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The intersection of intimate partner violence and HIV risk among women engaging in transactional sex in Ugandan fishing villages

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Abstract

Intimate partner violence (IPV) may increase risk for HIV/AIDS among women engaging in transactional sex in Ugandan fishing communities. In this cross-sectional study, 115 women reporting engaging in transactional sex in Lake Victoria fishing communities completed a computerized interview. We tested associations between IPV and other HIV risk factors, with unprotected sex and HIV status, and tested moderators of the IPV-HIV risk relationship. Women reporting recent sexual IPV reported 3.36 times more unprotected sex acts (AdjExp[B] = 3.36, 95% CI = 1.29–8.69, $p = 0.07$). The effect of sexual IPV on sexual risk was significantly greater among alcohol and fish sellers compared to sex workers (interaction: Exp[B] = 12.29, 95% CI = 5.06–29.85, $p < 0.001$). Women reporting any sexual IPV were nearly four times more likely to report being HIV positive than women reporting no sexual IPV (AOR = 3.94, 95% CI = 1.22–12.66, $p = 0.02$). Integrated IPV and HIV interventions are needed in this context, especially among alcohol and fish sellers engaging in transactional sex.

Keywords

HIV/AIDS; intimate partner violence; transactional sex; female sex workers; Uganda

Introduction

Ugandan fishing villages are considered HIV/AIDS hotspots, with HIV prevalence markedly higher than the general adult population (22% vs. 7.3%, respectively) (Opio, Muyonga, & Mulumba, 2011; Uganda MOH & ICF International, 2012). Economic insecurity compounded by gender inequity may make women in these communities particularly vulnerable for HIV (Pearson et al., 2013; Seeley, Tumwekwase, & Grosskurth, 2009). Landing sites, made up of a transient population seeking economic opportunities, include a

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large population of commercial sex workers (CSWs), a population most at risk for HIV (Uganda AIDS Commission, 2014), and transactional sex is reportedly common among other women (i.e., fish sellers, alcohol sellers) (Pearson et al., 2013; Sileo, Kintu, Chanes-Mora, & Kiene, 2016). The gender-power imbalance inherent in sexual exchanges between men and women for goods may decrease women's ability to negotiate condom use (MacPherson et al., 2012), and intimate partner violence (IPV) may further increase women's vulnerability to HIV in this setting (Mbonye et al., 2012). IPV already occurs at high rates in the general population in Uganda (UBOS & ICF International Inc., 2012), and globally, is elevated among CSWs with clients and steady partners (Gysels, Pool, & Nnalusiba, 2002; Wilson et al., 2015). However, little research has explored the role of IPV on HIV risk among women in Ugandan fishing communities.

Strong evidence for a bidirectional relationship between IPV and HIV has emerged from prospective cohort studies (Kouyoumdjian, Calzavara, et al., 2013; Wagman et al., 2015), though support for the mechanisms in which IPV may lead to HIV is limited (Kouyoumdjian, Findlay, Schwandt, & Calzavara, 2013). In addition to direct transmission of HIV through sexual assault (Jenny et al., 1990), IPV is theorized to indirectly increase women's risk for HIV by reducing their ability to refuse sex, use a condom, and access HIV prevention resources (Dunkle & Decker, 2013). Violence-induced psychological trauma may similarly reduce women's ability to negotiate safe sex, and may increase women's sexual risk taking in general (Dunkle & Decker, 2013). Alcohol during sex in abusive relationships may also mediate or exacerbate the association of IPV and unprotected sex (Devries et al., 2014). Alcohol use is reportedly common among women and CSWs on landing sites (Sileo et al., 2016; Tumwesigye et al., 2012), and is linked in the broader literature to unprotected sex (Kiene et al., 2008; Kiene & Subramanian, 2013).

In the context of sex with steady partners, and transactional sex on landing sites, reduced ability to negotiate condom use may be one pathway by which violence increases women's risk for HIV acquisition. However, high prevalence of depression, alcohol use, and poor access to HIV resources in this setting (Sileo et al., 2016) suggests other potential mechanisms to explore. Using cross-sectional survey data collected from women with a history of transactional sex in Ugandan fishing villages, we test associations between emotional, physical, and sexual IPV and sociodemographics, psychosocial factors, and unprotected sex and HIV status. We further test psychosocial and HIV prevention access factors as moderators of the IPV-HIV risk relationship.

