




Prevalence of and Risk Factors for Intimate Partner Violence in the First 6 Months Following HIV Diagnosis Among a Population-Based Sample in Rural Uganda

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Abstract

Research in Uganda examining HIV-positive status disclosure and IPV victimization is scarce, and existing findings may not generalize to community-based samples of men and women newly diagnosed with HIV in Uganda. We investigated the prevalence of lifetime IPV, IPV experienced between HIV diagnosis and 6 months following diagnosis (recent IPV), and IPV specifically related to a partner learning one's HIV-positive status among a sample of men and women newly diagnosed with HIV in a population-based study in rural Uganda. We also examined correlates of recent IPV, including HIV-positive status disclosure. The sample included 337 participants followed for 6 months after HIV diagnosis. Lifetime IPV findings showed that over half of the sample reported experiencing emotional IPV (62.81% of men, 70.37% of women), followed by physical IPV (21.49% of men, 26.39% of women) then sexual IPV (7.44% of men, 17.59% of women). For recent IPV, men and women reported similar rates of physical (4.63% and 8.29%, respectively) and emotional (19.44% and 25.91%, respectively) IPV. Women were more likely than men to report recent sexual IPV (8.29% vs. 1.85%); however, this relationship was no longer significant after controlling for other risk factors associated with sexual IPV (AOR = 3.47, 95% CI [0.65, 18.42]). Participants who disclosed their HIV-positive status to their partner had 59% lower odds of reporting emotional IPV (AOR = 0.41, 95% CI [0.21, 0.81]) than participants who did not disclose their HIV-positive status. Younger age, non-polygamous marriage, lower social support, and greater acceptance for violence against women were also significantly associated with experience of recent IPV. Overall, 12.20% of participants who experienced recent IPV reported that the IPV was related to their partner learning their HIV-positive status. Findings highlight the need for IPV screening and intervention integrated into HIV diagnosis, care, and treatment services.

Keywords Intimate partner violence · Domestic violence · Gender-based violence · HIV-status disclosure · HIV · Uganda · Sub-Saharan Africa

Introduction

There is inconsistent evidence regarding the relationship between human immunodeficiency virus (HIV) positive status disclosure and women's intimate partner violence

(IPV) risk, with some research suggesting that disclosing HIV-positive status to one's partner may be a catalyst for IPV [1–5] and others suggesting that there may be stronger risk factors for IPV among women living with HIV than HIV-status disclosure [6–8]. Additionally, although men

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living with HIV may also be at risk of IPV victimization, most research examining IPV risk among this population tends to focus on IPV perpetration [9, 10] or solely focus on men who have sex with men and/or men who have sex with men and women [11–14]. The current study investigates the prevalence and correlates of IPV victimization, including HIV-status disclosure among men and women recently diagnosed with HIV in Uganda. Study findings will inform best practices for IPV screening, intervention, and prevention among people living with HIV (PLHIV) in Uganda, as well as provide crucial information about the scope and nature of IPV victimization among this population.

HIV and IPV in Uganda

Globally, there are approximately 5000 cases of new adult and child HIV infections a day, and 66% of these cases are in sub-Saharan Africa [15]. Although there were significantly fewer number of new HIV infections among people in eastern and southern Africa in 2017 compared to 2000 (30% fewer new HIV infections), Uganda had the sixth-highest rate of new HIV infections in 2017 among the 21 countries in the eastern and southern African region included in the United Nations Program on HIV/AIDS (UNAIDS) 2018 report [15]. Further, Uganda is the only country other than Angola that recorded an increase in new HIV infections between the period of 2005 and 2013 [16]. High rates of IPV, defined as physical violence, sexual violence, emotional abuse/psychological aggression, or stalking perpetrated by a current or former spouse/intimate partner [17], may be one factor placing people in Uganda at increased risk of HIV infection.

Perhaps not surprisingly, Ugandan men and women who report experiencing IPV are more likely to report HIV risk behaviors than those who do not report IPV [18, 19]. For example, a recent study by Kiene et al. [18] found a significant association between IPV (physical and emotional IPV) and high-risk sex acts (i.e., unprotected sex with a partner of unknown or HIV positive status) for both men and women living in Uganda. Among women, they also found an association between emotional IPV and testing positive for HIV or an STI. This finding is similar to results of other studies using samples from Uganda [20, 21].

The link between IPV and HIV is worrisome, considering the high rates of IPV present in Uganda. Among the 12 eastern and southern African countries included in population-based household surveys conducted between 2013 and 2016, Uganda had the highest percentage (30%) of adult women who reported being victims of physical or sexual IPV in the previous year [15]. Interestingly, men and women in Uganda reported experiencing similar rates of IPV. Results from the 2016 Uganda Demographic and Health Survey (DHS) indicated 39% of ever-married men and 39% of ever-married

women experienced some form of IPV (physical, sexual, or emotional IPV) by their current spouse or partner during the prior year [22]. Further, 41% of Ugandan women reported having ever experienced emotional violence compared to 36% of Ugandan men [22]. These findings make Uganda unique, given rates of past-year IPV are generally lower for men compared to women in other parts of the world [23, 24]. Despite reporting similar rates of past-year IPV and lifetime emotional IPV, it is important to note that a higher percentage of women than men in Uganda reported experiencing lifetime physical (44% compared to 21%) and lifetime sexual (25% compared to 9%) IPV. Additionally, IPV rates may vary by place of residence. Researchers using national data from the Uganda DHS found that incidence of emotional, physical, and sexual IPV was higher among women living in rural areas of Uganda compared with their urban counterparts [25]. Also, rural Ugandan women living with HIV reported significantly higher rates of physical abuse relative to rural Ugandan men living with HIV [6].

Correlates of IPV in Uganda

Although not limited to PLHIV, work has been conducted in Uganda to examine risk factors for IPV [19, 25–27]. Findings across these studies suggest the following factors are associated with IPV in Uganda: sociodemographics (e.g., age, marital status, educational status, employment and housing ownership), substance use, perceptions that violence is acceptable/gender norm perspectives, marital dissatisfaction, sexual problems (e.g., lack of romance, refusal of sex), and oral pre-exposure prophylaxis (PrEP) interruption. Further, when asked about IPV in the context of HIV, focus group participants in the Karamagi et al. study [26] mentioned that for women, getting testing for HIV, disclosing HIV test results, and requesting to use condoms are potential contributors to IPV.

Correlates of IPV Among PLHIV

Researchers studying correlates of IPV among PLHIV in Uganda have found that there is no association between HIV-positive status disclosure and IPV [6, 7]. However, these studies had methodological limitations precluding definitive inferences about study findings. One study [7] was based on qualitative research and did not assess for differences based on different forms of IPV. Thus, results from this study may not be generalizable to most PLHIV in Uganda. The other study [6] measured IPV based on prior 12 months experience, which may be more prone to recall bias. Additionally, this study did not examine the impact of HIV-status disclosure on sexual IPV. Instead, it only focused on how HIV-status disclosure affects physical and emotional IPV. Considering these limitations, additional research is needed

to further understand the IPV experiences of PLHIV in Uganda.

