major depressive symptoms.[53] Depressive symptom severity was treated as a continuous variable in all primary analyses.

Alcohol Use

The Alcohol Use Disorders Identification Test (AUDIT) is a 10-item survey that measures alcohol consumption and drinking behavior over the past 30 days.[54] Responses on this 10-item measure are scored from 0 to 4, with a maximum possible score of 40; higher scores indicate problematic drinking. The scores were dichotomized with numbers ≥ 8 categorized as hazardous drinking. Cronbach's alpha for this scale in the present sample was .86. Total scores of 8 or more indicate hazardous and harmful alcohol use as well as possible alcohol dependence.[54]

Adherence Measures

HIV Visit Adherence

Respondents were asked about the number of primary healthcare visits they attended in the past six months. They were also asked: “How soon after your positive test for HIV did you first go for medical care for your HIV?”. We calculated adherence to HIV visits by combining these two questions. To assess engagement of HIV care or adherence to HIV visits, an alternative approach was developed that categorize PLHV by their use of health services.[55] For this study, the classifications are as followed: (1) “Regular users” as people who completed HIV medical care appointments within six weeks of positive diagnosis **and** had at least 6 primary care visits in the past six months which was the standard of care at the time; (2) “Sporadic users” as people who had either completed HIV medical care appointments within six weeks of positive diagnosis **or** had at least 6 primary care visits in the past six months; (3) “Non-engagers” as people who did not complete any HIV medical care appointments within six weeks of positive diagnosis **and/or** did not have at least 6 primary care visits in the past six months.

HIV Treatment Adherence

Self-reported antiretroviral medication adherence was assessed using the Community Programs for Clinical Research on AIDS (CPCRA) Antiretroviral Medication Self-Report questionnaire.[56] Adherence difficulties were assessed based on a seven-day recall period. The questionnaire also has slots for recording drug name, drug code, number of pills per dose, number of doses per day, and total number of pills per day.[11,56] Adherence to each medication was calculated based on the percentages assigned to each of these responses, which include: “all” (100%); “most” (80%); “about half” (50%); “few” (20%); and “none” (0%).[11,56] Because near perfect adherence to many HIV

medications is vital to improve therapy efficacy, this measure was then dichotomized to reflect either 'consistent adherence' (zero doses missed in the past seven days) or 'inconsistent adherence' (one or more doses missed in the past seven days). To achieve the maximum viral suppression, adherence to the ARV medications used at the time was recommended to be ≥95%.. [57,58] This 95% goal for consistent adherence translates into missing less than one dose in 7 days. [57,58] Therefore, for the 7-day time period assessed in this study, adherence was dichotomized into (1) those missing one or more doses in one week, or (2) those who were 100% adherent over a one-week time period.

Statistical Analyses

The data gathered from the completed questionnaires were imported into the Statistical Package for the Social Sciences (SPSS version 26) for data analysis. Descriptive statistics including means, and standard deviations were generated for all continuous variables and frequencies and proportions were generated for all categorical variables. Bivariate correlations were computed to assess the unadjusted zero-order relationships between all key study variables. The following demographic and clinical variables were included: age, marital status, educational level, religion, current housing, employment status, income level, children, health insurance, AIDS diagnosis, ART medication adherence, alcohol use (AUDIT) and partner's HIV status. Primary data analysis consisted of mediation analysis; wherein bootstrap resampling techniques (k = 10,000) were used to generate 95% bias-corrected confidence intervals (CIs) of indirect effects using PROCESS version 3.5. [59] We conducted a mediation analysis to examine the indirect association of perceived HIV stigma on HIV treatment adherence via the mediating effects of depressive symptoms. We also tested the mediating role of depressive symptoms in the association between HIV-related stigma and HIV care visit

adherence. 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* (HIV-related stigma) on *Y* (HIV treatment adherence or HIV visit adherence) via *M* (depressive symptoms) c'-path for SPSS 25. Bias-corrected CIs that did not include zero for the indirect effect indicated statistical significance. All covariates were examined for potential influence on HIV-perceived stigma but only the following demographic and clinical variables were significant and included as covariates in the final model: educational level and AUDIT. In all statistical models, we applied a cutoff p-value of 0.05 and confidence interval of 95%.

RESULTS

Descriptive Statistics

A total of 173 WLHV were included in the study; approximately 56% of them were married or were living with a partner and had an average age of 35±7.8 (Mean ±SD) years. Most women (91%) had 1 or more children. Approximately 60% had a 6th grade or lesser level of education and only a few reported their employment status (15%) and their income level (13%). Regarding HIV health, self-report measures revealed that 51% of participants were diagnosed with AIDS and 69% reported currently taking HIV medication; the vast majority (95%) stated not having health care insurance. Participants also reported high level of hazardous drinking (71%). Concerning the spouse/partner's HIV health condition, 52% of women reported not knowing the partner's HIV status. (See Table 1)

A total of 157 participants reported experiencing perceived HIV-related stigma (Table 2). Participants who reported high levels of perceived stigma also showed high levels of

consistent adherence, with 69% showing zero doses missed in the past seven days. Regarding engagement in HIV primary care and medical care, among WLHV who experienced high levels of perceived stigma, 44% were adherent to both healthcare services (regular users), 46% were adherent to one type of care (sporadic users) and only 10% were considered non-adherent or non-engagers (Table 2). Approximately 55% of participants who reported higher levels of perceived stigma also reported higher levels of depressive symptoms. Only 29% of participants who experienced high levels of depressive symptoms reported being inconsistent with ART treatment in the past seven days.

Relationships Between Perceived HIV-Stigma, Depressive Symptoms and HIV Treatment and Visit Adherence

Table 3 shows the bivariate correlation for variables used in the mediation analysis. Significant correlations were observed between perceived stigma and depressive symptoms ($r = 0.211$, $p < .001$) (Table 3) and between depressive symptoms and HIV treatment adherence ($r = - 0.206$, $p=.027$) (Table 3). However, no significant correlations were found between perceived stigma and HIV treatment adherence ($r = - 0.010$, $p= .917$; Table 3) and HIV visit adherence ($r = - 0.006$, $p= .947$; Table 3).

Direct and Indirect Effects of Perceived HIV-related Stigma and HIV treatment Adherence

Figure 1. depicts the conceptual mediation model with standardized regression coefficients. Results indicate significant direct effects between perceived stigma and depressive symptoms whereby higher levels of stigma was associated with greater depressive symptoms ($\beta = 0.232$, $p=0.02$) [a-path]. Depressive symptoms were

negatively associated with higher level of perceived HIV-related stigma (β = -0.292, p < 0.001) [b-path]. However, direct effects were not found between perceived stigma and consistent medication adherence (β = 0.0318, p=0.76) [c-path]. In addition, mediation analyses revealed that perceived HIV-related stigma was not indirectly associated with HIV treatment adherence via the indirect effects of depressive symptoms (β = -.0005, 95% CI: [-.0013, .0000]).

Direct and Indirect Effects of Perceived HIV-related Stigma and HIV Visit Adherence

Figure 2. illustrates the results of the mediation analysis, which indicated that HIV-related stigma was significantly associated with depressive symptoms (path a; β = .208, p < .01). However, there were no significant associations between depressive symptoms and HIV visit adherence (path b; β = -.0489, p = .58) nor between HIV-related stigma and HIV visit adherence (path c; β = 0.035, p = .40). Mediation analysis also yielded no indirect effect through depression in the association between perceived stigma and visit adherence (β = -.0004, 95% CI [- .0018, .009]).

DISCUSSION

Although significant improvements in prevention and treatment of HIV have been made lately, the HIV epidemic persists partly due to challenges faced by PLHV in delaying seeking HIV treatment services and adherence to HIV treatment. HIV experts in the field have called for new efforts to address poor engagement in HIV care by reducing barriers to adherence to standard utilization of HIV medical care, HIV primary care and to ART.[37,60] Previous literature has suggested a negative impact of internalized HIV-related stigma on the delivery and utilization of HIV services by PLHV, but less is known about

the impact of perceived HIV-related stigma (personal and public stigma) in a low-resource healthcare setting on HIV visits and medication adherence by WLHV in Haiti.[11–18,33,61] The current study helps fill this gap in knowledge by examining the association between perceived HIV-related stigma, depressive symptoms, and HIV visit and medication adherence among Haitian WLHV. We also examined the mediating roles of depressive symptoms on perceived HIV-related stigma and HIV medication adherence and on perceived HIV-related stigma and HIV visit adherence in this association.

Perceived HIV-related Stigma and HIV Visit and Treatment adherence

Contrary to our hypotheses, our results indicate that women with high levels of perceived HIV-related stigma had a better engagement in care across the HIV care cascade in the form of increased HIV healthcare visits and medication adherence. In the current study, 69% of WLHV in Haiti receiving healthcare services at GHESKIO reported 100% adherence to prescribed antiretroviral medication therapies in the past seven days. In fact, only 31% of participants deviated from the standard 7-days medication regimen. This finding is particularly surprising, considering that past research has linked infrequent non-adherence to antiretroviral therapy with poor treatment outcomes in general populations of PLHV.[58] However, findings from past studies that utilized comparable assessment methodologies among the GHESKIO population indicate that PLHV reported a relatively high rate of antiretroviral adherence.[11,37]

Visit adherence is a very valuable measure of care engagement used in research studies, given that it assesses engagement in care with more granularity than other existing health related measures.[27,33,35,55,62] Previous research show that PLHV who miss multiple HIV care visits are at increased risk for premature mortality. [32,34,55] Failure

to engage in care is a marker for delayed ART receipt and worse treatment adherence, reduced treatment benefits, less viral suppression, and increased secondary transmission, all vital components of a successful approach to reduce HIV incidence.[19,32–35] Additional, missed visits are missed occasions for additional activities for HIV prevention through health care.[27,33,35,55,62] Our findings show that 66% of WLHV with high levels of perceived stigma were very adherent to HIV primary and medical care.

Several factors in this study that were hypothesized to be associated with low adherence were not found. For instance, it was predicted that women with high levels of perceived HIV-related stigma would have lower HIV visit and treatment adherence. Yet, our findings suggest that perceived HIV-related stigma is not significantly associated with higher HIV care visit adherence and HIV treatment adherence, contrary to the results of a prior studies exploring this relationship.[13,14,16,19,33] Rice et al. found that higher internalized stigma was associated with lower visit adherence and medication adherence.[33] Another cross-sectional study of 285 PLHV (male and female) in Haiti reported that high levels of HIV-related perceived stigma were marginally associated with lower levels of treatment adherence.[11] Our study findings also deviate from existing literature in the suggestion that pathways from perceived stigma to depressive symptoms to engagement in HIV care (visit and treatment adherence) could be more salient among women.[33,63] Future studies should focus on the potential to address the direct or indirect effects of HIV-related stigma by addressing different processes in the pathway from stigma to outcomes, and perhaps using gender-specific approaches. Future intervention studies or longitudinal study designs should perhaps examine these

associations to further elucidate causal relationships between stigma, depressive symptoms and HIV visit and treatment adherence.

Perceived HIV-related Stigma and Depressive Symptoms

Depression, worldwide, is more common in women than men, with an estimated male/female risk ratio of 2:1.[64] In our study, 80% of WLHV had a score at or above the threshold for current depression. This was consistent with other reports in PLHV within the Haitian population.[11,39,44,65] HIV diagnosis can be highly stressful or traumatic, immediately leading to a depressed state.[21,39,42,66] Therefore, it is not surprising to observe a higher level of depressive symptoms in our study population. Furthermore, we found that HIV-related stigma had a positive significant association with having depressive symptoms in our study population. HIV-related stigma has been reported to be associated with depression among PLHV.[12,21,42,51,64,66] The items that measured HIV-related stigma (perceived stigma) in our study actually had two underlying contexts, personal and public stigma, which were both strongly associated with being depressed. Stigma is a serious challenge that people diagnosed with HIV have to face.[21,42] Stigma may prevent them from disclosing HIV status and seeking help from their loved ones, including partner, family or friends; therefore, PLHV may lack support and be prone to depression.[13,22,67,68] Depression may, in turn, deter them from seeking timely HIV care.

Depressive Symptoms and HIV Visit and Treatment Adherence

Another important finding was the association between depressive symptoms and HIV visit and treatment adherence. Depression is widely thought to reduce the degree of adherence to antiretroviral therapy.[21,33,69] In contrast, our results indicated that WLHV with high levels of depressive symptoms showed satisfactory adherence to antiretroviral

treatment. Approximately 53% of women with high levels of depressive symptoms in this study were 100% adherent to their HIV medication.

Depressive symptoms can present itself as a significant barrier to adequate engagement in HIV care. Research has established links between the presence of psychosocial/mental health factors and poor rates of HIV care visits.[33–35,62] In a previous study conducted in Alabama, researcher found that missed HIV primary care visits during the first year of care were more common among patients who had substance abuse disorders, as well as those who were younger, female, Black, and lacking private health insurance.[34] On the other hand, a large randomized unblinded study trial of PLHV in Haiti receiving care at GHESKIO found that 72% were continuously retained in HIV care over a twelve months period after HIV testing.[37] Similarly, in the present study, we observed a high rate of adherence to HIV care visits. Among women with high levels of depressive symptoms, 34% were considered regular users, 37% sporadic users and only 9% were non-engagers. However, there is no significant association between depressive symptoms and HIV visit adherence.

On the other hand, we also observed a positive significant relationship between depressive symptoms and HIV treatment adherence. The high rates of adherence for HIV visits and medication among this small cohort of WLHV can be attributed to the excellent services offered by health professionals at GHESKIO. Most patients in this study were under follow-up care, which suggested that a consistent relationship was a key factor for the success of antiretroviral treatment.

Mediation Analysis

Our focus on perceived HIV-related stigma was a critical component, as HIV-related stigma is a good predictor that tends to have a strong association with ART adherence behaviors.[18,21,27] Furthermore, a number of studies have found that depressive symptoms mediate the effect of HIV stigma on suboptimal ART adherence, providing evidence for the claim that HIV-related stigma affects adherence through depression.[12,16,21,33] Nevertheless, our findings revealed that perceived HIV-related stigma was not significantly associated with HIV treatment adherence through depressive symptoms. The findings also revealed that the effect of HIV-related stigma on HIV visit adherence is not mediated by depressive symptoms. Although previous research suggest that depressive symptoms operate as a mediator between perceived HIV-related stigma and HIV treatment adherence or between perceived HIV-related stigma and HIV visit adherence, the psychological level factor (depressive symptoms) in this study did not show any mediation effect.[16,33] Perhaps it is due to the fact that the study's sample size is too small; consequently, the study lacks adequate statistical power to detect an effect size of practical importance for the mediation analyses.

Limitations

Current findings should be interpreted with attention to study limitations. As this is a cross-sectional study, temporality could not be determined, and it is therefore not possible to make causal inferences about the relation between HIV stigma and self-reported measured aspects of health. All data were gathered through self-report questionnaires, so participants' responses may have been subject to social-desirability bias and no biomarkers of adherence were available to validate self-report measures. Caution should be taken when considering the relation of HIV-related stigma to other

psychological variables presented in this study. Furthermore, participants were asked to recall events dating back to when they initially started ART treatment or came to their first clinical appointment; these responses may be subject to recall bias. Secondly, this study was a secondary analysis of data from a randomized controlled trial that examined the effectiveness of an adapted Cognitive-Behavioral Stress Management intervention study. Thus, hypotheses and subsequent findings were limited to measures chosen by the parent study's researchers and available data gathered. Thirdly, some caution should be taken when considering the generalizability of this study's findings. The participants included Haitian WLHV from Port-au-Prince, the largest metropolitan area in Haiti, who were receiving services at the GHESKIO Centers, the largest HIV testing and treatment center in the Caribbean. Therefore, findings could differ dramatically if participants were from different regions in Haiti and were not receiving healthcare services at GHESKIO. Finally, the sample was relatively small. A larger sample may provide further information on the association between HIV-related stigma, the psychological variable (depression) and their impact on health outcomes mentioned above.

CONCLUSION

Despite the noted limitations, the present study helps fill in the knowledge gap of the association between HIV-related stigma, depression, and HIV visit and medication adherence among Haitian WLHV. As the results of the current study indicated, stigma, psychological factors like depressive symptoms, and their impact on HIV health outcomes are significant challenges for WLHV. Adolescent girls and young women worldwide are a vulnerable, underserved population who need tailored models of HIV care that address their unique barriers and challenges to engagement to care.[4,7,70,71]

This issue must be tackled in order to end the HIV epidemic, particularly among vulnerable populations such as women of color.

This study aims to improve engagement in care of Haitian WLHV by addressing the barriers of stigma, psychological factors, and healthcare utilization. The study contributes to the extant literature by analyzing the relationships between these complex variables which play an important role in controlling the disease. Consequently, improved understanding of these relationships and mechanisms may inform the development of more effective HIV prevention, testing, and treatment programs both regionally and globally.

TABLES AND FIGURES

Table 1. Demographic and Health Information for the Study Sample (N=173)

Age in years, mean, (SD)	35.0 (7.8)
Marital Status N (%)	171 (99%)
Single or Living single	74 (43%)
Married or cohabitated	97 (56%)
Educational Level N (%)	167 (97%)
6th Grade or less	104 (60%)
Some High School or Higher	63 (36%)
Religion N (%)	171 (99%)
Religious	162 (94%)
Atheist/Not religious	9 (5%)
Regular place to live (family's, partner's, or own house) N (%)	26 (15%)
Employment Status N (%)	26 (15%)
Regularly employed Full time in a job	1 (0.6%)
Employed seasonally/day-to-day basis	3 (2%)
Unemployed/looking for work	15 (9%)
Student	1 (0.6%)
Other	6 (4%)
Income Level N (%)	23 (13%)
Less than 150	3 (2%)
150-1000	6 (4%)
1001-5000	10 (6%)
5001-10000	2 (1%)
10001-20000	2 (1%)
Children N (%)	171 (99%)
No	14 (8%)
Yes	157 (91%)
Health Insurance N (%)	171 (99%)
No	164 (95%)
Yes	7 (4%)
Diagnosed with AIDS N (%)	171 (99%)
No	82 (47%)
Yes	89 (51%)
Currently taking any ART medications N (%)	171 (99%)
No	53 (31%)
Yes	118 (69%)
Alcohol Use Disorders Identification (AUDIT) N (%)	173 (100%)
Low-risk Consumption	50 (29%)
Hazardous Drinking	123 (71%)
Partner's HIV status N (%)	162 (94%)
Has HIV	27 (16%)
Does not have HIV	31 (19%)
Do not know	85 (52%)
Have not been tested	19 (11%)

Scales	(Mean ±SD)
Perceived Stigma	108.78±17.282
Depression	35.79±9.731
HIV Treatment Adherence	1.68±0.468
HIV Visit Adherence	2.65±0.654

Table 2. Descriptive Statistics of the Self-report Measures of HIV-related Stigma, Depressive Symptoms, HIV Treatment and Visit Adherence.

Depression N (%)	Perceived Stigma Low	Perceived Stigma High	Total
	53 (34%)	104 (66%)	157 (100%)
Low	14 (9%)	18 (12%)	32 (20%)
High	39 (25%)	86 (55%)	125 (80%)
HIV Treatment Adherence (%)			
	35 (32%)	73 (68%)	108 (100%)
Inconsistent Adherence (1 or more doses missed in the past seven days)	9 (8%)	24 (23%)	33 (31%)
Consistent Adherence (0 doses missed in the past seven days)	26 (24%)	49 (45%)	75 (69%)
HIV Visit Adherence (%)			
	53 (34%)	104 (66%)	157 (100%)
Regular Users (adherent to both)	21 (13%)	48 (31%)	69 (44%)
Sporadic Users (adherent to 1)	26 (17%)	46 (29%)	72 (46%)
Nonengagers (nonadherent to none)	6 (4%)	10 (6%)	16 (10%)
HIV Treatment Adherence (%)	**Depression Low**	**Depression High**	**Total**
	21 (18%)	95 (82%)	116 (100%)
Inconsistent Adherence (1 or more doses missed in the past seven days)	3 (3%)	34 (29%)	37 (32%)
Consistent Adherence (0 doses missed in the past seven days)	18 (16%)	61 (53%)	79 (68%)
HIV Visit Adherence (%)			
	34 (20%)	137 (80%)	171 (100%)
Regular Users (adherent to both)	18 (11%)	58 (34%)	76 (44%)
Sporadic Users (adherent to 1)	14 (8%)	64 (37%)	78 (46%)
Nonengagers	2 (1%)	15 (9%)	17 (10%)

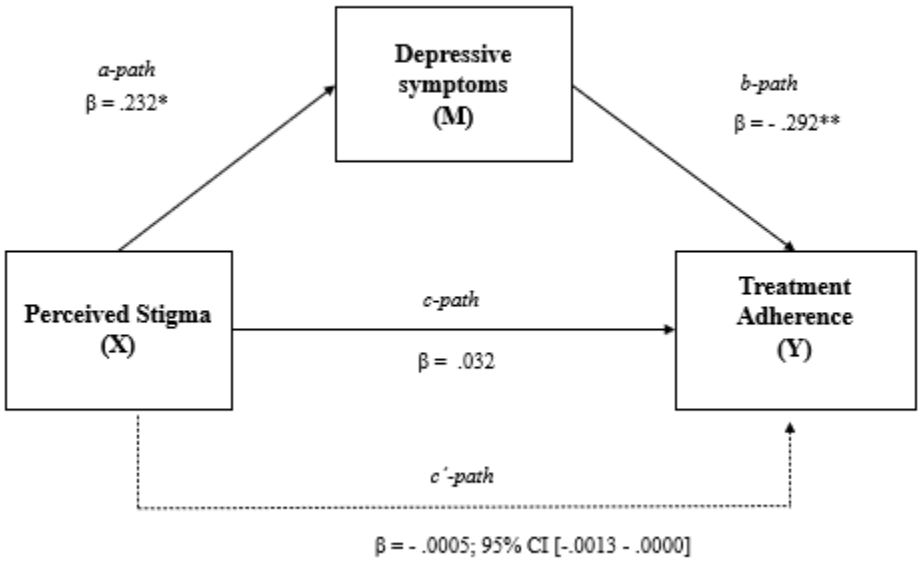
(nonadherent to none)				

Table 3. Bivariate Correlations among HIV Treatment Adherence, Perceived Stigma, Depressive Symptoms, HIV Visit Adherence and Demographic Characteristics (N=173).

