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Based on further analysis of
Zimbabwe Demographic and Health Surveys

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The Association between Violence against Women and HIV: Evidence from a National Population-Based Survey in Zimbabwe

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ABSTRACT

Violence against women has been associated with increased risk of HIV infection among women. In Zimbabwe, both violence against women and HIV are widespread. Although Zimbabwe has been experiencing a significant decline of adult HIV prevalence in recent years, women remain disproportionately infected and affected by the epidemic.

The 2005-06 Zimbabwe Demographic and Health Survey (ZDHS) provides the first national estimate of the prevalence of violence against women and also the first population-based estimates of HIV prevalence and patterns. These new data provide an opportunity to further understand the relationship between these two issues of public health concern.

Our analysis first used descriptive statistics to examine the prevalence of emotional, physical, and sexual violence against women and differentials in spousal violence by socio-demographic characteristics, and also to compare spousal violence by women's HIV status. We then used multivariate logistic regression to examine selected risk factors for spousal violence among currently married and ever-married women.

Results confirm that violence against women is widespread in Zimbabwe. Among all respondents, including both married and unmarried, nearly 6 women in every 10 reported having experienced some type of violence—emotional, physical, or sexual—in their lifetime. Among currently married women, 28% reported physical violence and 18% reported sexual violence from their husband. Currently married women who had experienced physical violence only, or both physical and sexual violence, were significantly more likely to be HIV-positive than those who had not experienced any physical or sexual violence (OR 1.35, p=0.020 for physical violence only; and OR 1.38, p=0.029 for both physical and sexual violence). After controlling for other factors, the analysis found that number of children ever born, polygyny, and accepting

attitudes toward violence were strongly associated with spousal violence among currently married women.

Because the study is based on cross-sectional data, it cannot draw conclusions about the causal relationship between violence against women and HIV transmission. Despite this, the findings call for special attention to societal values and norms on gender equality in programming, both for prevention of violence against women and prevention of HIV. It is within marriage that women's options for HIV prevention become limited. Increased attention to individual and collective responsibility for protecting against HIV and for preventing violence against women will sustainably reduce the incidence of both problems. This study also provides useful data for prioritizing geographical regions in Zimbabwe with higher prevalence of violence and HIV for focused interventions.

Key words: *Violence against women, intimate partner violence (IPV), spousal violence, domestic violence, HIV, Zimbabwe.*

INTRODUCTION

Intimate partner violence (IPV) against women is a global health concern, with 10-69% of women and girls estimated to experience such abuse among countries around the world (WHO 2002; Garcia-Moreno and Watts 2000; Heise et al. 1999). Violence against women has been associated with increased risk of HIV infection among women (Dunkle et al. 2004a; Maman et al. 2000; van der Strathen et al. 1998). In Zimbabwe both violence against women and HIV are widespread. The 2005-06 Zimbabwe Demographic and Health Survey (ZDHS) provides the first national estimate of the prevalence of violence against women, as well as the first population-based estimates of HIV prevalence and patterns (CSO [Zimbabwe] and Macro International 2007). Given the magnitude of both problems and their devastating consequences on women, these new data provide an opportunity to further understand the relationship between these two issues of public health concern.

Our study has five specific objectives: i) to determine the prevalence of violence against women by type of violence, ii) to assess prevalence of HIV among women who experienced violence, iii) to assess the socio-demographic and behavioral differences in the experience of spousal violence between HIV-positive and HIV-negative women, iv) to identify risk factors for spousal violence, and v) to assess the association between experience of physical or sexual violence and HIV serostatus of ever-married women. Ultimately, this study will aim to identify women at greater risk of IPV and to inform the development of interventions that jointly address violence against women and HIV among women in Zimbabwe.

Previous research

While coercive sex poses a direct biological risk for HIV infection from vaginal trauma and lacerations, studies from Rwanda, Tanzania, and South Africa have shown up to three-fold increases in risk of HIV among women who have experienced IPV compared with women who have not experienced this type of violence (Dunkle et al. 2004a; Maman et al. 2000; van der Strathen et al. 1998).

Among the numerous negative health outcomes associated with IPV, HIV infection is of particular concern among Zimbabwean women. Although Zimbabwe has been experiencing a significant decline in adult HIV prevalence over the past decade, the 2005-06 ZDHS found that women remain disproportionately infected and affected by the epidemic: 21% of women are HIV-infected compared with 15% of men (CSO [Zimbabwe] and Macro International 2007). Among 28% of cohabiting couples in Zimbabwe, one or both partners were HIV-infected (15% concordant and 13% discordant). Among 61% of the discordant couples, it was the male partner who was infected, according to the ZDHS. Overall, 36% of women have experienced physical violence, while 25% of women have experienced sexual violence at some point in their lives, with about two-thirds (65%) reporting that the perpetrator was their current or former husband, partner, or boyfriend (CSO [Zimbabwe] and Macro International 2007).

Women's experience of violence from an intimate partner has been linked to increased risk-taking, including having multiple sexual partners or engaging in transactional sex. For example, a study in South Africa showed that women who experienced IPV were two to three times more likely to engage in transactional sex than women who did not experience violence (Dunkle et al. 2004b). Conversely men's violence against women has been linked to men's own sexual risk-taking behavior, thus exposing themselves and their partners to sexually transmitted

infections (STI), including HIV. A study in India, for example, showed that men who had extramarital sex were six times more likely than men who remained faithful to report that they had abused their wives (Martin et al. 1999).

While a majority of respondents in the 2005-06 ZDHS showed accepting attitudes towards negotiating safer sexual relations with husbands, the threat of violence often limits women's ability to negotiate safer sex and poses a barrier to seeking HIV testing, disclosing their HIV status, and gaining access to AIDS-related services. In a study from South Africa, women who experienced sexual coercion were much less likely to use condoms consistently than those who did not experience coercion and, in turn, women with inconsistent condom use were more likely to be HIV-infected than those who used condoms consistently (Pettifor et al. 2004).

The age difference between partners has also been shown to contribute to IPV, as well as to explain high rates of HIV infection among young women. Male partners who are 5-10 years older than their female partners have been shown to have more controlling behavior in relationships, including decisions about condom use and contraception and in some cases to use violence as a form of control (Luke and Kurz 2002). Evidence from South Africa suggests that women with partners who are three or more years older than themselves are 1.6 times more likely to be HIV-infected than women with partners their own age. Also, young women with older partners are 1.5 times more likely to experience physical and sexual violence than women with partners their own age (WHO 2004).