Methods

Research setting and study population

The research was conducted with 115 women residing in one of three fishing villages (Kasenye, Bussi Island, and Burgiri) in Wakiso District, Uganda along Lake Victoria and was part of a larger cross-sectional study examining alcohol and sexual risk among men and women (N=300). The local economies of these communities are centered on the fishing industry, with the population made up of fisherfolk (i.e., fishermen, fisher sellers and processors, food vendors, and alcohol sellers). Fishermen and those supporting the business are highly mobile, as they move across sites based on the fish yields. A large population of

CSWs work on the landing sites out of rented rooms in lodges where they meet clients. Other women who sell alcohol, food, or other goods are also considered high risk for HIV, commonly engaging in transactional sex with fishermen as a means of economic survival (Sileo et al., 2016).

Procedures

This study was carried out in partnership with Wakiso Integrated Rural Development Association (WIRDA). WIRDA worked with elected community leaders, known as Beach Management Units, and representatives of each occupational group to non-randomly recruit individuals for participation in the study. Participants met the following criterion: (1) at least 18 years of age, (2) not being intoxicated at the time of the study, and (3) self-identifying as one of the four populations: fishermen, CSW, fisher seller, and alcohol seller. For the present analysis, we excluded men ($n=132$); we did not have data to fully assess their experiences of IPV. We also excluded women with no history of transactional sex ($n=53$). We considered transactional sex an indicator for risk of HIV and IPV. Moreover, though the inclusion of women reporting no transactional sex would have allowed us to make comparisons between groups, the sample size of women in this category was not large enough to do so ($n=53$), and their risk profiles were too different from those engaging in transactional sex to include them as one sample. Therefore, our sample includes women recruited by the CSW leader and self-identifying as CSWs, and women recruited as alcohol or fish sellers, but reporting engaging in transactional sex (68.50% of women in the sample).

Participants completed a one-on-one interviewer-administered questionnaire entered in real-time on computer-assisted personal interviewing (CAPI) software in a private setting. Institutional review boards in the U.S. and in Uganda approved the study. All participants provided written, informed consent before completing the interview and were compensated 10,000 shillings (~ \$4) for their time.

Measures

Independent variables—The following **demographic items** were included in our analysis: age, education, landing site, marital status, monthly income, occupation, and mobility (“Do you shift to different areas throughout the year based on your work?” yes/no).

Among **psychosocial factors**, *depression* was assessed by use of a modified 20-item version of the Center for Epidemiological Studies (CESD) scale ($\alpha = 0.87$ in the present sample) (Radloff, 1977). We used the standard cutoff for ‘possible depression’ at 11 and for ‘probable depression’ at 16 (Radloff, 1977). Finally, *partner substance use during sex* is measured by a 5-point scale item: “During the last 3 months, how often did your partner use drugs or alcohol during sex?” Women did not report using substances themselves during sex; therefore, we did not include self-substance use during sex in the analysis.

We measured two constructs related to **HIV prevention behaviors/service access**. *Self-efficacy for reducing HIV sexual risk behavior* was measured using two items on a 5-point scale from the behavioral skills sub-scale of the HIV IMB measures (Misovich, Fisher, & Fisher, 1998), asking how hard or easy it would be to use a condom and abstain from sex in

the next 6 months. *Prior HIV testing* is measured through a single item: “How many times have you had an HIV blood test?” We dichotomized as it into 3 or less, 4 or more, as it was not normally distributed.

Intimate partner violence (IPV) was measured using the Demographic Health Survey items (UBOS & ICF International Inc., 2012). All questions asked about a “sexual partner,” which in this context could include steady or casual partners, or clients. Two items assessed lifetime emotional IPV by a sexual partner (e.g., ever insult or threaten to hurt you) ($\alpha = 0.70$), and if they had, two additional items asked whether it occurred in the prior 12 months ($\alpha = 0.85$). Six items assessed lifetime experience of physical IPV by a sexual partner (e.g., ever slapped, pushed, hit, beaten you) ($\alpha = 0.86$) and six additional items asked about physical IPV in the prior 12 months ($\alpha = 1.00$). Finally, two items assessed any sexual IPV from a sexual partner (e.g., ever physically forced to have sexual intercourse when you did not want to) ($\alpha = 0.64$), and two additional items asked about sexual IPV in the prior 12 months ($\alpha = 0.86$).

Our outcome of *unprotected sex acts* was measured using the Timeline Follow-Back Sexual Behavior Interview (Sobell & Sobell, 1996; Weinhardt et al., 1998). Participants were shown a calendar to help them recall their sexual activities in the prior 30 days, and asked to report for each day the number of sex acts, condom use during each sex act, and type of partner (steady, casual, client). No women reported engaging in oral or anal sex in the prior 30 days, making our outcome specific to vaginal sex. We include self-reported *HIV status* as our second outcome. Participants who had ever tested for HIV were asked their HIV status (negative, positive, don’t know) and the date of their most recent test. We categorized the response options into three categories: negative (tested in the last 6 months), unknown or tested negative more than 6 months ago, and positive. We separated those reporting being HIV negative by time of test, as those testing negative more than 6 months ago may have since been infected.

