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Original Research

Perceived Barriers to HIV Care and Viral Suppression Comparing Newly Diagnosed Women Living with HIV in Rural Uganda with and without a History of Intimate Partner Violence

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Abstract

Intimate partner violence (IPV) is associated with poor HIV care linkage and retention, medication adherence, and viral suppression. However, limited knowledge exists regarding potential mechanisms linking IPV to these outcomes. We aimed to (a) identify the top barriers to accessing HIV care experienced by women living with HIV (WLHIV) who report a history of IPV and have suppressed viral load (VL) versus unsuppressed VL

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and (b) understand how these barriers influence VL, comparing WLHIV with a history of IPV to WLHIV without a history of IPV. Study data come from newly diagnosed WLHIV in rural Uganda participating in the standard-of-care control arm of a randomized trial (*n* = 152). Descriptive results ranking mean scores from highest to lowest showed that, among women with a history of IPV, irrespective of viral suppression status, paying for transportation to come to clinic, having to wait at the clinic for long periods of time, and finding a clinic within reasonable travel distance were the top three barriers to accessing HIV care. WLHIV with a history of IPV were significantly more likely to have unsuppressed VL versus suppressed VL if they reported higher levels of difficulty finding a clinic within reasonable travel distance (RRR = 1.7, 95% CI [1.1–2.7]), getting permission to take time off from work (RRR = 1.5, 95% CI [1.0–2.9]), and finding time to come to the clinic for an appointment (RRR = 1.6, 95% CI [1.0–2.6]). The same relationships were not present among WLHIV without a history of IPV, suggesting these barriers and their effect on VL may be uniquely related to IPV. Interventions should address IPV and HIV care continuum outcomes in tandem, targeting barriers to accessing HIV care likely associated with IPV. Additional research is necessary to better understand how IPV relates to HIV care barriers and VL.

Introduction

Intimate partner violence (IPV), whether current or past, is a primary risk factor for poor HIV care continuum outcomes among women, including being in care (Kosia et al., 2016; Lichtenstein, 2006; Oldenburg et al., 2018; Onono et al., 2019), being retained in care with optimal adherence (Fiorentino et al., 2019; Hampanda, 2016; Hatcher et al., 2015; Kidman & Violari, 2018; Leddy et al., 2019; Lopez et al., 2010; Mendoza et al., 2017; Onono et al., 2019; Ramlagan et al., 2018; Rotheram-Borus et al., 2019; Trimble et al., 2013; Yee et al., 2018), and being virally suppressed (Anderson et al., 2018; Bukowski et al., 2018; Espino et al., 2015; Rose et al., 2010; Sullivan et al., 2015). Virally suppressed individuals still have HIV. However, the amounts of HIV (viral load or VL) in the body are reduced, making them healthier and at lower risk of transmitting the virus than individuals who are not virally suppressed (i.e., have unsuppressed VL). The link between IPV and poor

HIV care continuum outcomes, especially viral suppression, is alarming, considering the high rates of IPV among women living with HIV (WLHIV) in sub-Saharan Africa. Findings from a recent meta-analysis of the prevalence of IPV against WLHIV in sub-Saharan Africa revealed a combined IPV rate of approximately 33% across studies ($n = 8$; Tenkorang et al., 2020). Similarly, a high prevalence of IPV exists among WLHIV in Uganda.

Among a national sample of Ugandan WLHIV engaged in care, 32% reported a lifetime experience of physical IPV, and 28% reported a lifetime experience of sexual IPV (Kabwama et al., 2019). Rates of IPV may be even higher among the entire population of WLHIV (i.e., including both those who are and are not engaged in HIV care) in rural Uganda, with a recent study indicating that 72.22% of WLHIV reported at least one lifetime experience of physical, sexual, or emotional IPV (Ogbonnaya et al., 2020). Further, researchers have found that rural Ugandan WLHIV are at higher risk of IPV than urban Ugandan WLHIV (Kairania et al., 2015).

There is a growing body of research that seeks to understand potential mechanisms driving the relationship between IPV and HIV care engagement in sub-Saharan Africa and other resource-limited settings. This research suggests both individual and interpersonal factors may play a significant role in women's barriers to seeking HIV care. For example, WLHIV exposed to current or past IPV may demonstrate poor antiretroviral therapy (ART) adherence due to fear of their partners learning of their HIV positive status and instigating further IPV (Hampanda et al., 2017; Hatcher et al., 2014; Wolff et al., 2000). Thus, they may prioritize their safety from IPV over ART adherence or attending clinic appointments. Further, poor mental health, including depression, may mediate the relationship between lifetime IPV and ART adherence (Malow et al., 2013).