METHODS

Study design

The analysis uses data from the 2005-06 ZDHS, which collected information on behavioral, social, and demographic indicators and also obtained blood samples for testing for HIV from a nationally representative probability sample of adult women age 15-49 and men age 15-54. Respondents provided separate informed consent for interviews and HIV testing. Testing for HIV was conducted using standard blood collection, testing, and quality-control procedures (Macro International 2007a, 2007b). HIV testing was carried out using two HIV enzyme immunosorbent assays (EIA), based on different antigens. Specimens with equivocal or discordant test results were retested with the same EIAs and, if still discordant, were resolved by Western blot testing. For quality control, all positive specimens and 5% of negative specimens were re-tested at a different laboratory, using the same testing algorithm. Individual HIV test results were anonymously linked to survey information through bar codes. Further details of the survey design and implementation are provided in the ZDHS country report (CSO [Zimbabwe] and Macro International 2007).

Survey and HIV testing protocols were cleared by the Institutional Review Board of Macro International (a U.S. institution responsible for providing technical assistance for conducting the Demographic and Health Surveys (DHS) and the AIDS Indicator Surveys (AIS) worldwide) and were approved by the local governments and implementing partners.

The ZDHS administered a domestic violence module to one eligible woman randomly selected in each sampled household, with the use of the Kish-grid technique. Overall, 6,293 women answered questions on domestic violence, of which 4,658 reported ever being married.

Of all women who were asked questions on domestic violence, 4,204 also provided a blood sample with a valid HIV test result.

Measurements

Spousal violence, or intimate partner violence (IPV), was defined in the 2005-06 ZDHS as violence perpetrated by a current or previous husband or partner. Non-spousal violence was defined as violence involving perpetrators other than the woman's intimate partner that a woman may have experienced since her fifteenth birthday.

The survey assessed different forms of spousal violence by asking the woman whether or not her current or a previous husband or partner had ever done the following:

Emotional violence—done or said something to humiliate her in front of others, threatened to hurt or harm her or someone close to her, insulted her or made her feel bad about herself.

Physical violence—any of the following: (1) pushed her, shaken her, thrown something at her, twisted her arm or pulled her hair; (2) slapped her; (3) punched her with his fist or with something that could hurt her, kicked her, dragged her, or beaten her up; (4) tried to choke her or burn her; (5) threatened her with a knife, gun or other type of weapon; and (6) attacked her with a knife, gun, or other type of weapon.

Sexual violence—physically forced her to have sexual intercourse or forced her to perform any other sexual acts.

Statistical analysis

The analysis used both descriptive and multivariate methods. First, we used descriptive statistics to (a) discuss prevalence of emotional, physical, and sexual violence against women by their marital status; (b) to analyze prevalence and differentials in spousal violence; and (c) to compare prevalence and differentials in spousal violence by women's HIV status.

We then used multivariate logistic regression to examine selected risk factors for physical or sexual spousal violence, among currently married women who were tested for HIV. Logistic regression was also used to examine the association between spousal violence and HIV serostatus of women. The models were estimated after accounting for complex survey design, and the results are presented as adjusted odds ratios (OR) with 95% confidence intervals (CI) and *p*-values.

In this analysis, prevalence of violence is presented for all 6,293 women who were asked questions about domestic violence. For measuring experience of physical and sexual violence among HIV-positive women, only women with a valid HIV test result are included. Analysis of the factors associated with spousal violence is limited to currently married women with valid HIV test results, and the analysis of association between experience of violence and HIV is carried out separately for currently married and formerly married women with valid HIV test results. All analyses were conducted using STATA 10.0 (Stata Corporation 2007).

RESULTS

Prevalence of violence against women, by type of violence

Table 1 presents the prevalence of different forms of violence against women by their marital status. Among all respondents, including both married and unmarried, nearly 6 women in every 10 (57%) reported having experienced some type of violence—emotional, physical, or sexual—in their lifetime. Among all respondents, 40% experienced emotional violence, 36% experienced physical violence, and 25% experienced sexual violence. Eleven percent of women experienced all three types of violence.

Table 1: Prevalence of violence against women among women age 15-49 by marital status and type of violence, ZDHS 2005-06

	Type of violence			Any type of violence	All types of violence	Number of women
	Emotional	Physical	Sexual[1]			
All women	40.1	36.2	25.0	56.9	11.3	6,293
Currently married women						
Spousal violence	28.5	28.0	18.2	46.8	6.4	3,694
Non-spousal violence	24.2	15.5	13.6	36.3	2.1	3,694
Either	41.9	38.8	29.0	61.3	12.8	3,694
Formerly married women						
Spousal violence	35.0	35.2	21.9	53.1	9.3	964
Non-spousal violence	25.0	16.6	18.5	39.8	3.0	964
Either	48.2	44.8	35.9	66.1	19.2	964
Never married women	31.2	25.1	9.8	41.5	3.4	1,635

[1] Among women who ever had sexual intercourse. Women who never had sexual intercourse are assumed to have never experienced sexual violence.

Among currently married and formerly married women, husbands are the main perpetrators of violence. For instance, 28% of currently married women have experienced physical violence from their husband, nearly twice the percentage (16%) who reported physical violence by a non-spouse. Among formerly married women, 35% reported physical violence by their husband, more than twice the percentage (17%) who reported physical violence by a non-

spouse. A similar pattern is found for all types of violence, including emotional and sexual as well as physical—husbands are the main source of violence against married women. Overall, formerly married women are most likely to have experienced each type of violence, followed by currently married women, and never-married women.

HIV prevalence among women, by experience of violence and type of violence

Table 2 shows HIV prevalence among women age 15-49 by their experience with violence, and type of violence. Among women who experienced physical violence, about one in every four (26%) were HIV-positive compared with one in five (20%) who reported no physical violence, a statistically significant difference. Similarly, among women who reported experiencing sexual violence, 27% were HIV-positive compared with 21% among those who reported no sexual violence. This difference is also statistically significant. Among never-married women who experienced sexual violence, 14% were HIV-positive compared with 9% among those who did not experience sexual violence.

While HIV prevalence is significantly higher among all women who experienced physical or sexual violence, violence by the husband does not make any statistical difference to HIV prevalence among currently married or formerly married women. Twenty-two percent of currently married women who experienced spousal violence were HIV-positive compared with 20% of those who did not experience spousal violence. However, the experience of non-spousal violence is significantly associated with HIV prevalence among currently married women: Among women experiencing non-spousal violence, 26%were HIV-positive compared with 19% of those who reported no non-spousal violence.