Analysis

Data analysis was conducted in SPSS version 24 (IBM Corp, 2011). Using Poisson loglinear and multinomial logistic generalized linear models, we first test independent associations between demographic, psychosocial, HIV service access, and IPV variables with the total number of unprotected sex acts and HIV status, respectively. Statistically significant ($p < 0.10$) factors identified in univariate models, or those deemed theoretically relevant, were included in multivariate models for our two outcomes. In each model, we also tested for interactions between each IPV variable and psychosocial variables (depression, partner substance use during sex), HIV prevention access variables (self-efficacy for reducing HIV risk behavior, prior HIV testing [only for unprotected sex events]), and occupation; we include only those interactions found statistically significant in the multivariate models. We present trimmed final models, removing non-significant variables ($p > 0.05$) to improve model fit. For analyses with unprotected sex events as the outcome, the exponentiated beta (Exp[B]), and adjusted ExpB (AdjExpB), with 95% confidence intervals (CI) are presented and used to interpret effect size. For analyses with HIV status as the outcome, Odds Ratios (OR) and Adjusted Odds Ratios (AOR) with 95% CI are presented. The multinomial logit

regression models the probability of reporting having tested HIV negative recently (testing more than 6 months ago) or not knowing one's status and having tested HIV positive compared to reporting being HIV negative (having tested in the last 6 months), respectively.

Results

Our sample included 115 women reporting a history of transactional sex, approximately 65% of whom self-identified as a CSW, while 35% reported employment as an alcohol or fish seller. All forms of IPV were reportedly high, with more than 50% of the sample reporting each form of IPV in their lifetime. Women responded to all applicable questions, resulting in no missing data for our variables of interest. Table 1 includes participant characteristics and descriptive statistics.

Univariate predictors of total number of unprotected sex acts in the past 30 days and HIV status

Univariate factors positively associated with unprotected sex acts in the past 30 days ($p < 0.10$) included: greater age, higher education, landing site (Kasenyi being higher risk than Bussi Island, Bugiri being lower), being married, being an alcohol or fish seller (compared to CSW), depression, reporting partner substance use during sex, reporting 4 or more prior HIV tests (compared to 3 or less), lifetime and recent (prior 12 months) experience of emotional and sexual IPV. Factors negatively associated with unprotected sex acts included self-efficacy for reducing HIV risk and lifetime physical IPV. Univariate predictors of HIV positive status included: greater age, greater education, Burgiri landing site (compared to Bussi Island), and lifetime emotional and sexual IPV. Univariate predictors of unknown HIV status or having tested negative more than 6 months ago included: Burgiri landing site (compared to Bussi Island), as well as negative associations with lifetime and recent (prior 12 months) IPV. Details are provided in Table 2.

Multivariate Poisson regression analysis testing the association between any IPV in the prior 12 months and total number of unprotected sex events in the prior 30 days

In the final trimmed model with covariates and effects retained if they were associated with the outcome at $p < 0.05$, married women reported less unprotected sex in the prior 30 days than unmarried women ($\text{AdjExp}[B] = 0.18$, 95% CI = 0.12–0.27, $p < 0.001$) and alcohol/fish sellers reported less unprotected sex compared to CSWs ($\text{Exp}[B] = 0.39$, 95% CI = 0.18–0.83, $p = 0.02$). Women reporting possible or probable depression reported twice as many unprotected sex acts than women reporting no depression ($\text{Exp}[B] = 1.90$, 95% CI = 1.21–2.99, $p = 0.01$). According to the model, those reporting sexual IPV in the prior 12 months had 3.36 times more unprotected sex sex acts ($\text{AdjExp}[B] = 3.36$, 95% CI = 1.29–8.69). While this main effect was marginally significant ($p = 0.07$), there was a statistically significant interaction between occupation and sexual IPV: the effect of sexual IPV on sexual risk was significantly greater among alcohol and fish sellers compared to CSWs (interaction: $\text{Exp}[B] = 12.29$, 95% CI = 5.06–29.85, $p < 0.001$) (see Figure 1). Emotional IPV in the prior 12 months and other covariates were no longer associated with unprotected sex and were removed from the final model. No other significant interactions were identified.

