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Are women's experiences of emotional and economic intimate partner violence associated with HIV-risk behaviour? A cross-sectional analysis of young women in informal settlements in South Africa

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ABSTRACT

Women's experiences of emotional intimate partner violence (IPV) and economic IPV are rarely considered in research on women's HIV-risk. Using cross-sectional data of young women (18–30) in Durban, South Africa, we assessed whether women's experiences of emotional IPV and economic IPV were independently associated with six HIV-risk behaviours. Amongst 680 women enrolled between September 2015 and September 2016, past year emotional IPV (78.1%) and economic IPV (52.2%) were common. In adjusted logistic regressions, women reporting past year emotional IPV were less likely to report condom use at last sex, and those reporting past year economic IPV were more likely to report transactional sex with a main partner, or casual partner. Overlaps between economic IPV and transactional sex, suggests economic IPV may be part of male economic coercion of women. Association between emotional IPV and condom use suggests complex inter-personal and psychodynamic relationships shape condom use.

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Intimate partner violence; young women; informal settlements; economic coercion; psychological abuse

Introduction

Women's experiences of intimate partner violence (IPV) are associated with HIV-acquisition (Durevall & Lindskog, 2014; Jewkes, Dunkle, Nduna, & Shai, 2010; Kouyoumdjian et al., 2013; Li et al., 2014) and there a number of well-established pathways linking IPV and HIV-acquisition (Dunkle & Decker, 2013). Specifically, there may be a direct pathway from sexual IPV to HIV-acquisition, with transmission facilitated through genital and/or anal trauma (Dunkle & Decker, 2013). Physical IPV can lead to HIV-acquisition indirectly through increasing women's poor mental health, alcohol and drug use, and undermining their ability to determine the timing and circumstances of sex, including the condom use (Dunkle & Decker, 2013; Jewkes et al., 2010). Additionally, men who are violent are more likely to engage in high-risk sexual behaviour and be HIV-positive (Dunkle & Decker, 2013; Jewkes et al., 2014). Yet, while physical and/or sexual IPV has been relatively well researched, these forms of IPV rarely occur in isolation; more often, they occur in combination with emotional IPV and economic IPV (Jewkes, 2010), highlighting IPV is complex and takes multiple, overlapping forms.

There has been, however, less focus on the potential role of emotional IPV and economic IPV in shaping women's risk for HIV-acquisition. A small body of work on emotional IPV shows association with HIV-risk. A cross-sectional study of 10 countries using Demographic Health Survey (DHS) data found emotional IPV was independently associated with HIV-prevalence (Durevall & Lindskog, 2014). There is some evidence suggesting emotional IPV has an independent impact on mental health, which is a risk factor for HIV-acquisition (Nduna, Jewkes, Dunkle, Shai, & Colman, 2010). However, in a systematic review exploring the associations between IPV and HIV-acquisition, only two studies looked at emotional IPV as a separate predictor, and found no association with HIV-prevalence (Li et al., 2014).

There is remarkably little research on the potential role of economic IPV in shaping women's HIV-risk. A qualitative study in South Africa, highlighted how economic IPV was part of wider violence women experienced increasing HIV-risk (Fox et al., 2007). Additionally, a small body of research suggests economic IPV has an impact on women's mental health (Gibbs, Dunkle, & Jewkes, 2018; Stöckl & Penhale, 2015). In this paper, we seek to understand whether emotional IPV and economic IPV, are independently associated with six HIV-risk behaviours, amongst a group of young women from urban informal settlements in South Africa.

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Materials and methods

Data comes from $n = 680$ women participating in the baseline for the Stepping Stones and Creating Futures trial, a cluster randomized controlled trial of an IPV and HIV prevention intervention, undertaken in urban informal settlements in eThekwini Municipality, South Africa, between September 2015 and September 2016.

Women aged between 18 and 30, not in formal work or school, and resident in an informal settlement were eligible for the study. 34 clusters, with between 19 and 21 women per cluster, were recruited in collaboration with Project Empower, a local NGO, who delivered the intervention (Gibbs, Washington, et al., 2017). Those in the intervention arm received R100 (~US$7) and those in the control arm received R300 (~US$21) for completion of the baseline survey (the difference reflected additional compensation for being on the wait-list control). The study received ethical approval from the South African Medical Research Council, and the University of KwaZulu-Natal. All participants provided written informed consent. Detailed information on methods can be found elsewhere (Gibbs, Washington, et al., 2017).