Table 2. Percent HIV positive among women age 15-49 who were tested for HIV by marital status, experience of violence and type of violence, ZDHS 2005-06

	Experienced violence			Did not experience violence		
	%	95% CI	N	%	95% CI	N
Physical violence						
All women	26.0	(23.5 - 28.8)	1,963	20.4	(18.8 - 22.1)	2,959
Currently married women						
Spousal violence	22.6	(19.7 - 25.7)	963	19.9	(18.1 - 21.8)	2,241
Non-spousal violence	27.7	(21.9 - 34.5)	577	19.1	(17.6 - 20.8)	2,626
Either	23.9	(21.0 - 27.0)	1,352	18.4	(16.6 - 20.3)	1,851
Formerly married women						
Spousal violence	48.6	(41.5 - 55.8)	272	48.8	(43.1 - 54.6)	462
Non-spousal violence	46.0	(36.1 - 56.2)	136	49.4	(43.9 - 54.9)	599
Either	46.0	(40.1 - 52.1)	343	51.2	(44.8 - 57.6)	391
Never married women	11.4	(8.2 - 15.8)	267	9.0	(7.2 - 11.2)	716
Sexual violence[1]						
All women	27.2	(24.3 - 30.2)	1,297	21.1	(19.4 - 22.9)	3,624
Currently married women						
Spousal violence	19.8	(16.1 - 24.2)	587	20.9	(19.3 - 22.5)	2,617
Non-spousal violence	23.3	(18.6 - 28.9)	423	20.3	(18.4 - 22.3)	2,780
Either	21.6	(18.7 - 24.8)	917	20.3	(18.5 - 22.3)	2,287
Formerly married women						
Spousal violence	51.7	(43.0 - 60.4)	187	47.8	(42.5 - 53.0)	547
Non-spousal violence	53.3	(43.2 - 63.0)	127	47.8	(42.2 - 53.5)	607
Either	50.2	(43.2 - 57.2)	279	47.9	(42.0 - 53.8)	456
Never married women	14.0	(8.7 - 21.8)	101	9.2	(7.4 - 11.3)	882
Physical or sexual violence						
All women	25.6	(23.4 - 27.8)	2,470	19.8	(18.0 - 21.6)	2,452
Currently married women						
Spousal violence	21.5	(19.0 - 24.1)	1,218	20.2	(18.4 - 22.2)	1,985
Non-spousal violence	26.0	(21.9 - 30.7)	896	18.6	(16.9 - 20.5)	2,307
Either	22.7	(20.3 - 25.3)	1,706	18.3	(16.3 - 20.6)	1,498
Formerly married women						
Spousal violence	47.8	(41.0 - 54.8)	343	49.6	(43.9 - 55.3)	391
Non-spousal violence	50.1	(42.6 - 57.5)	229	48.2	(42.2 - 54.2)	505
Either	46.9	(41.2 - 52.7)	435	51.4	(44.8 - 58.1)	299
Never married women	11.8	(8.8 - 15.8)	328	8.6	(6.7 - 10.9)	656

[1] Among women who ever had sexual intercourse. Women who never had sexual intercourse are assumed to have never experienced sexual violence.

Differentials in prevalence of spousal violence

Table 3 shows prevalence of spousal violence (physical or sexual) among currently married women by selected socio-demographic characteristics and behaviors. Overall, 37% of currently married women reported spousal violence. Spousal violence was more common among rural, less educated, and poorer women. Spousal violence was also more common among working women, women in a polygynous relationship (where the husband has another wife or wives), and women with more children. Women with younger or same age spousal partners and those with less educated partners are more likely to have experienced spousal violence. Currently married women who themselves decide on how their cash earnings are used and those who worked in the past year but did not earn cash were more likely to have experienced spousal violence. Moreover, women who said they do not participate in all four major household decisions and those who reported that they cannot negotiate safer sex are more likely to have experienced spousal violence, as were women who reported more reasons justifying wife beating. Finally, women who reported that their spouse was tested for HIV but did not share results were also more likely to have experienced spousal violence.

Table 3. Differentials in the prevalence of spousal violence (physical or sexual) by HIV status among currently married women age 15-49, ZDHS 2005-06

	Experienced spousal violence		Experienced spousal violence					
			Among HIV+ women			Among HIV- women		
	%	N	%	95% CI	N	%	95% CI	N
Background characteristics								
Age group								
15-19	40.8	288	*	--	32	36.4	(27.8 - 46.0)	214
20-24	40.2	900	46.5	(35.8 - 57.5)	118	41.0	(37.3 - 44.9)	646
25-29	35.6	786	42.0	(34.7 - 49.6)	190	37.3	(33.1 - 41.8)	571
30-34	36.0	649	33.8	(26.3 - 42.1)	177	37.0	(30.6 - 43.8)	434
35-39	28.7	440	27.0	(18.7 - 37.3)	83	30.9	(25.2 - 37.3)	272
40-44	38.8	362	37.6	(24.5 - 52.8)	51	37.0	(29.8 - 44.8)	221
45-49	38.5	269	*	--	12	40.6	(32.4 - 49.4)	184
Residence								
Urban	31.1	1,266	37.8	(30.8 - 45.3)	231	29.2	(25.4 - 33.4)	793
Rural	39.9	2,428	40.3	(36.3 - 44.5)	431	41.5	(39.1 - 43.9)	1,748
Province								
Manicaland	32.5	440	29.7	(21.6 - 39.5)	71	36.7	(31.8 - 41.8)	300
Mashonaland Central	44.9	358	45.2	(36.3 - 54.4)	74	43.6	(37.0 - 50.4)	308
Mashonaland East	47.5	380	50.4	(38.5 - 62.3)	56	47.1	(39.3 - 55.0)	246
Mashonaland West	40.4	350	48.7	(38.0 - 59.6)	72	36.7	(31.1 - 42.7)	270
Matebeleland North	27.8	211	36.6	(22.8 - 52.9)	50	25.8	(20.0 - 32.7)	149
Matebeleland South	29.1	173	(28.2)	(19.2 - 39.4)	31	35.3	(27.9 - 43.5)	98
Midlands	45.0	494	46.3	(36.7 - 56.2)	92	43.9	(38.2 - 49.8)	371
Masvingo	33.2	512	32.5	(22.4 - 44.6)	79	37.9	(32.3 - 43.8)	350
Harare	34.4	581	37.1	(26.6 - 49.0)	99	34.0	(27.9 - 40.6)	323
Bulawayo	18.9	197	29.3	(18.8 - 42.6)	37	15.5	(10.4 - 22.4)	126
Education								
No Education	43.8	176	*	--	16	42.0	(29.4 - 55.8)	131
Primary	40.2	1,312	37.7	(30.9 - 44.9)	228	40.3	(37.3 - 43.4)	954
Secondary	35.5	2,071	40.6	(35.0 - 46.5)	406	36.2	(33.5 - 38.9)	1,382
Higher	17.7	135	*	--	12	24.1	(15.1 - 36.2)	74
Religion								
None	45.7	315	55.4	(41.0 - 69.0)	69	45.6	(38.6 - 52.7)	225
Roman Catholic	33.8	339	51.8	(38.9 - 64.4)	61	27.5	(21.7 - 34.2)	231
Protestant	32.3	899	28.0	(21.4 - 35.6)	172	33.5	(29.3 - 38.0)	572
Pentecostal	33.9	625	30.9	(21.6 - 42.0)	102	36.2	(31.1 - 41.5)	401
Apostolic Sect	39.7	1,170	43.0	(35.7 - 50.7)	199	41.6	(38.6 - 44.7)	856
Other	39.9	345	44.2	(32.3 - 56.8)	60	38.2	(31.2 - 45.6)	257