Abusive partners' controlling behaviors (e.g., throwing pills away, delaying attendance to clinic by providing household chores) may also inhibit access to medical care for WLHIV (Kosia et al., 2016; Lichtenstein, 2006). Additionally, women who experience recent and/or lifetime IPV are at increased risk of being financially reliant on male partners. This risk may be due to recent and/or past IPV experiences that disrupt women's education and employment as a result of controlling/isolating behaviors of the partner, limiting women's ability to work or seek advanced training/education (Adams et al., 2013; Adams et al., 2012; Duvvury et al., 2013; Hess & Rosario, 2018). This financial reliance on male partners may present barriers to HIV care, including one's ability to afford transportation to an HIV clinic to pick up their medications (Kosia et al., 2016; Winchester, 2015). Such barriers may be even more concerning among WLHIV who have not disclosed their HIV positive status to their partners.

The high prevalence of IPV among WLHIV and suboptimal HIV care continuum outcomes in this population demonstrates an urgent need for effective interventions that address IPV and HIV care engagement in tandem. While progress has been made in developing and testing IPV interventions that focus on HIV prevention (e.g., STI/HIV incidence, condom use, number of sex partners; Kouyoumdjian et al., 2013), there is limited evidence on effective approaches for addressing the HIV cascade of care and treatment among WLHIV in abusive relationships. Additional research is needed to inform the design of interventions that prevent poor HIV care and treatment outcomes among WLHIV affected by IPV.

This study will provide further insight into the potential ways that IPV may impact HIV care. We attempt to understand what types of HIV care barriers are most experienced by newly diagnosed WLHIV who have a history of IPV and how these barriers may influence their HIV treatment outcomes. Specifically, we identified the barriers to accessing HIV care perceived as most challenging for WLHIV with a history of IPV and ranked them by viral suppression status (suppressed vs. unsuppressed VL). Further, to better understand the relationship between IPV, HIV care barriers, and viral suppression, we investigated the relationship between barriers to HIV care and viral suppression comparing women with and without a history of IPV and focusing only on barriers ranked highest among WLHIV with a history of IPV and unsuppressed VL. We hypothesized that, although WLHIV who report no history of IPV may perceive similar barriers to HIV care as those who report a history of IPV, these barriers would only be significantly associated with unsuppressed VL among women with a history of IPV due to their added barrier of IPV. Findings from this study may inform interventions that contribute to achieving UNAIDS goals for 95% of people living with HIV being virally suppressed (UNAIDS, 2020), especially WLHIV in Uganda who report a history of IPV.

Method

The current study was part of a larger study named the PATH/Ekkubo study. The PATH/Ekkubo study is a cluster-randomized controlled trial designed to test an intervention to enhance linkage to HIV care and improve HIV viral suppression among newly diagnosed people living with HIV in rural Uganda. The trial involved community-wide home-based HIV testing. Participants gave written informed consent for HIV testing and participating in the study. We provide a brief description of the relevant PATH/Ekkubo study methods in the following sections. A more detailed description of the methodological procedures can be found elsewhere (Kiene et al., 2017).

Setting, Study Design, and Eligibility Criteria

The PATH/Ekkubo study took place in rural communities (i.e., villages) in Butambala, Mpigi, Gomba, and Mityana Districts in central Uganda. The majority of the population depends upon subsistence farming as the primary source of livelihood. HIV prevalence in this area is approximately 7% among those aged 15–64 (Ministry of Health, Uganda, 2019). In rural Ugandan villages, most residents go to the same health clinic, making fear of being seen at the HIV clinic a major barrier to care. Other commonly cited barriers to HIV care among rural Ugandan residents include structural and economic barriers (transportation cost and distance) and health system-level factors (feeling the clinic was not helpful) (Geng et al., 2010).

Villages were randomized to the intervention arm or villages to the standard-of-care control arm. Individuals had to meet the following criteria to be eligible to participate in the intervention trial: aged 18–59 years, or emancipated minors, aged 15–17 years; accept HIV testing; be newly diagnosed with HIV at study enrollment or previously diagnosed but never linked to care; speak Luganda or English; and reside in the household. Only one person per household was eligible to be enrolled in the intervention trial. The present study includes participants enrolled in the control arm.

Procedures

The HIV testing procedures have been described in detail elsewhere (Kiene et al., 2017). Baseline data were collected via individual interviews using structured computer-based questionnaires while the participant was waiting for his/her HIV test results. After receiving the HIV positive test results and post-test counseling, control arm participants were referred to HIV care and provided with a referral slip with a list of clinics in their area providing free HIV treatment. A venous blood sample was collected at the enrollment visit for CD4 and VL testing. A study counselor returned to the participant's home two weeks later to provide their CD4 results and reinforce the importance of linking to care. Follow-up data were collected 6 and 12 months from enrollment via individual structured interviews. The 12-month follow-up included collection of a venous blood sample for VL testing.