In addition to HIV-status disclosure, researchers have studied other potential correlates of IPV among PLHIV in Uganda. These researchers reported that marital status, education level, and use of antiretroviral therapy (ART) were associated with IPV among PLHIV in Uganda [6, 28]. In particular, among a community-based sample of HIV-positive individuals aged 18 to 49 living in rural Rakai, Uganda. Kairania et al. [6] found that married individuals were more likely to report physical and verbal IPV in the past 12 months than were unmarried individuals. Further, among a sample of 317 HIV infected women receiving HIV treatment from a hospital in rural Uganda, Osinde et al. [28] found the use of ART increased the risk of IPV (physical, sexual, or psychological) in the preceding 12 months. They also found an inverse relationship between women's education level and past-year physical IPV; and women and their spouse's education level and past-year psychological and sexual IPV. However, whether findings from this study apply to the general Ugandan PLHIV population is uncertain because the study relied on a clinic-based sample and did not include men.

Current Study

The current study aims to advance the knowledge of IPV among PLHIV in Uganda. We address some of the prior limitations of studies examining correlates of IPV among PLHIV in Uganda by using a population-based sample from four districts. For example, rather than using a clinic-based sample that was already accessing HIV care [28] the current study's analyses are based on reports from individuals newly diagnosed with HIV living in rural Uganda and who at follow-up may or may not have been linked to HIV care. Different from the Osinde et al. study [28], our sample also included men living with HIV in rural Uganda. Further, we assessed recent IPV based on experiences during the prior 6 months, reducing the chance of recall bias that may have existed with prior research that assessed IPV based on past-year experience [6, 28]. Lastly, different from past studies [6, 7] we included measures of all forms of IPV (physical, sexual, and emotional) in the current study. Using a population-based sample of Ugandan men and women newly diagnosed with HIV in home-based HIV testing, we sought to answer the following research questions:

1. What is the prevalence of emotional, physical, and sexual IPV (*recent, lifetime, and related to partner learning HIV-positive status*) among women recently diagnosed with HIV in Uganda compared to men recently diagnosed with HIV in Uganda?;
2. What socio-demographic, social and individual characteristics, and HIV-related behaviors (disclosure, linkage to care, use of antiretroviral [ARV] drug) are associated with recent (past 6-months) experiences of emotional, physical, and sexual IPV?

Method

This study primarily used 6-month follow-up data from the PATH/Ekkubo study, which is a cluster randomized trial of an enhanced linkage to HIV care intervention within the context of community-wide home-based HIV testing. The study was approved by IRBs in the U.S. and Uganda and by the National Council for Science and Technology, and participants provided written informed consent for HIV testing and study participation. At the time of the current study, six-month follow-up data were collected for 338 participants newly diagnosed with HIV via home-based testing at study enrollment. However, IPV was only assessed for participants who reported ever having a sexual partner. Therefore, we limited the analysis for the current study to 337 participants who met that criterion. A full and detailed discussion of the methodological procedures of the PATH/Ekkubo study can be found elsewhere [29]. Here, we provide a brief overview.

Setting, Study Design, and Eligibility Criteria

The PATH/Ekkubo study was conducted in rural communities in Butambala, Mpigi, Gomba, and Mityana Districts in central Uganda. The study tested an enhanced linkage to HIV care intervention in the context of home-based HIV testing and counseling (HBHCTC) using a cluster randomized design (with clusters being villages). Villages were randomized to either the intervention arm or standard-of-care (control) arm. All households within each village were included in the study. Eligibility criteria for the intervention trial were adults aged 18 to 59 years or emancipated minors aged 15 to 17 years, accepting HIV testing, newly diagnosed with HIV at study enrollment, speaking Luganda or English, and residing in the household.

Procedures

HIV counseling and testing was provided to all consenting household members meeting the age eligibility criterion. Individuals could choose to receive individual or couples HIV counseling and testing. Data were collected from consenting participants using individual structured interviewer-administered computer-based interviews at baseline, 6-month follow-up, and 12-month follow-up. Participants meeting eligibility criteria described above were invited to participate in the intervention trial. Only one randomly

selected person per household was included in the trial to ensure independence in data.

Measures

To answer study research questions, we measured characteristics related to participants' IPV experiences, HIV experiences (status disclosure, HIV linkage to care, taking ARV, couples counseling), sociodemographic characteristics, social support, and perceptions of violence. We also considered how participating in the trial may influence IPV risk by controlling for study arm allocation (intervention arm versus control arm). Unless otherwise stated, data for all measures were collected during the six-month follow-up interview.

IPV

IPV was measured using a 10-item instrument developed by the World Health Organization (WHO) [30]. This instrument was used to assess emotional (e.g., Has he/she ever insulted you or made you feel bad about yourself?), physical (e.g., Has he/she ever slapped you or thrown something at you that could hurt you?), and sexual (e.g., Has he/she physically forced you to have sexual intercourse when you did not want?) IPV perpetrated by a sexual partner anytime during (a) participants' lifetime (also referred to as lifetime IPV) and (b) the prior 6 months, covering the period between diagnosis and the 6 month follow-up (also referred to as recent IPV). Acts of physical violence were disaggregated further into less severe and severe IPV. Severe physical violence included being beat up, choked, burnt, or threatened with a weapon. We characterized participants as having experienced IPV if they reported being a victim of at least one act of emotional, physical, or sexual IPV. Because questions related to recent IPV referred to IPV experienced since HIV diagnosis (within the previous 6-months), participants who reported that these questions did not apply to them because they did not have a partner during that time ($n = 37$; 13 men, 24 women) were excluded from analyses regarding recent IPV.

IPV Related to Partner Learning HIV-Positive Status

IPV related to partner learning HIV-status was measured by asking participants the following question if they responded "yes" to a question regarding recent IPV: "Was this [recent IPV experience] related to your partner learning your HIV-positive status?"

HIV-Positive Status Disclosure

HIV-status disclosure to sexual partner was determined using multiple questions in the 6-month follow-up questionnaire.

However, due to an error in skip pattern programming in the questionnaire for a portion of the data collection period, there were some cases in which we were unable to determine whether a participant disclosed their HIV-status to a partner using these data. In these cases ($n = 26$), we resorted to using disclosure data collected during study visits before the six-month follow-up period.

We considered participants as having disclosed their HIV status to their partner if they responded "spouse (husband/wife)" or "boyfriend/girlfriend" to at least one of the following questions: "Which of these people have you disclosed to?" and "Who is your [HIV] treatment supporter?" We also classified participants as having disclosed if they answered yes when asked "Since you have known that you are HIV positive have you disclosed your status to your spouse?" or answered no when asked "Since you have known that you are HIV positive, have you ever NOT told a sexual partner that you are HIV-positive?"

Couples HIV Counseling and Testing

During the HIV counseling and testing component of the study, participants were given the option of being counseled and tested together with their partner or separately. Participants that opted to test together received couples counseling and test results together; and were classified as having received couples HIV testing and counseling.

Taking ARV

We assessed whether participants were taking ARVs by asking: "Are you currently taking (swallowing) antiretroviral drugs (ARVs)?" (y/n).

Linked to HIV Care

Participants were asked about linkage to HIV care using the following question: Since the last interview [when you were diagnosed with HIV at the baseline visit until now] have you received medical care or treatment for HIV? (y/n).

Sociodemographic Characteristics

We used the baseline data to gather information regarding participants' sociodemographic characteristics, including age, years of schooling, gender, marital status, polygamous marriage, and household wealth. Using questions from the Uganda DHS [22] and procedures for calculating a wealth index for the full baseline sample population ($n = 18,702$) [31], we calculated household wealth by conducting a factor analysis using seven household characteristics (e.g., having a television; having a sofa; having electricity) as indicators.

Using the calculated factor analysis score, we computed the position of each household in the sample by quintiles.

