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Prevalence and correlates of intimate partner violence in HIV-positive women engaged in transactional sex in Mombasa, Kenya

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Abstract

We evaluated the prevalence and correlates of intimate partner violence in the past year by a regular male partner in HIV-positive female sex workers in Mombasa, Kenya. This cross-sectional study included HIV-positive women ≥ 18 years old who reported engagement in transactional sex at the time of enrolment in the parent cohort. We asked 13 questions adapted from the World Health Organization survey on violence against women about physical, sexual, or emotional violence in the past year by the current or most recent emotional partner (index partner). We used standardised instruments to assess socio-demographic and behavioural characteristics as possible correlates of intimate partner violence. Associations between intimate partner violence and these correlates were evaluated using univariate and multivariate logistic regression. Overall, 286/357 women (80.4%) had an index partner, and 52/357 (14.6%, 95% confidence interval 10.9%–18.2%) reported intimate partner violence by that partner in the past year. In multivariate analysis, women with severe alcohol problems (adjusted odds ratio 4.39, 1.16–16.61) and those experiencing controlling behaviours by the index partner (adjusted odds ratio 4.98, 2.31–10.74) were significantly more likely to report recent intimate partner violence. Recent intimate partner

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Authors' contributions

KSW and RSM designed the study. KSW analysed the data and drafted the manuscript. RSM, LM, RD, JMS, JPH, JS, WJ and AV reviewed drafts of the manuscript. RD, LM, and JS provided oversight of study procedures and data collection at our research clinic. Access to research materials for this study is available by request.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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violence was common in HIV-positive female sex workers. Interventions targeting risk factors for intimate partner violence, including alcohol problems and partner controlling behaviours, could help to reduce recurrent violence and negative health outcomes in this key population.

Keywords

Intimate partner violence; HIV-positive women; transactional sex; Africa

Introduction

An estimated one in three women report ever experiencing intimate partner violence (IPV).[1,2] There are several negative outcomes associated with experiencing IPV, including depression,[3] unwanted pregnancy,[4] sexually transmitted infections (STIs), including HIV[5,6] and suicide.[7] In Africa, IPV in women is common.[2,5,8] According to the 2008/9 Kenya Demographic and Health Survey, 48% of ever married women reported lifetime IPV, and 41% reported IPV in the past year.[9] Previous studies of correlates of IPV in African women have found that inequitable gender norms,[10,11] alcohol use by either partner,[12] women having multiple sex partners,[13] prior abuse as a child or adult,[10] lower education[12] and HIV-positive status[14] are associated with greater frequency of IPV.[15] There may be unique correlates of IPV in HIV-positive women, including HIV status disclosure and initiation of HIV care.[16–18]

An estimated 1–4% of all women in Africa are female sex workers (FSWs), a particularly stigmatised population that experiences high rates of violence.[19,20] This population has an estimated 14-fold higher likelihood of HIV-infection compared to women not engaged in sex work.[21] Quantitative and qualitative studies reveal that most FSWs maintain intimate partners (i.e. boyfriends or husbands), for emotional and financial support.[16,22,23] FSWs may also experience a high frequency of IPV, which may affect their overall health and ongoing risk of unintended pregnancy and HIV transmission.[16,22,24] One cohort study of HIV-negative FSWs in Kenya reported that 55.0% of women had experienced any physical or sexual violence by an ‘emotional’ partner in the past year.[24] Limitations to the existing literature in African FSWs include a focus on violence by clients and police rather than IPV, lack of standard definitions of IPV in this population and lack of studies on the correlates of IPV in HIV-positive FSWs.[23,25] Improved understanding of the prevalence and correlates of IPV in HIV-positive FSWs using standardised tools will help to identify potentially modifiable intervention targets to help reduce IPV, and potentially strengthen more comprehensive HIV care for this key population.[26] To address these knowledge gaps, we conducted a cross-sectional study to evaluate the prevalence and correlates of IPV in the past year among HIV-positive FSWs in Mombasa, Kenya.

