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AIDS Stigma and Uptake of HIV Testing in Zimbabwe

William Sambisa

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Macro International Inc.

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Corresponding Author: William Sambisa, MEASURE Evaluation Project and Carolina Population Center, University of North Carolina at Chapel Hill, CB# 8120, 206 West Franklin Street, Chapel Hill, NC 27514; Phone: 919-843-3772; Email: wsambisa@unc.edu

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ABSTRACT

The objective of this report is to examine the effects of AIDS stigma on uptake of HIV testing in Zimbabwe, with particular emphasis on pathways to HIV testing and reasons for not being tested. Understanding the role of AIDS stigma on uptake of HIV testing can be useful in providing input on the development of HIV testing services. Data are derived from the nationally representative 2005-06 Zimbabwe Demographic and Health Survey. Analyses are restricted to women (6,997) and men (5,359) who have ever had sex. Multinomial logistic regression models are used to determine the independent effects of AIDS stigma on HIV testing uptake through different pathways (volunteering, being offered and accepting the test, and being required to be tested) and on competing reasons for not being tested.

Testing for HIV is higher among women (30 percent) than men (22 percent). For women, the main reason for being tested for HIV is accepting testing when it is offered (particularly in the context of antenatal care), whereas for men it is volunteering to be tested. For both women and men, the most common reasons for not being tested are lack of access to testing services and fear of test results. The odds of having ever been tested for HIV across all pathways to testing are lower for women but not men who have social rejection stigma. Testing uptake is significantly increased among those women and men who have observed enacted stigma. Education, religion, exposure to mass media, perceived risk of HIV infection, and ever use of condoms are strongly predictive of having ever been tested for HIV. Social rejection stigma is predictive of not being tested because of fear of test results. Rural residence and having had three or more lifetime sexual partners increases the odds of not having been tested because of lack of access to testing services.

In conclusion, AIDS-related stigma appears to be a deterrent to HIV testing uptake. Hence, more work needs to be done to reduce the impact of AIDS-related stigma on the adoption of preventive behaviors.

INTRODUCTION

Stigma has accompanied the HIV/AIDS epidemic since its early years (Parker and Aggleton, 2003). As early as 1987, AIDS stigma was identified as one of three distinct epidemics that threatened public health. This stigma has made it difficult to tackle the first two of these epidemics: HIV infection and AIDS (Mann, 1987; Panos Institute, 1990). Since its establishment in 1996, the Joint United Nations Program on HIV and AIDS (UNAIDS) has noted the urgency of dealing with AIDS stigma, stressing it as the most important task in reducing the impact of the HIV/AIDS epidemic (Aggleton, 2001). Yet AIDS stigma is still reported to be pervasive and to constitute one of the greatest barriers to dealing effectively with the HIV/AIDS epidemic in sub-Saharan Africa (Campbell et al., 2005; UNAIDS, 2003; Van Dyk, 2001).

There is a growing recognition that AIDS stigma limits the opportunities of individuals to engage in HIV preventive behavior and affects their emotional, financial, and social lives (Vanable et al., 2006; Ogden and Nyblade, 2005; Banteyerga et al., 2004). Several empirical studies have shown that AIDS stigma experiences deter individuals from finding out about their HIV status (Spielberg et al., 2001; Kalichman and Simbayi, 2003; Parker and Aggleton, 2003; Valdiserri, 2002). In Botswana and Zambia, researchers have reported that stigma against HIV-infected people and fear of being mistreated prevent people from participating in voluntary counseling and testing for HIV, including programs aimed at preventing mother-to-child transmission of HIV (Nyblade and Field, 2000). The reluctance to be tested for HIV is driven by the fear of experiencing violence and physical and social ostracism if the test results are positive (Maher et al., 2000; Maman et al., 2001; Medley et al., 2004). Studies have also shown that the fear of loss of social status, social isolation, and discrimination inhibits those who know they are infected from sharing their diagnosis, thus contributing to spreading the virus further (Chesney,

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2003; Hutchinson and Mahlalela, 2006; Kilewo et al., 2001; Mill, 2003). Stigmatizing beliefs about HIV/AIDS have been shown to impede decisions to seek treatment and care and to discontinue treatment for treatable health problems (Brown et al., 2003; Stein and Nyamathi, 2000; Chesney and Smith, 1999). For example, in a study of clinic clients in Botswana, stigma accounted for 15 percent of the principal barriers to antiretroviral adherence (Weiser et al., 2003).

