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## Experiences of Violence and Association with Decreased Drug Abstinence Among Women in Cape Town, South Africa

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### Abstract

Drug abuse is a contributing factor in women's HIV risk in low-income communities in Cape Town, South Africa. This study assessed whether experiencing violence is associated with reduced drug abstinence among adult women ( $n = 603$ ) participating in a randomized field trial for an HIV prevention study in Cape Town. In relation to drug abstinence at 12-month follow-up, multivariable regression models were used to assess (1) baseline partner and non-partner victimization, and (2) victimization at 12-month follow-up among participants reporting baseline victimization. Baseline partner (AOR = 0.6; 95 % CI 0.4–0.9) and non-partner victimization (AOR = 0.6; 95 % CI 0.4–0.9) were associated with a reduced likelihood of drug abstinence at follow-up. Among participants who reported victimization at baseline, those no longer reporting victimization at follow-up did not differ significantly in drug abstinence compared with those who reported victimization at follow-up. The study findings highlight the lasting impact of victimization on women's drug use outcomes, persisting regardless of whether violence was no longer reported at follow-up. Overall, the findings support the need for the primary prevention of violence to address the cycle of violence, drug use, and HIV among women in this setting.

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## Keywords

Gender-based violence; Substance use; Women

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## Introduction

Illicit drug use is a major public health problem in the Western Cape Province of South Africa [1–3]. Drug use among poor South African women has been consistently associated with sex risk behaviors for HIV, including exchanging sex for drugs or money and inconsistent condom use [4–9]. Consequently, promoting abstinence from drug use has been proposed as one strategy for preventing HIV among vulnerable drug-using women [10].

Among South African women using drugs, however, the ability to achieve and maintain abstinence from drug use may be hampered by their experiences of gender-based violence (physical and/or sexual violence perpetrated by males who are often relationship partners). Gender-based violence is commonplace in South Africa, with studies reporting that between one in four and one in two women have lifetime histories of violence exposure [11–13]. Experiences of violence not only place South African women at increased risk for HIV infection [11, 14–17] but they are also a major contributing factor to women's drug use [18–20]. For women with these experiences, drug use may serve as a coping mechanism for the psychological outcomes of violence, such as trauma [20–22]. Additionally, the prevalence of drug use among male perpetrators of gender-based violence is high, and drug use is associated with increased risk of violence perpetration [23–29]. Consequently, women in relationships characterized by gender-based violence are more likely to be exposed to drug use through their male partner, which may make it more difficult for women to quit using drugs [30].

While the intersection between violence and drug use appears to be critical to informing HIV prevention efforts among women, currently our understanding of these issues is limited. The few studies that have examined whether experiences of partner violence inhibit women's ability to stop using drugs support assertions that women with histories of partner victimization have poorer treatment outcomes than women without experiences of violence [31–34]. However, relatively little has been published on the effects of non-partner gender-based violence on drug use outcomes [35]. Furthermore, no studies have examined whether programming efforts to reduce partner violence or non-partner victimization have a specific effect on women's drug use outcomes. Consequently, the present study examines the following aims among women participants of a randomized HIV and drug prevention field trial: (1) to describe the relation between women's reports of victimization at baseline and drug abstinence at follow-up; and (2) to examine whether decreases in partner and non-partner victimization between intervention assessment periods are associated with women's drug use outcomes.

## Methods

### Study Design, Recruitment and Enrollment Procedures

A randomized HIV prevention field trial was conducted among low-income communities in Cape Town between September 2008 and January 2012. The study methods have been described in detail elsewhere [35]. A total of 720 women were recruited to participate in the study, and the 603 women who completed the follow-up assessments were included in the current analyses. Eligible women were of childbearing age (18–33 years old), lived in one of the targeted communities (e.g., low income, disadvantaged), reported using at least two drugs (one of which could be alcohol) at least once a week for the past 3 months, reported being sexually active in the past month, and had not participated in the pilot study [36].

A rigorous sampling plan was developed to ensure a balanced recruitment of women across all the targeted communities. Peer outreach workers recruited participants via the distribution of marketing materials in areas frequented by potential participants, such as beauty parlors and convenience stores. Outreach workers approached potential participants and requested verbal permission to administer a brief screener to assess eligibility. If eligible, women who were interested in the study were scheduled for an intake interview where they were rescreened and enrolled in the study after giving informed consent. After enrollment, participants completed a baseline interview, provided urine specimens for drug testing, completed alcohol breathalyzer testing, and received HIV counselling and testing (HCT).