Methods

This study was a cross-sectional analysis of enrolment data from women participating in a cohort study on the relationship between reproductive lifecourse events and HIV treatment and prevention-related outcomes at our HIV/STI research clinic. Most women were already participating in a long-term open cohort on risk factors for HIV acquisition and transmission

(parent cohort). Eligible women were laboratory-confirmed HIV-positive, age 18 or older, and reported exchanging sex for cash or in-kind payment at the time of enrolment in the parent cohort. Women completed a standardised face-to-face interview in their preferred language (Kiswahili or English) with a trained Kenyan study nurse to collect socio-demographic, health, and behavioural data. All interviews were conducted in a private room. A study clinician conducted a physical examination including a speculum-assisted pelvic examination for collection of genital swabs for laboratory testing. Participants received free outpatient care at our research clinic, including comprehensive risk reduction counselling, antiretroviral therapy (ART) according to Kenyan National Guidelines and STI treatment. Study staff received additional training on conducting research on violence against women (VAW), emphasising objective and non-judgmental interviewing techniques. Women who reported experiencing violence were offered counselling on site or referral. This study was approved by the ethics committees of Kenyatta National Hospital and the University of Washington. All participants provided written informed consent.

Measures

The main outcome, ‘any IPV’ in the last year, was defined as responding yes to at least 1 of 13 questions about acts of IPV in the past 12 months committed by an emotional partner. Questions were adapted from the WHO survey on VAW (WHO VAW), which has high internal consistency in different settings.[27] These questions were pilot tested in our target population to ensure understanding prior to initiating the study. All women were asked whether they had a regular emotional partner, defined as a boyfriend or husband, who they did not consider to be a client or a casual partner. If they did not have an emotional partner at the time of the interview, they were asked about their most recent emotional partner. That man was identified as the ‘index partner’. Only participants who had an index partner were asked the IPV questions. When responding to the IPV questions, women were asked to think about behaviours by that index partner. If a participant reported any lifetime IPV by that index partner, she was then asked whether that act occurred in the past 12 months. There were six questions on physical violence (slapped, pushed, hit, kicked, choked, or threatened with a weapon); four on emotional violence (insulted, belittled, intimidated, threatened to hurt someone you care about) and three on sexual violence (forced sex, coerced sex or degrading sexual behaviour). We measured how closely related these 13 items were in our sample using Cronbach’s alpha. Internal consistency was high ($\alpha = 0.88$). Women who reported no index partner were classified as having no IPV.

Socio-demographic, behavioural and clinical characteristics were evaluated as correlates of IPV in the past 12 months, based on a literature review and our conceptual model (Figure 1). Socio-demographic characteristics included age (continuous); marital status (ever married); years since first sex work (<5, 5–9, ≥10); early sexual debut (first sex ≤ 15 years); education level (<8 years versus 8 or more); and workplace (bar, nightclub, home/other). Reproductive characteristics included pregnancy history; fertility desire; use of modern contraceptive methods (none/condoms only, oral or injectable hormonal contraceptives, intrauterine device, tubal ligation, or hysterectomy); laboratory-confirmed pregnancy; post-partum status (within nine months of last delivery); and menopausal status.[28] Women were asked about their index partner’s reaction to a possible pregnancy (excited, neutral, upset). They were

also asked whether they had a casual partner in the last three months. The number of sexual partners in the past week (any, including the index partner) was dichotomised at the median (≥2 vs.<2) because the distribution of these data was highly skewed.