Although numerous studies in the United States have amply documented that stigma is an impediment to creating effective HIV testing interventions, few studies in sub-Saharan Africa provide quantifiable measures of the effect of stigma on the uptake of HIV testing (Herek et al., 1998; Valdiserri, 2002; Iliyasu et al., 2005). Specifically, little is known about the factors that influence uptake of HIV testing in Zimbabwe (the country on which the present study focuses) (Sherr et al., 2007; Corbett et al., 2006). To our knowledge, there are also no published studies that have documented the effects of AIDS stigma on uptake of HIV testing and counseling services. Only recently has research in Zimbabwe started assessing AIDS stigma, but this research is limited to documenting stigma rather than its implications for health behaviors (Genberg et al., 2007). The lack of research on the impact of AIDS stigma on HIV preventive behavior is a major drawback for AIDS prevention programs in countries such as Zimbabwe experiencing high HIV prevalence levels.

In light of these considerations, this study has three aims. First, the level of HIV testing uptake is determined among a nationally representative sample of men and women in Zimbabwe. Second, the level of AIDS stigma across different dimensions is documented. Third, the association between AIDS stigma and HIV testing uptake is determined. The findings from this study will help to better understand the influence of AIDS stigma on voluntary HIV testing and

counseling and provide much-needed input for further development of HIV testing services in Zimbabwe. Furthermore, because this study provides a unique perspective on AIDS-related stigma in Zimbabwe, the results might guide the design of stigma-reduction interventions.

DATA

For the present analysis, data from the 2005-06 Zimbabwe Demographic and Health Survey (ZDHS) are used. These data include information from a nationally representative sample of women age 15-49 years and men age 15-54 years. The ZDHS survey collects information on demographic and health indicators, including social and demographic characteristics; marriage and sexual activity; family planning knowledge and use; and HIV/AIDS-related knowledge, attitudes, and behavior. Of particular relevance to this analysis is that the ZDHS data include self-reported information on AIDS stigma, risk awareness, sexual history and behavior, HIV testing, and reasons for not being tested for HIV.

A two-stage cluster sampling technique was used to collect the data. In the first stage, a total of 400 primary sampling units or enumeration areas (EAs) were systematically sampled. The EAs were derived from the 2002 Zimbabwe Master Sample developed by Zimbabwe's Central Statistical Office after the 2002 population census. In the second stage, a fixed number of households were randomly selected in each sample EA. A total of 9,285 households were successfully interviewed, representing a household response rate of 95 percent. All women age 15-49 and all men age 15-54 in selected households were eligible to be interviewed. In the interviewed households, 9,870 eligible women were identified and 8,907 completed the interview, resulting in a 90 percent response rate. Of all 8,761 eligible men, 7,175 were

successfully interviewed, for an 82 percent response rate (Central Statistical Office [Zimbabwe] and Macro International Inc., 2007).

Because the variables of interest are HIV testing uptake and AIDS stigma, the analysis is restricted to women and men who answered these questions. The sample is further restricted to respondents who have ever had sex because some of the predictors of HIV testing uptake and AIDS stigma that are considered (most notably condom use and number of lifetime sexual partners) were measured only for this group. The final sample for the analysis is thus 6,997 women and 5,359 men.

METHODS

Statistical Analyses

The distribution of women and men are first examined by variables related to AIDS stigma, HIV testing uptake, selected sociodemographic characteristics, HIV knowledge, risk awareness, and sexual behavior. Next, the association between HIV testing uptake, AIDS stigma, and the same individual characteristics and sexual behaviors are assessed and distinctions are made among respondents who were tested because they volunteered, they were offered a test and accepted it, or they were required to be tested. The association between the individual characteristics and sexual behaviors are also assessed for those who had not been tested and distinctions are made among the reasons for not being tested. All associations are evaluated using chi-square (χ^2) tests.