	1	**2**	**3**	**4**	**5**	**6**
1. HIV Treatment Adherence	1					
2. HIV-related Perceived Stigma	-.010	1				
3. Depressive Symptoms	-.206**	.211**	1			
4. AUDIT	-.135	-.174*	-.004	1		
5. Education	-.129	-.237**	-.048	.266**	1	
6. Visit Adherence	-.094	-.006	.107	.011	.127	1

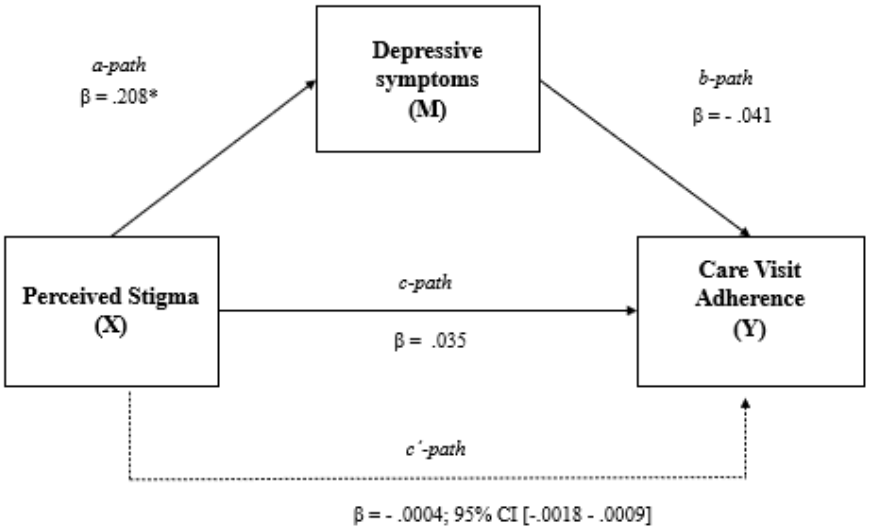
* $P < .05$; ** $P < .01$

Figure 1. **Results of Mediation Model depicting Direct and Indirect Effects of Perceived Stigma, Depressive Symptoms, and Treatment Adherence**



Note: *p<0.01; **p<0.001; **X**=predictor; **M**=mediator; **Y**=outcome. Mediation model controlled for education, and AUDIT.

Figure 2. **Results of Mediation Model depicting Direct and Indirect Effects of Perceived Stigma, Depressive Symptoms, and Care Visit Adherence**



Note: *p<0.01; **X**=predictor; **M**=mediator; **Y**=outcome. Mediation model controlled for education, and AUDIT.

REFERENCES

1. UNAIDS. Women and HIV: A spotlight on adolescent girls and young women. 1–20 (2019).

2. UNAIDS. When women lead, change happens. 36 (2017).

3. Dellar, R. C., Dlamini, S. & Karim, Q. A. Adolescent girls and young women: Key populations for HIV epidemic control. *J. Int. AIDS Soc.* **18**, 64–70 (2015).

4. UNAIDS. Forty years into the HIV epidemic, AIDS remains the leading cause of death of women of reproductive age-UNAIDS calls for bold action. (2020).

5. UNIAIDS, HIV. 'AIDS estimates, 2018.' URL http://www. unaids. org/en/regionscountries/countries/Haiti/.

6. UNAIDS. 2019-global-AIDS-update. *Communities Cent.* 121–138 (2019) doi:10.2307/j.ctt1t898kc.12.

7. Seo, G. *et al.* The FANMI ('my FAMILY' in Creole) study to evaluate community-based cohort care for adolescent and young women living with HIV in Haiti: Protocol for a randomized controlled trial. *BMC Public Health* **19**, 1–10 (2019).

8. Reif, L. K. *et al.* Impact of a youth-friendly HIV clinic: 10 years of adolescent outcomes in Port-au-Prince, Haiti. *J. Int. AIDS Soc.* **19**, 20859 (2016).

9. Herek, G. M., Capitanio, J. P. & Widaman, K. F. HIV-related stigma and knowledge in the United States: Prevalence and trends, 1991-1999. *Am. J. Public Health* **92**, 371–377 (2002).

10. DeFleur, M. L. Stigma: Notes on the Management of Spoiled Identity. By Erving Goffman. Englewood Cliffs, New Jersey: Prentice-Hall, 1963. 147 pp. Cloth, $4.50; paper, $1.95. *Soc. Forces* **43**, 127–128 (1964).

11. Rubens, M. *et al.* HIV-Related Stigma, Quality of Care, and Coping Skills: Exploring Factors Affecting Treatment Adherence Among PLWH in Haiti. *J. Assoc. Nurses AIDS Care* **29**, 570–579 (2018).

12. Kay, E. S. *et al.* Experienced HIV-Related Stigma in Health Care and Community Settings: Mediated Associations With Psychosocial and Health Outcomes. *J. Acquir. Immune Defic. Syndr.* **77**, 257–263 (2018).

13. Eaton, L. A. *et al.* HIV microaggressions: a novel measure of stigma-related experiences among people living with HIV. *J. Behav. Med.* (2019) doi:10.1007/s10865-019-00064-x.

14. Earnshaw, V. A., Smith, L. R., Chaudoir, S. R., Amico, K. R. & Copenhaver, M. M. HIV stigma mechanisms and well-being among PLWH: a test of the HIV stigma framework. *AIDS Behav.* **17**, 1785–1795 (2013).

15. Whittle, H. J. *et al.* Precarity and health: Theorizing the intersection of multiple material-need insecurities, stigma, and illness among women in the United States. *Soc. Sci. Med.* **245**, (2020).

16. Kemp, C. G. *et al.* HIV stigma and viral load among African-American women receiving treatment for HIV. *AIDS* **33**, 1511–1519 (2019).

17. Pantelic, M., Steinert, J. I., Park, J., Mellors, S. & Murau, F. 'Management of a spoiled identity': Systematic review of interventions to address self-stigma among people living with and affected by HIV. *BMJ Glob. Heal.* **4**, (2019).

18. Turan, J. M. *et al.* Challenges and opportunities in examining and addressing intersectional stigma and health. *BMC Med.* **17**, (2019).

19. Eaton, L. A. *et al.* Experiences of stigma and health care engagement among Black MSM newly diagnosed with HIV/STI. *J. Behav. Med.* **41**, 458–466 (2018).

20. Chaudoir, S. R., Earnshaw, V. A. & Andel, S. 'Discredited' Versus 'Discreditable': Understanding How Shared and Unique Stigma Mechanisms Affect Psychological and Physical Health Disparities. *Basic Appl. Soc. Psych.* **35**, 75–87 (2013).

21. Turan, B. *et al.* How Does Stigma Affect People Living with HIV? The Mediating Roles of Internalized and Anticipated HIV Stigma in the Effects of Perceived Community Stigma on Health and Psychosocial Outcomes. *AIDS Behav.* **21**, 283–291 (2017).

22. Mukerji, R. & Turan, J. M. Exploring manifestations of tb-related stigma experienced by women in Kolkata, India. *Ann. Glob. Heal.* **84**, 727–735 (2018).

23. Brief, D. J. *et al.* Understanding the interface of HIV, trauma, post-traumatic stress disorder, and substance use and its implications for health outcomes. *AIDS Care* **16 Suppl 1**, S97-120 (2004).

24. Rao, D., Frey, S. & Ramaiya, M. eHealth for Stigma Reduction Efforts Designed to Improve Engagement in Care for People Living with HIV. *Curr. HIV/AIDS Rep.* **15**, 397–402 (2018).

25. Turan, J. M. & Nyblade, L. HIV-related stigma as a barrier to achievement of global PMTCT and maternal health goals: A review of the evidence. *AIDS and Behavior* vol. 17 2528–2539 (2013).

26. Panchanadeswaran, S. *et al.* Intimate partner violence and consistent condom use among drug-using heterosexual women in New York City. *Women Heal.* **50**, 107–124 (2010).

27. Turan, B. *et al.* Framing mechanisms linking HIV-related stigma, adherence to treatment, and health outcomes. *American Journal of Public Health* vol. 107 863–869 (2017).

28. Rice, W. S. *et al.* Perceptions of intersectional stigma among diverse women living with HIV in the United States. *Soc. Sci. Med.* **208**, 9–17 (2018).

29. Auerbach, J. D., Parkhurst, J. O. & Cáceres, C. F. Addressing social drivers of HIV/AIDS for the long-term response: conceptual and methodological considerations. *Glob. Public Health* **6 Suppl 3**, S293-309 (2011).

30. Krieger, N. Measures of Racism, Sexism, Heterosexism, and Gender Binarism for Health Equity Research: From Structural Injustice to Embodied Harm-an Ecosocial Analysis. (2019) doi:10.1146/annurev-publhealth.

31. Estimates of global, regional, and national incidence, prevalence, and mortality of HIV, 1980-2015: the Global Burden of Disease Study 2015. *lancet. HIV* **3**, e361–e387 (2016).

32. Mugavero, M. J., Amico, K. R., Horn, T. & Thompson, M. A. The state of engagement in HIV care in the United States: from cascade to continuum to control. *Clin. Infect. Dis. an Off. Publ. Infect. Dis. Soc. Am.* **57**, 1164–1171 (2013).

33. Rice, W. S. *et al.* Care Visit Adherence. *J. Immune Defic. Syndr.* **76**, 482–487 (2018).

34. Mugavero, M. J. *et al.* Missed visits and mortality among patients establishing initial outpatient HIV treatment. *Clin. Infect. Dis.* **48**, 248–256 (2009).

35. Mugavero, M. J., Davila, J. A., Nevin, C. R. & Giordano, T. P. From access to engagement: Measuring retention in outpatient HIV clinical care. *AIDS Patient Care STDS* **24**, 607–613 (2010).

36. McNairy, M. L. *et al.* Outcomes after antiretroviral therapy during the expansion of HIV services in Haiti. *PLoS One* **12**, (2017).

37. Koenig, S. P. *et al.* Same-day HIV testing with initiation of antiretroviral therapy versus standard care for persons living with HIV: A randomized unblinded trial. *PLoS Med.* **14**, 1–15 (2017).

38. Dévieux, J. G. *et al.* Post-traumatic stress disorder symptomatology and alcohol use among HIV-seropositive adults in Haiti. *AIDS Care - Psychol. Socio-Medical Asp. AIDS/HIV* **25**, 1210–1218 (2013).

39. Dévieux, J. G. *et al.* Depression, Abuse, Relationship Power and Condom Use by Pregnant and Postpartum Women with Substance Abuse History. *AIDS Behav.* **20**, 292–303 (2016).

40. Malow, R., Rosenberg, R., Lichtenstein, B. & Dévieux, J. G. The Impact of Disaster on HIV in Haiti and Priority Areas Related to the Haitian Crisis. *Journal of the Association of Nurses in AIDS Care* vol. 21 283–288 (2010).

41. Dévieux, J.G., Deschamps, M.M., Malow, R.M., Pape, J.W., Rosenberg, R., Jean-Gilles, M., Saint-Jean, G., & Metsch, L. Barriers to care among HIV-positive Haitians: An examination of socio-cultural factors. in *HIV/AIDS: Global Frontiers in Prevention/Intervention* (2009).

42. Kane, J. C. *et al.* A scoping review of health-related stigma outcomes for high-burden diseases in low- and middle-income countries. *BMC Medicine* vol. 17 (2019).

43. Whetten, K., Reif, S., Whetten, R. & Murphy-McMillan, L. K. Trauma, mental health, distrust, and stigma among HIV-positive persons: implications for effective care. *Psychosom. Med.* **70**, 531–538 (2008).

44. Beck-Sagué, C. M. *et al.* Depression in caregivers of status-naïve pediatric HIV patients participating in a status disclosure study in haiti and the dominican Republic: Preliminary report. *J. Trop. Pediatr.* **61**, 65–68 (2015).

45. Weiss, E. L., Longhurst, J. G. & Mazure, C. M. Childhood sexual abuse as a risk factor for depression in women: psychosocial and neurobiological correlates. *Am. J. Psychiatry* **156**, 816–828 (1999).

46. Dévieux, J. G. *et al.* Cultural adaptation in translational research: Field experiences. *J. Urban Heal.* **82**, 82–91 (2005).

47. Bauman, L. J., Camacho, S., Westbrook, L. E., and Forbes-Jones, E. Correlates of personal stigma and social stigma among mothers with HIV/AIDS. in *Presented at the National Conference on Women and HIV*.

48. Bauman, L. J., Silver, E. J., and Camacho, S. Stigma among mothers with HIV/AIDS. in *Presented at the XIII International AIDS Conference* (2000).

49. Westbrook, L. E., and Bauman, L. J. Perceived Stigma of HIV/AIDS Scale. *Albert Einstein College of Medicine* (1996).

50. Radloff, L. S. The CES-D Scale: A Self-Report Depression Scale for Research in the General Population. *Appl. Psychol. Meas.* **1**, 385–401 (1977).

51. Kalichman, S. C., Rompa, D. & Cage, M. Distinguishing between overlapping somatic symptoms of depression and HIV disease in people living with HIV-AIDS. *J. Nerv. Ment. Dis.* **188**, 662–670 (2000).

52. Lutgendorf, S. K. *et al.* Cognitive-behavioral stress management decreases dysphoric mood and herpes simplex virus-type 2 antibody titers in symptomatic HIV-seropositive gay men. *J. Consult. Clin. Psychol.* **65**, 31–43 (1997).

53. Radloff, L. S. The CES-D Scale: A Self-Report Depression Scale for Research in the General Population. *Appl. Psychol. Meas.* **1**, 385–401 (1977).

54. Saunders, J. B., Aasland, O. G., Babor, T. F., de la Fuente, J. R. & Grant, M. Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO Collaborative Project on Early Detection of Persons with Harmful Alcohol Consumption--II. *Addiction* **88**, 791–804 (1993).

55. Horstmann, E., Brown, J., Islam, F., Buck, J. & Agins, B. D. Retaining HIV-infected patients in care: Where are we? where do we go from here? *Clin. Infect. Dis.* **50**, 752–761 (2010).

56. *Terry Beirn Community Programs for Clinical Research on AIDS. Form 646: antiretroviral medication self-report.*

57. Heckman, B. D., Catz, S. L., Heckman, T. G., Miller, J. G. & Kalichman, S. C. Adherence to antiretroviral therapy in rural persons living with HIV disease in the United States. *AIDS Care - Psychol. Socio-Medical Asp. AIDS/HIV* **16**, 219–230 (2004).

58. Paterson, D., Mohr, J. & Al, E. How much adherence is enough? A prospective study of adherence to protease inhibitor therapy using MEMS caps. in *6th Conference on Retroviruses and Opportunistic Infections* (1999).

59. Preacher, K. J. & Hayes, A. F. Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behav. Res. Methods* **40**, 879–891 (2008).

60. Unaids. Un ai d s | 2 0 1 6. *Cities Rep. UNAIDS* (2016).

61. Walcott, M., Kempf, M. C., Merlin, J. S. & Turan, J. M. Structural community factors and sub-optimal engagement in HIV care among low-income women in the deep south of the USA. *Cult. Heal. Sex.* **18**, 682–694 (2015).

62. Mugavero, M. J. Improving engagement in HIV care: what can we do? *Top. HIV Med.* **16**, 156–161 (2008).

63. Turan, B. *et al.* Mechanisms for the negative effects of internalized HIV-related stigma on antiretroviral therapy adherence in women: The mediating roles of social isolation and depression. *J. Acquir. Immune Defic. Syndr.* **72**, 198–205 (2016).

64. Lépine, J.-P. & Briley, M. The increasing burden of depression. *Neuropsychiatr. Dis. Treat.* **7**, 3–7 (2011).

65. Saxena, A. *et al.* Association between intimate partner violence and HIV status among Haitian Women. *Glob. Public Health* **14**, 1557–1568 (2019).

66. Kamen, C. *et al.* HIV-related stigma: Implications for symptoms of anxiety and depression among Malawian women. *African J. AIDS Res.* **14**, 67–73 (2015).

67. LeGrand, S. *et al.* A Review of Recent Literature on Trauma Among Individuals Living with HIV. *Curr. HIV/AIDS Rep.* **12**, 397–405 (2015).

68. Lyimo, R. A. *et al.* Stigma, disclosure, coping, and medication adherence among people living with HIV/AIDS in Northern Tanzania. *AIDS Patient Care STDS* **28**, 98–105 (2014).

69. Mugavero, M. *et al.* Barriers to antiretroviral adherence: the importance of depression, abuse, and other traumatic events. *AIDS Patient Care STDS* **20**, 418–428 (2006).

70. Richardson, E. T. *et al.* Gender inequality and HIV transmission: A global analysis. *J. Int. AIDS Soc.* **17**, 1–5 (2014).

71. Travaglini, L. E., Himelhoch, S. S. & Fang, L. J. HIV Stigma and Its Relation to Mental, Physical and Social Health Among Black Women Living with HIV/AIDS. *AIDS Behav.* **22**, 3783–3794 (2018).

CHAPTER III: Relationship between HIV-related Stigma, Sexual Relationship Power and Sexual Risk Behaviors among Haitian Women Living with HIV (WLHV)

ABSTRACT

Women account for about half of all HIV infections globally. After sub-Saharan Africa, the Caribbean is the most HIV-affected region in the world, with half of the region's people living with HIV (PLHV) in Haiti. Over 40% of new HIV infections in Haiti occur among adolescents and youth, 80% of which occur among young women. Given the disproportionate burden of HIV among women in Haiti, the clear influence of HIV-related stigma and sexual relationship power on sexual risk behaviors, and the scantiness of existing literature about this population, it is critical to identify HIV-related stigma, sexual relationship power, and the factors that elevate sexual risk behaviors among Haitian WLHV. This cross-sectional study examined the association between HIV-related stigma, sexual relationship power and sexual risk behaviors among a sample of Haitian women. The current study is a secondary analysis of baseline data collected from 276 PLHV from Haiti. The questionnaires included: Perceived Stigma scale; Sexual Relationship Power scale (SRP); and sexual risk behaviors measures. Descriptive statistics were used for demographic characteristics. Independent t-test and linear regression analyses were used for estimating the strength of associations. A total of 173 WLHV participated in this study with 67% experiencing high levels of perceived related stigma. Results show that WLHV who experienced higher levels of perceived stigma also reported significantly lower levels of sexual relationship power (β = -0.290; t = -2.998; p =.003; R^2 = .176). In addition, perceived stigma was significantly associated with less drug use (β =-0.046; t =-0.376; p =.080; R^2 =.176). For the association between

sexual relationship power and sexual risk behaviors, the independent t-tests showed significant differences with alcohol use (p<.0001), drug abuse (p=.017), sex exchange (p=.019) and having multiple male sexual partners (p =.008) between participants with low and high levels of SRP. Study findings suggest that more research is needed to develop more intensive interventions that address HIV-related stigma and the role of gender power inequity for this subgroup of Haitian WLHV.