(Cont'd)

Table 3 – cont'd

	Experienced spousal violence		Experienced spousal violence					
			Among HIV+ women			Among HIV- women		
	%	N	%	95% CI	N	%	95% CI	N
Household wealth quintile								
Lowest	40.9	671	47.6	(37.7 - 57.7)	117	43.1	(39.3 - 47.1)	562
Second	43.8	697	45.3	(31.5 - 59.8)	133	45.1	(41.5 - 48.7)	509
Third	39.3	660	27.1	(19.6 - 36.2)	114	39.7	(33.8 - 46.0)	446
Fourth	36.5	921	44.5	(35.9 - 53.4)	195	36.3	(32.3 - 40.5)	598
Highest	25.2	745	26.9	(19.2 - 36.2)	104	21.4	(17.2 - 26.5)	427
Work status								
Not working	34.8	2,221	38.1	(32.5 - 43.9)	400	35.1	(32.6 - 37.6)	1,624
Working	40.2	1,473	41.6	(33.2 - 50.5)	262	42.3	(38.8 - 45.8)	917
Type of union								
Currently in monogamous union	35.2	3,118	36.4	(31.7 - 41.3)	539	36.5	(34.0 - 39.0)	2,185
Currently in polygynous union	46.1	575	52.9	(42.6 - 62.9)	123	44.8	(38.1 - 51.8)	356
Married more than once								
No	37.0	3,182	40.7	(36.5 - 45.2)	491	37.7	(35.5 - 40.0)	2,273
Yes	36.2	512	35.7	(28.3 - 43.9)	171	37.0	(31.2 - 43.3)	268
Number of children ever born								
0	30.7	304	(27.5)	(15.1 - 44.7)	43	23.0	(15.6 - 32.5)	196
1-2	36.5	1,658	44.0	(36.3 - 51.9)	320	37.1	(34.0 - 40.2)	1,146
3-4	36.6	1,035	33.1	(25.4 - 41.8)	199	40.0	(36.2 - 43.8)	718
5+	41.0	697	42.9	(33.0 - 53.4)	99	41.7	(37.4 - 46.1)	482
Women's status								
Age gap with husband/partner								
Partner younger/same age	41.9	217	39.7	(26.9 - 54.2)	53	42.1	(33.6 - 51.1)	119
Partner 1-4 yrs. older	37.4	1,245	43.9	(34.9 - 53.5)	190	38.7	(35.1 - 42.4)	900
Partner 5-9 yrs. older	37.4	1,362	34.8	(28.3 - 41.9)	213	38.6	(35.5 - 41.8)	947
Partner 10+ yrs. older	34.2	854	40.3	(33.0 - 47.9)	201	33.4	(29.6 - 37.4)	554
Don't know/missing	*	17	*	--	6	*	--	20
Education gap with husband/partner								
Same	34.0	1,237	30.8	(24.6 - 37.8)	199	34.9	(31.4 - 38.6)	845
Partner lower	41.0	728	43.5	(34.2 - 53.3)	159	40.2	(34.9 - 45.7)	488
Partner higher by 1-3 yrs	38.0	1,266	44.0	(36.6 - 51.7)	228	39.3	(35.9 - 42.9)	901
Partner higher by 4+ yrs	37.1	417	41.8	(30.6 - 53.9)	67	37.6	(31.4 - 44.2)	281
Don't know/missing	17.0	46	*	--	9	(21.3)	(8.1 - 45.3)	25

(Cont'd)

Table 3 – cont'd

	Experienced spousal violence		Experienced spousal violence					
			Among HIV+ women			Among HIV- women		
	%	N	%	95% CI	N	%	95% CI	N
Person who decides how woman's cash earnings are used								
Mainly respondent	45.5	363	43.4	(29.0 -59.0)	76	47.7	(40.7 - 54.7)	230
Respondent and husband/partner jointly	36.7	787	44.8	(34.7 - 55.4)	136	37.2	(32.9 - 41.8)	467
Mainly husband/partner/other	31.3	64	*	--	11	31.3	(21.2 - 43.5)	47
Worked, but didn't receive cash in last 12 months	46.1	493	38.1	(28.1 - 49.1)	77	46.7	(40.8 - 52.7)	348
Did not work in past 12 months	33.3	1,986	36.2	(30.5 - 42.2)	363	34.3	(31.6 - 37.0)	1,448
Participates in all 4 major household decisions[1]								
No	42.6	1,059	44.5	(37.5 - 51.8)	200	42.0	(38.3 - 45.8)	711
Yes	34.6	2,635	37.3	(32.9 - 41.8)	462	36.0	(33.5 - 38.5)	1,830
Number of reasons given for refusing to have sexual intercourse with husband[2]								
0	38.1	427	42.7	(30.9 - 55.4)	64	36.7	(30.8 - 42.9)	114
1-2	37.3	1,306	43.0	(35.3 - 51.1)	212	37.8	(34.3 - 41.4)	337
All 3	36.4	1,961	36.9	(31.7 - 42.5)	386	37.8	(34.8 - 41.0)	507
Number of reasons for which wife beating is justified[3]								
0	30.9	1,907	29.4	(24.1 - 35.3)	347	30.7	(28.1 - 33.5)	1,260
1-2	41.9	868	50.7	(40.4 - 61.0)	153	43.1	(39.3 - 47.0)	632
3-4	41.9	675	45.5	(34.9 - 56.5)	117	44.9	(40.3 - 49.5)	474
All 5	52.6	244	62.5	(45.7 - 76.8)	46	48.3	(41.7 - 55.0)	175
Negotiate safer sex[4]								
No	42.8	1,057	46.6	(39.6 - 53.8)	190	40.4	(35.7 - 45.4)	745
Yes	36.0	2,445	36.8	(32.7 - 41.2)	446	37.5	(34.7 - 40.4)	1,680
Don't know/missing	15.5	192	(32.4)	(15.7 - 55.3)	26	22.2	(14.5 - 32.4)	116
HIV/AIDS-related knowledge, attitudes and behaviours								
Knows HIV status								
Previously tested, received results of last test	32.6	994	37.9	(30.0 - 46.4)	184	34.1	(30.1 - 38.2)	627
Previously tested, did not receive results of last test	35.9	216	(44.4)	(27.7 - 62.4)	33	37.5	(30.5 - 45.0)	150
Never tested for HIV	38.7	2,483	39.7	(35.4 - 44.2)	446	39.0	(36.5 - 41.4)	1,764

(Cont'd)