Multivariate multinomial logistic regression analysis testing the association between any sexual IPV (lifetime) and HIV status

In the final trimmed model with covariates and effects retained if they were associated with the outcome at $p < 0.05$, with reporting having tested HIV negative as the comparison, age remained positively associated with HIV positive status (AOR = 1.13, 95% CI = 1.04–1.24, $p = 0.01$), and women employed as an alcohol or fish seller were less likely to be HIV positive than CSWs (AOR = 0.24, 95% CI = 0.73–0.79, $p = 0.02$). Women reporting any lifetime experience of sexual IPV were nearly four more likely to report being HIV positive than women reporting no sexual IPV (AOR = 3.94, 95% CI = 1.22–12.66, $p = 0.02$). A history of emotional abuse and other covariates were trimmed from the final model, and no statistically significant interactions were identified. We also did not observe any statistically significant effects comparing those who did not know their status to those who had recently tested HIV negative.

Discussion

Intimate partner violence (IPV) and HIV/AIDS are recognized as intertwined epidemics in sub-Saharan Africa. Given high rates of HIV and transactional sex in Ugandan fishing communities (Opio et al., 2011; Sileo et al., 2016), understanding the role of IPV in HIV/AIDS risk and acquisition in this setting is needed. The present study is the first to our knowledge to examine IPV among female fisherfolk in Uganda. IPV was prevalent in our sample. Physical IPV was similar to that reported among the general population (51% vs. 56%, respectively), while lifetime experience of sexual IPV was twice as high in our sample as the national prevalence (62% vs. 28%, respectively) (UBOS & ICF International Inc., 2012). As hypothesized, women experiencing IPV in our sample generally reported more unprotected sex and were more likely to be HIV positive than women with no history of IPV.

Reporting sexual IPV in the prior 12 months was associated with unprotected sex acts for alcohol and fish sellers in our sample, but not for CSWs. For all women regardless of occupation in our sample, reporting any lifetime history of sexual IPV was associated with almost a four-fold increased likelihood of being HIV positive compared to those with no history of sexual IPV. These findings support previous studies in Uganda demonstrating associations between sexual violence, unprotected sex, and HIV status (Wagman et al., 2015). The observed association between sexual IPV and both unprotected sex acts and HIV in our sample may be explained through forced unprotected sex, leading to the direct transmission of HIV (Campbell et al., 2008). However, our findings do not rule out other indirect mechanisms that may be at play, including reduced ability to control future condom use (Dunkle & Decker, 2013). While we did not find psychosocial factors or factors related to access to HIV prevention services to moderate the relationship between IPV and sexual risk or HIV, more work is needed using longitudinal data to tease apart the mechanisms in which IPV may lead to HIV/AIDS.

Our findings highlight the need for integrated IPV and HIV reduction interventions with female fisherfolk in Uganda, especially among alcohol/fish sellers, who demonstrated greater risk behavior and were more affected by sexual IPV compared to CSWs. This finding is consistent with our prior qualitative work; female alcohol/fish sellers and shop

owners were said to be more easily influenced to have unprotected sex for money than were CSWs due to greater economic vulnerability (BLIND REVIEW). Moreover, CSWs were said to work in a close knit network of other CSWs that provide protection against violent clients. Whereas female alcohol and fish sellers engage in sex work in isolation; therefore, they may have less protective social support, and may be missed by community HIV prevention efforts targeting CSWs. Thus, gender transformative interventions shown effective in synergistically influencing gender-inequity, violence, and HIV (Dworkin, Hatcher, Colvin, & Peacock, 2013; Jewkes et al., 2008; Wagman et al., 2015) should be explored in this setting, but may be made more effective when paired with efforts to increase social support and reduce economic vulnerability.

The cross-sectional nature of our data limits our ability to infer causation between IPV variables and our HIV outcomes. The IPV-HIV relationship is thought to be bidirectional; IPV may increase risk for HIV acquisition, but HIV positive status can similarly lead to increased risk of IPV (Kouyoumdjian, Calzavara, et al., 2013; Wagman et al., 2015). Similarly, other constructs examined in this study may be bidirectional (e.g., depression can increase one's risk for unprotected sex, but could also be an outcome of unprotected sex). There is a need for more prospective cohort studies and randomized clinical trials of interventions to reduce IPV to establish temporality between IPV and HIV acquisition, and to better examine mechanisms in which IPV and HIV are related. Our subjects were nonrandomly recruited, limiting the study's generalizability beyond our study population. Furthermore, data was self-reported, including our outcome of HIV status, which may have captured women who more recently accessed HIV testing/prevention services. It is also subject to social desirability bias, and may have resulted in under-reporting or misreporting of the number of HIV-infected women in our sample.

