

## Risk factors for physical domestic violence in a high-prevalence HIV setting: findings from Project Accept baseline data (HPTN-043)

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### Abstract

Zimbabwe faces an acute generalized HIV/AIDS epidemic combined with rapidly deteriorating economic and political conditions, under which levels of domestic violence are on the rise. We aimed to determine possible demographic and behavioral factors associated with physical domestic violence in a rural setting in order to better inform both national and local domestic violence and HIV prevention policies. Using the Project Accept baseline data set, we selected demographic, socio-economic, and behavioral variables that might be associated with physical domestic violence based on a review of the literature. Univariate and multivariate analyses were carried out, and odds ratios (OR) were computed using logistic regression. Women reporting physical domestic violence were significantly more likely to report (i) a history of childhood domestic violence (OR=2.96, P<0.001), (ii) two or more lifetime partners (OR=1.94, P<0.001), (iii) some form of sexual abuse as a child (OR=1.82, not significant), and (iv) low or medium socio-economic status as measured by type of homestead (OR=1.4, P=0.04) than women who reported no experience of physical domestic violence. Married women were less likely to experience physical domestic violence than unmarried women (OR=0.65, P=0.011). Women at greatest risk of domestic violence include those with a personal history of violence or sexual abuse, multiple lifetime partners, and low or medium socio-economic status. Risk assessments and joint interventions for both domestic violence reduction and HIV prevention should target these population groups, which are effective both on the public health and global health diplomacy levels.

### Introduction

Domestic violence (defined here as violence or physical abuse directed toward a spouse or domestic partner; and usually taking the form of violence by men against women) is an international problem,<sup>1</sup> is increasingly recognized as a critical public health issue,<sup>2</sup> and was declared a violation of human rights by the United Nations General Assembly in 1993.<sup>3</sup> Globally, the prevalence of domestic violence has wide variations by region and is estimated to occur in between 10% and 69% of domestic environments,<sup>1</sup> with a generally higher prevalence in developing countries.<sup>2</sup> However, due to stigma, fear of further violence, and family sanctions, among other reasons, there may be significant under-reporting of such acts. A recent household survey of eight southern African countries indicated that 18% of women had experienced domestic violence in the past year.<sup>4</sup> While domestic violence can affect either gender, women are particularly at risk. In a recent survey in South Africa, one in three of the 759 women interviewed were living in an abusive relationship, with rates as high as 42% in some provinces.<sup>5</sup> In Zimbabwe, a national household survey reported that 19% of women and 17% of men had experienced physical violence at the hands of their partners during the preceding year.<sup>4</sup>

In African countries, the association between domestic violence and HIV/AIDS is of particular concern. A number of reports from sub-Saharan Africa have revealed an association between violence, sexually transmitted infections (STIs)<sup>6</sup> and, more specifically, HIV infection in women.<sup>7-13</sup> A range of associations between domestic violence and HIV has also been documented. Acts of domestic violence, which include sexual assault, are frequently associated with STI infections such as bacterial vaginosis.<sup>14</sup> Similarly, the risk of domestic violence may also affect women's ability to negotiate condom use,<sup>5</sup> a key HIV prevention mechanism, at least partially due to the associated erosion of self-esteem. In Kenya, knowledge and disclosure of HIV status has also been shown to produce acts of domestic violence.<sup>15</sup> In Zimbabwe, domestic violence has been identified as a key risk factor for HIV transmission.<sup>16</sup> The World Health Organization reports that between 4% and 15% of women in developing countries experience violent acts perpetrated by their partners after disclosure.<sup>17</sup> Domestic violence has been shown to diminish involvement in prevention of mother-to-child transmission services,<sup>18</sup> with HIV-positive women almost 5 times more likely to report domestic violence as compared to their HIV-negative counterparts. These are important findings given the high prevalence

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of HIV in sub-Saharan Africa, where approximately 22 million adults are infected, of which 58% are female.<sup>19</sup> In Zimbabwe, 1.4 million people are living with HIV/AIDS<sup>20</sup> and 16% of all adults are HIV positive, representing the fourth highest national HIV prevalence in the world. Fifty-nine percent of those infected (or approximately 720,000 people) are women, and females make up nearly eighty per cent of young people between the ages of 15 to 24 infected with HIV.