INTRODUCTION

Girls and women make up more than half of the 36.9 million people living with HIV worldwide.[1–3] In sub-Saharan Africa (SSA) and African diaspora populations, there is a disproportionate burden of HIV infection along with high levels of HIV-related stigma and disparity between genders.[4–6] After sub-Saharan Africa, the Caribbean is the most HIV-affected region in the world, with half of the region's HIV-infected persons living in Haiti.[6–9] In 2018, UNAIDS reports show that women are disproportionately affected by HIV in Haiti and of the 150,000 adults living with HIV, 58% were women.[7,9,10] Over 40% of new HIV infections in Haiti occur among adolescents and youth, 80% of which occur among young women. [7,9,10] Studies conducted in developing countries such as Haiti, South Africa and other African countries show that detrimental traditional practices, intimate partner violence, sexual relationship power, and discriminatory laws strengthen unequal power dynamics between men and women, with women particularly disadvantaged.[1–3,8,9,11–16]

People living with HIV (PLHV) have been victims of stigmatization ever since the epidemic began in the 1980s.[17] Stigma is the perception of an undesirable attribute that causes individuals to be devalued by others.[18] HIV-related stigma is closely associated

with many adverse outcomes, including being labeled, experiencing separation from others, being subjected to loss in social status and being the recipient of actual discrimination.[18–22] There is extensive literature that identifies HIV-related stigma as a barrier to HIV prevention, care, treatment and the wellbeing of people living with HIV.[19,20,23–28] HIV stigma may be deepened in marginalized groups experiencing multiple and intersecting forms of stigmatized identities (e.g., race, class, gender, sexuality etc.).[20–23,26,28] Women of color are at especially high risk of acquiring HIV, and have worse HIV care outcomes than their White counterparts. [29–31] These risks appear to be deep-rooted in social drivers of HIV such as racial and gender inequality, and cultural norms that undervalue women's identities and limit their opportunities.[23,24,26,32–34] To effectively address racial and gender disparities in HIV prevention, treatment and related sequelae, it is essential to recognize unique barriers to optimal HIV care outcomes among women, specifically in global regions, such as the Caribbean, where women are particularly impacted.

Hazardous and harmful alcohol consumption is also adversely linked to several relevant HIV health behaviors and outcomes, including non-adherence to ART, risky sexual behavior, HIV disease progression, childhood trauma, sexual relationship power and earlier death.[5,15,19,25,35–39] Given the documented link between alcohol use and increased risk for HIV transmission, women with alcohol use disorders are a particularly vulnerable population.[5,25,40–42] Risky alcohol consumption among women may often put them at further risk of being victimized as they potentially become easy targets for those who intend to engage in sex with them.[32,41] Expects within the fields of gender and alcohol have identified gender constructs (sexual relationship power) and alcohol constructs (alcohol use disorders) as critical determinants of unprotected sex. [5,12,43–48] Numerous

studies have established that power imbalances within sexual relationships are linked to poor sexual health outcomes for women worldwide. [5,15,25,41,42,44–46,49–51] Persistent power imbalances often limit women's abilities and willingness to engage in care and place them at higher risk for HIV infection.[45,46,49] To date, the sexual relationship power scale (SRP) has been examined in a handful of studies and results show that women with lower SRP report less consistent condom use compared to women with SRP that is equal to or higher than their sexual partner. [5,15,25,42,45,46,49] Without proper treatment, living with HIV and being exposed to trauma resulting from sexual abuse can have long-lasting, harmful effects on HIV outcomes.[15,52,53] While limited, evidence suggests that being exposed to sexual abuse or interpersonal violence may interfere with an WLHV's ability to adhere to her HIV medication and be retained in HIV care over time.[15,35,49,52,54,55] Studies also show that exchanging sex for money/drugs or other goods and nondisclosure of the disease to their sexual partners has been linked to risky sexual behavior, reduced HIV treatment adherence and poor engagement with healthcare among women.[5,56–60]

Addressing current HIV-related stigma and the factors that elevate the sexual risk behaviors among WLHV is critical, as they bear a large and disproportionate burden of HIV infections. Our understanding of the factors that have an impact on the health of WLHV is limited when we regard these categories as separate entities.[47–51]The current study will examine the association between HIV-related stigma, sexual relationship power, and sexual risk behaviors among WLHV in Haiti. These three aspects of health have not been studied simultaneously among this population, and growing rates of HIV/AIDS among Black Caribbean women indicate a need to better understand risk and protective factors within this group. We hypothesize that WLHV with high sexual

relationship power will have lower levels of perceived stigma and lower levels of HIV risk behaviors compared to women with low sexual relationship power.

METHODS

Study Design and Population

This cross-sectional study design used data from a randomized controlled trial that examined the effectiveness of an adapted Cognitive-Behavioral Stress Management intervention (CBSM-A) in simultaneously reducing risk behaviors, improving ART adherence and other psychological factors. Participants were provided with information on HIV disease and its treatment, including currently available ART medications, the negative effects of substance use and high-risk sexual behavior on the immune system and health status, and the nature of depressive symptoms. Data collection for the parent study occurred at the GHESKIO Centers in Port-au-Prince, Haiti.

A total of 276 Haitian men and women living with HIV completed baseline data collection between 2009 and 2013 as part of the longitudinal clinical trial study conducted in Port-au-Prince, Haiti. For the current study, data from a subgroup of 173 WLHV were used for the analyses to examine the relationship between HIV-related stigma, sexual relationship power, and HIV risk behaviors. To be eligible, participants had to be 18–60 years old, be fluent in Haitian Creole, had a documented HIV diagnosis, reported at least one episode of unprotected anal or vaginal sex in the past 90 days, reported recent alcohol consumption in the past 90 days, not display cognitive impairment at the time of recruitment, and did not show symptoms of major psychiatric disorder.

Measures

The survey instruments used were translated into Creole from English then back translated and reviewed by a Cultural Linguistic Group to ensure cultural appropriateness and relevance.[61] This study was approved by the Institutional Review Board of Florida International University and the Ethics Committee of the GHESKIO Centers.

Socio-demographic characteristics

Participants provided socio-demographic characteristics including age (measured continuously in years); marital status (single/living single, married/cohabitated), education level (1=6th grade or less, 2=some high school or higher); religion (1=religious, 2= not religious); current housing (own house/family's/friends'); employment status (1=employed full time, 2=employed part-time, 3=unemployed, 4=student, 5=other); income level (1=less than 150, 2=150-1000, 3=1001-5000, 4=5001-10000, 5=10001-20000); children (1=No, 2=Yes); health insurance (1=No, 2=Yes); AIDS diagnosis (1=No, 2=Yes); ART medication adherence (1=No, 2=Yes); and partner's HIV status (1=has HIV, 2=don't have HIV, 3=don't know, 4=has not been tested yet).

Stigma of HIV/AIDS

To assess the participant's perceptions of HIV/AIDS related stigma, the Perceived Stigma of HIV/AIDS scale was used.[62–64] This scale contains two subscales- personal view (internalized stigma) and public view (externalized stigma). The personal view subscale has items that assess whether PLHV experienced shame, guilt, blame, embarrassment, or poor self-worth due to HIV. The public view subscale includes items that assessed whether PLHV had experienced social stigma, for instance what the respondent thinks about other people's attitudes and beliefs towards her disease

condition. Sample items include “Most people are afraid to be around a person with HIV, “Most people think you should be embarrassed about having HIV”. The questions in the subscales are both positively and negatively formulated to increase the specificity of the responses. Each subscale contains 24 items measured by a four-point Likert-type scale (1 = strongly agree to 4 = strongly disagree); scores were summed for each subscale. The total score of each subscale ranges between 24 and 96 and higher scores represent higher levels of stigma. The Cronbach’s alpha (α) of the instrument in the current study was 0.87 [62–64] The Perceived HIV-related stigma was analyzed as a continuous variable. Binary variables were also created to present cross tabulated distributions across key study variables with cut-off scores at the mean.

Relationship Power

Relationship power was measured using the Sexual Relationship Power scale (SRP), a 23 item, 4-point Likert scale measure, which provides a total score with favorable internal consistency, and reliability of .78 in the present study.[39,43,45] This procedure was suggested by Pulerwitz et al. when testing the association between relationship power and sexual risk behaviors.[39,43,45] The SRP scale contains two subscales: Relationship Control (RC) and Decision-Making Dominance (DMD). The relationship control subscale consists of 15 items assessing empowerment, such as “My partner won’t let me wear certain things.” and “I feel trapped or stuck in our relationship.” The decision-making dominance subscale consists of eight items capturing the ability to assert personal desires. Questions include “Who usually has more say about whether you have sex?” and “Who usually has more say about when you talk about serious things?” Scores for the Relationship Control and Decision-Making Dominance subscales were calculated separately and then combined into the Sexual Relationship Power Scale. Responses are

summed and normalized to a range of 1 to 4, with higher scores indicating greater relationship power.[39] As suggested by Pulerwitz et al., the overall scale scores were split into tertiles representing 'low'(<2.43), 'medium' (2.43 to 2.82), and 'high' (>2.82) levels of power.[43] Relationship power was treated as a continuous variable for linear regression analyses and treated as an ordinal variable for descriptive purposes.

Alcohol Use

The Alcohol Use Disorders Identification Test (AUDIT) is a 10-item survey that measures alcohol consumption and drinking behavior over the past 30 days.[65] Responses on this 10-item measure are scored from 0 to 4, with a maximum possible score of 40; higher scores indicate problematic drinking. The scores were dichotomized with numbers ≥ 8 categorized as hazardous drinking. Cronbach's alpha for this scale in the present sample was .85. Total scores of 8 or more indicate hazardous and harmful alcohol use as well as possible alcohol dependence.[65] Alcohol use was treated as a categorical variable in all analyses.

Drug and Sexual Risk Behavior Measures

Drug and Sexual Risk Behavioral Assessment (DS Measure) asks specific questions about history and current substance use, as well as sexual behaviors and relationships (i.e., sexual partners, activities, history).[66] It assists in measuring the number and proportion of unprotected sex acts (i.e. unprotected oral, anal, and vaginal sex) with unknown serostatus or HIV negative sex partners. It also measures drug abuse, and the number may assist with determining the proportion of times drug injection equipment is lent or given to unknown serostatus or HIV negative drug using partners after use. Internal consistency rating of the DS Measure in the present study is 0.80.

Drug Abuse

Drug abuse in this study was measured using the following question: “Have you ever used [substance] in the last 30 days?” (Y/N). The following drugs were measured: marijuana; crack or rock cocaine; sniffed or snorted cocaine; heroin; tranquilizers (i.e., Valium, Xanax); glue inhalation; other drugs; and the use of needles to inject drugs under the skin or veins. A score of “1” is given for each YES response and a score of “0” for each NO response. We coded drug abuse dichotomously based on whether or not the respondent ever used drugs in the last 30 days. Drug abuse was analyzed as a categorical variable.

Sexual Risk Behavior

Sexual risk behavior was measured using an index of sexual risk, Vaginal Episode Equivalent (VEE).[67,68] The VEE is an index representing the weighted sum of participants’ unprotected sexual acts during the past 3 months, including unprotected oral, anal, and vaginal sex. The benefit of using this index instead of individual sex acts is that it provides a score reflecting a subject’s overall sexual risk-taking behavior while considering the fact that some sexual behaviors are riskier than others.[67,68] Each sex act is weighted based on its differential risk following the formula: VEE = (1 × # of unprotected vaginal sex acts) + (2 × # of unprotected anal sex acts) + (0.01x # of unprotected oral sex acts).[67] VEE was analyzed as a continuous variable.

The number of sexual partners were dichotomized as participants reporting 0–1 or ≥ 2 sexual partners in the last 3 months. Sex exchange was measured using the following question: “Of the...number of sexual partners that you reported, with how many have you

exchanged sex for money, drugs, or a place". We coded sex exchange dichotomously based on whether or not the respondent reported having ever exchanged sex for money, drugs, or a place to live in the past 90 days.

Statistical Analyses

The data gathered from the completed questionnaires were imported into the Statistical Package for the Social Sciences (SPSS version 26) for data analysis. Descriptive analyses were performed to describe the demographic characteristics of the study participants. Frequencies, means, and standard deviation tests were used to describe the demographic characteristics. The following demographic and clinical variables were included: age, marital status, educational level, religion, current housing, employment status, income level, children, health insurance, AIDS diagnosis, ART medication adherence and partner's HIV status. Linear regression analysis was used to assess the association between HIV-related stigma and Sexual Relationship Power, as well as the association of HIV-related stigma and drug and sexual risk behaviors. Independent t-test and linear regression analyses were also used to assess the association between SRP and drug and sexual risk behaviors. All covariates were examined for potential influence on HIV-perceived stigma and SRP but education was the only significant demographic variable; therefore, it is the only one included as covariate in the final model. In all statistical models, we applied a cutoff p-value of 0.05 and confidence interval of 95%.

RESULTS

Demographic and socio-economic characteristics

A total of 173 WLHV were included in the study; approximately 56% of them were married or living with a partner and had an average age of 35±7.8 (Mean ±SD) years.

Most women (91%) had 1 or more children. Approximately 60% had a 6th grade or lesser level of education and only a few reported their employment status (15%) and their income level (13%). Regarding HIV health, self-report measures revealed that 51% of participants were diagnosed with AIDS and 69% reported currently taking HIV medication; the vast majority (95%) stated not having health care insurance. Concerning the spouse/partner's HIV health condition, 52% of women reported not knowing the partner's HIV status. (See Table 1).

Perceived HIV-related Stigma and Sexual Relationship Power

A total of 143 participants reported experiencing perceived HIV-related stigma (Table 2). The mean (SD) for perceived stigma score calculated was 108.78±17.282 (Mean ±SD) (Table 3). Participants who reported higher levels of perceived stigma also reported significantly lower levels of sexual relationship power (β = -0.290 t = -2.998, p =.003, R^2 = .176) (Table 4). Additionally, 60% of WLHV who experienced higher levels of perceived stigma also reported lower levels of relationship control while 44% reported decision-making dominance in their sexual relationship. Low sexual relationship power was common among this sample, with 83% reporting a history of low level of SRP.

Perceived HIV-related Stigma and Sexual Risk Behaviors

When the association between perceived HIV stigma and alcohol use was analyzed, approximately 46% of WLHV who experienced high levels of perceived stigma showed an increased risk for hazardous drinking compared to those who experienced lower levels of perceived stigma. In addition, perceived stigma was significantly inversely associated with drug use (β = -0.046 t = -0.376, p =.080, R^2 = .176) (Table 4). For the

association between HIV-related stigma and other sexual risk behaviors, approximately 56% of WLHV who experienced high levels of perceived stigma reported having high levels of unprotected vaginal/anal/oral sex and about 50% reported exchanging sex for drugs, money, or a place to live. However, stigma was not significantly associated with multiple sexual partners (male or female).

Sexual Relationship Power and Sexual Risk Behaviors

A total of 118 participants reported experiencing low levels of sexual relationship power (Table 2). For the association between sexual relationship power and sexual risk behaviors, about 120 WLHV reported hazardous drinking and 115 reported sex exchange for money, drugs or a place to live. In addition, the independent t-tests showed there is significant difference with alcohol use (p =.0001; Table 5), drug abuse (p =.017; Table 5), sex exchange (p =.019; Table 5) and having sex with multiple sexual male partners (p =.008; Table 5) between participants with low and high levels of SRP. However, there was no significant difference in multiple sexual female partners between participants reporting lower versus higher levels of sexual relationship power (p =.451; Table 5). Linear regression analysis shows that only one subscale of SRP, the Decision-Making-Dominance, was significantly associated with higher vaginal episode equivalent (p =.041; Table 6).

DISCUSSION

Although it has been demonstrated that women with lower relationship power are more likely to experience stigma and are at greater risk of engaging in unsafe sexual behaviors, few studies explicitly examined this association among WLHV in Haiti. Therefore, understanding the associations of HIV-related stigma, sexual relationship

power and sexual risk behaviors toward WLHV is important due to the critical role that gender inequality and power imbalances between men and women play in HIV prevention. Our results revealed that WLHV with high levels of perceived HIV stigma reported lower levels of Sexual Relationship Power. Several studies corroborate these findings. [69–72] In a study that sampled African American women, Younge et al. found that lower SRP scores were associated with higher scores on a perceived HIV risk.[69]

Perceived HIV-related Stigma and Sexual Relationship Power

The analysis supports our hypothesis that lower relationship power would be associated with higher levels of perceived HIV-related stigma in WLHV in Haiti. Similar to other studies, decreased sexual relationship power was associated with increased HIV-related stigma. Similarly, a previous study among urban women with mental illness found that participants in sexual relationships reported more stigma compared to those with no sexual partners.[70]

Our study findings are consistent with other studies that assess sexual relationship power among WLHV. High levels of perceived stigma also reported having low relationship control power and low levels of decision-making dominance power. This suggests that RC and DMD subscales of SRP may also have a significant association with HIV-related stigma. Lack of power in heterosexual relationships has been found to increase vulnerability to HIV positivity among women.[71–73] Dunkle et al. found that women who reported male dominance on the SRP were more likely to be infected with HIV.[71,72] Because of the value of sexual relationship power and cultural norms on women's ability to protect themselves from HIV, effective interventions must address power differentials among men and women.

Sexual Risk Behaviors

Alcohol Use

People living with HIV/AIDS (PLHV) often experience stigmatizing attitudes related to HIV and other identities (e.g., substance users), from families, partners, health care providers, and communities.[5,35,42,54,74,75] In addition to HIV stigma, unhealthy alcohol use is a personal risk factor that adds to the HIV risk environment.[5,16,72,76,77] Alcohol use disorder is common among PLHV and associated with a greater risk of poor medication adherence, unsafe sexual behaviors as well as poor quality of life. [5,15,19,25,35–39] A previous study conducted in Haiti discovered that alcohol use was one of the drivers for the HIV epidemic.[77] Our study results revealed that WLHV who experienced high levels of perceived stigma showed an increased risk of hazardous drinking. The study finding was consistent with other studies of PLHV.[5,16,54,77] A cross-sectional study of 276 PLHV in Haiti found a significant relationship between childhood sexual abuse and hazardous alcohol use among men and women living with HIV.[16]

Experts in the fields of gender and alcohol have also identified low levels of sexual relationship power and harmful use of alcohol as crucial elements of risky sexual behaviors like unprotected sex, transactional sex and multiple sexual partnerships. [5,12,43–48] Similar to other studies, our study results revealed that WLHV who experienced low levels of sexual relationship power showed an increased risk for hazardous drinking. In addition, there were significant differences in alcohol use between individuals with lower and higher levels of sexual relationship power. A national survey conducted in Haiti, reported that 16% of women who were currently married or living with a partner

experienced sexual violence and that alcohol use by the cohabiting male partner was a risk factor for partner sexual abuse. [5,78]

Drug Abuse

People who inject drugs (PWID) and live with HIV infection often experience double stigmatization.[6,27,49,58,60] Stigma, the exclusion of individuals in an undesirable social category, may have adverse effects on risk behaviors and health care utilization among PLHV. [18] Taken together, drug abuse and HIV amplify the stigmatization and discrimination against drug users, particularly among vulnerable populations. [6,27,49,58,60] Studies have shown that drug abuse can lead to increased sexual risk-taking, which can also result in HIV transmission. [6,15,27,49,58,60] Findings from the current study demonstrate inverse significant associations between perceived HIV-related stigma and drug abuse.

Drug-involved women have rarely been the focus of research on sexual relationship power; nevertheless, the interaction of gender, stigma, poverty and stress processes may uniquely impact this group.[44,79] Significant findings emerged in our study that supports the importance of sexual relationship power dynamics in the context of sexual behaviors for WLHV. In our study, there was significance difference in drug abuse scores with individuals reporting low and high levels of SRP and low and high levels of DMD. The direction of the significant associations we observed in our study is consistent with other studies.[44,49,79] In a study among drug-involved women, participants with more than one partner had on average lower decision-making scores .[44]

Sexual Risk Behaviors

Despite progress in the assessment of relationship power and HIV risk behaviors among women, research gaps remain. Relationship power has been highlighted as a major factor influencing women's safer sex practices. [5,15,25,42,45,46,49] Numerous studies have determined that power imbalances within sexual relationships are associated with poor sexual health outcomes for women worldwide. [5,15,25,41,42,44–46,49–51] Constant power imbalances often limit women's abilities and willingness to engage in care and place them at higher risk for HIV infection.[45,46,49] In this study, sexual risk behaviors may take the form of unprotected sex, sex with multiple partners (male or female), or transactional sex for money or other goods.[5,80]

Several studies have shown that exchanging sex for money and drugs is another high sexual risk behavior, often associated with HIV and other sexually transmitted infections (STIs).[58–60] Furthermore, the elevated risk for HIV correlated with exchanging sex may result from having more risky sexual partners and more unprotected sex.[44–46] In sub-Saharan Africa, adolescent girls and young women who have ever been involved in transactional sex are on average 50% more likely to be living with HIV than those who have never been engaged in transactional sex.[81] In addition, studies based on women involved in drug use suggest that exchanging sex is associated with factors, such as unemployment, homelessness, psychological distress, and having experienced stigma and sexual abuse, that also are known to increase HIV risk. [35,58–60,71–73,81,82] Consistent with prior research, our findings revealed that WLHV who experienced high levels of perceived stigma reported having higher levels of unprotected vaginal/anal/oral sex and reported exchanging sex for drugs, money, or a place to live.