Data collection

Questionnaires were self-completed by participants on cellphones, using Mobenzi Researcher, available in English, isiZulu or isiXhosa, with in-built skip patterns.

Measures

To assess HIV-risk, six outcome variables were selected, all of which have been shown to be associated with HIV-risk.

Transactional sex with a main partner in the past year. Based on previous South African studies, women were asked five items about whether they had started or stayed in a relationship with a main partner, because they expected or did receive a variety of items, including money, a place to stay, or drugs, (Dunkle et al., 2004). A positive response to any item led a woman to be classified as having engaged in transactional sex with a main partner.

Transactional sex with a casual partner in the past year. Women were asked five items about whether they had sex with a male casual or once-off sexual partner, because they expected or did receive a variety of items, based on previous studies in South Africa (Dunkle et al., 2004). A positive response to any item led to a woman being classified as having had transactional sex with a casual partner.

The number of sexual partners in the past year. Three items asked women about the number of past years main, casual, and once-off sexual partners. We summed these and created a binary item of 0–2 sexual partners, compared to three or more sexual partners.

Condom use at last sex. A single item asked about the use of a condom at last sex. Responses were yes or no.

Harmful alcohol use. Alcohol use was assessed with the Alcohol Use Disorders Identification Test (AUDIT) scale (Saunders, Aasland, Babor, De la Fuente, & Grant, 1993). Scores were summed, and a cut of eight or more was used to classify women as having harmful alcohol use.

Drug use in the past year. A single item asked about drug use "for fun or to get high" in the past year. Women were classified as either having used drugs or not.

IPV was assessed using scales based on the WHO's multi-country study on women's health (Garcia-Moreno et al., 2006), and the UN Multi-Country Survey (UNMCS) (Jewkes et al., 2017), both had been adapted and previously used in South Africa (Machisa, Jewkes, Morna, & Rama, 2011). To assess emotional IPV, five items were asked, with a typical item being "In the past 12 months how many times has a current or previous husband or boyfriend threatened to hurt you?" Responses were never, once, few, or many. Economic IPV was assessed using four items. An example question was: "In the past 12 months how often did your partner take your earnings against your will?". Responses were never, once, few, or many.

Physical IPV was assessed with five behaviourally specific items based on the WHO's multi-country study (Garcia-Moreno et al., 2006), previously used in South Africa and this population (Jewkes et al., 2014). A typical question was: "In the past 12 months how many times has a current or previous husband or boyfriend ever pushed or shoved you?" With responses never, once, few, or many.

Three items assessed sexual IPV based on the WHO's scale (Garcia-Moreno et al., 2006), again adapted and used previously in South Africa. Questions asked about specific sexual experiences, with items such as "In the past 12 months, how many times has your current or previous boyfriend, husband or partner used threats or intimidation to get you to have sex when you did not want to?".

Socio-demographic measures included age and education level. Food insecurity was assessed with the Household Hunger Scale (Deitchler, Ballard, Swindale, & Coates, 2010), which asks three questions about past month household food insecurity. Responses were

Table 1. Descriptive associations between emotional IPV, economic IPV and socio-economic measures and HIV-risk behaviours.