Finally, multivariate statistical methods are used to evaluate the association between HIV testing uptake and AIDS stigma. Two models are fitted to the data. The first model is fitted to the subsample of respondents who have been tested for HIV. This model evaluates the importance of

AIDS stigma for being tested through three main pathways: volunteering, being offered a test and accepting it, and being required to have the test. The second model is fitted to the subsample of respondents who have never been tested for HIV. This model evaluates the importance of AIDS stigma for reasons for not being tested: lack of access to testing services, fear of test results, concerns about the confidentiality of the test results, and other reasons. Details on the methodology used to construct the two dependent variables above are provided in the next section.

Because in both models the dependent variable is categorical, multinomial logistic regression is used to model the direct and conditional effect of AIDS stigma on the two outcome variables. Multinomial logistic regression models are multiequation models in which the number of models generated equals the number of response categories for the dependent variable minus one. Each of these equations is a binary logistic regression comparing a group with the reference group. This procedure estimates the logits, and resulting coefficients can be interpreted as relative risk ratios (i.e., exponentiated coefficients), that is, the risk of giving one response rather than the reference response.

In addition to statistical tests for the regression coefficients, multicollinearity is tested for. According to the variance inflation factor and the tolerance statistics, collinearity between variables in the model is not a problem.

All analyses are weighted and adjusted for variance estimations for the multistage cluster sampling survey design using STATA, version 10.0 (Stata Corporation, College Station, Texas). Results are presented first for the bivariate and multivariate results of the first model (pathways to HIV testing) and then for the bivariate and multivariate results of the second model (reasons for not having been tested for HIV).

Dependent Variable

As indicated in the previous section, to measure HIV testing uptake, two outcome variables are created: (1) pathways to HIV testing and (2) reasons for not having been tested for HIV.

The outcome variable *pathways to HIV testing* is constructed using two questions in the ZDHS. The first of these questions asks respondents if they have ever been tested for HIV (women who have given birth in the five years preceding the survey are asked if they have been tested both in and outside the context of antenatal care). The second questions asks those who have been tested for HIV if they asked for the test, if it had been offered to them and they accepted, or if it had been required (such as in the case of antenatal care for women). These assessments are recoded to create a categorical variable reflecting four situations: (1) the respondent was not tested for HIV, (2) the respondent was tested for HIV and had asked for the test, (3) the respondent agreed to be tested for HIV when offered the opportunity, and (4) the respondent was tested for HIV because the test was required.

The second outcome variable, *reasons for not having been tested for HIV*, is inferred directly from a ZDHS survey question for respondents who reported never having been tested for HIV about their reasons for not being tested. These reasons are recoded into five categories: (1) perceives no risk of HIV infection, (2) lack of access to testing services, (3) afraid of test results, (4) concerned about confidentiality, and (5) other reasons.

Independent Variables

The selection of the independent variables is guided by prior research on HIV testing uptake (Gage and Ali, 2005, Simbayi et al., 2003; Singhal and Rogers, 1999; Kalichman and Simbayi,

2003; Herek et al., 2003) as well as by social-cognitive theories such as the AIDS Risk Reduction Model (Catania et al., 1994) and the Information, Motivation and Behavioral Skills Model (Fisher and Fisher, 1992). These models suggest that HIV preventive behavior involves a number of cognitive-attitudinal factors, including AIDS stigma, perceived risk of HIV infection, and HIV knowledge.

The primary explanatory domain, AIDS stigma, consists of two groups of indicators related to stigmatizing attitudes toward people living with HIV/AIDS and observed enacted stigma. Stigmatizing attitudes toward people living with or suspected of having HIV/AIDS are measured using seven survey questions on AIDS and tuberculosis[1] (TB) stigma, which cover a broad range of stigma-related issues including labeling, repulsion, and avoidance. The selection of these survey items is grounded in a theoretical framework developed by Link and Phelan (2006).