We evaluated depressive symptoms, alcohol use, HIV disclosure and male controlling behaviours with tools used previously in similar populations in Africa.[29–31] Recent depressive symptoms were assessed with the Patient Health Questionnaire-9 (PHQ-9).[30] Scores were categorised as 0–4 (minimal), 5–9 (mild), 10 or higher (consistent with a major depressive disorder).[32] Alcohol use in the past year was evaluated with the alcohol use disorders identification test (AUDIT).[33] Scores were categorised as non-drinkers (zero), minimal (1–6), moderate (7–15) and severe problem or possible alcohol use disorder (AUD) (≥16).[34] Disclosure of HIV status was assessed by asking whether women had ever shared their results with someone.[35] Exposure to controlling behaviours was defined as responding yes to at least one of seven statements about behaviours ever committed by her index partner (e.g. requires permission to get health care). In addition, all women were asked about history of sexual or physical violence, since age 15, by someone besides an emotional partner (i.e. not the index partner, former boyfriend, or former husband). Sexual violence was assessed by asking whether women had been forced to have sex or perform a sexual act. Physical violence was assessed by asking women whether they had been beaten or physically mistreated.[31] Prevalent STIs (*Neisseria gonorrhoeae, Chlamydia trachomatis*, or *Trichomonas vaginalis*) was assessed by nucleic acid amplification testing (APTIMA;Hologic/Gen Probe, San Diego, CA). Baseline CD4 count was dichotomised as ≤350 versus >350 cells/μl. Current antiretroviral (ART) use was measured by self-report. For women receiving ART through our research clinic, we confirmed that they were taking ART with our pharmacy records.

Statistical analysis

We estimated the prevalence of IPV in the past year (recent IPV) and conducted an exploratory analysis of the correlates of IPV that included all women in the sample with complete data. We evaluated variables that were plausible correlates of recent IPV. These variables included socio-demographic characteristics,[13] early age of first sex,[36] reproductive characteristics (pregnancy, post-partum, menopausal, fertility desire, non-condom contraceptive use),[8,37] disclosure of HIV status,[38] controlling behaviours,[39] alcohol use[23] and depression.[40] Univariate logistic regression was used to estimate the association between each correlate and recent IPV. Variables associated with any recent IPV in univariate analysis ($p < 0.10$) were included simultaneously in the multivariate model. We decided *a priori* to evaluate variables that could be both correlates and outcomes of IPV (depressive symptoms, alcohol use, and reproductive characteristics), as illustrated in the conceptual model (Figure 1).[3,8,41–43] Sexual behaviours and STIs were considered primarily outcomes of IPV and were not included in the correlates analysis.[44] We conducted a sensitivity analyses restricted to women who reported an index partner. Because this analysis was exploratory, we did not adjust $\alpha = 0.05$ level for multiple comparisons. With a sample of 360 women, we estimated that we would have at least 80% power to detect an Odds Ratio (OR) ≥ 1.7 for common correlates (>30%) and an OR ≥ 2.0 for less frequent correlates (10–30%), assuming 20% prevalence of IPV in unexposed women. All associations were

reported as ORs with 95% confidence intervals (CI). Models used robust standard errors. Analyses were conducted in STATA 13.0 (StataCorp, College Station, TX).

Results

Sample characteristics

Overall, 359 women enrolled between October 2012 and December 2013, of whom, 357 had complete data on the IPV questions. Baseline characteristics are shown in Table 1. The median age was 39 years (interquartile range [IQR] 33, 44; range 20–61). Many reported first engaging in transactional sex at least 10 years earlier (173/355, 48.5%), and more than half reported engagement in sex work in the last year (193, 54.3%). Only 24 (8%) women reported being currently married. The majority of women (286, 80.1%) reported having an index partner. About one-fifth of women (73, 20.5%) reported ever experiencing physical abuse since age 15 by someone other than an emotional partner. A lower proportion of women (36/355, 10.1%) reported experiencing any sexual abuse since age 15 by someone other than an emotional partner. Nearly half of the women reported any alcohol use in the past year (174, 48.7%). Among women who were alcohol users, 103/174 (59.1%) reported drinking behaviour consistent with minimal alcohol use problems, 57/174 (32.8%) with moderate problems and 14/174 (8.0%) with severe alcohol problems or possible AUD. The prevalence of symptoms consistent with mild (scores 5–9; 66, 18.5%) and moderate (scores ≥ 10; 23/357, 6.4%) depression by PHQ-9 in the past two weeks was relatively low. Nearly half of the women experienced at least one controlling behaviour by the index partner 167 (46.8%). Less than one-third reported more than one sexual partner in the past week (98/356, 27.5%). Of 228 women who reported taking ART, 116 (50.8%) were receiving ART from our research clinic, while others received medications elsewhere.