Our study results also revealed there was a significant difference between lower and higher levels of SRP with higher levels of sexual risk behaviors including unprotected sex, sex with multiple male partners and transactional sex for drugs, money and/or other goods found among women with low SRP. Several studies confirm these findings.[41,83–86] In a cross-sectional study, a sample of women at an urban community health center in Massachusetts reported that higher total SRP scores were associated with fewer unprotected sex occasions.[85] Another recent study among women in psychiatric treatment revealed that women with higher levels of perceived relationship power showed lower levels of unprotected sexual behavior.[87] Our findings highlight the need to recognize the role that transactional sex plays in HIV-related stigma or relationship power. Further research is needed to understand better whether transactional sex mediates the relationship between HIV-related stigma and sexual relationship power.

Study findings support our hypothesis that lower relationship power, represented by the decision-making dominance and relationship control SRP subscales, would be associated with higher sexual risk behavior in WLHV in Haiti. Decreased decision-making dominance was associated with increased unprotected sex, increased sex with multiple male partners and increased transactional sex for drugs, money and/or other goods. These findings were parallel to a study conducted among drug-using women that found that individuals with higher decision-making power were less likely to be involved in risky sexual behaviors.[44] Another study done in Haiti by Conserve et al. found that women with greater levels of sexual decision making power were five times more likely to report consistent condom use.[5] Moreover, in a study conducted with pregnant Haitian women receiving prenatal care, higher DMD scores for women were associated with

intention to use condoms after pregnancy, but not with self-reported condom use or STIs in the prior year.[88]

On the other hand, relationship control showed a more complex relationship with sexual risk behaviors in this study sample. Our results revealed that for women living with HIV in Haiti, individuals with low levels of RC reported having higher levels of unprotected sex (vaginal/anal/oral). In a cross-sectional study among women offenders, participants reported higher RC scores related to decreased odds of unprotected anal sex, unprotected vaginal sex, and unprotected sex with a drug use.[89] Normally, women's motivations for engaging in transactional sex have included fulfilment of basic needs in impoverished settings, attempts to secure shelter and food and the expectation that men should provide for their partners in relationships rather than for empowering reasons.[71–73,81,82,90] Previous research has shown that women practice transactional sex in response to gender inequality in our society across a variety of economic conditions and perceived levels of control over their relationships. [81,82,90] In our sample, WLHV with low RC reported exchanging sex for drugs, money and/or a place to live. Other research from Uganda has found that among WLHV who are food insecure, transactional sex is an important strategy for survival and one that men knowingly consider when they approach women for sex.[71,72,82] A study in South Africa showed that among women who met their partners in bars, nearly half reported that their partner bought them drinks for sex.[71] Future research should consider the underlying motivations for engaging in transactional sex to more clearly understand the mechanisms involved.

Our study findings reveal a more complex picture of the association between sexual relationship power and sexual risk behaviors among women living with HIV in Haiti, with

a main effect in the hypothesized direction for decision-making dominance but not for relationship control. While the DMD subscale showed a significant association with several sexual risk behaviors mentioned in this study, the RC subscale showed no significant association with these specific variables. Consequently, the DMD subscale could be a better measure of sexual relationship power for the women living with HIV in Haiti; it provides a better view in their daily life with their partner (s) as expressed in decisions about spending time together, whether to have sex, whether to use a condom and/or the relationship overall.

Limitations

Several limits to our study need to be acknowledged. First, as this is a cross-sectional study, temporality could not be determined, and it is therefore not possible to make causal inferences about the relationship between HIV stigma and self-reported aspects of health. Secondly, all data were gathered through interviews, therefore participants' responses may have been subject to social-desirability bias. Thus, caution should be taken when considering the relationship between HIV-related stigma and other interpersonal variables presented in this study. Third, participants were asked to recall events dating back to the beginning of their relationship with their partner (s); these responses are subject to recall bias. Fourth, this study was a secondary analysis of data from a randomized controlled trial that examined the effectiveness of an adapted Cognitive-Behavioral Stress Management intervention study. Thus, hypotheses and subsequent findings were limited to measures chosen by the parent study's researchers and available data. A fifth limitation is that some caution should be taken when considering the generalizability of this study's findings. The participants included Haitian WLHV from one major metropolitan area in Haiti who were receiving services at the

GHESKIO Centers, the largest HIV testing and treatment center in the Caribbean. Therefore, findings could differ dramatically if participants were from different regions of Haiti and were not receiving healthcare services at GHESKIO. Finally, the sample was relatively small. A larger sample may provide further information on the association between HIV-related stigma and the interpersonal variables mentioned above.

CONCLUSION

Despite the noted limitations, the present study helps fill in the knowledge gap of the association between HIV-related stigma, sexual relationship power, and sexual risk behaviors among Haitian women living with HIV. As the results of the current study indicated, stigma and many interpersonal factors represent significant challenges for WLHV. Therefore, the current study modestly contributes to explaining the relationships between these complex variables, which play an important role in the lives of Haitian WLHV. Consequently, improved understanding of intersecting stigmas in Haitian WLHV who had a history of low sexual relationship power and high sexual risk behaviors is critical to designing more effective HIV prevention, testing and treatment programs both globally and regionally.

TABLES

Table 1. Demographic and Health Information for the Study Sample (N=173)

Age in years, mean, (SD)	35.0 (7.8)
Marital Status N (%)	171 (99%)
Single or Living single	74 (43%)
Married or cohabitated	97 (56%)
Educational Level N (%)	167 (97%)
6th Grade or less	104 (60%)
Some High School or Higher	63 (36%)
Religion N (%)	171 (99%)
Religious	162 (94%)
Atheist/Not religious	9 (5%)
Regular place to live (family's, partner's, or own house) N (%)	26 (15%)
Employment Status N (%)	26 (15%)
Regularly employed Full time in a job	1 (0.6%)
Employed seasonally/day-to-day basis	3 (2%)
Unemployed/looking for work	15 (9%)
Student	1 (0.6%)
Other	6 (4%)
Income Level N (%)	23 (13%)
Less than 150	3 (2%)
150-1000	6 (4%)
1001-5000	10 (6%)
5001-10000	2 (1%)
10001-20000	2 (1%)
Children N (%)	171 (99%)
No	14 (8%)
Yes	157 (91%)
Health Insurance N (%)	171 (99%)
No	164 (95%)
Yes	7 (4%)
Diagnosed with AIDS N (%)	171 (99%)
No	82 (47%)
Yes	89 (51%)
Currently taking any ART medications N (%)	171 (99%)
No	53 (31%)
Yes	118 (69%)
Partner's HIV status N (%)	162 (94%)
Has HIV	27 (16%)
Does not have HIV	31 (19%)
Do not know	85 (52%)
Have not been tested	19 (11%)

Table 2. Descriptive Statistics of the Self-report Measures of HIV-related Stigma, Sexual Relationship Power, Drug and Sexual Risk Behaviors.

Sexual Relationship Power Total **N (%)**	**Perceived Stigma Low**	**Perceived Stigma High**	**Total**
	47 (33%)	96 (67%)	143 (100%)
Low	34 (24%)	84 (59%)	118 (83%)
Medium	11 (8%)	10 (7%)	21 (15%)
High	2 (1%)	2 (1%)	4 (2%)
Sexual Relationship Power Decision making dominance subscale **N (%)**			
	51 (34%)	99 (66%)	150 (100%)
Low	26 (17%)	66 (44%)	92 (61%)
High	25 (17%)	33 (22%)	58 (39%)
Sexual Relationship Power Relationship control subscale **N (%)**			
	51 (33%)	102 (67%)	153 (100%)
Low	51 (33%)	91 (60%)	142 (93%)
High	0 (0%)	11 (7%)	11 (7%)
Drug Abuse N (%)			
	45 (32%)	97 (68%)	142 (100%)
None	31 (22%)	63 (44%)	94 (66%)
1 or more drugs in the last 30 days	14 (10%)	34 (24%)	48 (34%)
Alcohol Use N (%)			
	53 (34%)	104 (66%)	157 (100%)
Low-risk Consumption	10 (7%)	32 (20%)	42 (27%)
Hazardous Drinking	43 (27%)	72 (46%)	115 (73%)
Sexual Risk Behaviors-VEE N (%)			
	29 (28%)	76 (72%)	105 (100%)
None	5 (5%)	17 (16%)	22 (21%)
1 unprotected vaginal/anal/oral episode	24 (23%)	59 (56%)	83 (79%)
Sexual Risk Behavior-Sex with # men			
	51 (33%)	102 (67%)	153 (100%)
1 or less sexual partner	25 (16%)	50 (33%)	75 (49%)
2 or more sexual partners	26 (17%)	52 (34%)	78 (51%)
Sexual Risk Behavior-Sex with # women			
	36 (29%)	89 (71%)	125 (100%)
1 or less sexual partner	32 (26%)	82 (66%)	114 (92%)
2 or more sexual partners	4 (3%)	7 (5%)	11 (8%)
Sexual Risk Behavior-Sex for Exchange (%)			
	51 (33%)	102 (67%)	153 (100%)
None	11 (7%)	26 (17%)	37 (24%)

1 or more sexual partners for sex exchange	40 (26%)	76 (50%)	116 (76%)

Table 3. Perceived HIV-related Stigma, Drug and Sexual Risk Behaviors, Mean and SE of Mean (n=173)

Scales	**(Mean ±SD)**
Perceived Stigma	108.78±17.282
Drug Abuse	0.32±0.467
Alcohol Use	14.06±8.270
Sexual Risk Behavior-VEE	15.858±25.229
Sexual Risk Behavior- sex with men	1.49±0.501
Sexual Risk Behavior- sex with women	1.09±0.286
Sexual Risk Behavior-sex for exchange	1.74±0.439

Table 4. Results of Linear Regression analyses for predicting Perceived Stigma, Sexual Relationship Power, and Sexual Risk Behaviors.

	Perceived Stigma			
	SE	***Standardized β***	***t***	***p***
1. Sexual Relationship Power	*5.844*	*β = -0.290*	-2.998	.003
2. Drug Abuse	*4.030*	*β = 0.202*	1.771	.080
3. Alcohol Use (AUDIT)	*1.837*	*β = -0.130*	-1.229	.222
4. Sexual Risk Behaviors-VEE	*.068*	*β = 0.151*	1.509	.134
5. Sexual Risk Behaviors-sex for exchange	*4.475*	*β = -0.001*	-.007	.994
6. Sex with # men	*4.232*	*β = -0.046*	-.376	.707
7. Sex with # women	*5.565*	*β = -0.108*	-1.939	.279

***** Linear Regression model controlled for education.

Table 5. Independent Samples t-Test Results of Relationship Control subscale (RC), Decision Making Dominance subscale (DMD), Sexual Relationship Power (SRP) and Sexual Risk Behaviors.

Sexual Relationship Power RC						
Sexual Risk Behaviors	***N***	***Mean***	***SD***	***SE***	***t***	***p***
Drug Abuse						
None	105	33.38	4.244	.414	-.49	.627
1 or more drugs in the last 30 days	49	33.78	5.509	.787		
Alcohol Use (AUDIT)						
Low-risk Consumption	44	34.14	5.441	.820	.67	.502
Hazardous Drinking	123	33.58	4.450	.401		
Sexual Risk Behaviors-sex for exchange						
None	43	32.86	4.335	.661	-1.45	.150
1 or more exchange	123	34.07	4.826	.435		
Sex with # Men						
1 or less sexual partner	84	33.58	4.413	.482	-.47	.641
2 or more sexual partners	82	33.93	5.038	.556		
Sex with # Women						
1 or less sexual partner	123	33.28	4.504	.406	-.036	.971
2 or more sexual partners	12	33.33	3.916	1.103		
Sexual Relationship Power DMD						
Sexual Risk Behaviors	*N*	*Mean*	*SD*	*SE*	*t*	*p*
Drug Abuse						
None	102	15.18	3.100	.307	-3.83	.000
1 or more drugs in the last 30 days	49	17.37	3.672	.525		
Alcohol Use (AUDIT)						
Low-risk Consumption	42	14.90	3.098	.478	-2.17	. 031
Hazardous Drinking	122	16.20	3.428	.310		
Sexual Risk Behaviors-sex for exchange						
None	42	14.93	2.933	.453	-2.12	.035
1 or more exchange	121	16.21	3.493	.318		
Sex with # Men						
1 or less sexual partner	82	15.07	3.154	.348	-3.12	.002
2 or more sexual partners	81	16.69	3.456	.384		
Sex with # Women						
1 or less sexual partner	121	15.75	3.467	.315	-.702	.484
2 or more sexual partners	12	16.50	4.079	1.177		
Sexual Relationship Power Total						
Sexual Risk Behaviors	*N*	*Mean*	*SD*	*SE*	*t*	*p*
Drug Abuse						
None	99	2.1190	.24983	.02511	-3.30	.0001

1 or more drugs in the last 30 days	47	2.2764	.30762	.04487		
Alcohol Use (AUDIT)						
Low-risk Consumption	37	2.0825	.26438	.04346	-2.41	.017
Hazardous Drinking	120	2.2047	.27090	.2473		
Sexual Risk Behaviors-sex for exchange						
None	41	2.0917	.28206	.04405	-2.36	.019
1 or more exchange	115	2.2077	.26558	.02477		
Sex with # Men						
1 or less sexual partner	78	2.1193	.26470	.02997	-2.70	.008
2 or more sexual partners	78	2.2351	.27235	.03084		
Sex with # Women						
1 or less sexual partner	118	2.1575	.27692	.02549	-.76	.451
2 or more sexual partners	12	2.2217	.31034	.08959		

Table 6. Results of Linear Regression analyses for predicting Decision Making Dominance subscale (DMD), Relationship Control subscale (RC), Sexual Relationship Power (SRP) and Vaginal Episode Equivalent- VEE.

Sexual Relationship Power Scales	**Sexual Risk Behaviors-VEE**			
	SE	***Standardized β***	***t***	***p***
DMD	*.012*	*β =0.186*	2.071	.041
RC	*.016*	*β =0.032*	.349	.728
SRP	*.001*	*β = 0.160*	1.756	.082

***** Linear Regression model controlled for education.

REFERENCES

1. UNAIDS. Women and HIV: A spotlight on adolescent girls and young women. 1–20 (2019).

2. UNAIDS. When women lead, change happens. 36 (2017).

3. Dellar, R. C., Dlamini, S. & Karim, Q. A. Adolescent girls and young women: Key populations for HIV epidemic control. *J. Int. AIDS Soc.* **18**, 64–70 (2015).

4. Mihan, R., Kerr, J., Maticka-Tyndale, E. & Team, T. A. HIV-related stigma among African, Caribbean, and Black youth in Windsor, Ontario. *AIDS Care* **28**, 758–763 (2016).

5. Conserve, D. F., King, G., Dévieux, J. G., Jean-Gilles, M. & Malow, R. Determinants of HIV serostatus disclosure to sexual partner among HIV-positive alcohol users in haiti. *AIDS Behav.* **18**, 1037–1045 (2014).

6. UNAIDS. Forty years into the HIV epidemic, AIDS remains the leading cause of death of women of reproductive age-UNAIDS calls for bold action. (2020).

7. UNIAIDS, HIV. 'AIDS estimates, 2018.' URL http://www. unaids. org/en/regionscountries/countries/Haiti/.

8. UNAIDS. 2019-global-AIDS-update. *Communities Cent.* 121–138 (2019) doi:10.2307/j.ctt1t898kc.12.

9. Seo, G. *et al.* The FANMI ('my FAMILY' in Creole) study to evaluate community-based cohort care for adolescent and young women living with HIV in Haiti: Protocol for a randomized controlled trial. *BMC Public Health* **19**, 1–10 (2019).

10. Reif, L. K. *et al.* Impact of a youth-friendly HIV clinic: 10 years of adolescent outcomes in Port-au-Prince, Haiti. *J. Int. AIDS Soc.* **19**, 20859 (2016).

11. Saxena, A. *et al.* Association between intimate partner violence and HIV status among Haitian Women. *Glob. Public Health* **14**, 1557–1568 (2019).
12. Richardson, E. T. *et al.* Gender inequality and HIV transmission: A global analysis. *J. Int. AIDS Soc.* **17**, 1–5 (2014).

13. Brown, L., Macintyre, K. & Trujillo, L. Interventions to reduce HIV/AIDS stigma: What have we learned? *AIDS Educ. Prev.* **15**, 49–69 (2003).

14. Mihan, R., Kerr, J., Maticka-Tyndale, E. & Team, T. A. HIV-related stigma among African, Caribbean, and Black youth in Windsor, Ontario. *AIDS Care* **28**, 758–763 (2016).

15. Villalba, K., Attonito, J., Jean-Gilles, M., Rosenberg, R. & Devieux, J. G. Gender differences in the association between childhood sexual abuse and risk behaviors among people living with HIV in Haiti. *AIDS Care* 1–7 (2020) doi:10.1080/09540121.2020.1757022.

16. Villalba, K. *et al.* The Effects of Childhood Sexual Abuse: The Role of Anxiety and Alcohol Use among Haitian Women Living with HIV. *J. Child Sex. Abus.* 1–14 (2020) doi:10.1080/10538712.2020.1801939.

17. Herek, G. M., Capitanio, J. P. & Widaman, K. F. HIV-related stigma and knowledge in the United States: Prevalence and trends, 1991-1999. *Am. J. Public Health* **92**, 371–377 (2002).

18. DeFleur, M. L. Stigma: Notes on the Management of Spoiled Identity. By Erving Goffman. Englewood Cliffs, New Jersey: Prentice-Hall, 1963. 147 pp. Cloth, $4.50; paper, $1.95. *Soc. Forces* **43**, 127–128 (1964).

19. Eaton, L. A. *et al.* HIV microaggressions: a novel measure of stigma-related experiences among people living with HIV. *J. Behav. Med.* (2019) doi:10.1007/s10865-019-00064-x.

20. Earnshaw, V. A., Smith, L. R., Chaudoir, S. R., Amico, K. R. & Copenhaver, M. M. HIV stigma mechanisms and well-being among PLWH: a test of the HIV stigma framework. *AIDS Behav.* **17**, 1785–1795 (2013).

21. Eaton, L. A. *et al.* Experiences of stigma and health care engagement among Black MSM newly diagnosed with HIV/STI. *J. Behav. Med.* **41**, 458–466 (2018).

22. Chaudoir, S. R., Earnshaw, V. A. & Andel, S. 'Discredited' Versus 'Discreditable': Understanding How Shared and Unique Stigma Mechanisms Affect Psychological and Physical Health Disparities. *Basic Appl. Soc. Psych.* **35**, 75–87 (2013).

23. Kemp, C. G. *et al.* HIV stigma and viral load among African-American women receiving treatment for HIV. *AIDS* **33**, 1511–1519 (2019).

24. Turan, J. M. *et al.* Challenges and opportunities in examining and addressing intersectional stigma and health. *BMC Med.* **17**, (2019).

25. Rubens, M. *et al.* HIV-Related Stigma, Quality of Care, and Coping Skills: Exploring Factors Affecting Treatment Adherence Among PLWH in Haiti. *J. Assoc. Nurses AIDS Care* **29**, 570–579 (2018).

26. Whittle, H. J. *et al.* Precarity and health: Theorizing the intersection of multiple material-need insecurities, stigma, and illness among women in the United States. *Soc. Sci. Med.* **245**, (2020).

27. Pantelic, M., Steinert, J. I., Park, J., Mellors, S. & Murau, F. 'Management of a spoiled identity': Systematic review of interventions to address self-stigma among people living with and affected by HIV. *BMJ Glob. Heal.* **4**, (2019).

28. Kay, E. S. *et al.* Experienced HIV-Related Stigma in Health Care and Community Settings: Mediated Associations With Psychosocial and Health Outcomes. *J. Acquir. Immune Defic. Syndr.* **77**, 257–263 (2018).

29. Rao, D., Andrasik, M. P. & Lipira, L. HIV stigma among black women in the United States: Intersectionality, support, resilience. *Am. J. Public Health* **108**, 446–448 (2018).

30. Cederfjäll, C., Langius-Eklöf, A., Lidman, K. & Wredling, R. Gender Differences in Perceived Health-Related Quality of Life Among Patients with HIV Infection. *AIDS Patient Care STDS* **15**, 31–39 (2001).

31. Centers for Disease Control and Prevention. *Title: HIV Among Women.* (2017).

32. Rice, W. S. *et al.* Perceptions of intersectional stigma among diverse women living with HIV in the United States. *Soc. Sci. Med.* **208**, 9–17 (2018).

33. Auerbach, J. D., Parkhurst, J. O. & Cáceres, C. F. Addressing social drivers of HIV/AIDS for the long-term response: conceptual and methodological considerations. *Glob. Public Health* **6 Suppl 3**, S293-309 (2011).

34. Krieger, N. Measures of Racism, Sexism, Heterosexism, and Gender Binarism for Health Equity Research: From Structural Injustice to Embodied Harm-an Ecosocial Analysis. (2019) doi:10.1146/annurev-publhealth.