	Overall sample %/mean (95%CI)	No past year emotional IPV %/mean (95%CI)	Past year emotional IPV %/mean (95%CI)	*p*-value	No past year economic IPV %/mean (95%CI)	Past year economic IPV %/mean (95%CI)	*p*-value
Age	23.7(23.4–23.9)	23.3(22.8–23.8)	23.8(23.5–24.1)	0.1225	23.3(22.9–23.7)	24.0(23.7–24.4)	0.0046
Education Primary only	8.1(6.3–10.4)	6.7(3.6–12.1)	8.5(6.4–11.2)		8.6(6.0–12.2)	7.6(5.3–10.9)	
Secondary (not finished)	61.6(58.0–65.2)	53.7(45.7–61.5)	63.8(60.0–67.8)		60.0(54.6–65.2)	63.1(58.0–68.0)	
Completed secondary	30.3(27.0–33.8)	39.6(32.2–47.6)	27.7(24.1–31.6)	0.0204	31.4(26.7–36.5)	29.3(24.8–34.2)	0.6954
Food security None	18.7(15.9–21.8)	24.2(18.0–31.7)	17.1(14.2–20.6)		23.7(19.4–28.6)	14.1(10.8–18.1)	
Moderate	50.3(46.6–54.0)	49.7(41.7–57.6)	50.5(46.3–54.7)		48.0(42.7–53.4)	52.4(47.2–57.5)	
High	31.0(27.7–34.6)	26.2(19.7–33.9)	32.3(28.6–36.5)	0.1046	28.3(23.7–33.4)	33.5(28.8–38.6)	0.005
Depressive symptoms (mean score)	21.2(20.4–22.0)	18.4(17.3–19.5)	23.7(22.5–24.8)	<0.00001	17.9(16.3–19.5)	22.1(21.1–23.0)	<0.00001
Outcomes							
Transactional sex with main partner (yes)	55.5(51.7–59.3)	45.1(37.1–53.4)	58.5(54.2–62.7)	0.005	42.9(37.5–48.4)	67.6(63.4–72.4)	<0.00001
Transactional sex with causal partner (yes)	42.6(38.9–46.5)	27.1(20.4–35.0)	47.1(42.8–51.5)	<0.00001	32.4(27.5–37.7)	52.4(47.0–57.8)	<0.00001
Three or more past year sex partners (yes)	41.5(37.6–45.5)	29.0(21.6–37.3)	44.8(40.4–49.3)	0.0019	37.9(32.4–43.7)	44.8(39.3–50.3)	0.0902
Condom use last sex (yes)	54.1(50.0–58.1)	67.5(58.8–75.1)	50.5(46.0–55.1)	0.0008	57.2(51.3–62.9)	51.3(45.7–56.8)	0.1528
Alcohol problem (yes)	23.1(20.1–26.4)	9.4(5.6–15.3)	26.9(23.4–30.8)	<0.00001	14.2(10.8–18.4)	31.3(26.7–36.3)	<0.00001
Drug use past year (yes)	31.8(28.4–35.4)	18.8(13.3–25.9)	35.4(31.4–39.6)	0.0001	23.1(18.8–28.0)	39.7(34.8–44.9)	<0.00001
IPV							
Emotional IPV past 12 months (yes)	78.1(74.9–81.0)	**	**		68.9(63.7–73.7)	86.5(82.5–90.0)	<0.00001
Economic IPV past 12 months (yes)	52.2(48.5–55.9)	32.2(25.2–40.2)	57.8(53.6–62.0)	<0.00001	**	**	
Physical IPV past 12 months (yes)	59.6(55.8–63.2)	16.1(11.0–23.0)	71.8(67.8–75.4)	<0.00001	45.8(40.5–51.3)	72.1(67.2–76.6)	<0.00001
Sexual IPV past 12 months (yes)	29.4(26.1–33.0)	13.4(8.8–20.0)	33.9(30.0–38.1)	<0.00001	16.9(13.2–21.4)	40.9(35.8–46.1)	<0.00001

recoded as recommended to create a three-level categorical variable (none or little food insecurity, or moderate, or high, food insecurity).

The Centre for Epidemiologic Studies Depression Scale (CES-D) scale (Radloff, 1977) assessed depression and has been used previously in South Africa (Gibbs, Govender, & Jewkes, 2018). Twenty items asked about past week depressive symptoms with responses ranging from never to everyday (α=0.88), and items were summed into a total score.

Analysis

All analyses included adjustment for study design and clustering. In Table 1 descriptive statistics for the whole sample are first presented, and then the proportion of women experiencing emotional IPV, and then economic IPV, by socio-demographic information, physical IPV, sexual IPV, and outcomes, including tests of significance (*t*-tests for continuous and chi-squared for categorical variables).

Given it can be challenging to isolate the impacts of emotional IPV and economic IPV from physical and/or sexual IPV, because they co-occur, we modelled IPV in multiple ways. First, we treated all forms of IPV (emotional, economic, sexual and physical) as separate constructs. In Model 1, we categorized each form of IPV in terms of one or more experience of that IPV (compared to none), and in Model 2, we categorized each form of IPV in terms of two or more experiences (compared to one or none). This second categorization provides a severity of IPV assessment, with research showing two or more experiences of IPV have greater health impacts (Jewkes et al., 2010). In Models 1 and 2, we adjusted for age, education, food insecurity, depressive symptoms, study arm, physical IPV, sexual IPV, and emotional IPV or economic IPV. We report adjusted odds ratios (aOR) and 95% confidence intervals (95% CI) for emotional IPV and economic IPV for the six HIV-outcomes, and different "severities" of IPV.