Conclusions

In the present study, we identified high rates of emotional, physical, and sexual IPV among women engaging in transactional sex in Ugandan fishing villages. Alcohol and fish sellers experiencing recent sexual IPV engaged in more unprotected sex than those reporting no sexual IPV, and we observed elevated risk for being HIV positive among women reporting any sexual IPV in their lifetime for all women in our sample. Interventions that integrate IPV reduction and HIV prevention are needed in this context, especially among women engaging in transactional sex who don't consider themselves sex workers.

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References

Campbell JC, Baty ML, Ghandour RM, Stockman JK, Francisco L, Wagman J. The intersection of intimate partner violence against women and HIV/AIDS: a review. *International Journal of Injury*

- Control and Safety Promotion. 2008; 15(4):221–231. DOI: 10.1080/17457300802423224 [PubMed: 19051085]
- Devries KM, Child JC, Bacchus LJ, Mak J, Falder G, Graham K, Heise L. Intimate partner violence victimization and alcohol consumption in women: A systematic review and meta-analysis. *Addiction*. 2014; 109(3):379–391. DOI: 10.1111/add.12393 [PubMed: 24329907]
- Dunkle KL, Decker MR. Gender-Based Violence and HIV: Reviewing the evidence for links and causal pathways in the general population and high-risk groups. *American Journal of Reproductive Immunology*. 2013; 69:20–26. DOI: 10.1111/aji.12039 [PubMed: 23216606]
- Dworkin SL, Hatcher AM, Colvin C, Peacock D. Impact of a gender-transformative HIV and antiviolenence program on gender ideologies and masculinities in two rural, South African communities. *Men and masculinities*. 2013; 16(2)doi: 10.1177/1097184X12469878
- Gysels M, Pool R, Nnalusiba B. Women who sell sex in a Ugandan trading town: life histories, survival strategies and risk. *Social Science & Medicine*. 2002; 54(2):179–192. doi: [http://dx.doi.org/10.1016/S0277-9536\(01\)00027-2](http://dx.doi.org/10.1016/S0277-9536(01)00027-2). [PubMed: 11824924]
- IBM Corp. IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp; 2011.
- Jenny C, Hooton TM, Bowers A, Copass MK, Krieger JN, Hillier SL, Holmes KK. Sexually transmitted diseases in victims of rape. *New England Journal of Medicine*. 1990; 322(11):713–716. DOI: 10.1056/NEJM199003153221101 [PubMed: 2155389]
- Jewkes R, Nduna M, Levin J, Jama N, Dunkle K, Puren A, Duvvury N. Impact of stepping stones on incidence of HIV and HSV-2 and sexual behaviour in rural South Africa: cluster randomised controlled trial. *British Medical Journal*. 2008; 337:a506.doi: 10.1136/bmj.a506 [PubMed: 18687720]
- Kiene SM, Simbayi LC, Abrams A, Cloete A, Tennen H, Fisher JD. High rates of unprotected sex occurring among HIV-positive individuals in a daily diary study in South Africa: the role of alcohol use. *Journal of Acquired Immune Deficiency Syndrome*. 2008; 49(2):219–226. DOI: 10.1097/QAI.0b013e318184559f
- Kiene SM, Subramanian S. Event-level association between alcohol use and unprotected sex during last sex: evidence from population-based surveys in sub-Saharan Africa. *BMC Public Health*. 2013; 13(1):1–8. DOI: 10.1186/1471-2458-13-583 [PubMed: 23280303]
- Kouyoumdjian FG, Calzavara LM, Bondy SJ, O'Campo P, Serwadda D, Nalugoda F, Gray R. Intimate partner violence is associated with incident HIV infection in women in Uganda. *AIDS*. 2013; 27(8):1331–1338. [PubMed: 23925380]
- 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.doi: 10.1371/journal.pone.0081044 [PubMed: 24282566]
- MacPherson EE, Sadalaki J, Njoloma M, Nyongopa V, Nkhwazi L, Mwapasa V, Theobald S. Transactional sex and HIV: understanding the gendered structural drivers of HIV in fishing communities in Southern Malawi. *Journal of the International AIDS Society*. 2012; 15(Suppl 1): 17364.doi: 10.7448/IAS.15.3.17364
- Mbonye M, Nalukenge W, Nakamanya S, Nalusiba B, King R, Vandepitte J, Seeley J. Gender inequity in the lives of women involved in sex work in Kampala, Uganda. *Journal of the International AIDS Society*. 2012; 15(Supplement 1) (2012).
- Misovich, SJ., Fisher, W., Fisher, JD. A measure of AIDS prevention information, motivation, and behavioral skills and behavior. In: Davis, CM.Yarber, WL.Bauserman, R.Schreer, G., Davis, SL., editors. *Handbook of Sexually-Related Measures*. Thousand Oaks, CA: Sage; 1998. p. 328-337.
- Opio A, Muyonga M, Mulumba N. HIV sero behavioral survey in fishing communities of the Lake Victoria basin of Uganda: SIDA, MOH, AMREF. 2011
- Pearson G, Barratt C, Seeley J, Ssetaala A, Nabbagala G, Asiki G. Making a livelihood at the fish-landing site: exploring the pursuit of economic independence amongst Ugandan women. *Journal of East African Studies*. 2013; 7(4):751–765. DOI: 10.1080/17531055.2013.841026 [PubMed: 25400694]
- Radloff LS. The CES-D Scale: a self-report depression scale for research in the general population. *Applied Psychological Measurement*. 1977; 1:385–401.