### Randomization, Intervention Conditions and Follow-Up Interviews

Following the baseline interview, participants were randomized by computer to one of three intervention conditions: 50 % were randomized to the Women's Health CoOp (WHC), the experimental intervention that addresses alcohol and other drug use risks, sexual risks for HIV, violence, and gender inequality; 25 % to the Nutrition (equal-attention) comparison group that teaches principles of healthy eating and food preparation; and 25 % to an HCT-only control group. Both the WHC and Nutrition intervention conditions were delivered in a group-based format to foster social support of women. More detailed information regarding the specific curriculum of the various intervention conditions is provided elsewhere [35, 37, 38].

After receiving the interventions, participants completed 3-, 6-, 9-, and 12-month follow-up assessments. Biological testing was conducted at the 6- and 12-month follow-up appointments only. Ethical approval for the study was granted by the Institutional Review Boards at RTI International and Stellenbosch University's Faculty of Health Sciences.

### Measures

Demographic variables included age, race/ethnicity (Black African, Coloured [people of mixed race ancestry who form a particular ethnic and cultural grouping in South Africa]), employment (any employment, no employment), educational attainment (11th grade or less, 12th grade or greater), and homelessness.

The primary outcome was biologically confirmed abstinence from drug use at 12 months. Participants gave a urine specimen that was tested using the four-panel Reditest drug test (Redwood Toxicology Laboratory) for methamphetamine, cocaine, opiates, and THC (marijuana); recent alcohol use was tested with a breathalyzer. Urine was also tested for Mandrax (methaqualone) by a drug testing laboratory using standard gas chromatography techniques. Participants were classified as abstinent if they tested negative for all drugs and not abstinent if they tested positive for one or more drugs.

A dichotomous variable was created to reflect any intimate partner violence (IPV) in the past 6 months. Women who reported any physical violence (being slapped, pushed, shoved, kicked, hit with a fist or something else; dragged; beaten, choked; or burned) or sexual violence (forced vaginal, oral, or anal sex) by an intimate partner were categorized as having prior experiences of IPV. An additional dichotomous variable was constructed to reflect “decreased IPV” between baseline and follow-up. For this variable, participants who reported IPV at baseline with no IPV at 12-month follow-up were categorized as having decreased exposure to IPV.

In addition, a dichotomous variable (i.e., “prior exposure to non-partner victimization”) was constructed to reflect any physical or sexual victimization by someone other than their main relationship partner in the past 6 months. Non-partner physical victimization included reports of having been beaten up, having been cut by a knife, having been shot at, or having been threatened with a weapon in the past 6 months. Non-partner sexual victimization included reports of being forced to have sex, being forced to have sex with more than one person at a time, or being gang raped. To assess decreases in non-partner victimization between baseline and follow-up, a dichotomous variable was constructed, “decreased non-partner victimization.” Participants who reported non-partner victimization at baseline but no non-partner victimization at 12-month follow-up were classified as having decreased non-partner victimization.

## Data Analysis

Initially, interactions by intervention condition (experimental, comparison, and control groups) were examined to understand differential effects of violence on drug abstinence using generalized linear mixed models, with repeated measures at baseline, 6, and 12 months. Time was coded as a categorical measure with an unstructured covariance error structure, as preliminary analyses revealed that alternative specifications of the functional form (e.g., linear) of time and covariance structure (e.g., autoregressive) were not appropriate for these data. There were no significant interaction effects of violence by intervention arm, with all groups demonstrating significant changes in abstinence from baseline to 12-month follow-up. The WHC experimental condition had the greatest increases in drug use abstinence; however there were no statistically significant differences in decreased victimization reported by intervention condition. Given that there were no significant interaction effects by condition, these groups were combined in the models examining the relation between victimization and drug use outcomes (with intervention condition included as a covariate). Crude (adjusted for intervention condition only) and then adjusted (adjusted for condition and relevant demographic variables) logistic regression

models were used to examine drug abstinence at 12-month follow-up in relation to (1) baseline experiences of IPV (past 6 months), (2) baseline reports of non-partner victimization (past 6 months), and (3) victimization no longer reported at 12-month follow-up among those reporting baseline victimization. All demographic variables were examined in relation to drug use abstinence and those that were statistically significantly associated ( $p < 0.05$ ) with drug abstinence were included in adjusted regression analyses. All analyses were conducted using SAS version 9.1 (SAS Institute Inc, Cary, North Carolina).