Socio-cultural factors in many sub-Saharan countries may also facilitate domestic violence. There is widespread tolerance of violence in countries such as Zimbabwe, particularly within marriage. Culturally, a woman has no right to question the authority or behavior of her husband. Similarly, men's behavior may

be condoned as long as they are not separated or divorced.<sup>21</sup> Approximately 64% of Zimbabweans live on less than US\$2 per day, and 35% are living under the national poverty line.<sup>22</sup> Under these circumstances, women are also frequently forced into transactional sex to help to provide for their family, while simultaneously facing the prospect of destitution in the event of separation from their husband.<sup>23</sup> The investigation of factors associated with domestic violence in Zimbabwe is therefore particularly important at this time. In this context, we aimed to determine possible demographic, behavioral and environmental factors associated with physical domestic violence in a rural Zimbabwean setting. We used baseline data collected as part of larger study, which examined the impact of community-based voluntary counseling, and testing services on HIV incidence and stigma (Project Accept) which has been described elsewhere.<sup>24</sup> Forty-eight communities [10 in Tanzania, 8 in Zimbabwe, 16 in South Africa (8 in Soweto and 8 in Kwa-Zulu Natal), and 14 in Thailand] were randomized to receive either a community-based HIV voluntary counseling and testing (VCT) intervention or standard clinic-based VCT.

## Materials and Methods

### Population and sampling

Baseline assessment methods have been described elsewhere<sup>24</sup> and involved a two-stage probability sample conducted during 2005 and 2006. Briefly, using predefined criteria, trained study staff conducted an enumeration of households in selected study communities. Households were then selected randomly. Each selected household was approached, and an identified head of household was provided with an explanation of the study. An enumeration of the members of the household was then conducted with the head of household. At the time of enumeration of the household members, one person in the 18-32 year age range was randomly selected. The selected household member was then invited to participate in the study. Up to two repeat visits were made until contact was established with the selected household member.

Enumerated household members were considered eligible to participate in the baseline survey if they were aged 18-32 years, had lived in the community at least 4 months in the past year, and slept regularly in their household at least 2 nights per week. Minimum recruitment goals for each community were at least 200 individuals in each of 8 study communities in Zimbabwe. A total of 5116 households were visited, of which 95.3% were enumerated and 2871 interviews were completed (84% of per-

sons selected). Since the assessment was anonymous, no follow-up on missing or inconsistent data was possible.

The selected household member was asked to provide verbal consent. Interviewers were trained on the importance of ensuring privacy during the interview. Other members of the household were not permitted to observe the interview, and if the head of household refused to allow the interview to take place in privacy, the interview was forfeited. Participants could voluntarily withdraw from the assessment at any time, and choose not to have their responses submitted to the study team. Interviews were conducted in the local dialect (Shona), and respondents were reminded at the start of the interview that although the questions might be embarrassing or uncomfortable, it was important to provide the most honest answer possible.

Baseline questionnaires were transmitted by fax to DataFax centers and converted into electronic form. The data were further processed by the Project Accept Statistical Center. Questionnaires obtained through incorrect sampling mechanisms were excluded from the database. Data were exported into text-based SAS program files (SAS Institute Inc., Cary, NC, USA).