Social Support

We measured receipt of instrumental and emotional social support using the Social Support Scale [32], a scale adapted from the Duke-UNC Functional Social Support Questionnaire [33] and validated among PLHIV in rural Rwanda ($\alpha=0.91$) [34]. This scale contains six items on emotional support and four items on instrumental social support. Response options ranged from 1 (I get much less than I would like) to 5 (I get as much as I would like). Scores were summed (ranging from 10 to 50), with higher scores indicating higher levels of social support. Internal consistency for this measure was relatively high ($\alpha=0.89$) in the current study.

Violence Against Women Perceptions

Perceptions about violence against women were measured using a Uganda-adapted version of the violence and sexual relationships domain items from the Gender Equitable Men (GEM) Scale [35]. This 9-item scale was validated for use in Uganda by researchers involved in the Demographic and Health Surveys (DHS) [36]. Both men and women were asked these questions, with some questions specific to men and others specific to women. Examples of items include: “In your opinion, is a husband justified in hitting or beating his wife if she burns food?” and “Can you say no to your {husband/partner} if you do not want to have sexual intercourse?” We summed yes (coded as 1) or no (coded as 0) response options so that lower scores indicate lower levels of violence acceptability. To remain conservative, items for which participants responded “Don’t know” were treated as zeros. Internal consistency of the scale in this study was good for both women and men ($\alpha=0.71$ and 0.76 , respectively).

Statistical Analysis

We analyzed data using Stata 13.1 statistical software program. First, we used univariate analyses to summarize prevalence of recent (since HIV diagnosis), lifetime, and IPV related to the partner learning the participant’s HIV-positive status. Second, we conducted bivariate analyses to examine the associations of recent IPV with sample characteristics, including HIV-positive status disclosure. For these analyses, we created three separate categories to characterize recent IPV: [1] emotional IPV [2], physical IPV, and [3] sexual IPV. These categories were not mutually exclusive. Third, we used three separate logistic regression models to analyze associations of recent emotional, physical, and sexual

IPV with HIV-positive status disclosure and each sample characteristic. We included all sample characteristics in the regression model (regardless if they were insignificant in bivariate analyses), given the limited knowledge available on our research topic and prior research that suggests these variables are risk factors for IPV among people in Uganda [6, 25–28].

Results

Sample Characteristics

The sample consisted of 216 women and 121 men (total $n=337$) newly diagnosed with HIV at study enrollment. As indicated in Table 1, 32.05% of participants were in a non-polygamous marriage, 25.22% were in a polygamous marriage, 29.67% were divorced or widowed, and 13.06% never married. The mean age was 30.91 years (range 15–59 years; $SD=9.36$) and mean years of schooling was 6.73 years (range 0–15 years; $SD=3.12$). Over half of the sample (62.02%) were in the three lowest wealth quintiles, and 5.50% participated in HIV couples counseling during the baseline HIV counseling and testing.

On average, high levels of social support were reported: the average score was 33.28 (range 10–40; $SD=7.50$). The mean violence perception score was 1.83 (range 1–9; $SD=1.63$), indicating that many participants had low acceptance for violence against women. Regarding HIV-positive status disclosure and HIV care engagement, slightly over three-quarters (75.95%) of participants reported disclosing their HIV-status to their intimate partner; 68.84% were linked to HIV care and 62.31% of the participants reported taking ARVs.

IPV Prevalence

Lifetime and Recent IPV

Lifetime and past 6 months’ estimates of the prevalence of IPV are presented in Table 2. For lifetime IPV, the majority of participants reported experiencing emotional IPV (62.81% of men, 70.37% of women), followed by physical IPV (21.49% of men, 26.39% of women) then sexual IPV (7.44% of men, 17.59% of women). Overall, 65.29% of men reported that they experienced at least one form of emotional, physical, or sexual IPV in their lifetime. Among men reporting an experience of physical IPV during their lifetime, 69.23% reported at least one incident of severe physical violence (such as being beaten up, choked, or threatened with a weapon). Rates of lifetime victimization for women were similar: 72.22% of women reported at least one emotional, physical, or sexual IPV incident in their lifetime.

Table 1 Sample characteristics of newly diagnosed PLHIV in rural Uganda (n = 337)

	N (%)
HIV status disclosure to sexual partner by 6 months from diagnosis ^a	
Yes	240 (75.95)
No	76 (24.05)
Taking ARV at 6 months from diagnosis	
Yes	210 (62.31)
No	127 (37.69)
Linked to HIV care at 6 months from diagnosis	
Yes	232 (68.84)
No	105 (31.16)
Received couples HIV counseling and testing ^b	
Yes	18 (5.50)
No	309 (94.50)
Study arm	
Control	175 (51.93)
Intervention	162 (48.07)
Marital status	
Never married	44 (13.06)
Divorced/widowed	100 (29.67)
Polygamous marriage	85 (25.22)
Non-polygamous marriage	108 (32.05)
Wealth Index	
Lowest wealth quintile	59 (17.51)
2 nd lowest wealth quintile	86 (25.52)
3 rd lowest wealth quintile	64 (18.99)
2 nd highest wealth quintile	70 (20.77)
Highest wealth quintile	58 (17.21)
Gender	
Male	121 (35.91)
Female	216 (64.09)
	M (SD)
Years of schooling	6.73 (3.12)
Age (in years)	30.91 (9.36)
Perception that violence against women is acceptable	1.83 (1.63)
Social Support	33.28 (7.50)

The estimates reported are valid percentages. Analyses are reported based on non-imputed data. Missing data were excluded from the calculations

^a21 missing values on disclosure variable ($n = 316$)

^bOpted for couples HIV counseling and testing rather than individual HIV counseling and testing at study enrollment. Ten missing values on counseling variable ($n = 327$)

Among women experiencing physical IPV during their lifetime, 59.65% reported at least one occurrence of severe IPV.

Rates of IPV occurring in the 6 months since HIV diagnosis (i.e., recent IPV) were lower than lifetime estimates but followed similar patterns, with the most frequently reported type of IPV in that period being emotional IPV (19.44% of men, 25.91% of women). Furthermore, 21.30% of male respondents and 30.57% of female respondents indicated that they experienced emotional, sexual, or

physical IPV, at least once, since HIV diagnosis. Regarding recent physical IPV, among men, 4.63% reported at least one incident of less severe physical violence, and 3.70% reported at least one incident of severe physical violence. Among women, 7.77% reported at least one less severe physical IPV incident since HIV diagnosis and 4.66% at least one severe physical IPV incident. Concerning sexual IPV, women reported higher rates of recent sexual IPV than men (8.29% vs. 1.85%).