35. Pitpitan, E. V. *et al.* Gender-based violence, alcohol use, and sexual risk among female patrons of drinking venues in Cape Town, South Africa. *J. Behav. Med.* **36**, 295–304 (2013).

36. Kalichman, S. C., Simbayi, L. C., Kaufman, M., Cain, D. & Jooste, S. Alcohol use and sexual risks for HIV/AIDS in sub-Saharan Africa: systematic review of empirical findings. *Prev. Sci.* **8**, 141–151 (2007).

37. Cook, R. L. & Clark, D. B. Is there an association between alcohol consumption and sexually transmitted diseases? A systematic review. *Sex. Transm. Dis.* **32**, 156–164 (2005).

38. Pulerwitz, J., Amaro, H., Jong, W. De, Gortmaker, S. L. & Rudd, R. Relationship power, condom use and HIV risk among women in the USA. *AIDS Care* **14**, 789–800 (2002).

39. Pulerwitz, J., Gortmaker, S. L. & DeJong, W. Measuring Sexual Relationship Power in HIV/STD Research. *Sex Roles* **42**, 637–660 (2000).

40. Wingood, G. M. & DiClemente, R. J. Partner influences and gender-related factors associated with noncondom use among young adult African American women. *Am. J. Community Psychol.* **26**, 29–51 (1998).

41. Nkosi, S., Rich, E. P. & Morojele, N. K. Alcohol use, sexual relationship power, and unprotected sex among patrons in bars and taverns in rural areas of North West province, South Africa. *AIDS Behav.* **18**, 2230–2239 (2014).

42. Dévieux, J. G. *et al.* Depression, Abuse, Relationship Power and Condom Use by Pregnant and Postpartum Women with Substance Abuse History. *AIDS Behav.* **20**, 292–303 (2016).

43. Closson, K. *et al.* Measuring sexual relationship power equity among young women and young men South Africa: Implications for gender-transformative programming. *PLoS ONE* vol. 14 (2019).

44. Campbell, A. N. C., Tross, S., Hu, M. C., Pavlicova, M. & Nunes, E. V. Predictors of relationship power among drug-involved women. *AIDS Behav.* **16**, 1532–1541 (2012).

45. Pulerwitz, J., Amaro, H., Jong, W. De, Gortmaker, S. L. & Rudd, R. Relationship power, condom use and HIV risk among women in the USA. *AIDS Care* **14**, 789–800 (2002).

46. Pulerwitz, J., Gortmaker, S. L. & DeJong, W. Measuring Sexual Relationship Power in HIV/STD Research. *Sex Roles* **42**, 637–660 (2000).

47. Malow, R., Rosenberg, R., Lichtenstein, B. & Dévieux, J. G. The Impact of Disaster on HIV in Haiti and Priority Areas Related to the Haitian Crisis. *Journal of the Association of Nurses in AIDS Care* vol. 21 283–288 (2010).

48. Dévieux, J. G., Rosenberg, R., Saint-Jean, G., Bryant, V. E. & Malow, R. M. The Continuing Challenge of Reducing HIV Risk among Haitian Youth: The Need for Intervention. *J. Int. Assoc. Provid. AIDS Care* (2013).

49. Panchanadeswaran, S. *et al.* Intimate partner violence and consistent condom use among drug-using heterosexual women in New York City. *Women Heal.* **50**, 107–124 (2010).

50. Kershaw, T. S. *et al.* The influence of power on HIV risk among pregnant women in rural Haiti. *AIDS Behav.* **10**, 309–318 (2006).

51. Pettifor, A. E., Measham, D. M., Rees, H. V. & Padian, N. S. Sexual power and HIV risk, South Africa. *Emerg. Infect. Dis.* **10**, 1996–2004 (2004).

52. Evens, E. *et al.* Experiences of gender-based violence among female sex workers, men who have sex with men, and transgender women in Latin America and the Caribbean: A qualitative study to inform HIV programming. *BMC Int. Health Hum. Rights* **19**, (2019).

53. Flentje, A., Heck, N. C., Brennan, J. M. & Meyer, I. H. The relationship between minority stress and biological outcomes: A systematic review. *J. Behav. Med.* (2019) doi:10.1007/s10865-019-00120-6.

54. Dévieux, J. G. *et al.* Post-traumatic stress disorder symptomatology and alcohol use among HIV-seropositive adults in Haiti. *AIDS Care - Psychol. Socio-Medical Asp. AIDS/HIV* **25**, 1210–1218 (2013).

55. Turan, B. *et al.* How Does Stigma Affect People Living with HIV? The Mediating Roles of Internalized and Anticipated HIV Stigma in the Effects of Perceived Community Stigma on Health and Psychosocial Outcomes. *AIDS Behav.* **21**, 283–291 (2017).

56. Lyimo, R. A. *et al.* Stigma, disclosure, coping, and medication adherence among people living with HIV/AIDS in Northern Tanzania. *AIDS Patient Care STDS* **28**, 98–105 (2014).

57. Beck-Sagué, C. M. *et al.* Depression in caregivers of status-naïve pediatric HIV patients participating in a status disclosure study in haiti and the dominican Republic: Preliminary report. *J. Trop. Pediatr.* **61**, 65–68 (2015).

58. Logan, T. K., Leukefeld, C. & Farabee, D. Sexual and drug use behaviors among women crack users: implications for prevention. *AIDS Educ. Prev. Off. Publ. Int. Soc. AIDS Educ.* **10**, 327–340 (1998).

59. Roy, E. *et al.* Prevalence of HIV infection and risk behaviours among Montreal street youth. *Int. J. STD AIDS* **11**, 241–247 (2000).

60. Tortu, S. *et al.* Urban crack users: gender differences in drug use, HIV risk and health status. *Women Health* **27**, 177–189 (1998).

61. Dévieux, J. G. *et al.* Cultural adaptation in translational research: Field experiences. *J. Urban Heal.* **82**, 82–91 (2005).

62. Westbrook, L. E., and Bauman, L. J. Perceived Stigma of HIV/AIDS Scale. *Albert Einstein College of Medicine* (1996).

63. Bauman, L. J., Silver, E. J., and Camacho, S. Stigma among mothers with HIV/AIDS. in *Presented at the XIII International AIDS Conference* (2000).

64. Bauman, L. J., Camacho, S., Westbrook, L. E., and Forbes-Jones, E. Correlates of personal stigma and social stigma among mothers with HIV/AIDS. in *Presented at the National Conference on Women and HIV*.

65. Saunders, J. B., Aasland, O. G., Babor, T. F., de la Fuente, J. R. & Grant, M. Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO Collaborative Project on Early Detection of Persons with Harmful Alcohol Consumption--II. *Addiction* **88**, 791–804 (1993).

66. CDC. *INSPIRE*. (2001).

67. Rubens, M., McCoy, H. V. & Shehadeh, N. Proficiency in condom use among migrant workers. *J. Assoc. Nurses AIDS Care* **25**, 233–242 (2014).

68. Susser, E., Desvarieux, M. & Wittkowski, K. M. Reporting sexual risk behavior for HIV: A practical risk index and a method for improving risk indices. *Am. J. Public Health* **88**, 671–674 (1998).

69. Younge, S. N., Salem, D. & Bybee, D. Risk Revisited: The Perception of HIV Risk in a Community Sample of Low-Income African American Women. *J. Black Psychol.* **36**, 49–74 (2008).

70. Collins, P. Y. *et al.* Relationship of Stigma to HIV Risk Among Women with Mental Illness. *Am. J. Orthopsychiatry* **78**, 498–506 (2008).

71. Dunkle, K. L. *et al.* Transactional sex among women in Soweto, South Africa: prevalence, risk factors and association with HIV infection. *Soc. Sci. Med.* **59**, 1581–1592 (2004).

72. Dunkle, K. L. *et al.* Transactional sex with casual and main partners among young South African men in the rural Eastern Cape: prevalence, predictors, and associations with gender-based violence. *Soc. Sci. Med.* **65**, 1235–1248 (2007).

73. Rwafa, T., Shamu, S. & Christofides, N. Relationship power and HIV sero-status: An analysis of their relationship among low-income urban Zimbabwean postpartum women. *BMC Public Health* **19**, 1–10 (2019).

74. Braitstein, P. *et al.* Sexual violence among a cohort of injection drug users. *Soc. Sci. Med.* **57**, 561–569 (2003).

75. NIDA. Drug Facts Criminal Justice. 331–338 (2020).

76. Mugavero, M. *et al.* Barriers to antiretroviral adherence: the importance of depression, abuse, and other traumatic events. *AIDS Patient Care STDS* **20**, 418–428 (2006).

77. Malow, R. *et al.* Depression, substance abuse and other contextual predictors of adherence to antiretroviral therapy (ART) among Haitians. *AIDS Behav.* **17**, 1221–1230 (2013).

78. Gage, A. J. & Suzuki, C. Risk factors for alcohol use among male adolescents and emerging adults in Haiti. *J. Adolesc.* **29**, 241–260 (2006).

79. Campbell, A. N. C. *et al.* Relationship power and sexual risk among women in community-based substance abuse treatment. *J. Urban Heal.* **86**, 951–964 (2009).

80. Dévieux, J. G. *et al.* Predictors of Sexual Activity in Haitian-American Adolescents. *J. Immigr. Minor. Heal.* **18**, 161–172 (2016).

81. Wamoyi, J., Stobeanau, K., Bobrova, N., Abramsky, T. & Watts, C. Transactional sex and risk for HIV infection in sub-Saharan Africa: a systematic review and meta-analysis. *J. Int. AIDS Soc.* **19**, 20992 (2016).

82. Conroy, A. A. *et al.* Relationship Power and Sexual Violence Among HIV-Positive Women in Rural Uganda. *AIDS Behav.* **20**, 2045–2053 (2016).

83. Pettifor, A. E., Measham, D. M., Rees, H. V & Padian, N. S. Sexual power and HIV risk, South Africa. *Emerg. Infect. Dis.* **10**, 1996–2004 (2004).

84. Hatcher, A. M. *et al.* Sexual relationship power and depression among HIV-infected women in Rural Uganda. *PLoS One* **7**, e49821 (2012).

85. Pulerwitz, J., Amaro, H., De Jong, W., Gortmaker, S. L. & Rudd, R. Relationship power, condom use and HIV risk among women in the USA. *AIDS Care* **14**, 789–800 (2003).

86. Bermúdez, M. P., Castro, A., Gude, F. & Buela-Casal, G. Relationship power in the couple and sexual double standard as predictors of the risk of sexually transmitted infections and HIV: multicultural and gender differences. *Curr. HIV Res.* **8**, 172–178 (2010).

87. Abbamonte, J. M. *et al.* Social Support, Relationship Power, and Knowledge of HIV+ Serostatus in Sexual Risk Behavior Among Women in Psychiatric Treatment. *J. Clin. Psychol. Med. Settings* **28**, 191–199 (2020).

88. Magee, E. M., Small, M., Frederic, R., Joseph, G. & Kershaw, T. Determinants of HIV / AIDS Risk Behaviors in Expectant Fathers in Haiti. **83**, 625–636 (2006).

89. Knudsen, H. K. *et al.* Partner relationships and HIV risk behaviors among women offenders. *J. Psychoactive Drugs* **40**, 471–481 (2008).

90. UNAIDS & STRIVE. Transactional sex and HIV risk: from analysis to action. *Unaids* 1–42 (2018).

CHAPTER IV: Association between HIV-related Stigma, Depressive Symptoms and History of Childhood Sexual Abuse among Haitian Women Living with HIV (WLHV)

ABSTRACT

Human Immunodeficiency Virus (HIV) disproportionately affects women around the world. Globally, girls and women make up more than half of the 36.9 million people living with HIV. After sub-Saharan Africa, the Caribbean is the most HIV-affected region in the world, with half of the region's people living with HIV (PLHV) in Haiti. Over 40% of new HIV infections in Haiti occur among adolescents and youth, 80% of which occur among young women. Women living with HIV (WLHV) experience stigma and elevated exposure to negative experiences such as traumatic events, and mental illness. Stigma and co-occurring mental and psychological health problems have been reported among WLHV, yet the causal pathways explaining the relationship between HIV-related stigma, depressive symptoms, and childhood sexual abuse among Haitian women are rarely addressed explicitly. This cross-sectional study examined the association between HIV-related stigma and psychological variables such as depressive symptoms and history of childhood sexual abuse among a sample of Haitian women. The current study is a secondary analysis of baseline data collected from 276 PLHV from Haiti. The questionnaires included: Perceived Stigma scale; Centers for Epidemiological Studies Depression Scale (CES-D); and Childhood Sexual Abuse Scale (CSA). Linear regression and mediation analyses were used for estimating the strength of associations and mediating effects. A total of 173 WLHV participated in this study with 66% experiencing high levels of perceived stigma. Our results revealed that a greater number of CSA events was associated with a larger number of depressive symptoms and higher

perceived stigma. Depressive symptoms were also directly associated with higher levels of perceived stigma. In addition, mediation analyses showed that the indirect effect of history of CSA was associated with higher perceived stigma via the indirect effects of depressive symptoms. The present study contributes to our understanding of the role that history of CSA and adverse mental/health outcomes may play in perceived stigma among Haitian WLHV. Our results suggest the potential benefits of integrating trauma-informed interventions that target mental health outcomes in this population.

INTRODUCTION

Human Immunodeficiency Virus (HIV) disproportionately affects women.[1–3] In 2018, UNAIDS reports that women are disproportionately affected by HIV in Haiti and of the 150,000 adults living with HIV, 58% were women.[4–6] Over 40% of new HIV infections in Haiti occur among adolescents and youth, 80% of which occur among young women. [4–6] Studies conducted in developing countries such as Haiti, South Africa and other African countries show that detrimental traditional practices, intimate partner violence, childhood abuse, and discriminatory laws strengthen unequal power dynamics between men and women, with women particularly disadvantaged.[1,2,13,3,6–12]

People living with HIV (PLHV) frequently have complex histories, and adverse experiences such as stigma, psychosocial disorder, mental illness and traumatic events.[14–18] HIV-related stigma has been shown to undermine prevention, care, treatment, and the well-being of PLHV and is particularly lethal for Black women living with HIV.[19,20] The literature has been demonstrated that perceived and internalized stigma play a critical and direct role in mental health problems. [14–18] Depressive symptoms are particularly prevalent among PLHV throughout the world.[14,16,20–24] A

cross-sectional study of 362 PLHV in Haiti reported that HIV-related stigma was associated with lower levels of treatment adherence and higher levels of depression and anxiety.[14] Another study of PLHV in Haiti found that HIV-related stigma has been consistently associated with increased anxiety, depression, post-traumatic stress disorder (PTSD), alcohol and drug use, and other psychiatric disorders.[15] Depression is also associated with increased HIV transmission risk, increased morbidity, and a higher risk of HIV-related death among WLHV.[16,20,21,24] High childhood sexual abuse is also a major contributor to HIV risk, but there is limited understanding of how it is associated with HIV-related stigma and depressive symptoms among Black WLHV, specifically in the Caribbean.[25] This public health issue is problematic since the Caribbean region has the second highest regional prevalence of HIV/AIDS in the world (1.1%).[26,27]

Traumatic life experiences such as childhood sexual and physical abuse are characterized as having profound and lasting effects on health-related behaviors.[22,24] Individuals living with HIV report disproportionately high levels of exposure to traumatic life events in childhood as well as in adulthood.[12,13,22,28] A growing body of evidence that suggests that childhood sexual and physical abuse can in fact impact psychological symptoms into adulthood. [11,12,33,13,15,22,28–32] Exposure to trauma is often associated with problematic drinking and mental health conditions such as depression, posttraumatic stress disorder (PTSD), and anxiety, which PLHV experience at disproportionately high rates. [11,12,33,13,15,22,28–32]. A cross-sectional study of 276 Haitian men and women living with HIV reported that participants who experienced childhood sexual abuse (CSA) had increased odds of hazardous drinking compared to those who did not experience CSA.[12,13] Although rates of trauma vary widely in different populations, most studies concluded that it is extremely high in people living with HIV, particularly among women,

ethnic minorities including Indigenous people, and drug users. [11,12,33,13,15,22,28–32] In Haiti, a total of 25% of WLHV have experienced CSA, which also puts them at an increased risk for alcohol abuse. [12,13] In addition, some evidence suggests that women with histories of CSA may be more likely to suffer from depression in adulthood than men who have been victims of CSA.[12,24,28,34] Yet the causal pathways explaining the relationship between CSA, depressive symptoms, and HIV-related stigma among Haitian women living with HIV childhood sexual abuse are rarely addressed explicitly.

The current study examined the association between HIV-related stigma and psychological variables such as depressive symptoms and history of childhood sexual abuse. These three aspects of health have not been studied concurrently in this population, and growing rates of HIV/AIDS among Black Caribbean women indicate a need to better understand risk and protective factors within this group. We hypothesized that women who experienced a greater number of childhood sexual abuse events will have higher levels of perceived stigma, and higher levels of depressive symptoms compared to women with a lower number of childhood sexual abuse events. Finally, we hypothesized that depressive symptoms would mediate the relationship between history of childhood sexual abuse and HIV-related stigma. Improved understanding of intersecting stigmas in Haitian WLHV who have a history of childhood sexual abuse and depressive symptoms is critical to designing more effective HIV prevention, testing and treatment programs globally and regionally.

METHODS

Study Design and Population

This cross-sectional study design used data from a randomized controlled trial that examined the effectiveness of an adapted Cognitive-Behavioral Stress Management intervention (CBSM-A) in simultaneously reducing risk behaviors and improving ART adherence and other psychological factors. Participants were provided with information on HIV disease and its treatment, including currently available ART medications, the negative effects of substance use and high-risk sexual behavior on the immune system and health status, and the nature of depression and history of childhood trauma. Data collection for the parent study occurred at the GHESKIO (Groupe Haitien d'Etude du Sarcome de Kaposi et des Infections Opportunistes) Centers in Port-au-Prince, Haiti. Since 1982, GHESKIO has been the largest facility in Haiti treating patients with HIV/AIDS, other STIs, and tuberculosis.

A total of 276 Haitian men and women living with HIV completed baseline data collection between 2009 and 2013 as part of a longitudinal study conducted in Port-au-Prince, Haiti. For this study, a subgroup of 173 WLHV was used for the analyses. Women who reported having experienced HIV-related stigma or any psychological problems such as depression and history of traumatic abuse were eligible population for this study. 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, had a documented HIV diagnosis, reported at least one episode of unprotected anal or vaginal sex in the past 90 days, reported recent alcohol consumption in the past 90 days, not display cognitive impairment at the time of recruitment, and not show symptoms of major psychiatric disorder.

Measures

The survey instruments used were translated into Creole from English then back translated and reviewed by a Cultural Linguistic Group to ensure cultural appropriateness and relevance.[35] This study was approved by the Institutional Review Board of Florida International University and the Ethics Committee of the GHESKIO Centers.

Socio-demographic Characteristics

Participants provided socio-demographic characteristics including age (measured continuously in years); marital status (single/living single, married/cohabitated), education level (1=6th grade or less, 2=some high school or higher); religion (1=religious, 2= not religious); current housing (own house/family's/friends'); employment status (1=employed full time, 2=employed part-time, 3=unemployed, 4=student, 5=other); income level (1=less than 150, 2=150-1000, 3=1001-5000, 4=5001-10000, 5=10001-20000); children (1=No, 2=Yes); health insurance (1=No, 2=Yes); AIDS diagnosis (1=No, 2=Yes); ART medication adherence (1=No, 2=Yes); alcohol use (1=low-risk consumption, 2=hazardous drinking) and partner's HIV status (1=has HIV, 2=don't have HIV, 3=don't know, 4=has not been tested yet).

Perceived Stigma of HIV/AIDS

To assess the participant's perceptions of HIV/AIDS-related stigma, the Perceived Stigma of HIV/AIDS scale was used.[36–38] This scale contains two subscales- personal view (internalized stigma) and public view (externalized stigma). The personal view subscale has items that assess whether PLHV had experienced shame, guilt, blame, embarrassment, and poor self-worth due to HIV. The public view subscale includes

items that assessed whether PLHV had experienced social stigma, for instance, what the respondent thinks about other people's attitudes and beliefs towards her disease condition. Sample items include “Most people are afraid to be around a person with HIV, and “Most people think you should be embarrassed about having HIV”. The questions in the subscales are both positively and negatively formulated to increase the specificity of the responses. Each subscale contains 24 items measured using a four-point Likert-type scale (1 = strongly agree to 4 = strongly disagree); scores were summed for each subscale. The total score of each subscale ranges between 24 and 96 (summary score range of 48-192) with higher scores representing higher levels of stigma. The Cronbach’s alpha (α) of the instrument in the present sample was 0.87.[36–38] The Perceived HIV-related stigma was analyzed as a continuous variable. Binary variables were also created to present cross tabulated distributions across key study variables.