Current Study: Analytic Sample

This study, which used existing baseline and 6- and 12-month follow-up data from the PATH/Ekkubo study, received IRB approval from San Diego State University and Makerere University School of Public Health and was

approved by the Uganda National Council for Science and Technology. Data come from control arm participants enrolled between December 2015 and November 2019 with 6- or 12-month follow-up data collected through March 2020 (*n* = 245). We did not analyze data from the participants in the intervention arm (*n* = 251) because they likely differed in HIV care experiences due to their receipt of the enhanced linkage to HIV care intervention. We also excluded male participants in the control arm (*n* = 93) because our focus was on women. Lastly, we excluded two female participants who completed the 12-month follow-up but had discrepancies in VL results.

Measures

The data used in the current study focused on participants' IPV experiences, HIV VL, barriers to accessing HIV care, and sociodemographic characteristics. Sociodemographic data were collected during baseline. IPV and HIV care access barriers were measured during the 6-month and12-month follow-up periods. VL was examined only at 12-month follow-up.

   Intimate partner violence. We measured IPV using a 10-item instrument developed by the World Health Organization (WHO), which has been deemed valid for use with women living in Uganda (Ellsberg & Heise, 2005). Using this instrument, we assessed recent (i.e., past 12 months) and lifetime IPV experiences. Women were compared based on their lifetime IPV experiences at the time of 12-month follow-up. IPV was defined as emotional (i.e., Has he ever threatened to hurt you or someone you cared about?), physical (e.g., Has he ever kicked you, dragged you, or beaten you up?), and/or sexual (e.g., Did you ever have sexual intercourse when you did not want to because you were afraid of what he might do?) IPV perpetrated by a sexual partner. We excluded one item from the WHO instrument measuring emotional IPV ("Has he [sexual partner] ever insulted you or made you feel bad about yourself?"), given the high (72.4%) and less compatible rates of IPV classified using this item. Additionally, because verbal insults are common in Ugandan marriages in the study area, participants likely did not interpret this item as intended, specifically as a form of IPV (personal communication, June 29, 2020). After excluding this item, IPV rates were closer to rates of IPV reported in the 2016 Uganda Demographic Health Survey (DHS, 2018) and among WLHIV using Uganda national data (Kabwama et al., 2019). The scale's internal consistency with or without the removed item was very good ($\alpha = 0.85$ and $\alpha = 0.86$, respectively).

   VL suppression. Women were grouped based on their viral suppression at 12-months. VL was dichotomized into unsuppressed ($\geq$200 copies/mL) or

suppressed (<200 copies/mL). VL was measured using a plasma specimen from venous blood draws collected during 12-month follow-up.

Barriers to accessing HIV care. Logistical barriers to accessing HIV care (e.g., get permission to take time off from work to come to the clinic; come to the clinic for your HIV care without anyone in your family finding out you have HIV; pay for transportation to come to the clinic) were measured with an 18-item scale that showed good reliability in a South African sample (Peltzer et al., 2010). Response options were "very easy" (scored as 0), "easy" (scored as 1), "not hard or easy" (scored as 2), "hard" (scored as 3), and "very hard" (scored as 4). When summed, higher scores represented greater overall difficulties accessing HIV care. Internal consistency for this scale was relatively high ($\alpha = 0.95$ at 12 months) in the current study.

Sociodemographic characteristics. We assessed age, years of schooling, marital status, and household wealth. Household wealth was calculated using questions from the Uganda Demographic Health Survey. Specifically, using procedures for calculating a wealth index for the full baseline sample population ($n = 31,563$; DHS, 2018), we conducted a factor analysis including seven household characteristics (e.g., having a bed; having a television; having electricity) as indicators. We then computed each household's position in the sample by quintiles based on their factor analysis score.

Statistical Approach

All analyses were conducted using Stata 16 statistical software program. We conducted separate analyses including (a) only participants with 12-month follow-up data (i.e., the treatment-on-the-treated [TOT] sample) and (b) participants with (TOT sample) and without 12-month follow-up data (i.e., the intent-to-treat [ITT] sample). Because VL data were only collected at 12-month follow-up and were, therefore, missing for the ITT sample, to be conservative, we considered the ITT sample as not virally suppressed. Further, we used 6-month follow-up data regarding IPV and barriers to accessing HIV care for the ITT sample. ITT analyses were useful to understand the potential effects of IPV for those who were lost to follow-up and minimize the number of participants eliminated from study analyses. Nevertheless, results from these analyses may not generalize to the experiences of some of the most marginalized WLHIV.

Descriptive analyses (i.e., mean, standard deviation, and percentages) were used to describe sample characteristics (see Table 1). Additionally, the mean and standard deviation were used to summarize responses for each barrier. A higher mean score indicated greater difficulty accessing HIV care due to the barrier. (The first columns in Table 2 present the complete list of

barriers to accessing HIV care). Additionally, we rank-ordered barriers based on respondents' mean scores, with the rank of "1," indicating the barrier was most experienced among participants and had the highest mean score. If two or more items received the same mean score, we considered the items as tied and assigned them the same ranking. In addition to ranking means, we investigated differences between suppressed and unsuppressed women's total mean scores using the Wilcoxon rank-sum test. Wilcoxon rank-sum test is a conservative, nonparametric alternative to the two-sample *t*-test. Due to the current study's small sample size and non-normal distribution, the Wilcoxon rank-sum test is appropriate to investigate mean differences (Iman, 1976).