Prevalence of IPV in the past year and ever by the index partner

Fifty-two women (14.6%, 95% CI 10.9%–18.2%) reported IPV in the past year. The prevalence of IPV in the past year restricted to women who reported an index partner was 52/286 (18.2%, 13.7%–22.7%).

The most common type of recent IPV was physical violence (38, 10.6%), followed by emotional violence (36, 10.1%) and sexual violence (13, 3.6%). Nearly 40% of women reported ever experiencing IPV by an index partner (137/357, 38.2%, 33.2%–43.3%).

In univariate analysis, reporting alcohol problems (minimal OR 2.06, 0.99–4.29; moderate OR 3.08, 1.38–6.90; severe OR 7.83, 2.41–25.42), and controlling behaviours by the index partner (OR 6.05, 2.92–12.51) were associated with a significantly greater likelihood of IPV in the past year (Table 2). Compared to women who reported first engaging in sex work less than five years ago, those who reported first engaging in sex work 10 or more years earlier had a lower likelihood of recent IPV (OR 0.51, 0.24–1.09).

In multivariate analysis, compared to women who did not drink, women with higher alcohol use scores had a greater likelihood of IPV in the past year, although only the severe alcohol use category remained statistically significant (≥16 aOR 4.39, 1.16–16.61). The partner's controlling behaviours also remained significantly associated with a greater likelihood of

IPV in the past year (aOR 4.98, 2.31–10.74). Results from the sensitivity analyses restricted to women who reported an index partner were similar to the results in the primary analysis (data not shown).

Discussion

IPV in the past year was common in this sample of HIV-positive FSWs in Kenya. Male controlling behaviours and women having more severe alcohol use problems were significantly associated with experiencing recent IPV.

The 15% prevalence of IPV in the past year by the index partner fell within the range of previous studies among African women,[15,31,45–47] including those at-risk for HIV acquisition and transmission.[48,49] We found a lower prevalence of recent IPV compared to prior studies of Kenyan sex workers.[23,42] Differences in the reported prevalence of IPV are partly due to differences in study instruments, violence definitions and prevalence of risk factors for violence across samples.[31,50] In addition, other studies in FSWs have included both regular sex partners and clients in the definition of 'intimate partner,' which likely explains the higher prevalence of reported IPV. Both earlier studies included higher proportions of women with alcohol use problems, and one study was conducted with women receiving an alcohol use intervention.[20,51] As a result, those women may have been at higher risk of violence generally. In our sample, most women were taking ART and had been counselled that alcohol use can impair adherence, which can decrease medication effectiveness. Our study adds to the limited literature in HIV-positive FSWs. Specifically, this research highlights the important role of intimate partners as perpetrators of violence in HIV-positive women with past or present involvement in transactional sex.

Our finding that alcohol use problems were associated with a greater likelihood of IPV also parallels results from previous studies in Africa.[42] The relationship between alcohol use and IPV is complex and likely bidirectional.[41] Women who consume higher quantities of alcohol may be more likely to get into conflict that culminates in IPV, and have intimate partners who commit IPV while intoxicated.[52] Alternatively, women may drink to cope with IPV or other life stress. Longitudinal studies are needed to determine how each of these pathways may contribute to the observed association between IPV and alcohol use, and to inform future interventions to address high-risk alcohol use and IPV.[42,51]

The association between male partner controlling behaviours and experiencing IPV is consistent with results from other samples of African women.[12,39,53] Surveys conducted among men have found that controlling behaviours are associated with a greater likelihood of male perpetration of IPV.[54] Controlling behaviours like suspiciousness or requiring permission to get health care indicate unequal power dynamics in a relationship.[10,55,56] A woman's failure to act within in a designated role may trigger IPV because her partner feels that his power is threatened.[56,57] In-depth interviews of pregnant women, men, and health care providers in Western Kenya found that one of the triggers of IPV was a woman's failure to consult her husband before getting HIV testing.[58] Related themes emerged in a qualitative study of South African men.[56] In that study, improved communication with a partner and a reduced sense of sexual entitlement were identified as ways to help men to resolve

relationship conflict without resorting to IPV. These findings provide support for interventions that target relationship factors to improve power balance and communication skills, to reduce IPV.[20]