Depressive symptoms

Depressive symptoms were assessed using the Center for Epidemiological Studies Depression Scale (CES-D), a widely used measure in HIV research.[39] The CES-D includes few somatic indicators, thus reducing the likelihood of elevated depression scores due to the physical symptoms.[40] Depressive symptoms have been shown to be sensitive to CBSM-associated changes in symptomatic HIV+ individuals.[41] For the present study, participants used a rating scale ranging from 0 (never) to 4 (always) to rate how frequently they were affected by depressive symptoms. An example item is: “Feeling sad, depressed, or lonely.”[39] Responses were summed (range 0–60) with higher scores indicating greater severity of depression.[42] The measure demonstrated good internal consistency in the present study sample (α = .75). A score of 27 and

higher was used to indicate a high likelihood of current major depressive symptoms.[42] Depressive symptom severity was treated as a continuous variable in all analyses.

History of Childhood Sexual Abuse

The 5-item sexual abuse subscale of the Childhood Trauma Questionnaire (CT) was used to assess Childhood Sexual Abuse (CSA). The scale has been validated with illicit drug-using populations and shown to provide excellent convergent and discriminant validity with measures of antecedent trauma.[43] 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 CSA. [43] For the purpose of descriptive statistics, scores were dichotomized into moderate/severe (“CSA History,” 8–13) versus all others (“No CSA History,” 0–7). This method was previously used in studies among drug-using populations.[12,44,45] Cronbach’s alpha for this scale in the present sample was .85.[43] History of Childhood Sexual Abuse was treated as a continuous variable in all analyses.

Alcohol Use

The Alcohol Use Disorders Identification Test (AUDIT) is a 10-item survey that measures alcohol consumption and drinking behavior over the past 30 days.[46] Responses on this 10-item measure are scored from 0 to 4, with a maximum possible score of 40; higher

scores indicate problematic drinking. The scores were dichotomized with numbers ≥ 8 categorized as hazardous drinking. Cronbach's alpha for this scale in the present sample was .94. Total scores of 8 or more indicate hazardous and harmful alcohol use as well as possible alcohol dependence.[46] Alcohol use was treated as a categorical variable in all analyses.

Statistical Analyses

The data gathered from the completed questionnaires were imported into the Statistical Package for the Social Sciences (SPSS version 26) for data analysis. Descriptive statistics including means, and standard deviations were generated for all continuous variables and frequencies and proportions were generated for all categorical variables. Bivariate correlations were computed to assess the unadjusted zero-order relationships between all key study variables. The following demographic and clinical variables were included: age, marital status, educational level, religion, current housing, employment status, income level, children, health insurance, AIDS diagnosis, ART medication adherence, alcohol use (AUDIT) and partner's HIV status. Linear regression analysis was used to assess the association between HIV-related stigma and depressive symptoms, as well as the association of depressive symptoms and history of childhood sexual abuse. Linear regression was also used to assess the association between HIV related stigma and history of CSA. Primary data analysis consisted of mediation analysis; wherein bootstrap resampling techniques (k = 10,000) were used to generate 95% bias-corrected confidence intervals (CIs) of indirect effects using PROCESS version 3.5. We conducted a mediation analysis to examine the indirect association of history of childhood sexual abuse on HIV stigma via the mediating effects of depressive symptoms. 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* (history of CSA) on *Y* (HIV-related stigma) via *M* (depressive symptoms) c'-path for SPSS 25. Bias-corrected CIs that did not include zero for the indirect effect indicated statistical significance. All covariates were examined for potential influence on HIV-perceived stigma but only the following demographic and clinical variables were significant and included as covariates in the final model: educational level and AUDIT. In all statistical models, we applied a cutoff p-value of 0.05 and confidence interval of 95%.

RESULTS

Demographic and socio-economic characteristics

A total of 173 WLHV were included in the study; approximately 56% of them were married or living with a partner and had an average age of 35±7.8 (Mean ±SD) years. Most women (91%) had 1 or more children. Approximately 60% had a 6th grade or lesser level of education and only a few reported their employment status (15%) and their income level (13%). Regarding HIV health, self-report measures revealed that about 51% of participants were diagnosed with AIDS and 69% reported currently taking HIV medication; the vast majority (95%) reported not having health care insurance. Participants also reported a high level of hazardous drinking (71%). Concerning the spouse/partner's HIV health condition, 52% of women reported not knowing the partner's HIV status. (See Table 1).

History of Childhood Sexual Abuse and Perceived HIV-related Stigma

A total of 157 participants reported experiencing perceived HIV-related stigma (Table 2). Participants who reported greater number of childhood sexual abuse incidents also

reported significantly higher levels of perceived stigma (p< 0.01; Table 3). Childhood sexual abuse was common among this sample, with 60% reporting a history of severe/moderate CSA.

Depressive Symptoms and Perceived HIV-related Stigma

There were significant differences in HIV-stigma between participants reporting low versus high levels of depressive symptoms. Participants who reported higher levels of depressive symptoms also reported significantly higher levels of perceived stigma (*p* =0.05; Table 3).

History of Childhood Sexual Abuse and Depressive Symptoms

When the association between history of childhood sexual abuse and depressive symptoms was analyzed, WLHV who experienced moderate/severe CSA showed an increased level of depressive symptoms compared to those who experienced no history of CSA (*p* < 0.001; Table 3). About 50% of depressed participants reported high levels of exposure to traumatic events in childhood (Table 2).

Relationships Between History of Childhood Sexual Abuse, Depressive Symptoms and Perceived Stigma

Table 4 shows the bivariate correlation for variables used in the mediation analysis. Significant positive correlations were observed between childhood sexual abuse and depressive symptoms (r = 0.246, p < .01) (Table 4) and perceived stigma (r = 0.305, p < .01) (Table 4). Significant positive correlations were also observed between depressive symptoms and perceived stigma (r =0.211, p < .01; Table 4).

Direct and Indirect Effects of History of Childhood Sexual Abuse and Perceived HIV-related Stigma

Figure 1. depicts the conceptual mediation model with standardized regression coefficients. Results indicate significant direct effects between history of CSA and depressive symptoms whereby greater exposure to CSA was associated with greater depressive symptoms (β = 0.301, *p*=0.0000) [a-path]. Depressive symptoms were also significantly associated with higher levels of perceived HIV-related stigma (β = 0.172, $p < 0.001$) [b-path]. Direct effects were found between history of CSA and greater perceived HIV-related stigma (β = 0.214, $p < 0.001$) [c-path]. Lastly, mediation analyses revealed that history of CSA was indirectly associated with perceived HIV-related stigma via the indirect effects of depressive symptoms (β = 0.17, 95% CI: .015 - .40).

DISCUSSION

The goal of this study was to examine the association between HIV-related stigma and depressive symptoms and history of childhood sexual abuse among a sample of Haitian women. These three aspects of health have not been studied concurrently among this population. Given the high rates of PLHV who had experienced incidents of stigma, addressing stigma among those presenting mental health issues and other related problems is critical. HIV-related stigma has been shown to undermine prevention, care, treatment, and the well-being of people living with HIV and is particularly lethal for Black women living with HIV.[19,20] Our results revealed that individuals with higher levels of perceived HIV stigma (66%) reported higher depressive symptoms (55%) and a high prevalence of history of childhood sexual abuse (41%). Several studies in Haiti corroborate these findings.[11,12,14,15] A cross-sectional study of 362 PLHV in Haiti reported that HIV-related stigma was associated with lower levels of treatment adherence, and

higher levels of depression and anxiety.[14] Another study of PLHV in Haiti found that HIV-related stigma has been consistently associated with increased anxiety, depression, post-traumatic stress disorder (PTSD), alcohol and drug use and other psychiatric disorders.[15] In addition, our results show that a history of childhood sexual abuse and depressive symptoms were significant predictors of perceived stigma.

Depressive Symptoms and Perceived HIV-related Stigma

Depression, worldwide, is more common in women than men, with an estimated male/female risk ratio of 2:1.[47] In our study, 80% of WLHV had a score at or above the threshold for current depression. This finding was consistent with other studies of PLHV in Haiti.[11,14,16,23] HIV diagnosis can be highly stressful or traumatic, leading to a depressed state.[16,20,21,48] Therefore, it is not surprising to observe a high level of depressive symptoms in our study population. Furthermore, we found that HIV-related stigma had a significant positive association with depressive symptoms in our study population. HIV-related stigma has been reported to be associated with depression among PLHV in previous studies.[20,21,40,47–49] The items that measured HIV-related stigma (perceived stigma) in our study actually had two underlying contexts, personal and public stigma, which were both strongly associated with higher depressive symptoms. Stigma is a serious challenge that people diagnosed with HIV have to face.[20,21] It is important to note that the association between depressive symptoms and HIV related stigma could conceivably be bi-directional. Previous studies show that stigma may prevent PLHV from disclosing HIV status and seeking help from their loved ones, including partner, family or friends; therefore, they may be prone to depressive symptoms.[28,50–52] Depressive symptoms may, in turn, deter them from seeking HIV care in a timely

fashion. Future research should examine a bi-directional relationship between depressive symptoms and perceived HIV-stigma among WLHV.

History of Childhood Sexual Abuse and Depressive Symptoms

The results revealed that the highest depressive symptoms scores were found for women who have experienced child sexual abuse. About 50% of participants with high levels of depressive symptoms experienced a history of CSA. This suggests that the experience of CSA may have a greater association with depressive symptoms than HIV, and a positive HIV diagnosis may further strengthen depressive symptomatology. There is substantial evidence that childhood trauma exposure presents as a potent antecedent to adult-onset depression.[16,21,22,24,28] Our study demonstrated a significant association between history of CSA and adult-onset depressive symptoms. Some evidence suggests that women with histories of childhood sexual abuse may be more likely to suffer from depressive symptoms in adulthood than men who have been victims of childhood sexual abuse.[12,24,28,44,45]

History of Childhood Sexual Abuse and Perceived HIV-related Stigma

Black women living with HIV with higher HIV-related stigma reported greater frequency and symptom severity across many psychological categories, including depression, anxiety, trauma and PTSD.[14,15,22,44,50,53,54] Coupled with a greater number of trauma-related symptoms, studies show that women with higher stigma reported a greater number of traumatic life events and increased perceived risk of future revictimization.[13,22,28,32,55,56] Brezing and colleagues found rates of violent trauma ranging from 10 to 90% among PLHV.[32] Another study done in West Africa at a university

hospital, found high rates of physical violence reported by 63.1% of women, while sexual violence was reported by 69.7%.[57] In addition, the prevalence of victimization in the West Africa study was significantly higher for HIV-positive women when compared to HIV-negative women.[28,57] Our findings were consistent with prior research; they show that history of childhood sexual abuse was significantly positively associated with HIV-related stigma . WLHV in this study were indeed disproportionately burdened by history of childhood sexual abuse and the subsequent negative health consequences, making the combination of HIV and trauma a syndemic illness.

Indirect Association of History of Childhood Sexual Abuse and Perceived HIV-related Stigma

Our final hypothesis was to explore whether depressive symptoms could be identified as a particularly valuable mediator in explaining the relationship between history of childhood abuse and perceived HIV-related stigma. The mediation analyses revealed that depressive symptoms did in fact function as a mediating mechanism that linked the association between history of childhood sexual abuse and perceived stigma. More specifically, higher levels of childhood sexual abuse were associated with higher levels of depressive symptoms, and in turn, higher levels of depressive symptoms were associated with higher levels of perceived stigma. This finding may be relevant because it offers an empirical explanation of how history of childhood sexual abuse may increase HIV-related stigma. Considering the prominent role of mediating factors in this field of research and the limited literature, more studies are needed to examine potential mediators between history of childhood sexual abuse and HIV-related stigma in order to better inform the design of effective public health interventions for populations at risk for HIV and PLHV who experienced negative health outcomes.

Future Directions of the Study

As shown in this study, Childhood Sexual Abuse has the potential to cause serious and long-lasting negative health impacts, including increased risk of developing depressive symptoms, substance abuse (AUDIT), and stigma. Given the pervasive nature of childhood trauma exposure experienced by Haitian women living with HIV, future HIV prevention interventions should consider becoming trauma-informed. Rather than focusing on the specifics of the traumatic life experiences faced by the victims, Trauma Informed Care practices can encourage healthcare providers to view negative health outcomes in the context of traumatic experiences, providing a comprehensive understanding of health issues.[58] The intersection of trauma and HIV has ensued in development and testing of interventions to address trauma in the context of HIV prevention and treatment.[58]

Limitations

Several limits to our study need to be acknowledged. First, as this is a cross-sectional study, temporality could not be determined, and it is therefore not possible to make causal inferences about the relation between HIV stigma and self-reported measured aspects of health. Secondly, all data were gathered through self-report questionnaires, therefore participants' responses may have been subject to social-desirability bias. Thus, caution should be taken when considering the relation of HIV-related stigma to other psychological variables presented in this study. Third, participants were asked to recall events dating back to their childhood; these responses may be based on recall bias. Fourth this study was a secondary analysis of data from a randomized controlled trial that examined the effectiveness of an adapted Cognitive-Behavioral Stress Management

intervention study. Thus, hypotheses and subsequent findings were limited to measures chosen by the parent study's researchers and available data gathered. A fifth limitation is that some caution should be taken when considering the generalizability of this study's findings. The participants included Haitian WLHV from one major metropolitan area in Haiti who were receiving services at the GHESKIO Centers, the largest HIV testing and treatment center in the Caribbean. Therefore, findings could differ dramatically if participants were from different regions of Haiti and were not receiving healthcare services at GHESKIO. Finally, the sample was relatively small. A larger sample may provide further information on the association between HIV-related stigma and the psychological variables mentioned above.

CONCLUSION

Despite the noted limitations, the present study helps fill in the knowledge gap of the association between HIV-related stigma, depressive symptoms, and history of childhood sexual abuse among Haitian women living with HIV. As the results of the current study indicated, stigma and many psychological factors represent significant challenges for WLHV. Therefore, the study makes a significant contribution in elucidating the relationships between these three complex variables, which play an important role in the lives of Haitian WLHV. We also found a significant mediating effect between history of childhood trauma and HIV-related stigma through the indirect pathway of depressive symptoms. Consequently, improved understanding of intersecting stigmas in Haitian WLHV who had a history of childhood abuse and depressive symptoms is critical to designing more effective HIV prevention, testing and treatment programs both globally and regionally.

Table 1. Demographic and Health Information for the Study Sample (N=173)

Age in years, mean, (SD)	35.0 (7.8)
Marital Status N (%)	171 (99%)
Single or Living single	74 (43%)
Married or cohabitated	97 (56%)
Educational Level N (%)	167 (97%)
6th Grade or less	104 (60%)
Some High School or Higher	63 (36%)
Religion N (%)	171 (99%)
Religious	162 (94%)
Atheist/Not religious	9 (5%)
Regular place to live (family's, partner's, or own house) N (%)	26 (15%)
Employment Status N (%)	26 (15%)
Regularly employed Full time in a job	1 (0.6%)
Employed seasonally/day-to-day basis	3 (2%)
Unemployed/looking for work	15 (9%)
Student	1 (0.6%)
Other	6 (4%)
Income Level N (%)	23 (13%)
Less than 150	3 (2%)
150-1000	6 (4%)
1001-5000	10 (6%)
5001-10000	2 (1%)
10001-20000	2 (1%)
Children N (%)	171 (99%)
No	14 (8%)
Yes	157 (91%)
Health Insurance N (%)	171 (99%)
No	164 (95%)
Yes	7 (4%)
Diagnosed with AIDS N (%)	171 (99%)
No	82 (47%)
Yes	89 (51%)
Currently taking any ART medications N (%)	171 (99%)
No	53 (31%)
Yes	118 (69%)
Alcohol Use Disorders Identification (AUDIT) N (%)	173 (100%)
Low-risk Consumption	50 (29%)
Hazardous Drinking	123 (71%)
Partner's HIV status N (%)	162 (94%)
Has HIV	27 (16%)
Does not have HIV	31 (19%)
Do not know	85 (52%)
Have not been tested	19 (11%)
Scales	**(Mean ±SD)**

Perceived Stigma	108.78±17.282
Depressive Symptoms	35.79±9.731
Childhood Sexual Abuse	10.09±5.104

Table 2. Descriptive Statistics of the Self-report Measures of Depressive Symptoms, Childhood Sexual Abuse (CSA) and HIV-related Stigma

Depressive Symptoms N (%)	**Perceived Stigma Low**	**Perceived Stigma High**	**Total**
	53 (34%)	104 (66%)	157 (100%)
Low	14 (9%)	18 (12%)	32 (20%)
High	39 (25%)	86 (55%)	125 (80%)
CSA N (%)			
Low	23 (15%)	38 (25%)	61 (40%)
High	28 (19%)	61 (41%)	89 (60%)
CSA N (%)	**Depressive Symptoms Low**	**Depressive Symptoms High**	**Total**
	32 (20%)	131 (80%)	163 (100%)
Low	18 (11%)	50 (31%)	68 (42%)
High	14 (9%)	81 (50%)	95 (58%)

Table 3. Results of Linear Regression analyses for predicting Perceived Stigma on (1) Depressive Symptoms, (2) Childhood Sexual Abuse and for predicting Depressive Symptoms on (3) Childhood Sexual Abuse in Haitian WLHV (*N* = 173).

	Perceived Stigma	
	Standardized Beta	***P* values**
Perceived stigma-Dependent variable		---
8. Depression	β = 0.162	.052
9. Childhood Sexual Abuse	β = 0.209	.014
10. Education	β = -0.197	.012
11. AUDIT	β = -0.153	.055
Depression-Dependent variable	**Depression**	
12. Childhood Sexual Abuse	β = 0.271	.001
13. Education	β = -0.687	.005
14. AUDIT	β = 0.221	.493

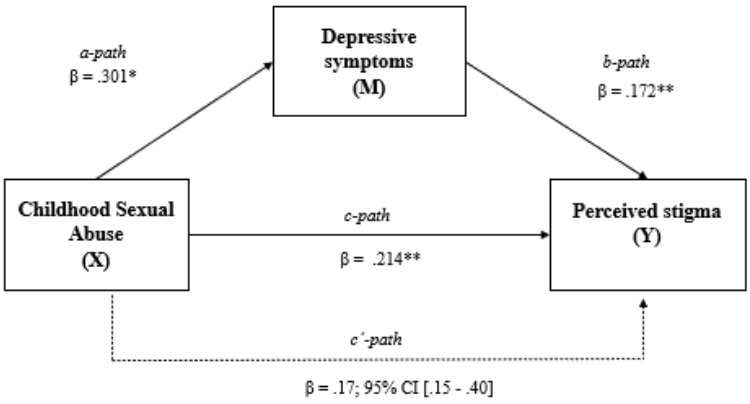
***** Linear Regression model controlled for education, and AUDIT.

Table 4. Bivariate Correlations among Perceived Stigma, Depressive Symptoms, Childhood Sexual Abuse and Demographic Characteristics (N=173).

	1	2	3	4	5
7. HIV-related Perceived Stigma	1				
8. Depressive Symptoms	.211**	1			
9. Childhood Sexual Abuse	.246**	.305**	1		
10. Education	-.237**	-.048	-.109	1	
11. AUDIT	-.059	.168*	.183*	-.007	1

* $P < .05$; ** $P < .01$

Figure 1. **Results of Mediation Model depicting Direct and Indirect Effects of Childhood Sexual Abuse, Depressive Symptoms, and Perceived Stigma**



Note: *p=0.0000; **p<0.001; **X**=predictor; **M**=mediator; **Y**=outcome. Mediation model controlled for education, and AUDIT.

REFERENCES

1. UNAIDS. Women and HIV: A spotlight on adolescent girls and young women. 1–20 (2019).

2. UNAIDS. When women lead, change happens. 36 (2017).

3. Dellar, R. C., Dlamini, S. & Karim, Q. A. Adolescent girls and young women: Key populations for HIV epidemic control. *J. Int. AIDS Soc.* **18**, 64–70 (2015).

4. UNIAIDS, HIV. 'AIDS estimates, 2018.' URL http://www. unaids. org/en/regionscountries/countries/Haiti/.

5. Reif, L. K. *et al.* Impact of a youth-friendly HIV clinic: 10 years of adolescent outcomes in Port-au-Prince, Haiti. *J. Int. AIDS Soc.* **19**, 20859 (2016).

6. Seo, G. *et al.* The FANMI ('my FAMILY' in Creole) study to evaluate community-based cohort care for adolescent and young women living with HIV in Haiti: Protocol for a randomized controlled trial. *BMC Public Health* **19**, 1–10 (2019).

7. Richardson, E. T. *et al.* Gender inequality and HIV transmission: A global analysis. *J. Int. AIDS Soc.* **17**, 1–5 (2014).

8. UNAIDS. 2019-global-AIDS-update. *Communities Cent.* 121–138 (2019) doi:10.2307/j.ctt1t898kc.12.

9. Brown, L., Macintyre, K. & Trujillo, L. Interventions to reduce HIV/AIDS stigma: What have we learned? *AIDS Educ. Prev.* **15**, 49–69 (2003).