Table 3 – cont'd

	Experienced spousal violence		Experienced spousal violence					
			Among HIV+ women			Among HIV- women		
	%	N	%	95% CI	N	%	95% CI	N
Shared own test results with spouse								
Previously tested, shared results with spouse	32.6	448	41.7	(30.4 - 53.9)	106	33.7	(27.3 - 40.8)	268
Previously tested, did not share results with spouse /never tested /did not receive results	37.5	3,245	39.0	(35.0 - 43.2)	557	38.1	(36.0 - 40.3)	2,273
Knows spouse/partner's HIV status								
Spouse tested and shared results	31.1	493	41.3	(27.6 - 56.4)	85	29.3	(24.2 - 35.0)	323
Spouse tested, did not share results	43.8	54	*	--	13	(64.6)	(44.6 - 80.6)	39
Spouse not tested /did not receive results	38.6	2,701	38.9	(34.5 - 43.6)	485	39.9	(37.5 - 42.3)	1,886
Don't know/missing	32.0	445	44.3	(33.5 - 55.8)	79	28.9	(22.0 - 37.0)	293
TOTAL	**36.9**	**3,694**	**39.4**	**(35.8 - 43.2)**	**662**	**37.7**	**(35.6 - 39.7)**	**2,541**

* indicates unweighted N is between 0-24, % is suppressed

( ) indicates unweighted N is between 25-49

[1] The 4 major household decisions include: 1. own health care; 2. making large household purchases; 3. making household purchases for daily needs; 4. visit family or relatives.

[2] Reasons include: Wife is justified in refusing intercourse with her husband if she: 1. knows husband has a sexually transmitted infection; 2. knows husband has intercourse with other women; 3. is tired or not in the mood.

[3] Reasons include: Husband is justified in hitting or beating his wife if she: 1. burns the food; 2. argues with him; 3. goes out without telling him; 4. neglects the children; 5. refuses to have sexual intercourse with him.

[4] A women can negotiate safer sex if she can refuse sex or request condom use if she knows that her husband has an STI.

Differences in experience of spousal violence between HIV-positive and HIV-negative women

Table 3 also presents an analysis of the differences in the experience of spousal violence between HIV-positive and HIV-negative women, by selected characteristics. Spousal violence was generally higher among HIV-positive women than among HIV-negative women across most age groups, with the exception of age 30-39. Among women age 20-24, 47% of HIV-positive women experienced spousal violence compared with 41% of HIV-negative women.

In urban areas, HIV-positive women were somewhat more likely to have experienced spousal violence (38%) than HIV-negative women (29%), but in rural areas the prevalence of spousal violence did not differ much by the HIV status of women.

By region, the prevalence of spousal violence among HIV-positive women was highest in Mashonaland East (50%) and lowest in Matebeleland South (28%). The largest difference between HIV-positive and HIV-negative women in the prevalence of spousal violence was in Bulawayo, where 29% of HIV-positive women had experienced spousal violence compared with 16% of HIV-negative women, although the difference is not statistically significant.

Education was not a significant variable in explaining the differences in the prevalence of spousal violence among HIV-positive and HIV-negative women.

HIV-positive women who were Roman Catholic were significantly more likely to have experienced spousal violence (52%) than HIV-negative Roman Catholic women (28%). HIV-positive women from the Protestant and Pentecostal churches reported a lower prevalence of spousal violence (28% and 31% respectively) than HIV-negative women from these churches (34% and 36% respectively), but these differences were not statistically significant.

The differences by household wealth status and by number of children ever born between HIV-positive and HIV-negative women's experience of spousal violence were generally small, inconsistent, and not statistically significant. There was no difference in the prevalence of spousal violence among HIV-positive and HIV-negative women in monogamous relationships. However, HIV-positive women in polygynous unions reported higher levels of spousal violence (53%) compared with HIV-negative women in polygynous unions (45%), but this difference was also not statistically significant.

The study also explored how woman's empowerment, as measured by employment status, participation in household decisions, education gap with partner, attitude towards wife beating, and ability to negotiate safer sex, affect differences in experience of spousal violence between HIV-positive and HIV-negative women. Women's participation in labor force, participation in all major household decisions, educational gap with the spouse, and ability to negotiate safer sex made no significant difference in women's experience of spousal violence by whether they were HIV-positive or HIV-negative. However, among women who independently decided use of their cash earnings, HIV-negative women experienced higher levels of spousal violence (48%) compared with HIV-positive women (43%). Also, 63% of HIV-positive women with accepting attitudes towards wife beating experienced spousal violence compared with 48% of HIV-negative women with accepting attitudes.

Among women who believe there is no acceptable reason for refusing to have sexual intercourse with your husband, 43% of HIV-positive women experienced spousal violence compared with 37% of HIV-negative women. Among women who have disclosed their HIV status to their partner, 42% of HIV-positive women reported spousal violence compared with

34% of HIV-negative women. A similar pattern was observed with respect to knowledge of the partner's HIV status.

Factors associated with spousal violence

Table 4 shows the risk factors associated with experiencing spousal violence, for currently married women who were tested for HIV in the ZDHS. The factors considered include the woman's background characteristics, women's status, knowledge of own and partner's status, and own HIV serostatus at the time of the survey.

With all other factors in the table controlled, women in Mashonaland East, Midlands, and Harare were significantly more likely, and women in Matebeleland North were significantly less likely to have experienced spousal violence than women in Manicaland. Religion was found to be a protective factor from spousal violence, with religious women across all churches being less likely to report spousal violence than non-religious women, although the difference was statistically significant only for Protestant women (OR 0.64, p=0.015). Women in polygynous unions were significantly more likely to have experienced spousal violence than those in monogamous relationships (OR 1.58, p=0.001). However, being married more than once was associated with significantly reduced odds of reporting spousal violence (OR 0.76, p=0.024). Women with one or more children ever born were more than twice as likely to have experienced spousal violence as those with no children.

There was a significant association between women's attitudes towards spousal violence and the experience of violence, with the likelihood of spousal violence increasing with an increase in the number of reasons for which the woman felt wife beating is justified (from OR 1.71 for 1-2 reasons to 1.95 for all 5 reasons).

Table 4. Risk factors for spousal violence (physical or sexual) among currently married women age 15-49 who were tested for HIV, ZDHS 2005-06