The strengths of this study include using a standardised instrument to measure IPV. The WHO VAW survey has been used successfully in studies in other populations of women in Africa.[5,8] Using this tool will enable us to interpret and compare findings across studies. Similarly, we measured potential correlates of IPV, including alcohol use and depressive symptoms, with tools that have been validated in similar populations.[24,30] We also considered directionality of associations, and aimed only to test variables as correlates of IPV that were plausible risk factors.

This study also had limitations. First, the cross-sectional design limited inferences about temporal sequence or causality. Second, this analysis was exploratory and should be replicated in other samples. We would have had lower power to detect associations between infrequent correlates and IPV. Future studies should also evaluate HIV disclosure to an emotional partner, the partner's alcohol use, and community-level factors including inequitable gender norms.[54,59] Third, IPV was measured by self-report and is subject to underreporting due to recall bias and sensitivity of the topic.[31] We tried to minimise underreporting of IPV by asking behaviourally specific questions, which have been shown to facilitate disclosure.[31] Fourth, we did not conduct a partner-level analysis to evaluate the frequency of IPV with different partners, including more than one index partner.[16,23] Asking about IPV committed by the current or most recent emotional partner is consistent with use of the WHO VAW tool, but could underestimate the true prevalence of IPV in the past year if women have more than one emotional partner. While our results may not be generalisable to all other populations, our findings are likely applicable to other women engaged in transactional sex.[44,60,61] Studies from diverse settings and risk groups are important for providing a more comprehensive understanding of IPV among HIV-positive women.

Conclusion

VAW with past or current involvement in sex work is a key health and human rights problem. There are several important health outcomes at stake, including the risk of depression, unintended pregnancy, STI and HIV transmission. Our study extends knowledge about this key population by highlighting the problem of IPV and providing evidence for potentially modifiable intervention targets.[62] A brief empowerment-based behavioural intervention has been shown to be efficacious at reducing IPV, substance use and unprotected sex in randomised trials in HIV-positive and HIV-negative women in South Africa.[20] Similar interventions should be evaluated in FSWs in other African settings to help reduce IPV and improve women's quality of life.