Using multinomial logistic regression analyses, we calculated relative risk ratios (RRR), predicting the association between level of difficulty accessing HIV care (i.e., barrier score) and the likelihood of belonging to one of the following four mutually exclusive groups of WLHIV: (a) history of IPV and suppressed VL, (b) history of IPV and unsuppressed VL, (c) no history of IPV and suppressed VL, and (d) no history of IPV and unsuppressed VL. We used separate models to examine this association, with one model using the sum barrier score and the other models ($n = 5$) using individual scores of the top three ranked barriers among WLHIV with unsuppressed VL and history of IPV.[1] All regression models controlled for sociodemographic characteristics and individual barrier scores were defined as continuous variables rather than ordinal variables. We decided to treat these scores as continuous variables, after comparing Bayesian Information Criterion (BIC) and Akaike Information Criterion (AIC) for constrained models defining barrier scores as categorical variables to unconstrained models defining barrier scores as continuous variables (Williams, 2019). Results revealed that the unconstrained models were better fit for the data and more parsimonious.[2]

Results

Sample Characteristics

The overall sample included 150 newly diagnosed WLHIV: 46.0% ($n = 69$) reported a history of IPV, and 54.0% ($n = 81$) reported no history of IPV. Approximately 40% of women who reported a history of IPV reported experiencing IPV during the prior 12 months. Overall, 52.0% of women had unsuppressed VL, and 46.7% had suppressed VL (VL<200) 12 months after HIV diagnosis. Among those reporting IPV, 53.6% of women who reported a history of IPV had unsuppressed VL, and 46.4% had suppressed VL (VL<200); 51.7% of women who reported recent IPV (i.e., prior 12-month) had unsuppressed VL and 48.3% had suppressed VL. Among women

reporting no history of IPV, 50.6% had unsuppressed VL, and 47.0% had suppressed VL (VL<200).

The average age was 28.3 years, and the average years of schooling completed was 6.9 years. Over half (60.0%) of the sample was married, 10.7% never married, and 23.3% divorced or widowed. Approximately one-fourth (25.3%) of the sample was among the lowest wealth quintiles, and 20.7% the highest wealth quantile.

Using bivariate analyses to compare women with IPV history and suppressed VL, IPV history and unsuppressed VL, no IPV history and suppressed VL, and no IPV history and unsuppressed VL on demographic characteristics, we found that the four groups were similar ($p > .05$) in terms of marital status, years of schooling, and household wealth (see Table 1). However, women with IPV history and suppressed VL ($M = 25.3$) were significantly younger than women with no IPV history and unsuppressed VL ($M = 31.2$).

Attrition Analyses

Of the 150 female participants who were eligible for study analyses, 124 had 12-month data (i.e., TOT sample), and 26 were lost to follow-up at 12 months and, therefore, did not have 12-month data (i.e., ITT sample). Of these 26 women, 13 reported IPV during the 6-month follow-up period. Comparing the TOT and ITT samples, there was no differential attrition by any of the sociodemographic variables, including marital status, years of schooling, age, or household wealth ($p > .05$).[3]

Barriers to Accessing HIV Care among WLHIV Who Report IPV History

Among the sample of women reporting a history of IPV, women with unsuppressed VL (TOT *only, M* = 21.5, *SD* = 22.2; TOT & ITT, *M* = 21.5, *SD* = 20.5) reported having more overall difficulties accessing care than women with suppressed VL (*M* = 13.9, *SD* = 9.6). However, the two groups did not differ significantly (TOT, *z* = 0.6, *p* = .5; TOT & ITT, *z* = 0.9, *p* = .3); women in both suppressed and unsuppressed groups ranked barrier types similarly.

As shown in Table 2, women with a history of IPV and unsuppressed VL were of the opinion that the top three barriers to accessing HIV care were (a) having to wait at the clinic for long periods of time (*M* = 2.1), (b) finding a clinic within reasonable travel distance (*M* = 1.7), and, tied for third most common, (c) paying for transportation to come to clinic (*M* = 1.6), and (d)

Table 1. Sample Characteristics of Newly Diagnosed WLHIV in Rural Uganda by IPV and VL Status ($n = 150$).