## Results

### Sample Characteristics

The mean age of the sample ( $n = 603$ ) was 23 (standard deviation = 1.8 years). Just under half of the sample (43 %) identified as Black African; the remaining 57 % identified as Coloured. Most (90 %) participants were unemployed, 2 % were homeless, and 89 % had an 11th-grade education or less. Only 19 % of participants with an 11th-grade education or less were abstinent at 12-month follow-up, compared with 33 % of participants with at least a 12th-grade education ( $\chi^2 = 6.5, p < 0.01$ ). Black African participants were most likely to report drug abstinence at follow-up, with 33 % reporting abstinence, compared with only 11 % of Coloured participants ( $\chi^2 = 42.5, p < 0.0001$ ). Other demographic variables were not significantly associated with drug abstinence at 12-month follow-up and are not shown.

At baseline, just over half (51 %) of participants reported prior experiences of non-partner victimization; 49 % of the sample reported non-partner physical victimization and 8 % reported non-partner sexual victimization. Approximately one third (33.3 %) reported IPV exposure in the 6 months prior to baseline assessment.

### Association Between Exposure to IPV, Non-partner Victimization, and Drug Abstinence

The logistic regression model findings indicate that recent IPV exposure (odds ratio [OR] = 0.5; 95 % confidence interval [CI] 0.3–0.7), and exposure to non-partner victimization (OR = 0.4; 95 % CI 0.3–0.6) were associated with decreased likelihood of abstinence from drug use at follow-up (Table 1). After adjusting for the influence of race/ethnicity and education on abstinence, these associations remained significant. Participants exposed to IPV (adjusted odds ratio [AOR] = 0.6; 95 % CI 0.4–0.9) or non-partner victimization (AOR = 0.6; 95 % CI 0.4–0.9) had a 40 % decreased likelihood of abstinence from drug use at follow-up compared with participants without exposure to these forms of violence.

Among participants who reported victimization at baseline, those no longer reporting victimization at follow-up did not differ significantly in drug abstinence compared with participants who continued to report victimization at follow-up. Models adjusting for the influence of race/ethnicity and education on abstinence produced similar findings.

## Discussion

Overall, the findings suggest that experiencing non-partner or partner victimization impedes women's ability to achieve abstinence from drug use within the context of an integrated drug and HIV risk-reduction program. These findings extend those of earlier studies that

documented the effects of IPV on increasing women's drug use, and build on the few existing studies that documented the negative effect of victimization on drug intervention outcomes among women [32–34]. Specifically, we found that even after controlling for other factors associated with drug use abstinence, experiencing IPV or non-partner victimization was associated with a 40 % decreased likelihood of achieving abstinence. The deleterious effects of victimization on drug abstinence is also a particular concern given that continuing drug use among women participating in an HIV risk-reduction program is likely to impact negatively on HIV prevention goals. Consequently, the findings underscore the intersection of gender-based violence and drug use in increasing women's risk for HIV, which can potentially impede ongoing HIV prevention efforts among women, particularly in contexts where drug use is widespread.

In addition, the findings indicate that not only does previous victimization (reported at baseline as occurring within the past 6 months) affect women's drug use outcomes at 12-month follow-up, but prior victimization also continues to affect women's drug outcomes, even when there is no additional exposure to victimization. Given these lasting effects when violence is no longer reported, the findings suggest that time needed for healing and coping with experiences of violence may partly explain the association between victimization and reduced drug abstinence observed during this study. While women may have greater exposure to or access to drugs in contexts where violence is occurring (e.g., from abusive male partners), we did not find that drug abstinence was improved when reductions in violence were reported and the findings do not support this as a mechanism for explaining the observed associations. More work is needed however, to better understand these and other possible mechanisms underpinning the study findings.

While studies have shown the benefits (in terms of drug use outcomes) of helping women heal from their experiences of trauma within the context of drug treatment programs for women with histories of abuse [33, 34], the current study suggests that compared with women who do not have experiences of victimization, those with such experiences fare worse in terms of drug abstinence outcomes. Consequently, efforts to help women heal from experiences of victimization, while essential, may take longer to have a measurable impact on drug use. Efforts are needed to identify other ways to help women reduce the impact of victimization on their drug use, such as identifying mechanisms other than drug use that will help women cope with victimization experiences.