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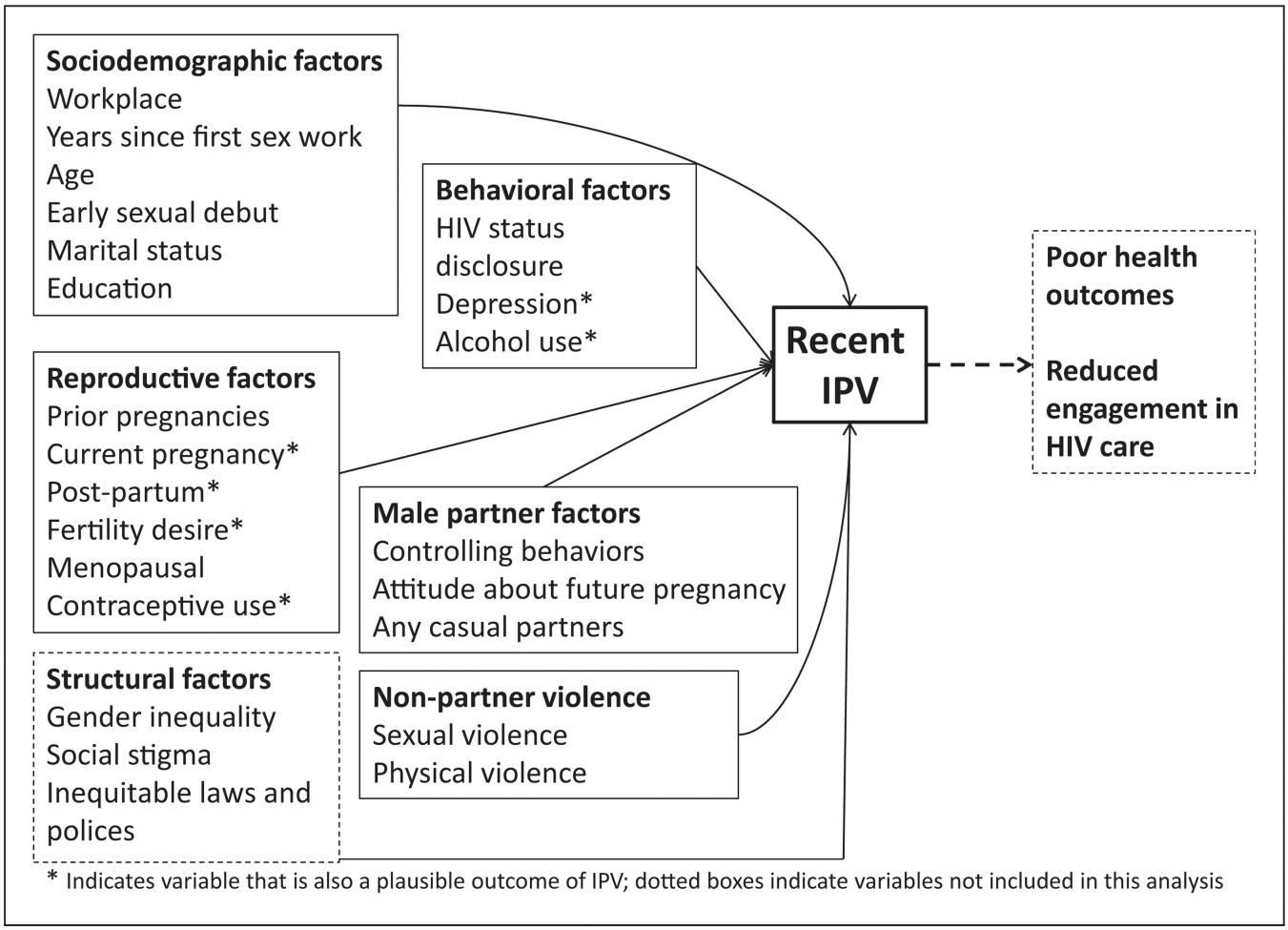

Figure 1.
Conceptual model of individual- and relationship-level correlates of intimate partner violence in the past year in HIV-positive female sex workers.

Table 1

Enrollment characteristics of 357 HIV-positive women who reported current or past engagement in transactional sex.

Characteristic	Median (IQR) or n(%)
Age	39 (33,44)
Highest education level ≥ 8 years	144 (40.3)
Workplace	
Bar/restaurant	210 (58.8)
Nightclub	83 (23.3)
Home/other	64 (17.9)
Early sexual debut (age 15 or younger)	101 (28.9)
Years since first sex work (n = 355)	
Less than 5	72 (20.2)
5–9	110 (30.8)
10 or more	173 (48.5)
Ever married	276 (77.3)
Had only a casual partner in the past 3 months	27 (7.6)
Has an index partner	286 (80.1)
Index partner in the past 3 months	160 (44.9)
Index partner in the past 3 months, no casual partner	99 (27.7)
Has both an index and casual partner in the past 3 months	132 (37.0)
Reproductive health characteristics	
Number of previous pregnancies (n = 356)	3 (2,4)
Pregnant by urine hCG test (n = 356)	3 (0.8)
Fertility desire (n = 355)	87 (24.3)
Post-partum (n=350)	6 (1.7)
Post-menopausal (n=354)[a]	57 (16.0)
Contraceptive use category (n = 355)	
None or condoms only	249 (69.8)
DMPA or OCP (short/medium acting hormonal methods)	72 (20.2)
IUD, TL, Norplant, hysterectomy (long acting methods)	34 (9.5)
Partner attitude about pregnancy (n=286)[b]	
Excited	165 (58.3)
Neutral	71 (24.9)
Upset	47 (16.8)
Depressive symptoms by PHQ-9	
Minimal (0–4)	268 (75.1)