	Total $n = 150$	IPV History and Unsuppressed VL $n = 37$	IPV History and Suppressed VL $n = 32$	No IPV History and Unsuppressed VL $n = 42$	No IPV History and Suppressed VL $n = 39$
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
Years of schooling	6.9 (3.4)	7.1 (3.3)	7.0 (3.4)	6.7 (3.7)	6.9 (3.3)
Age (in years)	28.3 (9.2)	25.3 (4.7)	28.8 (10.9)	28.0 (9.7)	31.2 (9.7)*
	N (%)	N (%)	N (%)	N (%)	N (%)
Recent IPV	29 (19.3%)	15 (40.5%)	14 (43.8%)	0 (0.0%)	0 (0.0%)
Marital status					
Never married	16 (10.7)	4 (10.8)	4 (12.5)	5 (11.9)	3 (7.7)
Divorced/widowed	44 (29.3)	10 (27.0)	9 (28.1)	14 (33.3)	11 (28.2)
Married and separated	18 (12.0)	3 (8.1)	6 (18.8)	3 (7.1)	6 (15.4)
Married and living together	72 (48.0)	20 (54.1)	13 (40.6)	20 (47.6)	19 (48.7)
Wealth Index					
Lowest wealth quintile	38 (25.3)	7 (18.9)	6 (18.8)	11 (26.2)	14 (35.9)
2nd lowest wealth quintile	31 (20.7)	10 (27.0)	8 (25.0)	9 (21.4)	4 (10.3)
3rd lowest wealth quintile	14 (9.3)	5 (13.5)	3 (9.4)	2 (4.8)	4 (10.3)
2nd highest wealth quintile	36 (24.0)	8 (21.6)	10 (31.3)	9 (21.4)	9 (23.1)
Highest wealth quintile	31 (20.7)	7 (18.9)	5 (15.6)	11 (26.2)	8 (20.5)

Notes. For continuous variables, estimates represent means and *p*-values for one-way analysis of variance (ANOVA); all other tests are based on Chi square analyses. IPV: intimate partner violence; VL: viral load. *$p < .05$

Table 2. Perspectives Concerning Barriers to Accessing HIV Care among Newly Diagnosed WLHIV in Rural Uganda Who Reported a History of IPV.

Barrier type	Treatment-on-the-Treated (TOT) n = 56				Intent-to-Treat (ITT) & TOT N = 69 (ITT, n = 13; TOT, n = 56)	
	Unsuppressed VL n = 24		Suppressed VL[a] n = 32		Unsuppressed VL n = 37	
	M (SD)	Rank	M (SD)	Rank	M (SD)	Rank
Find a clinic where the staff are kind, supportive and treat the patients with respect	0.9 (1.4)	8	0.8 (0.9)	4	1.0 (1.3)	6
Find a clinic for your HIV care that is within a reasonable travel distance	1.7 (1.7)	2	0.9 (1.1)	3	1.6 (1.6)	2
Pay for transportation to come to the clinic	1.6 (1.6)	3	1.7 (1.4)	1	1.6 (1.5)	2
Find the time to come into clinic for an appointment, including traveling to the clinic and waiting for your appointment	1.5 (1.6)	4	0.8 (1.1)	4	1.4 (1.5)	3
Afford to come in to the clinic (including finding someone to look after your child, lost hours at work, etc.)	1.3 (1.4)	5	0.8 (1.1)	4	1.2 (1.4)	4
Get permission to take time off from work to me to the clinic	1.6 (1.6)	3	0.8 (1.11)	4	1.4 (1.6)	3
Get time away from household duties such as, cooking, laundry, caring for children or sick family members, to come to the clinic	0.8 (1.3)	9	0.7 (1.0)	5	0.8 (1.3)	8
Come to the clinic for your HIV care without anyone in your family finding out you have HIV	1.1 (1.6)	6	0.8 (0.8)	4	1.1 (1.4)	5

(continued)

Table 2. Continued

Barrier type	Treatment-on-the-Treated (TOT) n = 56				Intent-to-Treat (ITT) & TOT N = 69 (ITT, n = 13; TOT, n = 56)	
	Unsuppressed VL n = 24		Suppressed VL[a] n = 32		Unsuppressed VL n = 37	
	M (SD)	Rank	M (SD)	Rank	M (SD)	Rank
Come to the clinic for your HIV care without anyone in your community finding out you have HIV	1.1 (1.4)	6	0.6 (0.8)	6	1.2 (1.4)	4
Find your way around the clinic (e.g., where waiting rooms, exam rooms, or specific services are located)	1.0 (1.4)	7	0.5 (0.5)	7	1.1 (1.3)	5
Find out which is the correct queue you should join when you are at clinic	1.0 (1.4)	7	0.5 (0.5)	7	1.1 (1.3)	5
Locate the people you need at the clinic (e.g., counselors, staff, doctors, nurses)	1.0 (1.4)	7	0.6 (0.5)	6	1.0 (1.3)	6
Get to be seen by the people you need at the clinic (e.g., counselors, doctors, nurses)	1.1 (1.4)	6	0.6 (0.7)	6	1.1 (1.4)	5
Get information about HIV at the clinic	1.0 (1.4)	7	0.6 (0.5)	6	0.91 (1.3)	7
Understand the information you are given at the clinic about HIV (e.g., from staff, pamphlets, or posters)	1.0 (1.4)	7	0.7 (0.8)	5	1.0 (1.3)	6
Get the support you need from clinic staff and providers at the clinic	1.0 (1.4)	7	0.6 (0.7)	6	1.1 (1.3)	5
Ask clinic staff or providers questions about your HIV or treatment	0.9 (1.3)	8	0.7 (0.5)	5	1.0 (1.3)	6
Wait at the clinic for long periods of time	2.1 (1.6)	1	1.3 (1.3)	2	1.9 (1.6)	1