### Sample and measures

Given that our focus was on physical domestic violence in the context of HIV transmission, the study population for this analysis was limited to sexually active females. This population was defined as all current or previously sexually active female respondents between 18 and 32 years of age. The baseline questionnaire contained the following question on physical domestic violence: *Have you ever had a sexual partner (including a current or former spouse, boyfriend/girlfriend, or other sexual partner) that has hit, slapped, kicked, pushed, shoved or otherwise physically hurt you?* Those who reported being physically hurt by a sexual partner were classified as physical domestic violence victims. Other forms of domestic violence, such as psychological or sexual violence, were not explicitly measured in the questionnaire.

### Statistical analysis

Using the baseline data set for Zimbabwe, we selected demographic, socio-economic, and behavioral variables that might be associated with physical domestic violence based on a review of the literature. Amongst other demographic questions, respondents were asked about their age, marital status, and whether or not they had a current sexual partner. Female respondents were asked if their husbands had more than one wife, and if so, how many wives their husbands currently had. Respondents were also asked about their religion and provided with a range of choices, including

Pentecostal, Catholic, Muslim, African or traditional, Protestant, Apostolic, and atheist.

Socioeconomic status was assessed by asking respondents about what assets they possessed (such as electricity, refrigerator or television), what standard of toilet facility they had, and the size and style of their houses (thatch, asbestos, or corrugated tin; presence of a kitchen or bedroom). Due to the lack of an effective single measure of economic status in this environment, we included all available measures in this analysis. Respondents were asked about the highest level of formal school completed. These included no formal education, primary education, Form Two (Zimbabwe Junior Certificate), Form Four (O-level), Form Six (A-level), and college or tertiary education.

Behavioral variables were divided into two categories: general health risk behaviors included days of alcohol use in the prior month, number of times intoxicated in the past 30 days, and forced sexual experiences (child abuse) or physical violence (child violence) before the age of twelve years. HIV-related behavioral variables included lifetime and current number of sexual partners.

Univariate and multivariate analyses were carried out. Odds ratios (OR) were computed using logistic regression to compare each subgroup to the reference group. In the logistic model, odds ratios were adjusted for the other variables present in the model. All analyses were conducted using STATA version 9.0 (StataCorp., College Station, TX, USA).

## Results

The characteristics of all respondents to the baseline survey have been described elsewhere.<sup>24</sup> Briefly, the mean age was 25 years old for women and 23 years old for men. Fifty-seven per cent of respondents were female. Forty per cent of women and 55% of men reported 5 to 10 years of education. Fifty-nine per cent of women and 30% of men were married.

### Sample characteristics

Table 1 describes the overall study sample in terms of sexual activity and physical domestic violence. The survey had 2874 respondents, of whom 2275 reported being sexually active (79.2%). Of these, 1612 (70.9%) had been sexually active during the prior six months, 213 (9.4%) had been victims of physical domestic violence, and 96 (4.2%) had been assaulted during the prior six months. HIV status was self-reported, and as such was considered an unreliable estimate of HIV prevalence and therefore excluded from the analysis. Of 1637 female respondents, 1362 (83.5%) were sexually active. Of these, 169 (12.4%) had ever

been victims of physical domestic violence and 74 (5.4%) had been assaulted during the last six months. Significantly more physical domestic violence victims were female than male (OR=3.04;  $P<0.001$ ) and we focus on the characteristics of these female victims here.

### Significant associations

Table 2 presents the associations between socio-demographic characteristics and experience of physical domestic violence for sexually active female respondents. Women reporting physical domestic violence were significantly

more likely to report (i) a history of childhood domestic violence (OR=2.96,  $P<0.001$ ), (ii) two or more lifetime partners (OR=1.94,  $P<0.001$ ), (iii) some form of sexual abuse as a child (OR=1.82, not significant), and (iv) low or medium socio-economic status as measured

**Table 1. Sample characteristics: sexual activity and physical domestic violence.**

| Gender | No.  | Ever sexually active % | Sexually active last 6 months* % | Violence victim ever* % | Violence victim last 6 months* % |
|--------|------|------------------------|----------------------------------|-------------------------|----------------------------------|
| Female | 1637 | 1362 (83.5)            | 1015 (75.1)                      | 169 (12.4)              | 74 (5.4)                         |
| Male   | 1237 | 913 (74.2)             | 597 (65.8)                       | 44 (4.8)                | 22 (2.4)                         |
| Total  | 2874 | 2275 (79.2)            | 1612 (70.9)                      | 213 (9.4)               | 96 (4.2)                         |

\*Percent among those reporting ever having been sexually active.