Table 2 Prevalence of lifetime IPV and IPV occurring during the 6 months following HIV positive diagnosis among newly diagnosed PLHIV in rural Uganda

	Total			Male			Female		
	Lifetime N (%)	Past 6-months N (%)	Post-partner learning HIV-status N (%)	Lifetime N (%)	Past 6-months N (%)	Post-partner learning HIV-status N (%)	Lifetime Number (%)	Past 6-months N (%)	Post-partner learning HIV-status N (%)
Emotional IPV	228 (67.66)	71 (23.59)	10 (14.08) ^a	76 (62.81)	21 (19.44)	6 (30.00) ^c	152 (70.37)	50 (25.91)	4 (8.70) ^d
Sexual IPV	47 (13.95)	18 (5.98)	1 (5.56)	9 (7.44)	2 (1.85)	0 (0.00)	38 (17.59)	16 (8.29)	1 (6.25)
Physical IPV	83 (24.63)	21 (6.98)	1 (4.76) ^b	26 (21.49)	5 (4.63)	0 (0.00)	57 (26.39)	16 (8.29)	1 (7.14) ^b
Any severe physical IPV	52 (15.43)	13 (4.32)	1 (4.76)	18 (14.88)	4 (3.70)	0 (0.00)	34 (15.74)	9 (4.66)	1 (6.25)
Any less severe physical IPV	81 (24.04)	20 (6.64)	1 (4.76)	25 (20.66)	5 (4.63)	0 (0.00)	56 (25.93)	15 (7.77)	1 (6.25)
Severe physical IPV only	2 (0.59)	1 (0.33)	0 (0.00)	1 (0.83)	0 (0.00)	0 (0.00)	1 (0.46)	1 (0.52)	0 (0.00)
Less severe physical IPV only	31 (9.20)	8 (2.66)	0 (0.00)	8 (6.61)	1 (0.93)	0 (0.00)	23 (10.65)	7 (3.63)	0 (0.00)
Any IPV (emotional, physical, or sexual)	235 (69.73)	82 (27.24)	10 (12.20) ^a	79 (65.29)	23 (21.30)	6 (27.27)	156 (72.22)	59 (30.57)	4 (7.27)

Estimates related to lifetime IPV are based on the entire sample of 337 (121 male, 216 female) participants. Estimates related to recent IPV are based on a sample of 301 (108 male, 193 female) participants (i.e., participants with a current partner during data collection). Estimates related to post-partner learning are based on sample of 82 participants with reports of past 6-months IPV

^a5 missing values

^b2 missing values; ^c1 missing value; ^d4 missing values

IPV Prevalence Related to Partner Learning HIV-Positive Status

We also examined the prevalence of recent IPV reported as explicitly related to one's partner learning about his/her HIV-positive status. Results (see Table 2) indicated that, among the 82 participants who reported a recent IPV experience, 12.20% ($n = 10$) of participants reported experiencing IPV for this reason; and, every participant (100%) who reported IPV, for this reason, reported emotional IPV as a form of IPV experienced. Conversely, among those who reported experiencing recent physical IPV, only one person (4.76%), a woman, reported experiencing this form of IPV was because of partner learning her HIV-status. Similarly, among participants who reported recent sexual IPV, one person (5.56%), also a woman, reported that her sexual IPV experience was related to her partner learning her HIV-status.

Because there were no men who reported physical or sexual IPV as a result of their partner learning their HIV-positive status, we were unable to statistically compare men

and women on these outcomes. However, we found that men were more likely than women to report emotional IPV (30.00% of men and 8.70% of women) related to their partner learning their HIV-positive status ($\chi^2(1, N = 66) = 4.92, p = 0.027$).

Correlates of IPV Since HIV-Positive Diagnosis

Bivariate Analysis

Table 3 presents the results of bivariate analyses comparing differences in sample characteristics among participants who reported experiencing no IPV, emotional IPV, physical IPV, and/or sexual IPV since being diagnosed with HIV 6 months ago. Participants who reported experiencing no recent IPV were more likely to have disclosed their HIV-status ($\chi^2(1, N = 286) = 6.55, p = 0.011$) and be of older age ($t(299) = 2.82, p = 0.005$) than participants who reported recent IPV (emotional, physical, and/or sexual IPV).

Table 3 Sample characteristics and bivariate associations with IPV occurring between HIV diagnosis and 6-month follow-up among PLHIV in rural Uganda (N=301)

	Emotional IPV (%)	Physical IPV (%)	Sexual IPV (%)	No IPV (%)
HIV status disclosure to sexual partner by 6 months from diagnosis				
Yes	20.09*	7.01	4.67*	76.64**
No	33.33	6.94	11.11	61.11
Taking ARV at 6-month from diagnosis				
Yes	25.81	8.06	6.99	76.43
No	20.00	5.22	4.35	76.52
Linked to HIV care at 6 months from diagnosis				
Yes	24.02	7.35	7.35	71.57
No	22.68	6.19	3.09	75.26
Received couples HIV counseling and testing				
Yes	22.22	11.11	5.56	77.78
No	23.36	6.93	6.20	72.63
Study arm				
Control	25.16	7.10	5.16	73.55
Intervention	21.92	6.85	6.85	71.92
Marital status				
Never married	13.16	7.89	7.89	81.58
Divorced/widowed	21.95	7.32	3.66	74.39
Polygamous marriage	19.48	5.19	9.09	75.32
Non-polygamous marriage	31.73	7.69	4.81	66.35
Wealth Index				
Lowest wealth quintile	19.61	5.88	7.84	74.51
2nd lowest wealth quintile	28.75	7.50	3.75	68.75
3rd lowest wealth quintile	20.75	7.55	3.77	77.36
2nd highest wealth quintile	26.15	7.69	7.69	69.23
Gender				
Male	19.44	4.63	1.85*	78.70
Female	25.91	8.29	8.29	69.43
	M (SD)	M (SD)	M (SD)	M (SD)
Years of schooling	7.01 (3.11)	6.48 (3.52)	7.44 (3.28)	6.62 (3.06)
Age	28.07 (7.77)**	26.81 (6.98)*	27.89 (6.88)	31.50 (9.76)**
Perception that violence against women is acceptable	2.03 (1.72)	2.95 (1.80)*	2.33 (1.61)	1.84 (1.63)
Social support	31.68 (8.81)*	31.29 (10.17)	32.67 (8.66)	34.11 (6.87)

The estimates reported are valid row percentages. Analyses are reported based on non-imputed data. Missing data were excluded from the calculations. For continuous variables, estimates represent means and p-values for independent samples *t* test; all other tests are based on Chi square analyses

* $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$

^a15 missing values on disclosure variable ($n=286$); ^b9 missing values on counseling variable ($n=292$)

Findings also indicated a statistically significant relationship between recent emotional IPV and HIV-positive status disclosure, age, and social support. Participants who disclosed their HIV-positive status to their spouse or partner were less likely to report experiencing emotional IPV than participants who did not disclose their HIV-positive status ($\chi^2(1, N=286) = 5.26, p=0.02$). Further, being younger age ($t(299) = 2.63, p=0.009$) and having lower levels of

social support ($t(299) = 2.47, p=0.014$) were associated with an increased likelihood of reporting experiencing emotional IPV. There was no statistically significant relationship between study arm and recent emotional IPV ($\chi^2(1, N=301) = 0.44, p=0.51$).

Regarding physical abuse, we found a significant association between age and violence perception. Specifically, participants with higher levels of acceptability for

violence against women ($t(299) = -3.08, p = 0.002$) and younger age ($t(299) = 1.93, p = 0.054$) were more likely to report recent physical IPV compared to participants with lower levels of acceptability for violence against women and older age, respectively. HIV-status disclosure ($\chi^2(1, N = 286) = 0.0003, p = 0.99$) and study arm ($\chi^2(1, N = 301) = 0.01, p = 0.93$) were not significantly associated with recent physical IPV.

Related to sexual IPV, women were more likely than men to report recent sexual IPV (8.29% vs. 1.85%, respectively; $\chi^2(1, N = 286) = 5.11, p = 0.024$). Further, similar to emotional IPV, HIV-status disclosure was inversely related to recent sexual IPV ($\chi^2(1, N = 286) = 3.79, p = 0.052$). Conversely, study arm and recent sexual IPV were not significantly associated ($\chi^2(1, N = 301) = 0.38, p = 0.54$).