Most notably, the findings suggest that more efforts are needed to prevent victimization experiences among women, such as focusing on the *primary prevention* of violence against women. These efforts likely need to engage the larger community (including men) to address the structural, gender-based, and social factors that are the primary determinants of violence in this context [39–41]. For example, previous work in South Africa has used community mobilization strategies effectively to engage the community on issues of the prevention of violence against women [39–41]. Similar strategies may be useful to address violence in contexts where drug use intersects with violence in determining women's HIV risk. Drawing from this previous work using structural approaches for the prevention of violence and HIV risk among women, more work is needed to examine ways of engaging both men and women at the community level to prevent violence against women.



The current study has several limitations that may have affected the findings. First, reliance on self-reported experiences of violence may have resulted in the underreporting of women's experiences of victimization; however, the prevalence of violence was very high nonetheless. Second, as this study examined experiences of violence in the previous 6 months, more work is needed to understand the effects of victimization across the life-course, and particularly the effects of early life experiences of victimization, on drug use outcomes. Third, the parent study was not powered to detect the effect of the intervention on HIV incidence; consequently more work is needed to understand the impact of violence on not only drug abstinence but also on drug and sex risk behaviors as well as HIV incidence.

These limitations notwithstanding, the current study documents the high prevalence of victimization reported by women and that such violence is perpetrated by both male partners and non-partners. Furthermore, the findings highlight how experiences of violence negatively impact drug use outcomes among women in our study population. Specifically, experiences of violence have a powerful and lasting influence on women's drug use outcomes. This observed impact suggests that broader community-level efforts, such as addressing structural and social determinants of violence, to prevent initial and recurrent victimization are essential for maximizing drug abstinence. Together, community-level efforts to prevent women's experiences of violence and women-centered programs that support women on issues of victimization—particularly to reduce the impact of victimization on women's drug use—may be critical to address the cycle of violence, drug use, and HIV among women in communities with high HIV prevalence in Cape Town.

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**Table 1**

The association between women's reports of victimization and reduced substance use abstinence at 12-month follow-up

Baseline victimization	Total (n = 603) % (n)	Drug abstinence at follow-up (n = 126) % (n)	No drug abstinence at follow-up (n = 477) % (n)	Crude odds ratio (95 % CI) <sup>^</sup>	Adjusted odds ratio (95 % CI) <sup>*</sup>
Intimate partner violence victimization					
Yes	33.3 (201)	21.4 (27)	36.5 (174)	0.5 (0.3–0.7) <sup>≠</sup>	0.6 (0.4–0.9) <sup>†</sup>
No	66.7 (402)	78.6 (99)	63.5 (303)	1.0 Referent	1.0 Referent
Non-partner physical or sexual victimization					
Yes	50.9 (307)	35.7 (45)	54.9 (262)	0.4 (0.3–0.6) <sup>≠</sup>	0.6 (0.4–0.9) <sup>†</sup>
No	49.1 (296)	64.3 (81)	45.1 (215)	1.0 Referent	1.0 Referent
Changes in victimization between baseline and follow-up					
Reporting intimate partner violence at baseline	(n = 201) % (n)	(n = 27) % (n)	(n = 174) % (n)		
No intimate partner violence victimization at follow-up					
Yes	72.6 (146)	77.8 (21)	71.8 (125)	1.4 (0.5–3.6)	1.2 (0.4–3.3)
No	27.4 (55)	22.2 (6)	28.2 (49)	1.0 Referent	1.0 Referent
Reporting non-partner physical or sexual victimization at baseline	(n = 307) % (n)	(n = 45) % (n)	(n = 262) % (n)		
No non-partner physical or sexual victimization at follow-up					
Yes	63.2 (194)	68.9 (31)	62.2 (163)	1.4 (0.7–2.7)	1.3 (0.6–2.7)
No	36.8 (113)	31.1 (14)	37.8 (99)	1.0 Referent	1.0 Referent

<sup>^</sup> Crude models are adjusted for treatment group

<sup>\*</sup> Adjusted models include treatment group, race/ethnicity, and education

<sup>†</sup>  $p < 0.05$ , Wald;

<sup>≠</sup>  $p < 0.01$ , Wald;

<sup>≠</sup>  $p < 0.0001$ , Wald