10. Mihan, R., Kerr, J., Maticka-Tyndale, E. & Team, T. A. HIV-related stigma among African, Caribbean, and Black youth in Windsor, Ontario. *AIDS Care* **28**, 758–763 (2016).

11. Saxena, A. *et al.* Association between intimate partner violence and HIV status among Haitian Women. *Glob. Public Health* **14**, 1557–1568 (2019).

12. Villalba, K., Attonito, J., Jean-Gilles, M., Rosenberg, R. & Devieux, J. G. Gender differences in the association between childhood sexual abuse and risk behaviors among people living with HIV in Haiti. *AIDS Care* 1–7 (2020) doi:10.1080/09540121.2020.1757022.

13. Villalba, K. *et al.* The Effects of Childhood Sexual Abuse: The Role of Anxiety and Alcohol Use among Haitian Women Living with HIV. *J. Child Sex. Abus.* 1–14 (2020) doi:10.1080/10538712.2020.1801939.

14. Rubens, M. *et al.* HIV-Related Stigma, Quality of Care, and Coping Skills: Exploring Factors Affecting Treatment Adherence Among PLWH in Haiti. *J. Assoc. Nurses AIDS Care* **29**, 570–579 (2018).

15. Dévieux, J. G. *et al.* Post-traumatic stress disorder symptomatology and alcohol use among HIV-seropositive adults in Haiti. *AIDS Care - Psychol. Socio-Medical Asp. AIDS/HIV* **25**, 1210–1218 (2013).

16. Dévieux, J. G. *et al.* Depression, Abuse, Relationship Power and Condom Use by Pregnant and Postpartum Women with Substance Abuse History. *AIDS Behav.* **20**, 292–303 (2016).

17. Malow, R., Rosenberg, R., Lichtenstein, B. & Dévieux, J. G. The Impact of Disaster on HIV in Haiti and Priority Areas Related to the Haitian Crisis. *Journal of the Association of Nurses in AIDS Care* vol. 21 283–288 (2010).

18. Dévieux, J.G., Deschamps, M.M., Malow, R.M., Pape, J.W., Rosenberg, R., Jean-Gilles, M., Saint-Jean, G., & Metsch, L. Barriers to care among HIV-positive Haitians: An examination of socio-cultural factors. in *HIV/AIDS: Global Frontiers in Prevention/Intervention* (2009).

19. Kemp, C. G. *et al.* HIV stigma and viral load among African-American women receiving treatment for HIV. *AIDS* **33**, 1511–1519 (2019).

20. Kane, J. C. *et al.* A scoping review of health-related stigma outcomes for high-burden diseases in low- and middle-income countries. *BMC Medicine* vol. 17 (2019).

21. Turan, B. *et al.* How Does Stigma Affect People Living with HIV? The Mediating Roles of Internalized and Anticipated HIV Stigma in the Effects of Perceived Community Stigma on Health and Psychosocial Outcomes. *AIDS Behav.* **21**, 283–291 (2017).

22. Whetten, K., Reif, S., Whetten, R. & Murphy-McMillan, L. K. Trauma, mental health, distrust, and stigma among HIV-positive persons: implications for effective care. *Psychosom. Med.* **70**, 531–538 (2008).

23. Beck-Sagué, C. M. *et al.* Depression in caregivers of status-naïve pediatric HIV patients participating in a status disclosure study in haiti and the dominican Republic: Preliminary report. *J. Trop. Pediatr.* **61**, 65–68 (2015).

24. Weiss, E. L., Longhurst, J. G. & Mazure, C. M. Childhood sexual abuse as a risk factor for depression in women: psychosocial and neurobiological correlates. *Am. J. Psychiatry* **156**, 816–828 (1999).

25. Travaglini, L. E., Himelhoch, S. S. & Fang, L. J. HIV Stigma and Its Relation to Mental, Physical and Social Health Among Black Women Living with HIV/AIDS. *AIDS Behav.* **22**, 3783–3794 (2018).

26. UIAIDS. 2019-global-AIDS-update. *Communities Cent.* 121–138 (2019) doi:10.2307/j.ctt1t898kc.12.

27. HIV and AIDS in Latin America the Caribbean regional overview _ Avert.

28. LeGrand, S. *et al.* A Review of Recent Literature on Trauma Among Individuals Living with HIV. *Curr. HIV/AIDS Rep.* **12**, 397–405 (2015).

29. Sledjeski, E. M., Speisman, B. & Dierker, L. C. Does number of lifetime traumas explain the relationship between PTSD and chronic medical conditions? Answers from the National Comorbidity Survey-Replication (NCS-R). *J. Behav. Med.* **31**, 341–349 (2008).

30. Pence, B. W. *et al.* Childhood trauma and health outcomes in HIV-infected patients: an exploration of causal pathways. *J. Acquir. Immune Defic. Syndr.* **59**, 409–416 (2012).

31. Briere, J. N. & Elliott, D. M. Immediate and long-term impacts of child sexual abuse. *Futur. Child.* **4**, 54—69 (1994).

32. Brezing, C., Ferrara, M. & Freudenreich, O. The Syndemic Illness of HIV and Trauma: Implications for a Trauma-Informed Model of Care. *Psychosomatics* **56**, 107–118 (2015).

33. Brief, D. J. *et al.* Understanding the interface of HIV, trauma, post-traumatic stress disorder, and substance use and its implications for health outcomes. *AIDS Care* **16 Suppl 1**, S97-120 (2004).

34. Spiegel, D., Classen, C., Thurston, E. & Butler, L. Trauma-focused versus present-focused models of group therapy for women sexually abused in childhood. in *From child sexual abuse to adult sexual risk: Trauma, revictimization, and intervention.* 251–268 (American Psychological Association, 2004). doi:10.1037/10785-013.

35. Dévieux, J. G. *et al.* Cultural adaptation in translational research: Field experiences. *J. Urban Heal.* **82**, 82–91 (2005).

36. Bauman, L. J., Camacho, S., Westbrook, L. E., and Forbes-Jones, E. Correlates of personal stigma and social stigma among mothers with HIV/AIDS. in *Presented at the National Conference on Women and HIV*.

37. Bauman, L. J., Silver, E. J., and Camacho, S. Stigma among mothers with HIV/AIDS. in *Presented at the XIII International AIDS Conference* (2000).

38. Westbrook, L. E., and Bauman, L. J. Perceived Stigma of HIV/AIDS Scale. *Albert Einstein College of Medicine* (1996).

39. Radloff, L. S. The CES-D Scale: A Self-Report Depression Scale for Research in the General Population. *Appl. Psychol. Meas.* **1**, 385–401 (1977).

40. Kalichman, S. C., Rompa, D. & Cage, M. Distinguishing between overlapping somatic symptoms of depression and HIV disease in people living with HIV-AIDS. *J. Nerv. Ment. Dis.* **188**, 662–670 (2000).

41. Lutgendorf, S. K. *et al.* Cognitive-behavioral stress management decreases dysphoric mood and herpes simplex virus-type 2 antibody titers in symptomatic HIV-seropositive gay men. *J. Consult. Clin. Psychol.* **65**, 31–43 (1997).

42. Radloff, L. S. The CES-D Scale: A Self-Report Depression Scale for Research in the General Population. *Appl. Psychol. Meas.* **1**, 385–401 (1977).

43. Bernstein, D.P, & Fink, L. Childhood Trauma Questionnaire: A retrospective self-report manual. (1998).

44. Medrano, M. A., Hatch, J. P., Zule, W. A. & Desmond, D. P. Childhood trauma and adult prostitution behavior in a multiethnic heterosexual drug-using population. *Am. J. Drug Alcohol Abuse* **29**, 463–486 (2003).

45. Braitstein, P. *et al.* Sexual violence among a cohort of injection drug users. *Soc. Sci. Med.* **57**, 561–569 (2003).

46. Saunders, J. B., Aasland, O. G., Babor, T. F., de la Fuente, J. R. & Grant, M. Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO Collaborative Project on Early Detection of Persons with Harmful Alcohol Consumption--II. *Addiction* **88**, 791–804 (1993).

47. Lépine, J.-P. & Briley, M. The increasing burden of depression. *Neuropsychiatr. Dis. Treat.* **7**, 3–7 (2011).

48. Kamen, C. *et al.* HIV-related stigma: Implications for symptoms of anxiety and depression among Malawian women. *African J. AIDS Res.* **14**, 67–73 (2015).

49. Kay, E. S. *et al.* Experienced HIV-Related Stigma in Health Care and Community Settings: Mediated Associations With Psychosocial and Health Outcomes. *J. Acquir. Immune Defic. Syndr.* **77**, 257–263 (2018).

50. Eaton, L. A. *et al.* HIV microaggressions: a novel measure of stigma-related experiences among people living with HIV. *J. Behav. Med.* (2019) doi:10.1007/s10865-019-00064-x.

51. Mukerji, R. & Turan, J. M. Exploring manifestations of tb-related stigma experienced by women in Kolkata, India. *Ann. Glob. Heal.* **84**, 727–735 (2018).

52. Lyimo, R. A. *et al.* Stigma, disclosure, coping, and medication adherence among people living with HIV/AIDS in Northern Tanzania. *AIDS Patient Care STDS* **28**, 98–105 (2014).

53. Rao, D., Andrasik, M. P. & Lipira, L. HIV stigma among black women in the United States: Intersectionality, support, resilience. *Am. J. Public Health* **108**, 446–448 (2018).

54. Turan, J. M. *et al.* Challenges and opportunities in examining and addressing intersectional stigma and health. *BMC Med.* **17**, (2019).

55. Evens, E. *et al.* Experiences of gender-based violence among female sex workers, men who have sex with men, and transgender women in Latin America and the Caribbean: A qualitative study to inform HIV programming. *BMC Int. Health Hum. Rights* **19**, (2019).

56. Kimerling, R. *et al.* Traumatic stress in HIV-infected women. *AIDS Educ. Prev. Off. Publ. Int. Soc. AIDS Educ.* **11**, 321–330 (1999).

57. Burgos-Soto, J. *et al.* Intimate partner sexual and physical violence among women in Togo, West Africa: Prevalence, associated factors, and the specific role of HIV infection. *Glob. Health Action* **7**, (2014).

58. Sales, J. M., Swartzendruber, A. & Phillips, A. L. Trauma-Informed HIV Prevention and Treatment. *Curr. HIV/AIDS Rep.* **13**, 374–382 (2016).

CHAPTER V: Summary, Limitations and Future Extensions

SUMMARY OF THE STUDY

This cross-sectional study design used data from a randomized controlled trial that examined the effectiveness of an adapted Cognitive-Behavioral Stress Management intervention (CBSM-A) in simultaneously reducing risk behaviors and improving ART adherence and other psychological factors. Data collection for the parent study occurred at the GHESKIO (Groupe Haitien d'Etude du Sarcome de Kaposi et des Infections Opportunistes) Centers in Port-au-Prince, Haiti. A total of 276 Haitian men and women living with HIV completed baseline data collection between 2009 and 2013 as part of a longitudinal study conducted in Port-au-Prince, Haiti. For this study, a subgroup of 173 women living with HIV (WLHV) was used for the analyses. Guided by the Conceptual Framework for HIV-Related Stigma, Engagement in Care, and Health Outcomes from Turan and colleagues (2017), the current study examined the associations between HIV-related stigma, interpersonal (e.g., sexual relationship power and sexual risk behaviors) and psychological/ mental health variables (depressive symptoms and history of childhood sexual abuse) and their impact on HIV health outcomes (HIV care visits and medication adherence).

Approximately 56% of WLHV in the study were married or living with a partner. The mean age of the cohort was 35±7.8 (Mean ±SD) years. About 60% reported a 6th grade or lesser level of education and only a few reported their employment status (15%) and their income level (13%). Regarding HIV health, self-report measures revealed that about 51% of participants were diagnosed with AIDS and 69% reported currently taking HIV medication; the vast majority (95%) stated not having health care insurance. Concerning the spouse/partner's HIV health condition, 52% of women reported not knowing the partner's HIV status.

In our first aim, we examined the direct and indirect effects of HIV-related stigma, depressive symptoms and medication and visit adherence among a sample of Haitian women. A total of 173 WLHV participated in this study with 66% experiencing high levels of perceived related stigma. Results show that participants showed high levels of consistent adherence, with 69% showing zero doses missed in the past seven days. Regarding engagement to HIV primary care and medical care, 44% were adherent to both healthcare services, 46% were adherent to one type of care, and only 10% were considered non-adherent or non-engagers. However, mediation analysis showed that the indirect effect of perceived stigma was not associated with HIV treatment adherence via the indirect effects of depressive symptoms. Additionally, mediation analysis yielded no effect by depression in the association between perceived HIV stigma and HIV visit adherence in the whole sample. Results highlight the importance for future intervention studies to use longitudinal study designs to examine these associations to further elucidate causal relationships between stigma, depressive symptoms and HIV visit and treatment adherence.

In our second aim, we examined the association between HIV-related stigma, sexual relationship power and sexual risk behaviors among a sample of Haitian women. Our findings revealed that WLHV with high levels of perceived HIV stigma reported significantly lower levels of Sexual Relationship Power (β = -0.290; t = -2.998; p =.003; R^2 = .176). For the association between sexual relationship power and sexual risk behaviors, the independent t-tests showed significant differences with alcohol use (p<.0001), drug abuse (p=.017), sex exchange (p=.019) and having multiple male sexual partners (p =.008) between participants with low and high levels of SRP. Study findings suggest that further studies should be designed to examine the relationship of HIV-

related stigma, sexual relationship power and sexual risk behaviors over time rather than cross-sectionally among this subgroup of Haitian WLHV.

Finally in our third aim, we assessed the association between HIV-related stigma and psychological variables such as depressive symptoms and history of childhood sexual abuse among a sample of Haitian women. Contrary to the results of the first aim, mediation analyses showed that there is an indirect effect via depressive symptoms between history of CSA and higher perceived stigma ($\beta = 0.17$, 95% CI: .15 - .40). Our results also revealed that a greater number of CSA events was associated with a larger number of depressive symptoms and higher perceived stigma. Participants who reported a greater number of childhood sexual abuse incidents also reported significantly higher levels of perceived stigma ($p< 0.01$). Childhood sexual abuse was common among this sample, with 60% reporting a history of severe/moderate CSA. The present study contributes to our understanding of the role that history of CSA and adverse mental/health outcomes may play in perceived stigma among Haitian WLHV. Our results suggest the potential benefits of integrating trauma-informed interventions that target mental health outcomes in this population.

STRENGTHS AND LIMITATIONS

The greatest strength of our study is in filling the knowledge gap of the associations between HIV-related stigma, interpersonal (e.g., sexual relationship power and sexual risk behaviors) and psychological/ mental health variables (depressive symptoms and history of childhood sexual abuse) and their impact on HIV health outcomes (HIV care visits and medication adherence) among Haitian WLHV. Therefore, the current study modestly contributes to elucidating the relationships between these complex variables, which play an important role in the lives of Haitian WLHV. The study

helped us understand the role of such intersectional stigma in treatment experience and outcomes for WLHV and identify the associated factors in low resource and HIV endemic settings. Consequently, improved understanding of these relationships and mechanisms may inform the development of more effective HIV prevention, testing, and treatment programs both regionally and globally.

The current findings of our study should be interpreted with attention to study limitations. As this is a cross-sectional study, temporality could not be determined, and it is therefore not possible to make causal inferences about the relation between HIV stigma and self-reported measured aspects of health. All data were gathered through self-report questionnaires, so participants' responses may have been subject to social-desirability bias. Thus, caution should be taken when considering the relation of HIV-related stigma to other interpersonal and psychological/mental health variables presented in this study. Furthermore, participants were asked to recall events dating back to when they initially started ART treatment or came to their first clinical appointment; to the beginning of their relationship with their partner (s) and dating back to their childhood; all these responses may be subject to recall bias. This study was a secondary analysis of data from a randomized controlled trial that examined the effectiveness of an adapted Cognitive-Behavioral Stress Management intervention study. Consequently, hypotheses and subsequent findings were limited to measures chosen by the parent study's researchers and available data gathered. Another limitation is that some caution should be taken when considering the generalizability of this study's findings. The participants included Haitian WLHV from Port-au-Prince, the largest metropolitan area in Haiti, who were receiving services at the GHESKIO Centers, the largest HIV testing and treatment center in the Caribbean. Therefore, findings could

differ dramatically if participants were from different regions in Haiti and were not receiving healthcare services at GHESKIO. Finally, the sample was relatively small. A larger sample may provide further information on the associations between HIV-related stigma, interpersonal (e.g., sexual relationship power and sexual risk behaviors) and psychological/ mental health variables (depressive symptoms and history of childhood sexual abuse) and their impact on HIV health outcomes (HIV care visits and medication adherence).

FUTURE EXTENSIONS

The findings of this proposed study hold promise for informing and stimulating further attention and research on gaps in the literature and how intersecting stigmas may limit WLHV's ability and willingness to stay engaged in care, thus impacting treatment outcomes. The study results shed light on factors related to engagement/retention in care and treatment outcomes that can be addressed by the health system and health professionals to increase the reach and impact of HIV screening among Haitian WLHV. On the association between stigma and HIV care visit and treatment adherence, these cross-sectional analyses may serve as a basis for future large-scale studies. These future studies should also focus on the potential to address the direct or indirect effects of HIV-related stigma by addressing different processes in the pathway from stigma to outcomes, and perhaps using gender-specific approaches.

Our findings highlight the need to recognize the role that transactional sex plays in HIV-related stigma or relationship power. Further research is needed to better understand whether transactional sex mediates the relationship between HIV-related stigma and sexual relationship power. Future research should consider the underlying

motivations for engaging in transactional sex to more clearly understand the mechanism involved.

Given the pervasive nature of childhood trauma exposure experienced by Haitian women living with HIV, future HIV prevention interventions should consider becoming trauma-informed. Rather than focusing on the specifics of the traumatic life experiences faced by the victims, Trauma Informed Care practices can inspire healthcare providers to view negative health outcomes in the context of traumatic experiences, providing a comprehensive understanding of health issues.[1] The intersection of trauma and HIV has ensued in development and testing of interventions to address trauma in the context of HIV treatment and HIV prevention.[1]

Finally, these cross-sectional analyses highlight the importance of an intersectional approach and how critical it is to understand the experiences of living with multiple stigmatized identities. The drivers of intersectional stigma, as well as the interpersonal, psychological/mental health mechanisms for effects on health outcomes, require additional explanation. The mechanisms of intersectional stigma are not that different from those of single stigma, but may be more complex when they occur simultaneously.[2] Consequently, the study findings help increase our understanding of intersectional stigma in low and middle-income countries, guide future stigma interventions, and facilitate monitoring and evaluation of new stigma reduction programs in areas with a high HIV/AIDS burden.

REFERENCES

1. Sales, J. M., Swartzendruber, A. & Phillips, A. L. Trauma-Informed HIV Prevention and Treatment. *Curr. HIV/AIDS Rep.* **13**, 374–382 (2016).

2. Turan, J. M. *et al.* Challenges and opportunities in examining and addressing intersectional stigma and health. *BMC Med.* **17**, (2019).

APPENDICES

APPENDIX I

PERCEIVED STIGMA OF HIV/AIDS: PERSONAL VIEW

Patient-Here are some statements that people with HIV have made about themselves. For each statement, circle the answer that comes closest to the way you feel about yourself.