Multivariable Logistic Regression Analysis

We examined the relationship between each recent IPV category and all sample characteristics using multivariable logistic regression analyses (see Table 4). The following sections describe findings related to each regression model.

Emotional IPV Since HIV-Positive Diagnosis

Results from the multivariable logistic regression model for recent emotional IPV were consistent with those found in our bivariate analysis. However, we additionally found that marital status was associated with recent emotional IPV. Participants who disclosed their HIV status to their spouse/partner had 59% lower odds of reporting recent emotional IPV (AOR = 0.41, 95% CI [0.21, 0.81]). Every one-point increase in the social support score decreased the odds of reporting recent emotional IPV by 4% (AOR = 0.96; 95% CI [0.92, 0.998]) while every year increase in age reduced the odds

Table 4 Multivariable logistic regression models predicting IPV occurring between HIV diagnosis and 6-month follow-up among PLHIV in rural Uganda (n = 277)

Variable	Emotional IPV		Physical IPV		Sexual IPV	
	AOR (95% CI)	p	AOR (95% CI)	p	AOR (95% CI)	p
HIV-status disclosure to sexual partner	0.41 (0.21, 0.81)	0.01	1.21 (0.37, 3.96)	0.76	0.38 (0.13, 1.13)	0.08
Taking ARV at 6 months from diagnosis (yes)	1.60 (0.84, 3.06)	0.15	1.91 (0.64, 5.72)	0.25	2.66 (0.80, 8.85)	0.11
Received couples HIV counseling and testing	0.82 (0.23, 2.90)	0.76	2.28 (0.38, 13.80)	0.37	1.63 (0.16, 16.63)	0.68
Study arm						
Control	Ref		Ref		Ref	
Intervention	0.82 (0.42, 1.57)	0.54	1.11 (0.39, 3.15)	0.85	0.86 (0.28, 2.63)	0.79
Age	0.95 (0.91, 0.99)	0.04	0.95 (0.87, 1.03)	0.09	1.00 (0.93, 1.08)	0.96
Gender						
Male	Ref		Ref		Ref	
Female	0.91 (0.43, 1.94)	0.81	1.05 (0.28, 3.98)	0.94	3.47 (0.65, 18.42)	0.15
Marital status						
Never married	Ref		Ref		Ref	
Divorced/widowed	2.27 (0.63, 8.12)	0.21	0.96 (0.16, 5.83)	0.43	0.51 (0.07, 3.64)	0.50
Polygamous marriage	2.92 (0.84, 10.18)	0.24	0.75 (0.13, 4.51)	0.30	1.21 (0.22, 6.47)	0.83
Non-polygamous marriage	4.39 (1.37, 14.10)	0.01	1.16 (0.22, 6.06)	0.86	2.04 (0.65, 6.35)	0.22
Education level	1.02 (0.92, 1.13)	0.60	0.94 (0.80, 1.10)	0.42	1.04 (0.86, 1.24)	0.71
Wealth Index						
Lowest wealth quintile	Ref		Ref		Ref	
2nd lowest wealth quintile	1.59 (0.61, 4.17)	0.35	1.22 (0.24, 6.12)	0.81	0.43 (0.08, 2.19)	0.31
3rd lowest wealth quintile	0.69 (0.22, 2.14)	0.52	1.63 (0.30, 8.90)	0.57	0.34 (0.05, 2.14)	0.25
2nd highest wealth quintile	1.47 (0.51, 4.23)	0.48	1.77 (0.32, 9.89)	0.52	0.63 (0.13, 2.98)	0.56
Highest wealth quintile	0.78 (0.25, 2.45)	0.67	1.50 (0.24, 9.29)	0.66	0.63 (0.12, 3.22)	0.58
Perception that violence against women is acceptable	1.12 (0.94, 1.34)	0.20	1.58 (1.19, 2.09)	0.002	1.16 (0.87, 1.54)	0.30
Social support	0.96 (0.92, 0.997)	0.04	0.95 (0.89, 1.01)	0.09	0.97 (0.91, 1.04)	0.40

Sample size reduced due to missing data for HIV-status disclosure and HIV couples counseling variables

AOR adjusted odds ratio; CI confidence interval; IPV intimate partner violence; Ref reference category. All participants linked to care were also taking ARV. Therefore, linkage to HIV care is not included in the model to avoid risks of multicollinearity

of recent emotional IPV by 5% (AOR = 0.95; 95% CI [0.91, 0.99]). Participants who were in a non-polygamous marriage had 4.4 times greater odds of reporting recent emotional IPV than participants who were not married (AOR = 4.39; 95% CI [1.37, 14.10]). Similar to bivariate results, we did not find a statistically significant relationship between study arm and recent emotional IPV (AOR = 0.82; 95% CI [0.42, 1.57]).

Physical IPV Since HIV-Positive Diagnosis

The bivariate findings indicating that violence perception was associated with recent physical IPV upheld in the regression analysis controlling for sample characteristics. Every single point increase in violence perception scores increased the odds of a recent reporting of physical IPV by 58% (AOR = 1.58; 95% CI [1.19, 2.09]). In other words, the more likely a participant was to perceive violence against women as acceptable, the more at risk s/he was for physical IPV. We did not find a statistically significant association between HIV-status disclosure (AOR = 1.21; 95% CI [0.37, 3.96]) or study arm (AOR = 1.11; 95% CI [0.39, 3.15]) and recent physical IPV.

Sexual IPV Since HIV-Positive Diagnosis

Different from our bivariate analysis, we did not find a significant association between HIV-status disclosure (AOR = 0.38; 95% CI [0.13, 1.13]) and gender (AOR = 0.65; 95% CI [0.65, 18.42]) and recent sexual IPV in our regression analysis. Further, there was no statistically significant association between study arm and recent sexual IPV (AOR = 0.86; 95% CI [0.28, 2.63]).

Discussion

The current study examined prevalence and correlates of IPV among a population-based sample of men and women newly diagnosed with HIV in Uganda who were participating in a linkage to HIV care intervention trial. Findings from this study contribute to existing research indicating many people living in Uganda experience IPV [22, 25] and factors outside of HIV-positive status disclosure may play a stronger role in increasing IPV risk among PLHIV in Uganda [6, 7]. However, this novel study is the first to document the prevalence of IPV related to a partner learning one's HIV-positive status that occurred in the 6 months since diagnosis. Further, this study is among the first to investigate correlates of IPV using a sample of PLHIV in Uganda. There are only two other studies [6, 7] to our knowledge that assessed demographic and risk characteristics associated with IPV within this population. Thus, this study adds to the scant research examining this topic.

We found that, except for sexual IPV, Ugandan men and women recently diagnosed with HIV reported similar and high rates of IPV. Approximately seven out of ten men and women in Uganda living with HIV reported experiencing emotional IPV during their lifetime, and about one in four men and women reported experiencing physical IPV during their lifetime. Among those who experienced physical IPV during their lifetime, over half of the experiences were severe types of physical IPV (e.g., being burnt, kicked, choked, punched with fist). Further, women were significantly more likely to report experiencing sexual IPV than men.

