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The Association between Intimate Partner Violence and Women's Distribution and Use of HIV Self-Tests with Male Partners: Evidence from a Cohort Study in Kenya

Elisabeth M. SCHAFFER, MA¹, Kawango AGOT, PhD², Harsha THIRUMURTHY, PhD^{1,3}

¹Department of Health Policy and Management, University of North Carolina at Chapel Hill, United States

²Impact Research and Development Organization, Kisumu, Kenya

³Carolina Population Center, Chapel Hill, United States

Increasing awareness of HIV status is essential for meeting the first of the UNAIDS 90–90–90 targets (1). Low rates of HIV testing among men and couples constitute missed opportunities to link individuals to appropriate interventions and prevent HIV transmission (5–7). Innovative strategies are therefore needed to promote HIV testing among men and couples. HIV self-testing (HIVST) is a promising approach that has high acceptability in diverse settings and populations (8–11). Following the World Health Organization's recent call for the scale-up of HIVST (12), there is a vital need for strategies that can make self-tests available to individuals who do not utilize existing HIV testing services (10,13). One approach that has shown promise is the provision of multiple self-tests to women seeking antenatal and postpartum care for the purpose of “secondary distribution” to male partners.

Two recent studies of the secondary distribution approach in Kenya have shown that HIV-negative women are willing and able to distribute self-tests to their male partners, and that this approach results in high rates of partner and couples self-testing (14,15). However, it is unknown whether a history of intimate partner violence (IPV) with one's partner reduces the likelihood of partner and couples self-testing. Given the high prevalence of IPV in sub-Saharan Africa (16–19), understanding the link between IPV and self-testing outcomes is important for assessing the potential impact and overall safety of secondary distribution approaches. We conducted a secondary analysis of data from a cohort study in Kenya (14) to explore whether recent IPV history affected the likelihood that women given multiple self-tests achieved partner and couples self-testing.

In the cohort study, women were recruited from antenatal and postpartum care clinics in the high HIV prevalence, urban setting of Kisumu (20). Women were eligible if they were 18–39 years of age, HIV-negative, and had a primary sexual partner. Women were excluded from participation if they thought that offering a self-test to their primary partner would

Corresponding author: Elisabeth Schaffer, Department of Health Policy and Management, University of North Carolina at Chapel Hill, 1101-E McGavran-Greenberg Hall, CB 7411, Chapel Hill, NC, USA 27599-7411, Tel: 919-907-9190, Fax: 919-966-6961, emschaff@live.unc.edu.

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result in violence. Safety was monitored throughout the study. The study received ethical approval from the University of North Carolina at Chapel Hill and the Kenya Medical Research Institute.

Women who provided informed consent were given three oral fluid-based rapid HIV tests (OraQuick Rapid HIV-1/2 antibody tests, OraSure Technologies, Bethlehem, PA, USA) to use themselves or offer to others. They received test-use instructions and modest encouragement to offer the self-tests to their sexual partners. Participants' demographic characteristics and IPV history over the past 12 months were assessed at enrollment. In the three months after enrollment, participants were administered follow-up questionnaires that assessed whether and how they used the self-tests.

Participants were defined as having experienced IPV in the 12 months prior to enrollment if they responded 'yes' to either or both of the following questions with regard to their primary partner: "In the past 12 months, has your partner pushed, grabbed, slapped, choked, hit or kicked you?" or "In the past 12 months, has your partner forced you to have sex when you did not want to?"

Partner and couples self-testing were defined according to whether a participant's primary partner used a self-test and, if so, whether he self-tested alone or whether the participant and the partner self-tested at the same time. The primary outcome indicated whether partner self-testing did not occur, partner self-testing occurred (but couples self-testing did not), or couples self-testing occurred.

We performed multinomial logistic regression to determine whether IPV history was associated with the partner and couples self-testing outcomes. For both of these outcomes, the reference group consisted of participants who reported that neither partner or couples self-testing occurred. Participants' demographic characteristics, perceived risk of acquiring HIV, and prior partner testing were included as covariates.

Restricting the sample to participants for whom partner or couples self-testing was achieved, we also performed logistic regression to determine whether IPV history was associated with couples self-testing having occurred rather than partner self-testing. Variables indicating whether a partner had a neutral or negative reaction to being offered a self-test and whether the participant experienced difficulty encouraging her partner to use a self-test were included as additional covariates. We estimated unadjusted and adjusted odds ratios (aOR) and 95% confidence intervals (CI) for all analyses. Analyses were conducted using Stata14.1 (StataCorp, College Station, TX, USA).

A total of 176 participants were enrolled and 162 (92%) provided complete follow-up information. Thirty-four participants (21%) experienced IPV in the 12 months prior to enrollment. For 18 participants (11%), their primary partner did not self-test during the follow-up period, while for 55 participants (34%) their partner self-tested and for 89 participants (55%) the partner and the participant both self-tested (couples self-testing).