Characteristic	Median (IQR) or n(%)
Mild (5–9)	66 (18.5)
Mod/severe (10 or higher)	23 (6.4)
Alcohol use problems by AUDIT	
Non drinkers	183 (51.0)
Minimal (1–6)	103 (28.9)
Moderate (7–15)	57 (15.9)
Severe (16 or higher)	14 (3.9)
Disclosed HIV status to anyone in the Past (n=356)	228 (68.9)
History of violence and controlling behaviours	
History of sexual abuse since age 15 (n=355)[c]	36 (10.1)
Any sexual abuse in the past 12 months (n=352)[c]	18 (5.1)
History of physical abuse since age 15[c]	73 (20.5)
Any physical abuse in the past 12 months (n = 355)[c]	23 (6.5)
Ever had controlling behaviours by the index partner	167 (46.8)
HIV-related clinical variables	
CD4 lymphocyte count ≤ 350 cells/μl (n = 355)	93 (26.1)
On ART by self-report (n = 356)[d]	228 (64.0)
Any GC, CT, or TV by APTIMA (n=348)	38 (10.9)

ART: anti-retroviral therapy; AUDIT: alcohol use disorders identification test; CT: *Chlamydia tracomatis*; DMPA: depot medroxyprogesterone acetate; GC: *Neisseria gonorrhoeae*; IPV: intimate partner violence; hCG: human chorionic gonadotropin; OCP: oral contraceptive pills; PHQ-9: Patient health questionnaire 9; TV: *Trichomonas vaginalis*.

[a] Post-menopausal status based on clinical algorithm was defined as >40 years old, reported ≥ 12 months of amenorrhea from the time of their last menstrual period, and not taking unopposed progesterone contraception such as depot medroxyprogesterone acetate or progesterone only oral contraceptive pills.

[b] Among women who had an index partner.

[c] Refers to anyone besides the index partner, former boyfriend, or former husband.

[d] Of 228 women who reported taking ART at enrollment, 116 (50.9%) were receiving this medication at our clinic and 107 (46.9%) reported getting ART at another clinic (five missing responses).

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Table 2

Correlates of any IPV in the past 12 months by the index partner.

Variable	IPV (n = 52)	No IPV (n = 305)	OR (95% CI)	*p*-value	AOR (95% CI)*	*p*-value
Age	37 (32, 44)	40 (33, 44)	0.98 (0.94–1.00)	0.16	--	
Early sexual debut (≤ 15 years)	18 (34.6)	83 (27.2)	1.42 (0.76–2.64)	0.28	--	
Years since first sex work						
<5 (ref)	14 (26.9)	58 (19.1)	1.0		1.0	
5–9	19 (36.5)	91 (30.0)	0.86 (0.40–1.86)	0.71	1.11 (0.48, 2.58)	0.80
10 or more	19 (36.5)	154 (50.8)	0.51 (0.24–1.09)	0.08	0.87 (0.37, 2.05)	0.75
Number of pregnancies (n=356)	3 (2, 4)	2 (2, 4)	1.08 (0.93–1.23)	0.36	--	
Number of births (n=355)	3 (1, 4)	2 (1, 3)	1.07 (0.90–1.27)	0.43	--	
Work place						
Bar (ref)	33 (63.5)	177 (58.0)	1.0		--	
Nightclub	11 (21.2)	72 (23.6)	0.82 (0.39–1.71)	0.60		
Home, Other	8 (15.4)	56 (18.4)	0.73 (0.33–1.76)	0.53		
Ever married	44 (84.6)	232 (76.1)	1.73 (0.78–3.84)	0.18	--	
8 or more years education	25 (48.1)	119 (39.0)	1.45 (0.80–2.61)	0.22	--	
Fertility desire (n = 355)	13 (25.5)	74 (24.3)	1.06 (0.54–2.11)	0.86	--	
Contraception (n = 355)[a]						
None/condoms (ref)	35 (67.3)	214 (70.6)	1.0			
OCP or DMPA	11 (21.2)	61 (20.1)	1.10 (0.53–2.30)	0.80	--	
Long-acting methods	6 (11.5)	28 (9.2)	1.31 (0.51–3.40)	0.58	--	
Pregnant (urine hCG)	2 (3.9)	1 (0.3)	1.68 (0.48–5.90)	0.42	--	
Post-partum (n = 350)	1 (1.9)	5 (1.7)	1.15 (0.13–10.10)	0.90	--	
Post-menopausal (n = 354)	7 (13.7)	50 (16.5)	0.81 (0.34–1.89)	0.62	--	
How would your partner feel if you became pregnant? [b]						
Excited (ref)	33 (66.0)	132 (56.7)	1.0			
Neutral	12 (24.0)	59 (25.3)	0.81 (0.39–1.69)	0.58	--	
Upset	5 (10.0)	42 (17.8)	0.48 (0.17–1.30)	0.15	--	