In Table 3, we created two four-level categorical variables for combinations of emotional, economic, physical and sexual IPV experiences. In the first categorical variable we modelled women with no IPV experience, one or more emotional IPV experience only, emotional and physical and/or sexual IPV, and only physical and/or sexual IPV experience (we did not consider women's experience of economic IPV in this model). In the second categorical variable, we modelled no IPV, economic IPV only, economic and physical and/or sexual IPV only, and physical and/or sexual IPV only (with no consideration of experience of emotional IPV). We present aORs and 95%CIs for each combination of IPV for the six outcomes. All models used Gaussian random

effects regression models, with the cluster as the random effect, in STATA14/IC.

Results

Six hundred eighty women were enrolled in the study. Women were relatively young (mean age 23.7), and just under a third (30.0%) had completed secondary school (Table 1). Food insecurity was high, a third reported high levels of past month food insecurity, and half reported moderate levels. Depressive symptoms were common (mean 21.2).

All forms of IPV were highly prevalent (Table 1). Over three-quarters (78.1%) reported any emotional IPV experience in the past year, and half reported economic IPV (52.2%). Past year physical IPV was reported by 59.6% and sexual IPV by 29.4%.

HIV-risk behaviours were common (Table 1). Just over half (55.5%) reported transactional sex with a main partner, and 42.6% transactional sex with a casual partner, in the past year. 41.5% of women reported having sex with three or more partners in the past year. Condom use at last sex was reported by half (54.1%). A quarter reported harmful alcohol use, and just under a third past year drug use.

Women who reported emotional IPV in the past year were less likely to have completed secondary school (Table 1), and more likely to have depressive symptoms. They were more likely to report transactional sex with main, and casual, partners, less likely to report condom use at last sex, and report more alcohol problems, and drug use (Table 1).

Women reporting economic IPV were slightly older than those not, and more likely to report moderate, or severe food insecurity, and had more depressive symptoms (Table 1). Those reporting economic IPV were more likely to report transactional sex with main, and casual, partners, alcohol problems, and drug use. All forms of IPV showed significant overlap.

In adjusted regression models, treating emotional IPV and economic IPV separately (Table 2), women reporting one or more experiences of emotional IPV (Model 1) reported significantly less condom use at last sex. Women reporting two or more experiences of emotional IPV (Model 2) were more likely to report transactional sex with a main partner, harmful alcohol use, and less condom use at last sex.

Women reporting one or more experiences of economic IPV (Model 1), and two or more experiences of economic IPV (Model 2) reported more transactional sex with a main partner, transactional sex with a casual partner, more harmful alcohol use, and more past year drug use.

Women reporting both emotional and physical and/or sexual IPV reported significantly higher HIV-risk for all outcomes assessed, compared to women reporting no IPV experience (Table 3). For condom use at last sex, women reporting only emotional IPV (but no physical/sexual IPV), had lower condom use. Similarly, women reporting only emotional IPV had more harmful alcohol use.

Women reporting both economic IPV and physical and/or sexual IPV reported higher HIV-risks on all outcomes. For transactional sex with a main partner and with a casual partner, women reporting only economic IPV reported increased risk.

Discussion

Amongst food-insecure young women in urban informal settlements in eThekwini, South Africa, all forms of IPV were common. Emotional IPV was the most common with over three-quarters reporting past year emotional IPV, while economic IPV was as prevalent as physical IPV. Analysis showed extensive overlaps between the different forms of IPV, but emotional IPV and economic IPV had independent effects on HIV-risk behaviours, and this was robust to modelling IPV in a variety of ways.

Economic IPV is relatively understudied compared to other forms of IPV, yet half of women reported experiencing this in the past year. Economic IPV was associated with transactional sex with a main partner, and with a casual partner. This held true through all the different modelling strategies, suggesting a robust relationship between the two variables.