**Table 2. Socio-demographic characteristics of ever sexually active women and associations with physical domestic violence: bivariate results (n=1362).**

| Variable                           | Category     | No.  | Violence victim ever (%) | OR   | P-value      |
|------------------------------------|--------------|------|--------------------------|------|--------------|
| Community                          | 1            | 148  | 20 (13.5)                | 1    | $\leq 0.88$  |
|                                    | 2            | 211  | 24 (11.4)                | 0.82 |              |
|                                    | 3            | 204  | 28 (13.7)                | 1.02 |              |
|                                    | 4            | 180  | 25 (13.9)                | 1.03 |              |
|                                    | 5            | 156  | 15 (9.6)                 | 0.68 |              |
|                                    | 6            | 149  | 16 (10.7)                | 0.77 |              |
|                                    | 7            | 162  | 23 (14.2)                | 1.06 |              |
|                                    | 8            | 151  | 18 (11.9)                | 0.87 |              |
| Age group                          | 18-22        | 371  | 55 (14.8)                | 1    | $\leq 0.22$  |
|                                    | 23-27        | 417  | 51 (12.2)                | 0.8  |              |
|                                    | 28-32        | 573  | 63 (11.0)                | 0.71 |              |
| Marital status                     | Unmarried    | 404  | 64 (15.8)                | 1    | $\leq 0.02$  |
|                                    | Married      | 957  | 105 (11.0)               | 0.65 |              |
| Education                          | Primary      | 503  | 75 (14.9)                | 1    | $\leq 0.08$  |
|                                    | Form 2 (ZJC) | 356  | 36 (10.1)                | 0.63 |              |
|                                    | O-Level +    | 501  | 58 (11.6)                | 0.75 |              |
| Religion                           | Apostolic    | 655  | 86 (13.1)                | 1    | $\leq 0.11$  |
|                                    | Other        | 606  | 67 (10.3)                | 0.83 |              |
|                                    | None         | 97   | 16 (16.5)                | 1.30 |              |
| SES (by homestead)                 | High         | 885  | 99 (11.2)                | 1    | $\leq 0.04$  |
|                                    | Medium/low   | 476  | 70 (14.7)                | 1.40 |              |
| SES (by toilet)                    | High         | 757  | 98 (12.9)                | 1    | $\leq 0.56$  |
|                                    | Medium/low   | 604  | 71 (11.8)                | 0.9  |              |
| SES (by assets)                    | High         | 159  | 15 (9.4)                 | 1    | $\leq 0.28$  |
|                                    | Medium/low   | 1202 | 154 (12.8)               | 1.41 |              |
| Multiple wives                     | No           | 1272 | 158 (12.4)               | 1    | $\leq 0.95$  |
|                                    | Yes          | 86   | 11 (12.8)                | 1.03 |              |
| Experienced child sexual abuse     | No           | 1301 | 157 (12.1)               | 1    | $\leq 0.1$   |
|                                    | Yes          | 60   | 12 (20.0)                | 1.82 |              |
| Experienced other child violence   | No           | 1155 | 117 (10.1)               | 1    | $\leq 0.001$ |
|                                    | Yes          | 204  | 52 (25.5)                | 3.04 |              |
| Sexually active in last 6 months   | No           | 336  | 42 (12.5)                | 1    | $\leq 0.95$  |
|                                    | Yes          | 1014 | 126 (12.4)               | 0.99 |              |
| Lifetime number of partners        | 1            | 937  | 95 (10.1)                | 1    | $\leq 0.001$ |
|                                    | 2-3          | 351  | 64 (18.2)                | 1.98 |              |
|                                    | >3           | 60   | 10 (16.7)                | 1.77 |              |
| Multiple partners in last 6 months | No           | 1322 | 164 (12.4)               |      | NS           |
|                                    | Yes          | 23   | 4 (17.4)                 |      |              |
| Alcohol use in last 30 days        | Abstinent    | 1313 | 162 (12.3)               | 1    | $\leq 0.77$  |
|                                    | Occasional   | 30   | 5 (16.7)                 | 1.42 |              |
|                                    | Regular      | 9    | 1 (11.1)                 | 0.89 |              |
| Drunk in last 30 days              | No           | 1340 | 165 (12.3)               |      | NS           |
|                                    | Yes          | 12   | 3 (25.0)                 |      |              |