1. When people know I have HIV I feel uncomfortable around them. (Choose one)
   - 1 Strongly Agree
   - 2 Agree
   - 3 Disagree
   - 4 Strongly Disagree

2. I feel ashamed that I have HIV. (Choose one)
   - 1 Strongly Agree
   - 2 Agree
   - 3 Disagree
   - 4 Strongly Disagree

3. Because I have HIV, I should not take care of other people's children. (Choose one)
   - 1 Strongly Agree
   - 2 Agree
   - 3 Disagree
   - 4 Strongly Disagree

4. I have been brave in handling my HIV. (Choose one)
   - 1 Strongly Agree
   - 2 Agree
   - 3 Disagree
   - 4 Strongly Disagree

5. I must have done something to deserve getting HIV. (Choose one)
   - 1 Strongly Agree
   - 2 Agree
   - 3 Disagree
   - 4 Strongly Disagree

6. I should not share dishes or glasses just in case someone might catch HIV from me. (Choose one)
   - 1 Strongly Agree
   - 2 Agree
   - 3 Disagree
   - 4 Strongly Disagree

7. If I applied for a job, and someone else also applied who did not have HIV, the employer should hire the other person. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

8. Although I have HIV, I am a person who deserves as much respect as anyone else. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

9. I feel that it was my fault that I got HIV. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

10. People are right to be afraid of me because I have HIV. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

11. Because of my HIV, I feel I am less attractive to those who might want to date me. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

12. I have a lot to teach people about life through having HIV. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

13. I am embarrassed about having HIV. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

14. I feel it is completely safe for me to care for other people's children even though I have HIV. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

15. I deserve a lot of credit for how well I have coped with HIV. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

16. I feel guilty about having HIV. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

17. I agree with mothers who do not want their children to play with my children because of my HIV. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

18. I understand why people would reject my friendship because I have HIV. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

19. I think I am a person of good moral character. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

20. I feel ashamed about the way I got HIV. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

21. Because of my HIV, I should not hold a new infant. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

22. My neighbors would be right to be upset if they learned I had HIV. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

23. I think less of myself because I have HIV. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

24. I think that my getting HIV was just a matter of bad luck. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

PERCEIVED STIGMAOF HIV/AIDS: PUBLIC VIEW

1. Most people believe that if you have HIV, you must have done something to deserve it. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

2.Most people are afraid to be around a person with HIV. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

3. Most people are uncomfortable around people who have HIV. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

4. Most people think less of a person who has HIV. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

5. Most people think that people with HIV are of good moral character. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

6. Most people think that someone with HIV should not take care of other people's children. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

7. Most people think that people with HIV deserve respect as much as anyone else. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

8. Most people feel that if you have HIV, it is your own fault. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

9. Most mothers would allow their children to play with a child whose mother has HIV. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

10. Most people would reject the friendship of a person with HIV. (Choose one)

1 Strongly Agree
2 Agree

3 Disagree
4 Strongly Disagree

11. Most people think that if you have HIV you are not as good as everyone else. (Choose one)
1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

12. Most people think you should be embarrassed about having HIV. (Choose one)
1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

13. Most people would not share dishes or glasses with someone who has HIV because they are afraid they will catch it. (Choose one)
1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

14.Most people would be upset if someone with HIV moved in next door. (Choose one)
1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

15. Most people believe that having HIV is something to be ashamed about. (Choose one)
1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

16. Most people think that people with HIV should be admired for their bravery in the face of the illness. (Choose one)
1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

17. Most people think that people with HIV should feel guilty about it. (Choose one)
1 Strongly Agree

2 Agree
3 Disagree
4 Strongly Disagree

18. Most mothers would not want someone with HIV to hold their new infant. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

19. Most people feel less attracted (as a date) to someone with HIV. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

20. Most people believe that people with HIV deserve a lot of credit for how well they cope with the disease. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

21. Most people feel that how you get HIV is something to be ashamed about. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

22. Most people think that getting HIV is just a matter of bad luck. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

23. Most employers would hire someone with HIV to work for them. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

24. Most people think that people with HIV can teach us a lot about life. (Choose one)

1 Strongly Agree
2 Agree
3 Disagree
4 Strongly Disagree

APPENDIX II

DEPRESSIVE SYMPTOMS SCALE

CES-D1. ...How often did you feel bothered by things that don't usually bother you?

0 = NEVER
1 = RARELY
2 = SOMETIMES
3 = OFTEN
4 = ALWAYS

CES-D2. ...How often did you feel that you could not shake off the blues even with help from family or friends?

CES-D3. ...How often did you feel that you were just as good as other people?

CES-D4. ...How often did you feel depressed?

CES-D5. ...How often did you feel hopeful about the future?

CES-D6. ...How often did you feel that your life had been a failure?

CES-D7. ...How often did you feel fearful?

CES-D8. ...How often did you feel happy?

CES-D9. ...How often did you talk less than usual?

CES-D10. ...How often did you feel lonely?

CES-D11. ...How often did you feel that people were unfriendly?

CES-D12. ...How often did you enjoy life?

CES-D13. ...How often did you have crying spells?

CES-D14. ...How often did you feel sad?

CES-D15. ...How often did you feel that people disliked you?

Scoring Procedure

Reverse code CE3, CE5, CE8, CE12, 0=4, 1=3, 2=2, 3=1, 4=0

Scores range from 0 to 60, with higher scores indicating more symptoms of depression.

APPENDIX III

CHILDHOOD TRAUMA QUESTIONNAIRE (SEXUAL ABUSE QUESTIONS)

CT1. **1. When I was growing up, someone tried to touch me in a sexual way, or tried to make me touch them.**

1 = Never True
2 = Rarely True
3 = Sometimes True
4 = Often True
5 = Very Often

CT2. **2. When I was growing up, someone threatened to hurt me or tell lies about me unless I did something sexual with them.**

1 = Never True
2 = Rarely True
3 = Sometimes True
4 = Often True
5 = Very Often

CT3. **3. When I was growing up, someone tried to make me do sexual things or watch sexual things.**

1 = Never True
2 = Rarely True
3 = Sometimes True
4 = Often True
5 = Very Often

CT4. **4. When I was growing up, someone molested me.**

1 = Never True
2 = Rarely True
3 = Sometimes True
4 = Often True
5 = Very Often

CT5. **5. When I was growing up, I believe that I was sexually abused.**

1 = Never True
2 = Rarely True
3 = Sometimes True
4 = Often True
5 = Very Often

APPENDIX IV

HIV VISIT CARE ADHERENCE

How soon after your positive test for HIV did you first go for medical care for your HIV?

1 = WITHIN 6 WEEKS
2 = 6-12 WEEKS
3 = 3- 6 MONTHS
4 = 6 MONTHS TO 12 MONTHS
5 = MORE THAN 1 YEAR

In the past 6 months, have you had any "primary healthcare" visits for your HIV/AIDS?

0 = No
1 = Yes

APPENDIX V

HIV MEDICATION ADHERENCE

During the last 7 days, you took...LAMIVUDINE (3TC 150 mg cp)

1 = ALL MY PILLS EVERY DAY
2 = MOST OF MY PILLS
3 = ABOUT ONE HALF OF MY PILLS
4 = VERY FEW OF MY PILLS
5 = NONE OF MY PILLS

During the last 7 days, you took...ABACAVIR (300 mg cp)

1 = ALL MY PILLS EVERY DAY
2 = MOST OF MY PILLS
3 = ABOUT ONE HALF OF MY PILLS
4 = VERY FEW OF MY PILLS
5 = NONE OF MY PILLS

During the last 7 days, you took...AZT (100/300 mg cp), ZIDOVUDINE, ZIDOVIR

1 = ALL MY PILLS EVERY DAY
2 = MOST OF MY PILLS
3 = ABOUT ONE HALF OF MY PILLS
4 = VERY FEW OF MY PILLS
5 = NONE OF MY PILLS

During the last 7 days, you took...AZT (siwo) (50 mg/5ml 240 ml) ZIDOVUDINE, ZIDOVIR

1 = ALL MY PILLS EVERY DAY
2 = MOST OF MY PILLS
3 = ABOUT ONE HALF OF MY PILLS
4 = VERY FEW OF MY PILLS
5 = NONE OF MY PILLS

During the last 7 days, you took...DUOVIR (AZT + 3TC 300/150 mg cp)

1 = ALL MY PILLS EVERY DAY
2 = MOST OF MY PILLS
3 = ABOUT ONE HALF OF MY PILLS
4 = VERY FEW OF MY PILLS
5 = NONE OF MY PILLS

During the last 7 days, you took...STAVUDINE (D4T 30/40 mg cp)

1 = ALL MY PILLS EVERY DAY
2 = MOST OF MY PILLS
3 = ABOUT ONE HALF OF MY PILLS
4 = VERY FEW OF MY PILLS
5 = NONE OF MY PILLS

During the last 7 days, you took...DIDANOSINE (DDI 25/50/100/200 mg cp)

1 = ALL MY PILLS EVERY DAY
2 = MOST OF MY PILLS
3 = ABOUT ONE HALF OF MY PILLS
4 = VERY FEW OF MY PILLS
5 = NONE OF MY PILLS

During the last 7 days, you took...EFIVARENZ 200/600 mg cp (STOCRIN MSD; EFAVIR)

1 = ALL MY PILLS EVERY DAY
2 = MOST OF MY PILLS
3 = ABOUT ONE HALF OF MY PILLS
4 = VERY FEW OF MY PILLS
5 = NONE OF MY PILLS

During the last 7 days, you took...INDINAVIR 400 mg cp (CRIXIVAN)

1 = ALL MY PILLS EVERY DAY
2 = MOST OF MY PILLS
3 = ABOUT ONE HALF OF MY PILLS
4 = VERY FEW OF MY PILLS
5 = NONE OF MY PILLS

During the last 7 days, you took...NELFINAVIR 250 mg cp (VIRACEPT)

1 = ALL MY PILLS EVERY DAY
2 = MOST OF MY PILLS
3 = ABOUT ONE HALF OF MY PILLS
4 = VERY FEW OF MY PILLS
5 = NONE OF MY PILLS

During the last 7 days, you took...NEVIRAPINE 200 mg cp (NEVIMUNE)

1 = ALL MY PILLS EVERY DAY
2 = MOST OF MY PILLS
3 = ABOUT ONE HALF OF MY PILLS
4 = VERY FEW OF MY PILLS
5 = NONE OF MY PILLS

During the last 7 days, you took...NEVIRAPINE (siwo) 10 mg/ml 240 ml (NEVIMUNE)

1 = ALL MY PILLS EVERY DAY
2 = MOST OF MY PILLS

3 = ABOUT ONE HALF OF MY PILLS
4 = VERY FEW OF MY PILLS
5 = NONE OF MY PILLS

During the last 7 days, you took...LOPINAVIR 200/ RITONAVIR 50 Tab (ALUVIA)

1 = ALL MY PILLS EVERY DAY
2 = MOST OF MY PILLS
3 = ABOUT ONE HALF OF MY PILLS
4 = VERY FEW OF MY PILLS
5 = NONE OF MY PILLS

During the last 7 days, you took...LAMIVUDINE 3TC (siwo) 10 mg/ml 240 ml

1 = ALL MY PILLS EVERY DAY
2 = MOST OF MY PILLS
3 = ABOUT ONE HALF OF MY PILLS
4 = VERY FEW OF MY PILLS
5 = NONE OF MY PILLS

During the last 7 days, you took...TENOFOVIR DISOPROXIL FUMARATE 300 mg (VIREAD)

1 = ALL MY PILLS EVERY DAY
2 = MOST OF MY PILLS
3 = ABOUT ONE HALF OF MY PILLS
4 = VERY FEW OF MY PILLS
5 = NONE OF MY PILLS

During the last 7 days, you took...OTHER

1 = ALL MY PILLS EVERY DAY
2 = MOST OF MY PILLS
3 = ABOUT ONE HALF OF MY PILLS
4 = VERY FEW OF MY PILLS
5 = NONE OF MY PILLS

APPENDIX VI

SEXUAL RELATIONSHIP POWER SCALE (SRP)

Relationship Control Factor/Subscale Items

I am going to ask you to rate your agreement with statements about your relationship with your main male sexual partner. Tell me if you strongly agree, agree, disagree, or strongly disagree with each statement.

1. If I asked my partner to use a condom, he would get violent.
2. If I asked my partner to use a condom, he would get angry.
3. Most of the time, we do what my partner wants to do.
4. My partner won't let me wear certain things.
5. When my partner and I are together, I'm pretty quiet.
6. My partner has more say than I do about important decisions that affect us.
7. My partner tells me who I can spend time with.
8. If I asked my partner to use a condom, he would think I'm having sex with other people.
9. I feel trapped or stuck in our relationship.
10. My partner does what he wants, even if I do not want him to.
11. I am more committed to our relationship than my partner is.
12. When my partner and I disagree, he gets his way most of the time.
13. My partner gets more out of our relationship than I do.
14. My partner always wants to know where I am.
15. My partner might be having sex with someone else.

Decision-Making Dominance Subscale Items

1. Who usually has more say about whose friends to go out with?
2. Who usually has more say about whether you have sex?
3. Who usually has more say about what you do together?
4. Who usually has more say about how often you see one another?
5. Who usually has more say about when you talk about serious things?
6. In general, who do you think has more power in your relationship?
7. Who usually has more say about whether you use condoms?
8. Who usually has more say about what types of sexual acts you do?

Scoring Procedures

Each of the 23 items in the two subscales was scored on a 4-point Likert scale, with 1 = strongly agree, 2 = agree, 3 = disagree, and 4 = strongly disagree. High scores represent high sexual relationship power. Certain items were reverse-scored if high scores would reflect low sexual relationship power. Scores for the two subscales were calculated separately, then combined into the SRP.

APPENDIX VII

ALCOHOL USE DISORDERS IDENTIFICATION TEST (AUDIT)

PATIENT: Because alcohol use can affect your health and can interfere with certain medications and treatments, it is important that we ask some questions about your use of alcohol. Your answers will remain confidential so please be honest. Place an X in one box that best describes your answer to each question

1. How often did you drink alcohol?
   - **0**=NEVER
   - **1**=MONTHLY OR LESS
   - **2**=2-4 TIMES A MONTH
   - **3**=2-3 TIMES/WEEK
   - **4**=4 OR MORE/WEEK

2. How many drinks containing alcohol do you have on a typical day when you are drinking?
   - **1**=1 or 2
   - **2**=3 or 4
   - **3**=5 or 6
   - **4**=7 to 9
   - **5**=10 or More

3. How often do you have six or more drinks on one occasion?
   - **0**=NEVER
   - **1**=LESS THAN MONTHLY
   - **2**=MONTHLY
   - **3**=WEEKLY
   - **4**=DAILY OR ALMOST DAILY

4. How often during the last year have you found that you were not able to stop drinking once you had started?
   - **0**=NEVER
   - **1**=LESS THAN MONTHLY
   - **2**=MONTHLY
   - **3**=WEEKLY
   - **4**=DAILY OR ALMOST DAILY

5. How often during the last year have you failed to do what was normally expected from you because of drinking?
   - **0**=NEVER
   - **1**=LESS THAN MONTHLY
   - **2**=MONTHLY
   - **3**=WEEKLY
   - **4**=DAILY OR ALMOST DAILY

6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?

0=NEVER
1=LESS THAN MONTHLY
2=MONTHLY
3=WEEKLY
4=DAILY OR ALMOST DAILY

7. How often during the last year have you had a feeling of guilt or remorse after drinking?

0=NEVER
1=LESS THAN MONTHLY
2=MONTHLY
3=WEEKLY
4=DAILY OR ALMOST DAILY

8. How often during the last year have you been unable to remember what happened the night before because you had been drinking?

0=NEVER
1=LESS THAN MONTHLY
2=MONTHLY
3=WEEKLY
4=DAILY OR ALMOST DAILY

9. Have you or someone else been injured as a result of your drinking?

0=NEVER
2=YES, BUT NOT IN THE LAST YEAR
4=YES, IN THE LAST YEAR

10. Has a relative or friend, or a doctor or other health care worker been concerned about your drinking or suggested you cut down?

0=NEVER
2=YES, BUT NOT IN THE LAST YEAR
4=YES, IN THE LAST YEAR

Scoring Procedures

The Alcohol Use Disorders Identification Test (AUDIT) can detect alcohol problems experienced in the last year. A score of 8+ on the AUDIT generally indicates harmful or hazardous drinking. Questions 1–8 = 0, 1, 2, 3, or 4 points. Questions 9 and 10 are scored 0, 2, or 4 only

APPENDIX VIII

DRUG AND SEX (DS) MEASURE

Drug Abuse

1. **In the last 30days/1 month, have you used Marijuana (Pot, Hashish)?**

0 = No
1 = Yes

2. **In the last 30days/1 month, have you used Crack or rock cocaine?**

0 = No
1 = Yes

3. **In the last 30days/1 month, have you used Sniffed or snorted Cocaine?**

0 = No
1 = Yes

4. **In the last 30days/1 month, have you used Heroin?**

0 = No
1 = Yes

5. **In the last 30days/1 month, have you used Tranquilizers (Valium, Xanax)?**

0 = No
1 = Yes

6. **In the last 30days/1 month, have you used Inhalant, Glue?**

0 = No
1 = Yes

7. **In the last 30days/1 month, have you used Other?**

0 = No
1 = Yes

8. **Have you ever used needles to inject any drug, including steroids, under your skin or into your veins?**

0 = No
1 = Yes

Sexual Risk Behaviors

1. **How many different people have you had sex with in the past 3 months? By sex we mean oral, vaginal, or anal sex. MEN**

   0 - 96 = MEN

2. **How many different people have you had sex with in the past 3 months? By sex we mean oral, vaginal, or anal sex. WOMEN**

   0 - 996 = WOMEN

3. **Of the number of sexual partners that you reported, with how many have you exchanged sex for money, drugs, or a place to stay?**

   0 - 96 = PEOPLE

Vaginal Episode Equivalent (VEE)

A. **In the past 3 months, how many times have you had vaginal sex with [Partner 1, 2….]?**

0 - 996 = TIMES PER WEEK

B. **Of the [Response to question A] times that you have had vaginal sex with [Partner 1, 2….] in the last 3 months, how many of those times did you have protected vaginal sex with this partner? Protected sex is when a condom is used the entire time from the beginning of insertion to final withdrawal.**

0 - 996 = TIMES

C. **In the past 3 months, how many times have you had anal sex with [Partner 1, 2…]?**

0 - 996 = TIMES

D. **Of the [Response to question C] times that you have had anal sex with [Partner 1, 2…] in the last 3 months, how many of those times did you have protected anal sex with this partner? Protected sex is when a condom is used the entire time from the beginning of insertion to final withdrawal. ___ ___ ___ (times)**

0 - 996 = range

E. **In the past 3 months, how many times have you had oral sex with [Partner 1, 2…]?**

0 - 996 = TIMES

F. **Of the [Response question E] times that you have had oral sex with [Partner 1, 2…] in the last 3 months, how many of those times did you have protected anal sex with this partner? Protected sex is when a condom is used the entire time from the beginning of insertion to final withdrawal. ___ ___ ___ (times)**

0 - 996 = range

Scoring Procedure (formula)

Unprotected Vaginal Sex Acts= Total Vaginal Sex Acts- Protected Vaginal Sex Acts
Unprotected Anal Sex Acts= Total Anal Sex Acts – Protected Anal Sex Acts
Unprotected Oral Sex Acts= Total Oral Sex Acts – Protected Oral Sex Acts
VEE = (1 × # of unprotected vaginal sex acts) + (2 × # of unprotected anal sex acts) + (0.01x # of unprotected oral sex acts).

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PUBLICATIONS AND PRESENTATIONS

Lee, I., Daniel, E. V., Oghogho E., Agarwal, R., Othman, A., Wuyke, G. and Darrow, W. *Winter is Coming: Influenza vaccination acceptance among students at a large Hispanic-Serving university: A cross-sectional study*. In Progress

Rojas, P., Ramirez-Ortiz, D., Wang, W., Daniel, E.V**.**, Sanchez, M., Cano, M., Ravelo, G., Braithwaite, R., Montano, N.P. and De La Rosa, M. (2019). *Testing the Efficacy of an HIV Prevention Intervention Among Latina Immigrants Living in Farmworker Communities in South Florida*. Journal of Immigrant and Minority Health, 1-7. In Press.

Daniel, E.V., Rosenberg, R., Jean-Gilles, M. and Devieux, J. (2020, July) *Perceptions of intersectional stigma among Haitian women with HIV and TB*. Presented at Society for Prevention Research Virtual Conference

Daniel, E.V., Rosenberg, R., Jean-Gilles, M. and Devieux, J. (2020, February) *Perceptions of intersectional stigma among Haitian women with HIV and TB*. Presented at CRUSADA Brown Bag.

Lee, I., Daniel, E. V., Oghogho E., Agarwal, R., Othman, A., Wuyke, G. and Darrow, W. (2019, November). Winter is Coming: Influenza vaccination acceptance among students at a large Hispanic-Serving university: A cross-sectional study. Presented at the American Public Health Association, PA.

Daniel, E. V. and Sanchez, M. (2019, April). *Validated Instruments measuring different Tuberculosis Factors among Blacks*. Presented at the New England Science Symposium, Harvard University, MA.

Daniel, E.V., Sanchez, M. and Preston, S. (2018, November). *Socio-Cultural factors influencing prevention and treatment of Tuberculosis among Haitians*. Presented at the American Public Health Association, CA.

Al Khoury, W., Agarwal, R., Daniel, E.V., Vassall, V., Oghogho, E., Bastida, E., Othman, A., and Ichite, A. (2018, November). *Non-Verbal Communication in Physician-Patient Dyads: Perceptions on Quality of Medical Care from Ethnically Diverse College*. Presented at the American Public Health Association, CA.

Othman, A., Al Khoury, W., Agarwal, R., Daniel, E.V., Vassall, V., Oghogho, E., Bastida, E., and Ichite, A. (2018, November). *Communication Cues of Healthcare Providers that Influence the Patient's Trust and Perception of Quality of Care*. Presented at the American Public Health Association, CA.

Daniel, E. V., Perrino, T., Horigian, V., Gwynn, L. (2018, March). *Through the Patient's Eyes: Examining the Healthcare Delivery Cascade for Haitian Patients at the Pediatric Mobile Clinic.* Presented Presented at the New England Science Symposium, Harvard University, MA.