	N	Odds ratio	95% CI	p-value
Background characteristics				
Residence				
Urban	1,024	1.00	-	-
Rural	2,179	0.82	(0.55 - 1.22)	0.325
Province				
Manicaland	372	1.00	-	-
Mashonaland Central	382	1.14	(0.82 - 1.6)	0.434
Mashonaland East	303	1.97	(1.37 - 2.85)	0.000
Mashonaland West	342	1.28	(0.94 - 1.75)	0.120
Matebeleland North	199	0.65	(0.44 - 0.97)	0.035
Matebeleland South	128	0.84	(0.59 - 1.19)	0.329
Midlands	463	1.47	(1.05 - 2.06)	0.025
Masvingo	429	0.96	(0.69 - 1.35)	0.815
Harare	422	1.51	(1.02 - 2.25)	0.040
Bulawayo	164	0.76	(0.43 - 1.36)	0.352
Education				
No Education	146	1.00	-	-
Primary	1,183	1.02	(0.59 - 1.79)	0.932
Secondary	1,788	1.20	(0.65 - 2.22)	0.567
Higher	86	1.06	(0.47 - 2.37)	0.891
Religion				
None	294	1.00	-	-
Roman Catholic	292	0.68	(0.44 - 1.05)	0.079
Protestant	744	0.64	(0.45 - 0.92)	0.015
Pentecostal	503	0.73	(0.51 - 1.06)	0.101
Apostolic Sect	1,054	0.85	(0.65 - 1.1)	0.215
Other	317	0.69	(0.45 - 1.07)	0.099
Household wealth quintile				
Lowest	679	1.00	-	-
Second	641	1.01	(0.82 - 1.24)	0.949
Third	560	0.71	(0.51 - 0.98)	0.035
Fourth	793	0.69	(0.48 - 0.98)	0.038
Highest	530	0.31	(0.2 - 0.49)	0.000
Type of union				
Currently in monogamous union	2,724	1.00	-	-
Currently in polygynous union	480	1.58	(1.2 - 2.1)	0.001
Married more than once				
No	2,764	1.00		-
Yes	439	0.76	(0.6 - 0.96)	0.024

(Cont'd)

Table 4 – cont'd

	N	Odds ratio	95% CI	p-value
Number of children ever born				
0	239	1.00	-	-
1-2	1,466	2.24	(1.43 - 3.52)	0.000
3-4	918	2.24	(1.44 - 3.47)	0.000
5+	581	2.61	(1.57 - 4.32)	0.000
Women's status				
Age gap with husband/partner				
Partner younger/same age	172	1.00	-	-
Partner 1-4 yrs. older	1,090	1.04	(0.71 - 1.53)	0.839
Partner 5-9 yrs. older	1,160	0.97	(0.66 - 1.43)	0.890
Partner 10+ yrs. older	755	0.76	(0.51 - 1.13)	0.172
Don't know/missing	26	0.62	(0.31 - 1.23)	0.171
Education gap with husband/partner				
Same	1,044	1.00	-	-
Partner lower	647	1.20	(0.91 - 1.6)	0.200
Partner higher by 1-3 yrs.	1,129	1.14	(0.92 - 1.41)	0.222
Partner higher by 4+ yrs.	348	1.17	(0.89 - 1.55)	0.262
Don't know/missing	35	0.55	(0.21 - 1.44)	0.221
Person who decides how woman's cash earnings are used				
Mainly respondent	306	1.00	-	-
Respondent and husband/partner jointly	603	0.78	(0.58 - 1.05)	0.102
Mainly husband/partner/other	58	0.54	(0.33 - 0.9)	0.018
Worked, but didn't receive cash in last 12 months	425	0.75	(0.52 - 1.08)	0.125
Did not work in past 12 months	1,812	0.59	(0.45 - 0.77)	0.000
Participates in all 4 major household decisions[1]				
No	910	1.00	-	-
Yes	2,293	0.83	(0.7 - 1.00)	0.050
Number of reasons given for refusing to have sexual intercourse with husband[2]				
0	375	1.00	-	-
1-2	1,103	1.10	(0.8 - 1.52)	0.561
All 3	1,725	1.27	(0.92 - 1.76)	0.148
Number of reasons for which wife beating is justified[3]				
0	1,607	1.00		-
1-2	785	1.71	(1.38 - 2.13)	0.000
3-4	591	1.72	(1.36 - 2.18)	0.000
All 5	221	1.95	(1.45 - 2.61)	0.000
Negotiate safer sex[4]				
No	935	1.00	-	-
Yes	2,126	0.92	(0.74 - 1.14)	0.442
Don't know/missing	143	0.58	(0.35 - 0.96)	0.036

(Cont'd)

Table 4 – cont'd

	N	Odds ratio	95% CI	p-value
HIV/AIDS-related knowledge, attitudes and behaviours				
Shared own test results with spouse				
Previously tested, shared results with spouse	373	1.00	-	-
Previously tested, did not share results with spouse /never tested / Did not receive results	2,830	0.82	(0.6 - 1.12)	0.203
Knows spouse/partner's HIV status				
Spouse tested and shared results	408	1.00	-	-
Spouse tested, did not share results	52	2.14	(0.89 - 5.13)	0.089
Spouse not tested /did not receive results	2,371	1.18	(0.9 - 1.53)	0.227
Don't know/missing	372	0.99	(0.69 - 1.41)	0.953
HIV status at the time of the survey				
HIV-	2,541	1.00	-	-
HIV+	662	1.11	(0.91 - 1.34)	0.303
Total		**3,203**		

Note: age removed from the model due to collinearity with number of children ever born.

[1] The 4 major household decisions include: 1. own health care; 2. making large household purchases; 3. making household purchases for daily needs; 4. visit family or relatives.

[2] Reasons include: Wife is justified in refusing intercourse with her husband if she: 1. knows husband has a sexually transmitted infection; 2. knows husband has intercourse with other women; 3. is tired or not in the mood.

[3] Reasons include: Husband is justified in hitting or beating his wife if she: 1. burns the food; 2. argues with him; 3. goes out without telling him; 4. neglects the children; 5. refuses to have sexual intercourse with him.

[4] A women can negotiate safer sex if she can refuse sex or request condom use if she knows that her husband has an STI.

The likelihood of spousal violence declined as household wealth status increased from the third to the highest wealth quintile (from OR 0.71 in the third quintile to 0.31 in the highest quintile). Women who did not receive cash earnings in the past 12 months and those who reported that their husband, partner, or others mainly decide on how woman's cash earnings are used were significantly less likely to have experienced spousal violence than women who themselves made such decisions (OR 0.59, $p<0.001$ for women who did not earn cash, and OR 0.54, $p=0.018$ for women whose husband, partner, or others decided). Women's participation in all major household decisions was associated with significantly reduced likelihood of having experienced spousal violence (OR 0.83, $p=0.050$).

Women whose spouses had been tested for HIV but did not share the results were 2.14 times more likely to have experienced spousal violence than those whose partners had been tested and shared the test results (p=0.089). Finally, it is noteworthy that women who were HIV-positive at the time of the survey were only slightly more likely to have experienced spousal violence compared with those who were HIV-negative (OR 1.11), and this association was not statistically significant.

None of the other factors included in Table 4 had any significant associations with spousal violence against women.

Factors associated with HIV infection

Table 5 shows the adjusted associations of experience of spousal violence and selected characteristics and behaviors of women with their HIV-positive status, separately for currently married and formerly married women age 15-49 who were tested for HIV in the 2005-06 ZDHS.

Controlling for other factors, currently married women who had experienced physical violence only, or both physical and sexual violence, were significantly more likely to be HIV-positive than those who had not experienced any physical or sexual violence (OR 1.35, p=0.020 for physical violence only; and OR 1.38, p=0.029 for both physical and sexual violence). With other factors controlled, currently married women who had experienced sexual violence only did not have any increased likelihood of being HIV-positive than those who had not experienced any physical or sexual violence. Also, among formerly married women there was no significant correlation between any experience of physical or sexual violence and HIV infection.