OR, odds ratio; ZJC, Zimbabwe Junior Certificate; SES, socio-economic status; NS, not significant.

by type of homestead (OR=1.4, P=0.04) than women who reported no experience of physical domestic violence. Married women were less likely to experience physical domestic violence than unmarried women (OR=0.65, P=0.011), including unmarried women in partnerships. Respondents reporting multiple sexual partners in the last six months were more likely to report physical domestic violence (17.4% vs 12.4%). Although very few women reported having been drunk in the past 30 days, those that had were more than twice as likely to report physical violence compared to women who had not (25% vs 12.3%). There was no association between domestic violence and community of origin, age group, education level, religion, number of other wives, or sexual activity over the prior six months.

### Multiple logistic regression

Variables significantly associated with physical domestic violence in bivariate analyses (P≤0.05) were included in a multiple logistic regression model (Table 3). In this model, low socio-economic status [OR=1.41, 95% confidence interval (CI)=1.01 to 1.99], a history of child violence (OR=2.83, 95% CI=1.95 to 4.11) and multiple (between 2 and 3) lifetime partners (OR=1.78, 95% CI=1.25 to 2.53) remained associated with physical domestic violence after adjusting for the other factors in the model.

## Discussion

In the present study, sexually active women who had experienced some form of domestic violence as a child, had two or more partners in their lifetime, or who classified themselves as low or medium socio-economic status (as measured by homestead type), were significantly more likely to report ever having been victims of physical domestic violence after adjusting for other potential predictors. In bivariate analyses, physical domestic violence

was more common among sexually active women who were unmarried, but these results became non-significant in the multivariate analysis. There were no significant associations with age, educational attainment, religion, multiple wives, community of origin, or alcohol use.

The association between domestic violence as a child and again later in life as an adult is in keeping with findings from other studies.<sup>25,26</sup> In South Africa, significant associations between perpetration of violence against intimate partners and experience of physical abuse during childhood have been found.<sup>27</sup> This indicates that exposure to violence frequently affects people throughout their lives, and is not a uniquely adult phenomenon. More specifically, experience of childhood sexual assault has been shown to increase risk behaviors associated with HIV acquisition in adulthood.<sup>28</sup> Experience of childhood sexual and physical abuse has been shown to be associated with dramatic increases in HIV risk behaviours in adulthood in both men and women.<sup>29</sup> Between one-third and one-half of respondents in a general-population survey reporting HIV risk behaviors also reported childhood abuse. As such, policies that address domestic violence may need to begin by addressing violent acts perpetrated against children, and not limit their focus to adults.

Links between low socio-economic status and domestic violence have also been found in other studies. Economic strain may easily spill over into domestic violence, and the deteriorating economic environment in Zimbabwe, including food insecurity, has, inevitably, led to increased tension in the home. Police and non-governmental organizations (NGOs) in Zimbabwe have reported a recent upsurge in gender-based violence.<sup>30</sup> Policies designed to alleviate the economic hardships of poor people may therefore have significant downstream effects, which should be considered as a positive externality in their development and implementation.