Notes. All ratings were made for each statement on a 0 to 4 scale, with 0 = very easy to 4 = very hard. Ranks were assigned based on mean scores, with the top ranked item being the item with the higher mean score indicating the most difficult barrier. If two (or more) items had the same mean score, they were ranked as tied. Estimates based on small numbers ($n < 30$) should be interpreted with caution. [a]Participants in the suppressed group are the same for both TOT and ITT samples.

getting permission to take time off of work (M = 1.6). Although endorsed lower than for those who had unsuppressed VL, with one exception, women with a history of IPV and suppressed VL reported the same barriers among their top three. However, these barriers were ranked in different orders. Specifically, these women were of the opinion that the top three barriers to accessing HIV care were (a) paying for transportation to come to clinic (M = 1.7), (b) having to wait at the clinic for long periods of time (M = 1.3), and (c) finding a clinic within reasonable travel distance (M = 0.9). Different from women with IPV history and unsuppressed VL, there was no tie with the third-ranked item.

When including the ITT sample, there remained a statistically significant difference between the overall average score for barriers to accessing HIV care, with women with a history of IPV and suppressed VL (M = 13.9, SD = 9.6) reporting a lower average score than women with a history of IPV and unsuppressed VL (M = 21.5, SD = 25.5) VL, $t(67)$ = 1.9, p = 0.03). However, among women with IPV history and unsuppressed VL, slightly different trends were observed in the rank-order of barriers comparing the samples with and without ITT participants (see Table 2). Specifically, among the TOT sample, paying for transportation to come to clinic (M = 1.6) became tied as second-ranked. Additionally, finding time to come to the clinic for an appointment became third ranked when including the ITT sample (M = 1.4).

Associations between Barriers to Accessing HIV Care and IPV by Viral Suppression

As shown in Table 3, similar to bivariate results, results from the multinomial logistic regression model (with and without the ITT sample) indicated no statistically significant relationship between VL and sum barrier scores among WLHIV who reported a history of IPV (p > .05). Additionally, there was no statistically significant difference in the sum barrier scores comparing WLHIV with a history of IPV and suppressed VL to WLHIV without a history of IPV with suppressed (p > .05) and unsuppressed VL (p > .05).

However, results indicated statistically significant relationships between some of the individual barriers and IPV by viral suppression, particularly among the TOT sample (see Table 3). Among the TOT sample with a history of IPV, every one-unit increase in difficulty finding a clinic within reasonable travel distance was associated with a 1.7 increased odds of having an unsuppressed VL versus a suppressed VL (RRR = 1.7, 95% CI [1.1- 2.7]). Additionally, among women with a history of IPV, a one-unit increase in

Table 3. Associations between Barriers to Accessing HIV Care and IPV by Viral Suppression Among Women with and without IPV.

	Sum Barrier Score RRR (95% CI)	Pay for Transportation to Come to the Clinic RRR (95% CI)	Wait at the Clinic for Long Periods of Time RRR (95% CI)	Get Permission to Take Time off from Work to Come to the Clinic RRR (95% CI)	Find a Clinic for Your HIV Care that is Within a Reasonable Travel Distance RRR (95% CI)	Find the Time to Come into Clinic for an Appointment, Including Traveling to the Clinic and Waiting for Your Appointment RRR (95% CI)
Treatment-on-the-treated (TOT, N = 124)						
IPV History and Suppressed VL (n = 32)	Ref	Ref	Ref	Ref	Ref	Ref
IPV History and Unsuppressed VL (n = 24)	1.0 (0.1, 1.1)	1.0 (0.7, 1.5)	1.4 (0.9, 2.1)	1.5 (1.0, 2.9)*	1.7 (1.1, 2.7)*	1.6 (1.0, 2.6)*
No IPV History and Suppressed VL (n = 39)	0.1 (0.9, 1.0)	0.9 (0.6, 1.3)	1.2 (0.8, 1.6)	0.9 (0.5, 1.4)	1.1 (0.7, 1.7)	0.8 (0.4, 1.3)
No IPV History and Suppressed VL (n = 29)	1.0 (0.1-1.1)	1.4 (1.0, 2.1)	1.3 (0.9, 1.9)	1.4 (1.0, 2.2)	1.2 (0.8, 1.9)	1.3 (0.8, 2.1)
Intent-to-Treat (ITT) & TOT (N = 150; ITT, n = 26; TOT, n = 124)						
IPV History and Suppressed VL (n = 32)	Ref	Ref	Ref	Ref	Ref	Ref
IPV History and Unsuppressed VL (n = 37)	1.0 (0.1, 1.1)	1.0 (0.7, 1.4)	1.3 (0.9, 1.8)	1.4 (0.9, 2.0)	1.5 (0.9, 2.2)	1.5 (1.0, 2.3)
No IPV History and Suppressed VL (n = 39)	1.0 (0.9, 1.0)	0.9 (0.6, 1.3)	1.1 (0.8, 1.6)	0.8 (0.5, 1.3)	1.1 (0.7, 1.7)	0.7 (0.4, 1.3)
No IPV History and Suppressed VL (n = 42)	1.0 (1.0, 1.1)	1.3 (0.9, 1.9)	1.2 (0.9, 1.7)	1.4 (1.0, 2.0)	1.3 (0.9, 1.9)	1.2 (0.8, 1.9)