Although rates of recent IPV (in the 6 months since HIV diagnosis) were not as high as that experienced during participants' lifetime, we found it alarming that nearly one in five men and one-third of women reported experiencing at least one type (physical, sexual, or emotional) of IPV in a 6-month time period. Given this high rate of recent IPV found in the current study, it is imperative that HIV programs properly screen for IPV among men and women newly diagnosed with HIV and among those already aware of their HIV positive status. However, according to WHO guidance, IPV screening should only be conducted if minimum technical and referral capacity is in place (protocol for screening, trained providers, private setting, confidentiality ensured, referral system) [37]. If IPV is identified, HIV programs should properly address IPV using evidence-informed interventions appropriate for use with PLHIV. King et al. [38] discuss potential IPV screening and brief interventions that may be useful for this population living in Uganda. Addressing IPV among PLHIV is especially crucial because IPV further compromises this population's health and sexually transmitted infection prevention practices [39].

Among those in our study who reported experiencing IPV during the 6 months since HIV diagnosis, it was quite rare that they reported the reason for the IPV experienced was explicitly related to their partner learning about their HIV-positive status. This circumstance was true in only about ten percent of cases. However, we found that men who experienced IPV during the 6 months since HIV diagnosis were more likely than women who experienced IPV during this timeframe to report emotional IPV related to a partner learning their HIV-positive status. We urge readers to interpret this finding with caution, given the small numbers of men who reported recent IPV related to their partner learning about their HIV-positive status. Also, there is a lack of supporting evidence to suggest men may experience IPV in conjunction with HIV-status disclosure. Thus, although interesting, this finding is unique to the current study and warrants additional evidence.

Our findings also showed that disclosing one's HIV-positive status was associated with lower odds of experiencing emotional IPV. This finding contradicts previous research

findings indicating no significant relationship between emotional IPV and HIV-positive status disclosure among PLHIV in Uganda [6, 7]. Our finding is also inconsistent with the vast evidence based on studies conducted outside of Uganda suggesting HIV-status disclosure increases IPV risk [1–5, 39–47]; thus, raising questions about whether there are unique relationship factors that may influence IPV risk among PLHIV who disclose their HIV-status. Although the data used in this analysis cannot provide a definitive answer to this question, Maman et al.'s research [48] might provide one possible explanation. Maman and colleagues found that HIV-status disclosure moderated the relationship between HIV-status (positive or negative) and IPV among pregnant and postpartum women in South Africa. Specifically, HIV-positive women who did not disclose their HIV-status were more likely to report physical IPV compared to HIV-negative women who did not disclose their HIV-status.

In light of Maman et al.'s [48] findings, a possible interpretation of the current study's findings is that PLHIV in Uganda who disclose their HIV-status were less likely to report recent emotional IPV than PLHIV in Uganda who did not disclose their HIV-status because they were in healthier relationships (e.g., relationships involving honesty, trust, respect, and open communication between partners). Despite finding a significant inverse relationship between social support level and emotional IPV in the current study, post hoc analysis revealed there was no significant interaction ($p > 0.05$) between social support and HIV-status disclosure. This is likely because we measured social support broadly, including all types of support persons and not limited to intimate partners. Thus, given limitations of the data, we could not assess whether relationship quality with intimate partners moderated the effect of HIV-status disclosure on emotional IPV. We encourage future research on this topic using a sample of Ugandans living with HIV.

Additional relationship factors to consider when attempting to understand possible explanations for our finding that emotional IPV is inversely related to HIV-positive status disclosure include one's prior experience with IPV. For example, it is plausible that fear of new IPV related to being in a past violent relationship(s) may impact one's decision to disclose or not disclose their HIV-positive status [49]. Further, it is essential to consider whether or not one's partner is also HIV-positive. It is possible that IPV is more likely to be related to HIV-positive status disclosure among individuals who are in serodiscordant relationships than individuals in seroconcordant relationships [50]. Lastly, how frequently IPV occurred in the relationship before and after HIV diagnosis may impact the relationship between HIV-status disclosure and IPV. Participants in the current study may not have experienced IPV between HIV diagnosis and the 6-month follow-up; however, IPV may have occurred at a later time. Unfortunately, we did not have adequate data to

explore whether partner's HIV-status and fear of IPV moderates the relationship between HIV-status disclosure and IPV. Future research is needed to understand these relationships in the study population, and this research should be longitudinal.

Based on our overall study findings, it appears that perceptions of violence against women may have the most substantial influence on physical IPV risk. This variable was the only significant predictor of recent physical IPV. Consequently, we encourage the development of national and community-based programs in Uganda, such as the United Nations Development Program Uganda (UNDPUG) Gender Equality Strategy [51] and SASA! [52] that advocate for gender equality and enhance awareness of the adverse consequences caused by IPV. Despite adopting formal laws and policies aimed toward treating men and women equally in Uganda (e.g., 2010 law on Domestic Violence; 2011 Domestic Violence regulations; anti-Female Genital Mutilation Act of 2010; and 2009 anti-trafficking in Person Act), these laws have not adequately addressed gender-sensitive issues [51]. For example, in Uganda, defilement was among the top committed and reported crimes in 2014, yet the conviction rate for rape and defilement cases was an underwhelming 0.8% and 1.8% respectively [51]. Findings from the current study demonstrating that women were significantly more likely to report sexual IPV than men, reinforce this disparity between formal gender equality and substantive gender equality.

Limitations

The current study has several strengths; however, there are limitations to report. First, the cross-sectional nature of the data used to study the research questions does not allow us to infer causation or the direction of the relationship between IPV and sample characteristics, including HIV-positive status disclosure. Therefore, we encourage future research using longitudinal data, especially to understand whether the risk of IPV increases following HIV-positive status disclosure.

Second, although novel that we measured rates of IPV occurrence as related to a partner learning about one's HIV-positive status, in addition to self-disclosure, there are other means of one learning. For example, an individual could learn about his/her partner's HIV-positive status by accidentally seeing his/her partner's HIV medications. Future research should determine the frequency of partners learning an individual's HIV positive status other than through self-disclosure. This research should also examine whether the risk of IPV varies by how the partner learned of the individual's HIV positive status.

Third, the processes through which HIV-status disclosure influences IPV may be different for men as compared to women. Relatedly, although the scale used to measure IPV

in the current study was used with men in the 2016 Uganda DHS, it was not originally designed to be used with men; raising questions about the validity of this measure for men and making it difficult to appropriately compare men and women's IPV experiences. Nevertheless, given the scarce data available on IPV experiences of men living with HIV in Uganda, our findings offer a good starting point for trying to understand this phenomenon. We recommend additional research related to this topic.

Fourth, we relied on self-reported data. This type of data is subject to social desirability. Further, because we used self-reported data, there is a risk of recall bias. However, the shorter timeframe used to assess correlates of IPV in the current study offers less risk of recall bias than that used in past studies with similar populations (i.e., IPV experienced during the prior 6 months vs. 12 months).

Lastly, a relatively small number of participants reported experiencing sexual IPV during the prior 6 months. Therefore, conclusions drawn from multivariable analysis results identifying correlates of sexual IPV may be less certain. We recommend additional research with larger samples to investigate sexual IPV risk among PLHIV in Uganda.

Conclusions

Our study findings demonstrated that a substantial proportion of recently diagnosed PLHIV in Uganda experience IPV. Also, men and women living with HIV report similar rates of emotional and physical IPV. However, women were more likely to report sexual IPV. We found few people who reported IPV experiences specifically related to their partner learning their HIV-positive status. Further, participants who disclosed their HIV-positive status to partners were less likely to report emotional IPV since their HIV diagnosis than participants who did not disclose their HIV-status. Implications for study findings suggest a need for professionals working with PLHIV to screen for IPV, regardless of clients' gender. It is especially imperative that such screening is conducted during HIV testing and diagnosis. However, the World Health Organization (WHO) [37] recommends that healthcare providers only perform routine IPV screening (i.e., "routine enquiry") if they meet the following minimum requirements: (a) a protocol/standard operating procedure; (b) training on how to ask, minimum response or beyond; (c) private setting; (d) confidentiality ensured; and (e) system for referral in place (p. 19). If these minimum requirements are not in place, WHO recommends that healthcare workers should, at a minimum, be trained to offer first-line support when women disclose violence [37]. First-line support ("LIVES") includes the following tasks: listen, inquire about needs and concerns, validate, enhance safety, and support [37, 53].