Physical domestic violence was also found to

be associated with the victim's lifetime number of partners. It is therefore possible that (i) having a single partner may have a protective effect, and/or (ii) that physical domestic violence is more likely to occur when partners are changed. The finding that married women may be less likely to experience physical domestic violence than unmarried women supports this hypothesis, and suggests that marriage may also have a protective effect. Policies designed to prevent domestic violence may wish to include messages about the risks of having multiple partners.

There are a number of limitations to the findings presented in this paper. The data are cross-sectional and therefore no assertions can be made about causal pathways. The survey did not include questions on women's experience of psychological and sexual violence, which are important factors linking physical violence and HIV transmission. Women who experience physical violence do not necessarily experience sexual violence, although the threat of physical violence may influence the use of precautions against HIV transmission (e.g. condoms). Another limitation was the absence of data on recent (as opposed to lifetime) experience of physical domestic violence. This was due to the low number of recent physical domestic violence episodes reported and the resulting lack of statistical power to examine associated risk factors. It is therefore possible that the lack of association between some risk factors and physical domestic violence might be due to the fact that the violence reported was experienced (i) some time ago, (ii) with a different partner, and/or (iii) in different social or economic circumstances. Finally, the comparison between domestic violence in married and unmarried women is limited by a lack of data on the proportion of unmarried women in non-marital partnerships.

Domestic violence is a key issue in the context of HIV prevention. Increased government recognition of the magnitude and seriousness of the issue, as well as its impact on HIV transmission, opens up possibilities for greater government, donor and NGO collaboration.<sup>31</sup> The integration of domestic violence monitoring and prevention programs into basic health care services in high HIV prevalence settings (as well as elsewhere) may therefore produce a number of secondary or downstream health benefits. For example, reproductive health services are likely to have earlier contact with victims of violence than other agencies, and should be encouraged to respond to the needs of domestic violence victims.<sup>32</sup> Similarly, the causes of domestic violence should be addressed in the formulation of national strategic plans, especially in a resource-poor, high-prevalence HIV setting such as Zimbabwe. Finally, global health programs that

**Table 3. Logistic model with multiple variables: multivariate results.**

| Variable                         | Category   | OR   | 95% CI    | P≤    |
|----------------------------------|------------|------|-----------|-------|
| SES (homestead)                  | High       | 1    | -         | -     |
|                                  | Medium/low | 1.41 | 1.01-1.99 | 0.04  |
| Marital status                   | Married    | 1    | -         | -     |
|                                  | Unmarried  | 1.41 | 1.00-2.00 | 0.05  |
| Experienced other child violence | No         | 1    | -         | -     |
|                                  | Yes        | 2.83 | 1.95-4.11 | 0.001 |
| Lifetime number of partners      | 1          | 1    | -         | -     |
|                                  | 2-3        | 1.78 | 1.25-2.53 | 0.002 |
|                                  | >3         | 1.37 | 0.66-2.86 | 0.4   |

OR, odds ratio; CI, confidence interval; SES, socio-economic status.

address issues such as domestic violence and HIV, due to their non-ideological, altruistic nature, are more likely to enhance donor prestige on a global health diplomacy level.<sup>33</sup>

In the case of Zimbabwe, addressing all possible methods of HIV prevention is particularly important. In a country that faces an economic and political crisis and which has seen international inflows of health and other aid funding diminish to negligible levels in recent years, and with more and more people falling further into poverty each year, policymakers need to explore every HIV prevention mechanism that is open to them. In particular, interventions that do not impose significant additional strains on an already overstretched health and social welfare system will be particularly welcome. The breakdown of the health care system in Zimbabwe also means that many acts of domestic violence may go unreported. The inclusion of domestic violence treatment and prevention campaigns as a part of routine health care services, as well as a part of national and international HIV treatment and prevention services, is therefore strongly recommended.

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