Notes. Controlling for age, years of schooling, household wealth, and marital status. RRR: relative risk ratio; CI: confidence interval; IPV: intimate partner violence; VL: viral load; Ref: reference category. *p < .05

difficulty finding time to come to the clinic for an appointment (including traveling to the clinic and waiting for your appointment) was associated with a 1.6 increased odds of being virally unsuppressed versus virally suppressed (RRR = 1.6, 95% CI [1.0–2.6]). Lastly, every one-unit increase in difficulty getting permission to take time off of work increased the odds of women with a history of IPV being virally unsuppressed versus virally suppressed by 50% (RRR = 1.5, 95% CI [1.0–2.9]). There was no statistically significant relationship between individual barriers and viral suppression among WLHIV without a history of IPV ($p > .05$). Additionally, IPV and viral suppression were not significantly associated ($p > .05$) with the barrier of paying for transportation or waiting at the clinic for long periods of time for WLHIV with a history of IPV and WLHIV without a history of IPV.

Discussion

To the best of our knowledge, this is the first IPV study to compare barriers to accessing HIV care among newly diagnosed Ugandan WLHIV by VL suppression. We found that women with a history of IPV and unsuppressed VL identified similar barriers to HIV care engagement as women with a history of IPV and suppressed VL. However, the order in which they ranked these barriers slightly differed. Additionally, some of the top-ranked barriers significantly influenced chances of viral suppression among WLHIV who reported a history of IPV. Conversely, these barriers were not significantly associated with viral suppression among WLHIV who did not report an IPV history. The study's findings offer valuable insight into potential interventions needed to alleviate HIV care engagement barriers and improve viral suppression among women who experience IPV.

Our descriptive analyses revealed that the number one barrier to accessing HIV care experienced by women with a history of IPV and unsuppressed VL was finding time to come to the clinic for an appointment (including coming to the clinic and waiting for appointment). This was one of the few barrier types ranked differently between women with an IPV history who had suppressed versus unsuppressed VL. It was also a barrier identified in our regression analyses as being uniquely related to viral suppression among WLHIV who experienced IPV. Although our analyses primarily focused on lifetime IPV, two in five women in our sample who reported lifetime IPV also reported recent (i.e., past 12-month) IPV. Further, slightly less than half of the women who reported recent IPV had unsuppressed VL—as such, finding time to come to the clinic for an appointment may have been a barrier for many of the women in our sample with a history of IPV and unsuppressed VL due to recent controlling behaviors by their partners. This explanation is supported

by our preliminary qualitative data with women sampled from the current study (findings not presented here) and prior research findings.

Prior research has demonstrated that abusive partners have interfered with HIV care by delaying clinic attendance using methods such as providing a long list of domestic chores to complete on the day of the clinic appointment (Kosia et al., 2016). Additionally, abusive partners may be mistrusting due to systematic barriers such as long wait times at the clinic, which puts women at higher risk of IPV if they attend clinic (Kosia et al., 2016). Therefore, HIV healthcare providers working with women experiencing IPV may want to consider specialized differentiated care models for women with a history of IPV to minimize wait times and provide appropriate linkages to support services. For example, if deemed safe, one differentiated care model may include providing this population of women with home-based healthcare services. Findings from a recent review of the literature examining the effects of home-based care for people living with HIV found that this intervention is more effective in improving rates of adherence to ART than the standard of care (Wood et al., 2018). Additionally, researchers examining the effects of this type of intervention in Uganda (Jaffar et al., 2009) and other parts of sub-Saharan Africa (Mwai et al., 2013) have found that home-based care is as effective as facility-based care. Considering the safety risks associated with IPV, providers using home-based healthcare interventions with WLHIV who have a history of IPV should only do so if they can ensure women's privacy, confidentiality, and safety (e.g., see WHO, 2013).

Despite having different number one ranked barriers, overall, descriptive results revealed no significant differences in mean barrier scores comparing WLHIV who reported IPV and had suppressed versus unsuppressed VL. This nonsignificant finding may be due to the study's small sample size. Nonetheless, it suggests that researchers and service providers may find it helpful to collect similar information regarding barriers to accessing HIV care among WLHIV with a history of IPV, regardless of if they have suppressed or unsuppressed VL.