- Seeley J, Tumwekwase G, Grosskurth H. Fishing for a living but catching HIV: AIDS and changing patterns of the organization of work in fisheries in Uganda. *Anthropology of Work Review*. 2009; 30(2):66–76. DOI: 10.1111/j.1548-1417.2009.01022.x
- Sileo K, Kintu M, Chanes-Mora P, Kiene S. “Such behaviors are not in my home village, I got them here”: A qualitative study of the influence of contextual factors on alcohol and HIV risk behaviors in a fishing community on Lake Victoria, Uganda. *AIDS and Behavior*. 2016; 20(3):537–47. DOI: 10.1007/s10461-015-1077-z. [PubMed: 25921303]
- Sileo, K., Kintu, M., Kiene, S. The role of economic instability and empowerment in HIV prevention behaviors among women in a Ugandan fishing village: A qualitative comparison of females in high-risk occupations. 2016 Society for the Study of Sexuality (SSSS) Annual Meeting; Pheonix, AZ. 2016.
- Sobell, LC., Sobell, M. Timeline Followback Method (Drugs, Cigarettes, and Marijuana). 1996. Retrieved from: <https://cde.drugabuse.gov/instrument/d89c8e23-16e5-625a-e040-bb89ad43465d>
- Tumwesigye NM, Atuyambe L, Wanyenze RK, Kibira SP, Li Q, Wabwire-Mangen F, Wagner G. Alcohol consumption and risky sexual behaviour in the fishing communities: evidence from two fish landing sites on Lake Victoria in Uganda. *BMC Public Health*. 2012; 12:12. [PubMed: 22221851]
- UBOS & ICF International Inc. Uganda Demographic and Health Survey 2011. Kampala, Uganda; Calverton, Maryland: UBOS & ICF International; 2012.
- Uganda AIDS Commission. Global AIDS Response Progress Report 2013: Country Progress Report Uganda. Kampala, Uganda: UAC; 2014. Retrieved from [http://www.unaids.org/en/dataanalysis/knowyourresponse/countryprogressreports/2012countries/ce_UG_Narrative_Report\[1\].pdf](http://www.unaids.org/en/dataanalysis/knowyourresponse/countryprogressreports/2012countries/ce_UG_Narrative_Report[1].pdf)
- Uganda MOH, & ICF International. Uganda AIDS Indicator Survey (AIS) 2011. Kampala, Uganda; Calverton, Maryland, USA: MOH and ICF International; 2012.
- Wagman JA, Gray RH, Campbell JC, Thoma M, Ndyababo A, Ssekasanvu J, Brahmbhatt H. Effectiveness of an integrated intimate partner violence and HIV prevention intervention in Rakai, Uganda: analysis of an intervention in an existing cluster randomised cohort. *The Lancet Global Health*. 2015; 3(1):e23–e33. DOI: 10.1016/S2214-109X(14)70344-4 [PubMed: 25539966]
- Weinhardt LS, Carey MP, Maisto SA, Carey KB, Cohen MM, Wickramasinghe SM. Reliability of the timeline follow-back sexual behavior interview. *Annals of Behavioral Medicine*. 1998; 20(1):25–30.
- Wilson KS, Deya R, Masese L, Simoni JM, Vander Stoep A, Shafi J, McClelland RS. Prevalence and correlates of intimate partner violence in HIV-positive women engaged in transactional sex in Mombasa, Kenya. *International Journal of STD & AIDS*. 2015; doi: 10.1177/0956462415611514

Figure 1.