Table 5. Factors associated with HIV-positive status among currently married and formerly married women age 15-49 who were tested for HIV, ZDHS 2005-06

	Currently married women				Formerly married women			
	N	Odds ratio	95% CI	p-value	N	Odds ratio	95% CI	p-value
Domestic violence								
Ever experienced sexual or physical violence								
Neither	1,498	1.00	-	-	299	1.00	-	-
Physical only	789	1.35	(1.05 - 1.73)	0.020	157	0.67	(0.43 - 1.04)	0.078
Sexual only	354	0.95	(0.66 - 1.37)	0.780	92	0.94	(0.52 - 1.7)	0.832
Both physical and sexual	563	1.38	(1.03 - 1.85)	0.029	187	1.08	(0.7 - 1.67)	0.727
Background characteristics								
Age group								
15-19	246	1.00		-	25	1.00		-
20-24	764	1.02	(0.6 - 1.74)	0.934	108	1.24	(0.38 - 4.02)	0.725
25-29	760	1.81	(1.13 - 2.91)	0.014	110	7.31	(2.43 - 21.96)	0.000
30-34	611	2.11	(1.22 - 3.65)	0.008	143	7.28	(2.17 - 24.43)	0.001
35-39	355	1.56	(0.9 - 2.7)	0.112	146	9.08	(2.89 - 28.51)	0.000
40-44	271	1.16	(0.65 - 2.06)	0.610	100	5.82	(1.79 - 18.9)	0.003
45-49	196	0.34	(0.16 - 0.75)	0.008	102	5.66	(1.77 - 18.12)	0.004
Residence								
Urban	1,024	1.00		-	272	1.00	-	-
Rural	2,179	0.93	(0.58 - 1.47)	0.744	463	0.69	(0.3 - 1.61)	0.392
Province								
Manicaland	372	1.00		-	117	1.00	-	-
Mashonaland Central	382	1.03	(0.63 - 1.68)	0.906	66	1.78	(0.75 - 4.23)	0.189
Mashonaland East	303	0.94	(0.6 - 1.45)	0.766	72	0.72	(0.34 - 1.49)	0.373
Mashonaland West	342	1.00	(0.66 - 1.51)	0.990	68	1.13	(0.51 - 2.55)	0.759
Matebeleland North	199	1.36	(0.86 - 2.17)	0.192	28	0.92	(0.35 - 2.44)	0.869
Matebeleland South	128	0.98	(0.59 - 1.62)	0.935	39	1.14	(0.49 - 2.65)	0.765
Midlands	463	0.94	(0.64 - 1.38)	0.742	98	1.03	(0.51 - 2.05)	0.941
Masvingo	429	1.15	(0.82 - 1.62)	0.416	91	0.82	(0.39 - 1.72)	0.602
Harare	422	1.27	(0.83 - 1.96)	0.274	120	0.75	(0.35 - 1.63)	0.468
Bulawayo	164	1.06	(0.63 - 1.8)	0.820	36	0.36	(0.15 - 0.86)	0.022
Education								
No Education	146	1.00		-	55	1.00	-	-
Primary	1,183	1.67	(0.87 - 3.22)	0.124	294	2.29	(0.93 - 5.64)	0.071
Secondary	1,788	1.92	(0.96 - 3.84)	0.064	361	3.27	(1.12 - 9.56)	0.031
Higher	86	1.01	(0.38 - 2.66)	0.985	25	1.94	(0.41 - 9.12)	0.399

(Cont'd)

Table 5 – cont'd

	Currently married women				Formerly married women			
	N	Odds ratio	95% CI	p-value	N	Odds ratio	95% CI	p-value
Religion								
None	294	1.00		-	57	1.00	-	-
Roman Catholic	292	1.00	(0.61 - 1.64)	0.998	76	0.57	(0.24 - 1.37)	0.209
Protestant	744	1.07	(0.71 - 1.6)	0.751	163	0.37	(0.18 - 0.77)	0.008
Pentecostal	503	0.83	(0.5 - 1.38)	0.474	132	0.29	(0.14 - 0.6)	0.001
Apostolic Sect	1,054	0.79	(0.53 - 1.2)	0.272	241	0.46	(0.23 - 0.91)	0.025
Other	317	0.84	(0.49 - 1.44)	0.521	64	0.53	(0.21 - 1.33)	0.176
Household wealth quintile								
Lowest	679	1.00		-	139	1.00	-	-
Second	641	1.32	(0.96 - 1.8)	0.085	117	0.98	(0.52 - 1.85)	0.959
Third	560	1.36	(0.96 - 1.92)	0.085	139	1.99	(1.03 - 3.83)	0.041
Fourth	793	1.45	(0.94 - 2.24)	0.092	183	1.84	(0.81 - 4.18)	0.148
Highest	530	1.09	(0.62 - 1.92)	0.753	157	0.78	(0.28 - 2.19)	0.642
Work status								
Not working	2,025	1.00		-	353	1.00	-	-
Working	1,179	1.14	(0.89 - 1.48)	0.299	381	0.74	(0.49 - 1.14)	0.174
Type of union								
Currently in monogamous union	2,724	1.00		-	n/a	n/a	n/a	n/a
Currently in polygynous union	480	1.21	(0.89 - 1.65)	0.227	n/a	n/a	n/a	n/a
Married more than once								
No	2,764	1.00		-	600	1.00	-	-
Yes	439	1.67	(1.22 - 2.29)	0.001	134	0.77	(0.46 - 1.29)	0.322
Women's status								
Age gap with husband/partner								
Partner younger/same age	172	1.00		-				
Partner 1-4 yrs. older	1,090	0.66	(0.44 - 1)	0.048	n/a	n/a	n/a	n/a
Partner 5-9 yrs. older	1,160	0.75	(0.51 - 1.11)	0.152	n/a	n/a	n/a	n/a
Partner 10+ yrs. older	755	1.03	(0.68 - 1.55)	0.885	n/a	n/a	n/a	n/a
Don't know/missing	26	1.05	(0.25 - 4.48)	0.945	n/a	n/a	n/a	n/a
Education gap with husband/partner								
Same	283	1.00		-	204	1.00	-	-
Partner lower	1,238	1.17	(0.9 - 1.52)	0.242	123	1.05	(0.58 - 1.89)	0.880
Partner higher by 1-3 yrs.	826	1.14	(0.86 - 1.5)	0.361	242	1.57	(0.91 - 2.7)	0.105
Partner higher by 4+ yrs.	698	1.16	(0.83 - 1.62)	0.396	129	1.46	(0.77 - 2.79)	0.246
Don't know/missing	157	0.96	(0.35 - 2.62)	0.942	36	1.17	(0.52 - 2.63)	0.711