The association between economic IPV and transactional sex raises a number of questions around how to conceptualize transactional relationships. Research on transactional sex has emphasized it has diverse meanings in different dyads, contexts and settings (Fielding-Miller et al., 2016; Stoebenau et al., 2011; Zembe et al., 2013). The widespread food insecurity of women living in informal settlements may drive these associations, with women engaging in transactional sex as a survival strategy (Zembe et al., 2013) and if men do not provide, women feel men have failed in their side of the "bargain" and report this as economic IPV (Dunkle et al., 2004; Dunkle et al., 2007). However, even economically driven relationships intersect with romantic love (Hunter, 2007) and as such these associations remain complicated.

Emotional IPV was associated with less condom use at last sex consistently across models. A small set of research has shown women who experience emotional IPV are less likely to use condoms (Wingood & DiClemente, 1997). Our study supports this and shows this association persists even with the inclusion of other forms of IPV. This is highly suggestive that condom

Table 2. aOR between six HIV-risk behaviours and emotional IPV, and economic IPV ($n = 595$).

	Transactional sex main partner past year		Transactional sex causal partner past year		3 or more past year sex partners		Condom use at last sex		Problem alcohol use		Past year drug use	
Model 1: IPV categorized as one or more exposure	aOR(95%CI)	*p*-value	aOR(95%CI)	*p*-value	aOR(95%CI)	*p*-value	aOR(95%CI)	*p*-value	aOR(95%CI)	*p*-value	aOR(95%CI)	*p*-value
Emotional IPV (one or more experiences)[a]	1.01(0.65–1.58)	0.961	1.52(0.95–2.45)	0.081	1.42(0.87–2.32)	0.164	0.55(0.35–0.89)	0.014	1.84(0.94–3.58)	0.075	1.28(0.76–2.15)	0.347
Economic IPV (one or more experiences)[a]	2.14(1.51–3.04)	<0.0001	1.62(1.14–2.31)	0.008	1.07(0.74–1.55)	0.72	0.84(0.59–1.20)	0.348	1.74(1.13–2.68)	0.012	1.61(1.12–2.33)	0.01
Model 2: IPV categorized as two or more exposures												
Emotional IPV (two or more experiences)[b]	1.45(0.97–2.15)	0.067	1.71(1.14–2.58)	0.01	1.32(0.86–2.01)	0.206	0.66(0.44–0.99)	0.042	1.74(1.01–3.01)	0.046	1.44(0.93–2.23)	0.105
Economic IPV (two or more experiences)[b]	2.00(1.38–2.90)	<0.0001	1.42(0.99–2.05)	0.06	1.06(0.73–1.56)	0.746	1.00(0.70–1.45)	0.99	2.01(1.31–3.09)	0.001	1.47(1.02–2.13)	0.04

[a]Also adjusted for economic IPV
[b]Also adjusted for emotional IPV.
Note: All models adjusted for clustering, age, education, food insecurity, depression, and intervention arm, physical IPV, sexual IPV.

Table 3. aOR between six HIV–risk behaviours and combinations of IPV experience ($n = 595$).

	Transactional sex main partner		Transactional sex causal partner		Three or more past year sex partners		Condom use at last sex		Problem alcohol use		Past year drug use	
Model 3: Combination of emotional and physical/sexual IPV experiennce	aOR(95%CI)	*p*-value	aOR(95%CI)	*p*-value	aOR(95%CI)	*p*-value	aOR(95%CI)	*p*-value	aOR(95%CI)	*p*-value	aOR(95%CI)	*p*-value
No IPV	base		base		base		base		base		base	
Emotional IPV only	1.01(0.59–1.74)	0.96	1.23(0.69–2.21)	0.482	1.37(0.73–2.58)	0.324	0.49(0.27–0.89)	0.019	2.72(1.12–6.62)	0.028	1.08(0.56–2.11)	0.819
Emotional and physical/sexual IPV	1.85(1.17–2.92)	0.008	2.25(1.38–3.64)	0.001	2.19(1.29–3.74)	0.004	0.43(0.26–0.72)	0.001	4.70(2.16–10.23)	<0.0001	2.66(1.56–4.55)	<0.0001
Physical/sexual IPV only	1.30(0.59–2.86)	0.52	0.84(0.35–2.06)	0.708	1.54(0.64–3.71)	0.339	0.73(0.31–1.70)	0.464	2.86(0.89–9.20)	0.077	1.28(0.51–3.25)	0.599
Model 4: Combination of economic and physical/sexual IPV experience												
No IPV	base		base		base		base		base		base	
Economic IPV only	1.87(1.05–3.33)	0.033	1.84(1.00–3.36)	0.049	0.73(0.37–1.42)	0.347	0.76(0.41–1.39)	0.369	2.01(0.89–4.52)	0.094	1.45(0.74–2.88)	0.281
Economic IPV and physical/sexual IPV	3.27(2.09–5.12)	<0.0001	2.86(1.81–4.53)	<0.0001	1.78(1.11–2.85)	0.016	0.58(0.37–0.91)	0.019	4.07(2.19–7.56)	<0.0001	3.36(2.03–5.54)	<0.0001
Physical/sexual IPV only	1.30(0.82–2.07)	0.265	1.65(1.01–2.71)	0.048	1.34(0.80–2.22)	0.262	0.69(0.42–1.12)	0.129	2.12(1.07–4.20)	0.031	2.01(1.16–3.46)	0.012