The WHO guidelines for responding to violence against women in healthcare settings could be a starting place for developing guidelines tailored to the Ugandan context. Additionally, we recommend that IPV screening should occur while individuals are separated from their partner, to prevent posing additional harm (e.g., abandonment by perpetrators, partner violence). We also suggest that professionals working with PLHIV provide resources for interventions aimed at preventing and alleviating IPV in the populations they serve. Considering findings from the current study, these resources should target relational factors as well as social support and violence norms and should be provided in the safest and most confidential way possible.

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Compliance with Ethical Standards

Conflict of interest The authors declare no conflicts of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional (San Diego State University and Makerere University School of Public Health) and national research committee (Uganda National Council for Science and Technology) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent All participants provided written informed consent.

Research Involving Human and Animal Participants This article does not contain any studies with animals performed by any of the authors.

References

- Colombini M, James C, Ndwiga C, Mayhew SH. The risks of partner violence following HIV status disclosure, and health service responses: narratives of women attending reproductive health services in Kenya. *J Int AIDS Soc.* 2016. <https://doi.org/10.7448/IAS.19.1.20766>.
- Iliyasu Z, Abubakar IS, Babashani M, Galadanci HS. Domestic violence among women living with HIV/AIDS in Kano, Northern Nigeria. *Afr J Reprod Health.* 2011;15(3):41–9.
- Koenig L, Moore J. Women, violence, and HIV: a critical evaluation with implications for HIV services. *Matern Child Health J.* 2000;4(2):103–9.
- Maeri I, El Ayadi A, Getahun M, Charlebois E, Akatukwasa C, Tumwebaze D, et al. "How can I tell?" Consequences of HIV status disclosure among couples in eastern African communities in

- the context of an ongoing HIV “test-and-treat” trial. *AIDS Care*. 2016;28(sup3):59–66.
5. Medley A, Garcia-Moreno C, McGill S, Maman S. Rates, barriers and outcomes of HIV serostatus disclosure among women in developing countries: implications for prevention of mother-to-child transmission programmes. *Bull World Health Organ*. 2004;82(4):299–307.
 6. Kairania R, Gray RH, Wawer MJ, Wagman J, Kigozi G, Nalugoda F, et al. Intimate partner violence and communication of HIV diagnosis in Rakai, Uganda. *Soc Work Public Health*. 2015;30(3):272–81.
 7. King R, Katuntu D, Lifshay J, Packer L, Batamwita R, Nakayiwa S, et al. Processes and outcomes of HIV serostatus disclosure to sexual partners among people living with HIV in Uganda. *AIDS Behav*. 2008;12(2):232–43.
 8. Shamu S, Zarowsky C, Shefer T, Temmerman M, Abrahams N. Intimate partner violence after disclosure of HIV test results among pregnant women in Harare, Zimbabwe. *PLoS ONE*. 2014;9(10):1–8.
 9. Mullinax M, Grilo SA, Song XS, Wagman J, Mathur S, Nalugoda F, et al. HIV-risk behaviors of men who perpetrate intimate partner violence in Rakai, Uganda. *AIDS Educ Prev*. 2017;29(6):527–39.
 10. Townsend L, Jewkes R, Mathews C, Johnston L, Flisher A, Zembe Y, et al. HIV risk behaviours and their relationship to intimate partner violence (IPV) among men who have multiple female sexual partners in Cape Town, South Africa. *AIDS Behav*. 2011;15(1):132–41.
 11. Davis A, Best J, Wei C, Luo J, Van Der Pol B, Meyerson B, et al. Intimate partner violence and correlates with risk behaviors and HIV/STI diagnoses among men who have sex with men and men who have sex with men and women in China: a hidden epidemic. *Sex Transm Dis*. 2015;42(7):387–92.
 12. Siemieniuk R, Miller P, Woodman K, Ko K, Krentz H, Gill M. Prevalence, clinical associations, and impact of intimate partner violence among HIV -infected gay and bisexual men: a population-based study. *HIV Med*. 2013;14(5):293–302.
 13. Stephenson R, Hast M, Finneran C, Sineath C. Intimate partner, familial and community violence among men who have sex with men in Namibia. *Cult Health Sex*. 2014;16(5):473–87.
 14. Sullivan P, Peterson J, Rosenberg E, Kelley C, Cooper H, Vaughan A, et al. Understanding racial HIV/STI disparities in Black and White men who have sex with men: a multilevel approach. *PLoS ONE*. 2014;9(3):e90514.
 15. UNAIDS. UNAIDS Data 2018. Geneva: UNAIDS; 2018. http://www.unaids.org/sites/default/files/media_asset/unaids-data-2018_en.pdf. Retrieved 5 Mar 2019.
 16. UNAIDS. The Gap Report. Geneva: UNAIDS; 2014. http://www.unaids.org/sites/default/files/media_asset/UNAIDS_Gap_report_en.pdf. Retrieved 5 Mar 2019.
 17. Centers for Disease Control and Prevention. Intimate partner violence. Atlanta, GA: Centers for Disease Control and Prevention; 2017. <https://www.cdc.gov/violenceprevention/intimatepartnerviolence/index.html>. Retrieved 5 Mar 2019.
 18. Kiene SM, Lule H, Sileo K, Silmi KP, Wanyenze RK. Depression, alcohol use, and intimate partner violence among outpatients in rural Uganda: vulnerabilities for HIV, STIs and high risk sexual behavior. *BMC Infect Dis*. 2017;17(1):88.
 19. Kouyoumdjian FG, Findlay N, Schwandt M, Calzavara LM. A systematic review of the relationships between intimate partner violence and HIV/AIDS. *PLoS ONE*. 2013;8(11):e81044.
 20. Sileo KM, Kintu M, Kiene SM. The intersection of intimate partner violence and HIV risk among women engaging in transactional sex in Ugandan fishing villages. *AIDS Care*. 2018;30:1–9.
 21. Zablotska IB, Gray RH, Koenig MA, Serwadda D, Nalugoda F, Kigozi G, et al. Alcohol use, intimate partner violence, sexual coercion and HIV among women aged 15–24 in Rakai, Uganda (Book review). 2009. pp. 225–233.
 22. Uganda Bureau of Statistics (UBOS) and ICF. Uganda demographic and health survey 2016. Kampala, Uganda and Rockville, Maryland, USA: UBOS and ICF; 2018.
 23. Smith SG, Chen J, Basile KC, Gilbert LK, Merrick MT, Patel N, et al. The National Intimate Partner and Sexual Violence Survey (NISVS): 2010–2012 State Report. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention; 2017.
 24. Umubyeyi A, Mogren I, Ntaganira J, Krantz G. Intimate partner violence and its contribution to mental disorders in men and women in the post genocide Rwanda: findings from a population based study. *BMC Psychiatry*. 2014;14(1):315.
 25. Amegbor PM, Pascoe L. Variations in emotional, sexual, and physical intimate partner violence among women in Uganda: a multilevel analysis. *J Interpers Violence*. 2019. <https://doi.org/10.1177/0886260519839429>.
 26. Karamagi CAS, Tumwine JK, Tylleskar T, Heggenhougen K. Intimate partner violence against women in eastern Uganda: implications for HIV prevention. *BMC Public Health*. 2006;6:284.
 27. Young CR, Kaida A, Kabakyenga J, Muyindike W, Musinguzi N, Martin JN, et al. Prevalence and correlates of physical and sexual intimate partner violence among women living with HIV in Uganda. *PLoS ONE*. 2018;13(8):e0202992.
 28. Osinde Michael O, Kaye Dan K, Kakaire O. Intimate partner violence among women with HIV infection in rural Uganda: critical implications for policy and practice. *BMC Women’s Health*. 2011;11(1):50.
 29. Kiene SM, Kalichman SC, Sileo KM, Menzies NA, Naigino R, Lin CD, et al. Efficacy of an enhanced linkage to HIV care intervention at improving linkage to HIV care and achieving viral suppression following home-based HIV testing in rural Uganda: study protocol for the Ekkubo/PATH cluster randomized controlled trial. *BMC Infect Dis*. 2017;17:460.
 30. Ellsberg M, Heise L. Researching violence against women: a practical guide for researchers and activists. Washington DC: World Health Organization, PATH; 2005.
 31. UNAIDS. UNAIDS Wealth Index Construction. Geneva: UNAIDS; 2019. <https://dhsprogram.com/topics/wealth-index/Wealth-Index-Construction.cfm>. Retrieved 29 Apr 2019.
 32. Antelman G, Smith Fawzi MC, Kaaya S, Mbwambo J, Msamanga GI, Hunter DJ, Fawze WW. Predictors of HIV-1 serostatus disclosure: a prospective study among HIV-infected pregnant women in Dar es Salaam, Tanzania. *AIDS*. 2001;15:1865–74.
 33. Broadhead WE, Gehlbach SH, de Gruy FV, Kaplan BH. The Duke-UNC functional social support questionnaire. Measurement of social support in family medicine patients. *Med Care*. 1988;26(7):709–23.
 34. Epino HM, Rich ML, Kaigamba F, Hakizamungu M, Socci AR, Bagiruwigize E, et al. Reliability and construct validity of three health-related self-report scales in HIV-positive adults in rural Rwanda. *AIDS Care*. 2012;24(12):1576.
 35. Nanda G. Compendium of Gender Scales. Washington, DC: FHI 360/C-Change; 2011.
 36. Kishor S, Subaiya L. Understanding women’s empowerment: a comparative analysis of demographic and health surveys (DHS) data. DHS Comparative Reports No. 20. Calverton, Maryland, USA: Macro International Inc; 2008.
 37. World Health Organization. Responding to intimate partner violence and sexual violence against women: WHO clinical and policy guidelines. Geneva: WHO; 2013. https://apps.who.int/iris/bitstream/handle/10665/85240/9789241548595_eng.pdf;jsessionid=A132E9BC934DD083FC3F94D7C64C1448?sequence=1. Retrieved 9 Aug 2019.