Table 1

Participant Characteristics and Descriptive Statistics, Uganda 2012–2013 (N=115)

	%	Mean	SD	Range
Demographics				
Age		28.77	6.18	18–48
Education				
Secondary or greater	24 (20.90%)			
Primary or less	91 (79.10%)			
Landing site				
Bugiri	32 (27.80%)			
Kasenyi	38 (33.00%)			
Bussi Island	45 (39.10%)			
Marital status				
Never married	15 (13.00%)			
Divorced	88 (76.50%)			
Widowed	4 (3.50%)			
Married and separated most of the time	2 (1.70%)			
Married and living together most of the time	6 (5.20%)			
Monthly income				
0–100,000 UGX (~0–30 USD)	57 (49.60%)			
>100,000 UGX (> ~30 USD)	58 (50.40%)			
Occupation				
Alcohol or fish seller	40 (34.80%)			
Commercial sex worker (CSW)	75 (65.20%)			
Mobile for work				
Yes	64 (55.70%)			
No	51 (44.30%)			
Psychosocial factors				
Depression				
Possible/probable	78 (68.40%)			
No	36 (31.6%)			
Partner alcohol or drug use during sex (last 3 months)				
Yes	68 (59.10%)			
No	47 (40.90%)			
HIV prevention behaviors/service access				
Self efficacy for reducing HIV sexual risk behavior		2.07	1.06	0.00–4.00
Total number of prior HIV tests				
4 or more	60 (52.52%)			
3 or less	55 (47.80%)			
Intimate partner violence				
Any emotional IPV ever	77 (67.00%)			
Any physical IPV ever	59 (51.30%)			

	%	Mean	SD	Range
Any sexual IPV ever	71 (61.70%)			
Any emotional IPV (prior 12 mons)	67 (58.30%)			
Any physical IPV (prior 12 mons)	46 (40.00%)			
Any sexual IPV (prior 12 mons)	62 (53.90%)			
HIV risk/status				
Total number of sex acts (prior 30 days)		21.15	20.04	0.00–68.00
Total number of unprotected sex acts (prior 30 days)		1.13	4.12	0.00–26.00
HIV status				
Negative (tested in the prior 6 months)	55 (47.80%)			
Unknown or tested negative more than 6 months ago	30 (26.10%)			
Positive	30 (26.10%)			

Table 2

Results of univariate Poisson and multinomial logit regression analysis testing predictors of total number of unprotected sex events in the past 30 days and HIV status, Uganda 2012–2013 (N=115)

	Total number of unprotected sex events in prior 30 days			HIV status		
	Exp(B) (95% CI)	χ^2	p	Unknown or tested negative more than 6 months ago compared to tested negative in the last 6 months	Positive compared to tested negative in the last 6 months	p
Demographics						
Age	1.08 (1.05–1.10)	40.94	<0.001***	1.01 (0.93–1.09)	1.08 (1.01–1.16)	0.81
Education						
Secondary or greater	1.87 (1.30–2.70)	11.35	0.001**	1.50 (0.51–4.39)	3.38 (0.89–12.79)	0.46
Primary or less (reference)						
Landing site						
Bugiri	0.13 (0.05–0.32)	19.39	<0.001***	13.26 (3.61–48.64)	7.09 (1.94–25.88)	<0.001***
Kasenyi	1.50 (1.06–2.15)	5.18	0.02*	1.38 (0.42–4.53)	1.53 (0.53–4.44)	0.60
Bussi Island (reference)						
Marital status ^a						
Married	6.84 (4.76–9.84)	107.66	<0.001***			
Not married (reference)						
Monthly income						
>100,000 UGX	0.79 (0.56–1.12)	1.75	0.19	1.10 (0.45–2.69)	0.74 (0.30–1.81)	0.83
0–100,000 UGX (reference)						
Occupation						
Alcohol or fish seller	3.67 (2.55–5.27)	49.10	<0.001***	1.33 (0.53–3.38)	1.83 (0.69–4.84)	0.55
Commercial sex worker (CSW)						
Mobile for work						
Yes	0.75 (0.53–1.06)	2.71	0.10	0.60 (0.24–1.49)	0.79 (0.32–1.94)	0.27
No (reference)						
Psychosocial factors						