Table 1. shows that IPV history with one's primary partner reduced the likelihood of partner self-testing occurring (OR 0.21, 95% CI 0.06 – 0.70; aOR 0.10, 95% CI 0.02 – 0.46) and of

couples self-testing occurring (OR 0.32, 95% CI 0.11 – 0.92; aOR 0.13, 95% CI 0.03 – 0.54). Partner self-testing was also less likely if a woman perceived her risk of acquiring HIV to be moderate or high (OR 0.17, 95% CI 0.04 – 0.68), a finding that was only statistically significant in unadjusted analysis.

Among participants who reported that their partner self-tested for HIV, IPV history was not significantly associated with partner versus couples self-testing (results not shown). However, couples self-testing was less likely if the partner responded with a neutral or negative reaction to the offer of a self-test (OR 0.37, 95% CI 0.15 – 0.91; aOR 0.32, 95% CI 0.12 – 0.87) or if it was not easy for the participant to encourage her partner to test (OR 0.31, 95% CI 0.11 – 0.83; aOR 0.26, 95% CI 0.09 – 0.76).

Within the context of an intervention in which women received multiple oral fluid-based self-tests, we found that IPV history generally led to a lower likelihood that partner or couples self-testing occurred. The results suggest that IPV could partially limit the success of interventions that seek to increase male partner testing rates through provision of self-tests to women, while also reducing risks of such intervention resulting in additional IPV. Given that women who believed violence would result from offering a self-test to their partner were excluded from participation in the parent study, the association reported here may be stronger in the general population of women seeking health services.

Despite the negative association between IPV history and self-testing outcomes, it is notable that a large majority (89%) of women reported that their partner used a self-test and that even among participants who reported IPV history, relatively high rates of partner or couples self-testing were reported (77%). Moreover, a randomized trial conducted in Kenya has since demonstrated that secondary distribution of HIV self-tests by women to their male partners is considerably more effective at promoting partner and couples testing than providing women invitation cards to encourage their partners to attend clinic-based testing (15). These findings suggest that although IPV is common and could reduce the likelihood that women distribute and use self-tests with their male partners in Kenya, secondary distribution of HIV self-tests is an effective approach to promoting HIV testing among male partners and might hold advantages for expanding testing among men who do not seek to test at health facilities.

This study has several limitations that could influence the generalizability of our results. HIV-positive women were excluded from participation. Exposure to IPV and factors influencing decisions to offer a self-test to a sexual partner likely vary for HIV-positive women. Enrollment of participants was also limited to women attending antenatal and postpartum care. Although these services are well attended by women in Kenya (21), our sample is not representative of all sexual partnerships. We further did not examine IPV history or distribution of self-tests to non-primary partners. Despite these limitations, our study did focus on a population that has broad reach to male partners and for whom identification of partner HIV status is of particular importance, given the elevated risk of infection during pregnancy and postpartum (22–24).

Following the WHO guidelines recommending HIVST (12), interventions relying on self-tests are likely to become more feasible. Secondary distribution of self-tests by women to their male partners has achieved high rates of partner and couples self-testing (14,15). However, a high prevalence of IPV in sub-Saharan Africa will likely limit secondary distribution interventions from attaining their full potential. We encourage investigation of alternative strategies to increase HIV testing in partnerships with IPV history. Engaging men to distribute self-tests to their male peers could be an additional approach to expand testing among men.

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Table 1.

Unadjusted and adjusted odds ratios (aOR) and 95% confidence intervals (CI) for characteristics associated with self-testing outcomes¹

Characteristic	Total participants n (%)	Self-testing outcomes			
		Partner self-testing (n = 55)		Couples self-testing (n = 89)	
		OR (95% CI)	aOR (95% CI)	OR (95% CI)	aOR (95% CI)
History of IPV in past 12 mo.					
Did not experience IPV	128 (79)	Ref.	Ref.	Ref.	Ref.
Experienced IPV	34 (21)	0.21 ^{***} (0.06 – 0.70)	0.10 ^{***} (0.02 – 0.46)	0.32 ^{**} (0.11 – 0.92)	0.13 ^{***} (0.03 – 0.54)
Perceived risk of HIV					
No or low risk	105 (65)	Ref.	Ref.	Ref.	Ref.
Moderate or high risk	28 (17)	0.17 ^{***} (0.04 – 0.68)	0.25 (0.05 – 1.23)	0.35 (0.11 – 1.08)	0.46 (0.12 – 1.77)
Unknown risk	28 (17)	1.46 (0.28 – 7.71)	4.10 (0.47 – 35.58)	1.07 (0.21 – 5.50)	2.74 (0.34 – 22.28)
Partner tested for HIV in past 12 mo.					
No	19 (12)	Ref.	Ref.	Ref.	Ref.
Yes	113 (70)	1.59 (0.35 – 7.27)	1.42 (0.20 – 10.12)	2.20 (0.51 – 9.53)	2.51 (0.41 – 15.33)
Don't know	30 (19)	0.94 (0.17 – 5.25)	0.44 (0.06 – 3.49)	0.93 (0.18 – 4.90)	0.62 (0.09 – 4.16)
Observations	162	-	160	-	160

¹In multinomial logistic regression, the likelihood of partner and couples self-testing is compared to the likelihood that the partner did not test (n = 18);

^{**}p < 0.01,

^{***}p < 0.001. Demographic characteristics included in adjusted analyses were the participant's age, marital status, level of education, and whether she had any living children.