Note: Models adjusted for age, clustering, education, depression, intervention arm, food insecurity.

use dynamics in a relationship are tightly bound up with psychological control by men.

The consistent finding that women experiencing both emotional IPV, or economic IPV, combined with physical and/or sexual IPV, had increased HIV-risk behaviours, supports other studies showing this in relation to mental health (Jewkes, 2010; Ludermir, Lewis, Valongueiro, de Araújo, & Araya, 2010; McLaughlin, O'Carroll, & O'Connor, 2012). Experience of multiple forms of IPV by women is an indication of severity of IPV and highlights the importance of interventions reducing all forms of IPV, rather than focusing narrowly on reducing only physical and/or sexual IPV.

The associations between economic IPV, emotional IPV, and substance use were less clear and depended on the modelling strategies. While studies have shown associations between physical and sexual IPV and alcohol and drug use (Foran & O'Leary, 2008), there is almost no research on the associations between emotional IPV, and economic IPV, and substance use. In other analyses, economic IPV and emotional IPV are associated with poorer mental health (Gibbs et al., 2018; Ludermir et al., 2010; Stöckl & Penhale, 2015) and there are overlaps between mental health and substance use. Further research on the pathways between economic IPV and substance use is required.

The analysis has a number of implications for thinking about IPV, and conceptualizing interventions to reduce HIV-risk. First, emotional IPV and economic IPV have distinct impacts on HIV-risk behaviours, and as such should be separate constructs, rather than one combined construct. Second, the limited focus on emotional IPV, and economic IPV, in HIV-research is problematic, as we have shown they have impacts on HIV-risk, independently of physical and/or sexual IPV. Third, women's experiences of multiple forms of IPV, rather than of one type only, are critical in understanding HIV-risk, supporting previous research (Durevall & Lindskog, 2014; Jewkes, 2010), and this should be considered when designing interventions.

Fourth, a body of research highlights the impact of economic strengthening and gender transformative interventions to reduce HIV-risk and IPV-vulnerability (Ellsberg et al., 2015; Gibbs, Kerr-Wilson, & Jacobson, 2017). These studies highlight the importance of strengthening women's ability to be economically independent of a male partner, often measured through earnings, or access to work. Yet these interventions rarely measure economic IPV, which may be an important route through which men extract resources from women, undermining impacts related to women's economic autonomy and HIV-risk.

This study has a number of limitations. The study is cross-sectional, so temporality of associations cannot be ascertained. Participants self-selected into the study, and as such IPV prevalence and outcomes are not generalizable. Our sample was too small to look at emotional IPV and economic IPV together. We did not control for relationship control, but previous research shows this is important for HIV-risk (Jewkes et al., 2010). Because this was an exploratory analysis we chose not to do any corrections to *p*-values for the multiple tests of associations, it is therefore possible that some of these associations are spurious and future analyses should formally test associations. Finally, alcohol and drug use are also outcomes of IPV, and known to effect HIV-risk, and while we treated them as independent outcomes, they may well moderate associations between IPV and other HIV-risks, and future studies should explore this.

In conclusion, emotional IPV, and economic IPV were highly prevalent in this sample. Despite overlaps with physical and sexual IPV, emotional and economic IPV remained independently associated with HIV-risk behaviours. Increasing recognition of the multiple forms of IPV women experience, and their impact on HIV-risk is critical for women's health, and intervention development.

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