Because stigmatizing beliefs are conceptually heterogeneous (Goffman, 1963), a principal component analysis with varimax rotation is used to extract factors from the seven items, resulting in a three-factor solution that accounts for 71 percent (in women) and 72 percent (in men) of the total variance (data not shown) (Dunteman, 1989). The factors hypothesized to reflect stigmatizing attitudes toward people living with HIV/AIDS (referred to as "dimensions" hereafter) are as follows: (1) *social rejection* (three items); (2) *prejudiced attitudes* (two items); and (3) *disclosure concerns* (two items) (see Table 1A for details on the survey questions corresponding to each dimension). Items in each scale are summed to create additive scales. The

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[1] HIV is the single most important factor in the resurgence of TB in most developing regions. In sub-Saharan Africa, the prevalence of TB-HIV coinfection ranges from 31 percent to 62 percent (Corbett et al., 2003).

total score is then split into binary variables indicating no stigma (score = 0) versus some stigma (score ≥ 1) for each dimension.

Observed enacted stigma is measured using four survey items that reflect the respondent's perceptions about manifestations of social, verbal, and institutional stigma within their community and the respondent's personal knowledge of someone with HIV or AIDS (see Table 1A for details on the survey questions corresponding to this dimension). These assessments are combined into a three-level categorical variable reflecting knowing no one with HIV/AIDS, knowing someone with HIV/AIDS and not having observed discrimination, and knowing someone with HIV/AIDS and having observed discrimination.

Table 1A. Responses to AIDS stigma items by dimension and gender, Zimbabwe DHS, 2005-06

AIDS stigma items	Women		Men	
	N	%	N	%
Sample size (weighted)	6,997	-	5,359	-
Stigmatizing attitudes				
Social rejection[1]				
Would buy fresh vegetables from a shopkeeper or vendor if you knew that this person had HIV	3,184	45.51	1,802	33.63
If a female teacher has HIV but is not sick, she should be allowed to continue teaching in school	2,155	30.79	1,390	25.93
If a male teacher has HIV but is not sick, he should be allowed to continue teaching in school	2,179	31.15	1,386	25.87
Prejudiced attitudes[2]				
Thinks people with HIV should be ashamed of themselves	2,216	31.68	1,403	26.17
Thinks people with HIV should be blamed	1,786	25.53	1,163	21.70
Disclosure concerns[3]				
Would want others to know if a family member became infected with HIV	3,627	51.84	3,062	57.14
Would you want others to know if a family member became infected with tuberculosis	4,888	69.86	3,988	74.41
Observed enacted stigma[4]				
Knows someone with HIV or who has died of AIDS	1,125	16.11	1,416	26.71
Knows someone suspected to have HIV/AIDS who has been denied health services in the last 12 months	481	6.87	233	4.34
Knows someone suspected to have HIV/AIDS who has been denied involvement in social events, religious services, or community events in the last 12 months	359	5.13	190	3.55
Knows someone suspected to have HIV/AIDS who has been verbally abused or teased in the last 12 months	1,365	19.50	1,288	24.03

[1]Results of factor analysis for these three items: women: $\alpha = 0.77$, eingenvalue $= 2.10$, percent of the variance explained $= 30.30$; men: $\alpha = 0.78$, eigenvalue $= 2.15$, percent of the variance explained $= 30.70$.
[2]Results of factor analysis for these two items: women: $\alpha = 0.65$, eingenvalue $= 1.48$, percent of the variance explained $= 20.80$; men: $\alpha = 0.61$, eingenvalue $= 1.44$, percent of the variance explained $= 28.20$.
[3]Results of factor analysis for these two items: women: $\alpha = 0.53$, eingenvalue $= 1.35$, percent of the variance explained $= 20.10$; men: $\alpha = 0.64$, eingenvalue $= 1.46$, percent of the variance explained $= 26.88$.
[4]Results of factor analysis for these four items: women: $\alpha = 0.54$, eingenvalue $= 1.70$, percent of the variance explained $= 54.20$; men: $\alpha = 0.51$, eingenvalue $= 1.61$, percent of the variance explained $= 48.66$.

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The second explanatory domain considered in the analysis, sociodemographic characteristics, includes seven measures of the respondent's individual characteristics: age, residence, education, marital status, religion, employment status and exposure to mass media. Exposure to mass media is measured through a composite index of three survey items that assess whether the respondent reads newspapers or magazines, listens to the radio, or watches television.[2] The additive scale is split into a three-level categorical variable: low media exposure (score of 0-1), medium media exposure (2-4), and high media exposure (5-6).