38. King EJ, Maman S, Namatovu F, Kiwanuka D, Kairania R, Ssemanda JB, et al. Addressing intimate partner violence among female clients accessing HIV testing and counseling services: pilot testing tools in Rakai, Uganda. *Violence Against Women*. 2016;23(13):1656–68.
39. Gielen A, Fogarty L, O'Campo P, Anderson J, Keller J, Faden R. Women living with HIV: disclosure, violence, and social support. *J Urban Health*. 2000;77(3):480–91.
40. Centers for Disease Control and Prevention. Intersection of intimate partner violence and HIV in women. Atlanta, GA: Centers for Disease Control and Prevention; 2014. https://www.cdc.gov/violenceprevention/pdf/ipv/13_243567_Green_AAG-a.pdf. Retrieved 5 Mar 2019.
41. El-Bassel N, Gilbert L, Wu E, Go H, Hill J. HIV and intimate partner violence among methadone-maintained women in New York City. *Soc Sci Med*. 2005;61(1):171–83.
42. Gari T, Habte D, Markos E. HIV positive status disclosure among women attending art clinic at Hawassa University Referral Hospital, South Ethiopia. *East Afr J Public Health*. 2010;7(1):87–91.
43. Campbell J, Hogan N, Kilonzo G, Maman S, Mbwambo J, Sweat M, et al. HIV-positive women report more lifetime partner violence: findings from voluntary counseling and testing clinic in Dar es Salaam, Tanzania. *Am J Public Health*. 2002;92(8):1331–7.
44. Olowookere SA, Fawole OI, Adekanle DA, Adeleke NA, Abioye-Kuteyi EA. Patterns and correlates of intimate partner violence to women living with HIV/AIDS in Osogbo, Southwest Nigeria. *Violence Against Women*. 2015;21(11):1330–40.
45. Mulrenan C, Colombini M, Howard N, Kikuvu J, Mayhew SH. Integra Initiative. Exploring risk of experiencing intimate partner violence after HIV infection: a qualitative study among women with HIV attending postnatal services in Swaziland. *BMJ Open*. 2015;5:e006907.
46. Tam M, Amzel A, Phelps BR. Disclosure of HIV serostatus among pregnant and postpartum women in sub-Saharan Africa: a systematic review. *AIDS Care*. 2015;27(4):436–50.
47. World Health Organization. Gender dimensions of HIV status disclosure to sexual partners: rates, barriers, and outcomes. Geneva: WHO; 2003. <http://apps.who.int/iris/bitstream/handle/10665/42717/9241590734.pdf;jsessionid=CEDE2E65F27687F56854D978A0B2B06E?sequence=1>. Retrieved 25 Apr 2019.
48. Maman KS, Groves LA, McNaughton Reyes LH, Moodley LD. Diagnosis and disclosure of HIV status: implications for women's risk of physical partner violence in the postpartum period. *J AIDS*. 2016;72(5):546–51.
49. Atuyambe LM, Ssegujja E, Ssali S, Tumwine C, Nekesa N, Nannungi A, Ryan G, Wagner G. HIV/AIDS status disclosure increases support, behavioural change and HIV prevention in the long term: a case for an Urban Clinic, Kampala, Uganda. *BMC Health Serv Res*. 2014;14:276.
50. Were E, Curran K, Delany-Moretlwe S, Nakku-Joloba E, Mugo NR, Kiarie J, Bukusi EA, et al. A prospective study of frequency and correlates of intimate partner violence among African heterosexual HIV serodiscordant couples. *AIDS*. 2011;25:2009–18.
51. United Nations Development Programme, Uganda (UNDPUG) (2018). Gender Equality and women empowerment. Uganda: UNDPUG; 2018. <http://www.ug.undp.org/content/uganda/en/home/ourwork/womenempowerment/overview.html>. Retrieved 5 Mar 2019.
52. Abramsky T, Devries K, Kiss L, Nakuti J, Kyegombe N, Starmann E, et al. Findings from the SASA! Study: a cluster randomized controlled trial to assess the impact of a community mobilization intervention to prevent violence against women and reduce HIV risk in Kampala, Uganda. *BMC Med*. 2014;12:122.
53. World Health Organization. Health care for women subjected to intimate partner violence or sexual violence: a clinical handbook. Geneva: WHO; 2014. https://apps.who.int/iris/bitstream/handle/10665/136101/WHO_RHR_14.26_eng.pdf?sequence=1. Retrieved 9 Aug 2019.

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