(Cont'd)

Table 5 – cont'd

	Currently married women				Formerly married women			
	N	Odds ratio	95% CI	p-value	N	Odds ratio	95% CI	p-value
Sexual behavior								
Age at first sexual intercourse								
<15	283	1.00		-	65	1.00	-	-
15-17	1,238	1.47	(0.72 - 3.01)	0.294	250	2.05	(0.69 - 6.09)	0.197
18-19	826	1.20	(0.75 - 1.91)	0.438	217	1.96	(0.75 - 5.15)	0.171
20+	698	1.38	(0.82 - 2.31)	0.220	175	1.57	(0.62 - 3.98)	0.343
Missing/inconsistent	157	1.48	(0.9 - 2.42)	0.121	27	0.99	(0.39 - 2.52)	0.991
Number of lifetime partners[1]								
1	2,269	1.00		-	337	1.00		-
2+	929	2.14	(1.63 - 2.82)	0.000	395	1.36	(0.83 - 2.22)	0.222
Don't know/missing					2	1.19		0.890
Non-spousal, non-cohabiting partners in past 12 months								
No	3,186	1.00		-	557	1.00	-	-
Yes	17	0.83	(0.27 - 2.6)	0.750	177	1.19	(0.1 - 13.49)	0.890
Condom use at most recent sex with non-spousal partner[2]								
No	n/a	n/a	n/a	n/a	95	1.00	-	-
Yes	n/a	n/a	n/a	n/a	82	0.88	(0.43 - 1.81)	0.732
No non-spousal sex in last 12 months	n/a	n/a	n/a	n/a	557	0.87	(0.48 - 1.58)	0.655
Total	**3,203**				**734**			

[1] 10 HIV negative currently married women who didn't know their number of lifetime partners or who didn't answer the question were included in the 2+ category.

[2] Condom use at last non-spousal sex was excluded from the currently married model due to small sample size.

Among other factors included in the analysis, age was strongly associated with HIV prevalence both among currently married and formerly married women, particularly among the formerly married. Also, women's level of education was positively associated with the likelihood of HIV infection in both groups of women from no education up to the secondary level, but not for higher than secondary level. Currently married women with secondary level of education were 1.92 times (p=0.064) more likely to be HIV-positive than women with no education, and

formerly married women with secondary level of education were 3.27 times (p=0.031) more likely to be HIV-positive than women with no education.

Religion was generally protective against HIV infection, except for currently married Protestant and Roman Catholic women. Formerly married women of Pentecostal religion (OR 0.29, p=0.001), Protestant religion (OR 0.37, p=0.008), and Apostolic Sect (OR 0.46, p=0.025) were significantly less likely to be HIV-positive than women of no religion. Currently married women who had married more than once were significantly more likely to be HIV-positive than women married only once (OR 1.67, p=0.001). Also, currently married women with two or more lifetime sexual partners were significantly more likely to be HIV-positive than women with only one lifetime partner (OR 2.14, p<0.001). These relationships for married more than once and multiple lifetime sexual partners were not observed for formerly married women.

DISCUSSION

The relationship between violence against women and HIV infection goes in both directions. For women, violence may lead to HIV infection, and disclosure of HIV-positive status may increase their vulnerability to violence. Although the analysis in this study cannot establish causality, a key finding is the significant link between violence against women and HIV infection. Nearly 3 women in every 10 who experienced sexual violence were HIV-positive. Moreover, women reporting physical violence, with or without sexual violence, were more likely to be HIV-positive than women experiencing neither physical nor sexual violence. Sexual violence by spouses did not on its own increase the likelihood of HIV infection.

Physical violence was strongly associated with the likelihood of HIV infection. While in Zimbabwe HIV is mainly transmitted through heterosexual contact, the fear of physical violence may limit a woman's ability to question her partner's extramarital sexual behavior or negotiate for safer sex. Qualitative data from Uganda and India support this interpretation, showing that women find it difficult to suggest or insist on condom use in the face of or threat of violence (Go et al. 2003; Human Rights Watch 2003).

Violence against women is widespread in Zimbabwe and affects women across all socio-economic categories. However, the ZDHS found that spousal violence was generally higher among HIV-positive women than among HIV-negative women. After controlling for other factors, number of children ever born, polygyny, and accepting attitudes toward violence were found to be strongly associated with spousal violence among currently married women. This association confirms findings by the Musasa Project (1999), where women reported being physically and emotionally abused by spouses, scorned by family members, and sometimes even ostracized from their homes after disclosing their HIV-positive status. Due to women's social

powerlessness, male partners who test HIV-positive may unleash their anger and frustration on their female partners.

While education and economic empowerment of women remain critical strategies for sustainable development, the findings of our study reveal that a change in inherent and deep seated cultural norms and values of male dominance is required before women can be respected and can live free from physical or sexual violence. While the study showed that poverty contributes to increased likelihood of violence, the incidence of spousal violence was lower in relationships where the woman agreed that the husband should decide how cash earnings should be used than in households where the woman herself decided.

The influence of age, education, and wealth observed in this study mirrors that observed in Zimbabwe's national epidemiological review (2007). Because currently married women age 25-34 years have a higher likelihood of being HIV-positive than those age 15-19, there is need to focus on young women and men during the transition years between adolescence to marriage and also within marriage. It is within marriage that women's options for HIV prevention become limited. It is possible that as women become more mature and beyond the socially accepted age of marriage, their insistence on taking precautions against pregnancy and HIV diminishes with promises of marriage, thereby increasing their exposure to HIV.

The findings of this study are consistent with those of Mishra et al. (2007) that increasing wealth is associated with greater likelihood of HIV infection in sub-Saharan Africa. Consistent with this pattern, working women and educated women (primary and secondary education) had higher HIV prevalence of HIV than non-working women and women without education. Arguably, as women become more mobile and economically empowered they may increasingly adopt risky sexual behaviors typical of men.

The analysis presented in this study has a number of limitations, which should be kept in mind when interpreting the results. First and foremost, our analysis is based on reported behaviors of violence, and thus the findings may be biased to the extent that women misreport these behaviors. Second, our analysis is based on cross-sectional data and hence we cannot draw definite conclusions on the causal relationship between spousal violence and HIV infection. In addition, for many HIV-positive women the infection may have occurred before the experience of violence reported in the survey, which would mean that violence could not have led to HIV infection, but the reverse may be true if the HIV status were disclosed. In cases where HIV infection preceded the experience of violence and where HIV-positive status was not known, the observed association may be due to some other factors.

Despite these limitations, the study findings call for special attention to societal values and norms on gender equality in programming, both for prevention of violence against women and prevention of HIV. Increased attention to individual and collective responsibility for HIV and violence prevention will sustainably reduce the incidence of both intimate partner violence and HIV. This study also provides useful data for prioritizing geographical regions with higher prevalence of violence and HIV for targeted interventions.

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