Our regression analyses revealed that finding a clinic within reasonable travel distance was uniquely related to viral suppression among women who reported a history of IPV. Although all women in the current study lived in rural areas, WLHIV who reported IPV and had unsuppressed VL may have lived in more remote (extreme rural) places than WLHIV who reported IPV and had suppressed VL, making it more difficult to access healthcare services. This difficulty accessing services may also lead to experiencing greater and more frequent incidents of severe IPV, which can further negatively impact viral suppression. Recognizing the diversity of rural areas in Africa

(Hay et al., 2005), future research is needed to gain a more nuanced understanding of the IPV experiences of WLHIV in rural Uganda.

It is also possible that women's perceptions of being able to find a clinic within reasonable travel distance varied based on whether or not they disclosed their HIV status to others, especially their partners. For women with a history of IPV, fear of IPV may have led to wanting to travel further away from home to seek HIV care and avoid revealing their HIV positive status to partners. Thus, in the current study, women with a history of IPV may have interpreted reasonable travel distance to mean reasonable *and* safe travel distance. Our follow-up analyses did not reveal a significant relationship between VL and not wanting anyone in your family to find out that you have HIV. However, after controlling for sociodemographic characteristics, we did find that not wanting anyone in the community to find out you have HIV was significantly related to viral suppression among women with a history of IPV (RRR = 1.6, 95% CI [1.0–2.5]). This relationship did not exist among women in our study without a history of IPV.

Helping WLHIV to safely disclose their HIV status to trusted family, friends, and community members may alleviate barriers to accessing care, especially among WLHIV in rural Uganda who have experienced IPV. The SHARE intervention, which focuses on disclosing HIV positive status and reducing IPV risk, may be useful for this population (King et al., 2017). Such interventions should not only be considered for use with women who report current IPV but also with those reporting past IPV. Although they might not be experiencing current IPV, it may be difficult for these women to disclose their HIV status to intimate partners due to fear of IPV related to having a history of IPV.

Limitations

In considering all the findings, we acknowledge our study's limitations. This study did not include measures of controlling behavior when assessing for IPV. Controlling behavior is defined by WHO (2012) as a type of IPV including isolation, monitoring movements, and controlling finances and is associated with poor treatment outcomes among WLHIV (Hatcher et al., 2015). Thus, by not examining this form of IPV in our sample, we may have missed a population of WLHIV who were highly vulnerable to HIV care barriers.

Additionally, rather than classifying women based on recent IPV experience, we categorized women based on lifetime IPV experience. Because women in the current study were newly diagnosed HIV positive at baseline and IPV data were not collected during the baseline study period, changes in

IPV associated with HIV care were more difficult to assess. However, as previously reported, many women in the current study who reported lifetime IPV also reported recent (i.e., prior 12-month) IPV. Additionally, lifetime IPV and fear of future IPV are risk factors of poor HIV care engagement (e.g., Hatcher et al., 2015; Lichtenstein, 2006; Trimble et al., 2013). Nonetheless, we recommend further research to assess the impact of recent IPV on barriers to accessing HIV care and VL among newly diagnosed WLHIV. This research should include a large enough sample of women with recent IPV experiences to detect statistically significant differences. Of the 150 WLHIV in the current study's sample, only 29 (19.3%) reported recent IPV. This number may have been even greater considering participants lost to follow-up. Although we attempted to capture the experiences of those lost to follow-up using ITT analyses, we may have excluded some of the most marginalized WLHIV, including some with recent IPV experiences.

Finally, the findings presented in this study only assume an association between the barriers studied and VL and IPV. In no way do findings prove that the barriers experienced are what caused unsuppressed VL among WLHIV with a history of IPV, or that these women experienced the barriers because of their IPV. While there is research to suggest WLHIV with a history of IPV experience HIV care barriers that are specifically related to their IPV experiences, this study cannot draw the same conclusion.

Conclusions

Despite the study's limitations, the findings provide valuable information about the barriers that newly diagnosed HIV-positive Ugandan women with a history of IPV may face in care engagement and how these barriers may ultimately affect viral suppression. In some cases, women with IPV history and unsuppressed VL ranked barriers to HIV care engagement differently than their counterparts with suppressed VL. Further, some barriers to accessing care significantly influenced the odds of being virally suppressed for WLHIV with a history of IPV but not WLHIV without a history of IPV. Interventions are needed that address IPV and HIV care engagement in tandem. These interventions should be tailored to the primary and unique barriers of women with a history of IPV.

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Declaration of Conflicting Interests

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Notes

1. Five models were analyzed due to ties among the top three barriers for IPV-exposed women in ITT and TOT samples with unsuppressed VL.
2. AIC and BIC fit statistic results are available upon request.
3. *P*-values for attrition analyses are available upon request.

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