	Total number of unprotected sex events in prior 30 days				HIV status			
	Exp(B) (95% CI)	χ^2	p	OR (95% CI)	Unknown or tested negative more than 6 months ago compared to tested negative in the last 6 months	OR (95% CI)	χ^2	p
Depression								
Possible/probable	2.15 (1.37–3.37)	11.05	0.001**	1.62 (0.61–4.32)		2.03 (0.74–5.55)	1.90	0.17
No (reference)								
Partner substance use during sex (last 3 months)								
Yes	2.03 (1.37–3.02)	12.37	<0.001***	1.62 (0.61–4.32)		2.03 (0.74–5.55)	1.90	0.17
No (reference)								
Access to HIV prevention services								
Self efficacy for reducing HIV sexual risk behavior	0.75 (0.64–0.88)	13.20	<0.001***	1.28 (0.83–1.98)		1.00 (0.66–1.52)	0.00	1.00
Total number of prior HIV tests								
4 or more	6.00 (3.73–9.66)	54.33	<0.001***	–		–	–	–
3 or less (reference)								
Intimate partner violence								
Any emotional IPV (lifetime)	1.51 (1.01–2.25)	4.12	0.04*	0.75 (0.30–1.85)		2.86 (0.95–8.64)	3.46	0.06 [†]
Any physical IPV (lifetime)	0.59 (0.42–0.85)	8.39	0.004**	0.39 (0.15–0.98)		1.16 (0.47–2.87)	0.11	0.75
Any sexual IPV (lifetime)	2.48 (1.61–3.81)	17.14	<0.001***	0.51 (0.21–1.26)		3.33 (1.11–10.03)	4.59	0.03*
Any emotional IPV (prior 12 mons)	2.19 (1.47–3.27)	14.89	<0.001***	0.77 (0.32–1.89)		1.81 (0.70–4.65)	1.50	0.22
Any physical IPV (prior 12 mons)	0.85 (0.59–1.22)	0.80	0.37	0.37 (0.14–0.99)		1.05 (0.43–2.56)	0.01	0.92
Any sexual IPV (prior 12 mons)	2.23 (1.52–3.28)	16.78	<0.001***	0.56 (0.23–1.37)		1.67 (0.66–4.21)	1.17	0.28

Note:

[†] p < .10;

* p < .05;

** p < .01;

*** p < .001.

Exp(B) = exponentiated beta; OR = Odds Ratio; Any IPV (prior 12 months) includes participants who never experienced violence in the “no” category; the multinomial logit regression models the probability of reporting HIV negative (testing more than 6 months ago) or not knowing one’s status and HIV positive compared to reporting being HIV negative (having tested in the last 6 months), respectively.

^aThe cell sample size was too small to run marital status with HIV status.

Table 3

Results of multivariate Poisson regression analysis testing the association between any intimate partner violence in the prior 12 months and total number of unprotected sex acts in the past 30 days, Uganda 2012–2013 (N=115)

	AdjExp(B) (95% CI)	χ^2	<i>p</i>
Demographics			
Marital status			
Married	0.18 (0.12–0.27)	70.05	< 0.001 ***
Not married (reference)			
Occupation			
Alcohol or fish seller	0.39 (0.18–0.83)	5.93	0.02 *
CSW (reference)			
Psychosocial factors			
Depression			
Possible/probable	1.90 (1.21–2.99)	7.76	0.01 *
No (reference)			
Intimate partner violence			
Sexual IPV (prior 12 months)			
Yes	3.36 (1.29–8.69)	3.36	0.07
No (reference)			
Interactions			
Occupation × sexual IPV (prior 12 months)	12.29 (5.06–29.85)	30.73	< 0.001 ***

Note:

[†]
p < .10;

*
p < .05;

**
p < .01;

p < .001.

AdjExp(B) = Adjusted exponentiated beta

Table 4

Results of multivariate logistic regression analysis testing the association between any emotional or sexual intimate partner violence (lifetime) and being HIV positive, Uganda 2012–2013 (N=115)

	Unknown or tested negative more than 6 months ago compared to tested negative in the last 6 months			Positive compared to tested negative in the last 6 months		
	AdjExp(B) (95% CI)	χ^2	p	AdjExp(B) (95% CI)	χ^2	p
Demographics						
Age	1.02 (0.94–1.12)	0.23	0.63	1.13 (1.04–1.24)	7.93	0.01 *
Occupation						
Alcohol or fish seller	0.75 (0.27–2.06)	0.31	0.58	0.24 (0.73–0.79)	5.54	0.02 *
CSW (reference)						
Intimate partner violence						
Sexual IPV (prior 12 months)						
Yes	0.52 (0.21–1.30)	1.97	0.16	3.94 (1.22–12.66)	5.29	0.02 *
No (reference)						

Note:

† p < .10;

* p < .05;

** p < .01;

*** p < .001.

Multinomial logit regression models the probability of reporting HIV negative (testing more than 6 months ago) or not knowing one's status and HIV positive compared to reporting being HIV negative (having tested in the last 6 months), respectively.