Variable	IPV (n = 52)	No IPV (n = 305)	OR (95% CI)	*p*-value	AOR (95% CI)*	*p*-value
Controlling behaviours by index partner	42 (80.8)	125 (41.0)	6.05 (2.92–12.51)	<0.001	4.98 (2.31–10.74)	<0.001
Physical abuse since age 15[c]	15 (28.9)	58 (19.0)	1.73 (0.89–3.35)	0.11	--	
Physical abuse, past year[c] (n = 355)	4 (7.7)	19 (6.3)	1.25 (0.41–3.83)	0.70	--	
Sexual abuse since age 15[c] (n = 355)	5 (9.6)	31 (10.2)	0.93 (0.34–2.53)	0.89	--	
Sexual abuse, past year[c] (n = 352)	3 (5.8)	15 (5.0)	1.17 (0.33, 4.20)	0.81	--	
Ever disclosed HIV status	33 (63.5)	195 (64.1)	0.97 (0.53–1.79)	0.93	--	
Depressive symptoms by PHQ-9 categories						
Min 0–4 (ref)	35 (67.3)	233 (76.4)	1.0			
Mild 5–9	12 (23.1)	54 (17.7)	1.48 (0.72–3.04)	0.29	--	
Mod/Sev (10 or higher)	5 (9.6)	18 (5.9)	1.85 (0.64–3.51)	0.25		
Alcohol problems by AUDIT						
Non-drinkers (ref)	16 (30.8)	167 (54.8)	1.0	1.0		
Min 1–6	17 (32.7)	86 (28.2)	2.06 (0.99–4.29)	0.05	1.95 (0.89–4.27)	0.09
Mod 7–15	13 (25.0)	44 (14.4)	3.08 (1.38–6.90)	0.006	2.09 (0.87–5.00)	0.10
Sev 16+	6 (11.5)	8 (2.6)	7.83 (2.41–25.42)	0.001	4.39 (1.16–16.63)	0.03
CD4 count <350 cells/μl (n = 355)	12 (23.5)	81 (26.6)	0.85 (0.42–1.70)	0.61	--	
On ART (n=356)	32 (61.5)	196 (64.2)	0.86 (0.58–1.53)	0.61	--	

ART: anti-retroviral therapy; AUDIT: alcohol use disorders identification test; DMPA: depot medroxyprogesterone acetate; hCG: human chorionic gonadotropin; IPV: intimate partner violence; OCP: oral contraceptive pills; OR: Odds Ratio; AOR: adjusted Odds Ratio; PHQ-9, patient health questionnaire 9.

*Multivariate analysis sample was 355.

[a]Long-term methods include Norplant, IUD, tubal ligation, hysterectomy.

[b]Among 286 women with an index partner.

[c]Violence by any person besides the index partner, former boyfriend, or former husband.