The third explanatory domain, HIV knowledge, includes four binary variables to capture the relevance of AIDS-related knowledge about HIV testing uptake. These dichotomous variables assess the respondents' beliefs concerning whether abstaining from sex, being faithful to one's partner, and using condoms consistently can prevent HIV infection, and whether a healthy-looking person can have HIV.

The fourth explanatory domain, HIV risk awareness, assesses respondents' perceived susceptibility to contracting HIV using one variable: perceived risk of HIV infection. A single survey item is used to assess the level of risk the respondent feels he or she is at of contracting HIV, that is: "Do you think your risk of getting infected with HIV is low, medium, high, do you have no risk at all or don't know?" Respondents who gave a "don't know" response are combined with the "high-risk" group. Therefore, four levels of perceived risk of HIV infection are used in the analysis: "no risk," "small risk," "moderate risk," and "high risk."

Finally, the firth explanatory domain, sexual behavior, includes respondents' reports of whether they have ever used condoms and the number of lifetime sexual partners they have had.

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[2] The index has a Cronbach alpha of 0.75 for women and 0.72 for men.

RESULTS

Sample Characteristics

Table 1B shows the general profile of the respondents in the selected sample. For both women and men, slightly more than one-third of respondents are age 25-34 years and a majority live in a rural area and have secondary or higher education. Furthermore, the majority of respondents believe that abstinence, being faithful to one's partner, and condom use can prevent HIV infection and that a healthy-looking person can have HIV. Most respondents perceive themselves as having no or a small risk of becoming infected by HIV. Ever use of condoms is higher among men (32 percent) than women (11%), and men are more likely than women to report having had three or more lifetime sexual partners (64 percent versus 13 percent , respectively). Overall, 30 percent of women and 22 percent of men report having ever been tested for HIV.

Table 1B. Frequency distributions and percentages of women and men who have ever had sex, by selected sociodemographic characteristics, HIV knowledge, risk awareness, sexual behavior, AIDS stigma, and HIV testing uptake, Zimbabwe DHS, 2005-06[1]

Independent variables	Women age 15-49		Men age 15-54	
	N	%	N	%
All respondents	6,997	-	5,359	-
Sociodemographic characteristics				
Age (years)				
15-24	2,295	32.80	1,629	30.40
25-34	2,604	37.21	1,895	35.37
35-44	1,512	21.61	1,119	20.88
45+	586	8.38	715	13.35
Residence				
Urban	2,550	36.44	2,239	41.78
Rural	4,447	63.56	3,120	58.22
Education				
Primary or less	2,905	41.53	1,618	30.20
Secondary or higher	4,091	58.47	3,741	69.80

(Cont'd)

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Table 1B – Cont'd

Independent variables	Women age 15-49		Men age 15-54	
	N	%	N	%
Marital status				
Never married	553	7.90	3,751	69.99
Ever married	6,444	92.10	1,608	30.01
Religion				
Traditional	863	12.34	2,005	37.42
Apostolic	2,209	31.58	1,145	21.37
Pentecostal	1,180	16.86	616	11.49
Protestant	2,067	29.54	1,000	18.66
Roman Catholic	677	9.68	593	11.06
Employment status				
Unemployed	4,183	59.84	1,371	25.63
Employed	2,807	40.16	3,977	74.37
Exposure to mass media				
Low media exposure	3,410	48.61	1,424	26.58
Medium media exposure	2,410	34.32	2,537	47.34
High media exposure	1,194	17.07	1,398	26.08
Household Wealth				
Poorest	1,330	19.00	864	16.11
Poor	1,257	17.97	885	16.51
Middle	1,231	17.60	816	15.22
Richer	1,621	23.17	1,545	28.84
Richest	1,558	22.26	1,250	23.32
HIV knowledge				
Abstinence belief				
No	1,340	19.15	633	11.82
Yes	5675	80.85	4,726	88.12
Being faithful belief				
No	1,325	18.94	755	14.08
Yes	5,672	81.06	4,605	85.92
Condom use belief				
No	1,578	22.55	899	16.78
Yes	5,419	77.45	4,460	83.22
Healthy-looking person can have HIV				
No	810	11.83	360	6.72
Yes	6,039	88.17	4,999	93.28

(Cont'd)

Table 1B – Cont'd

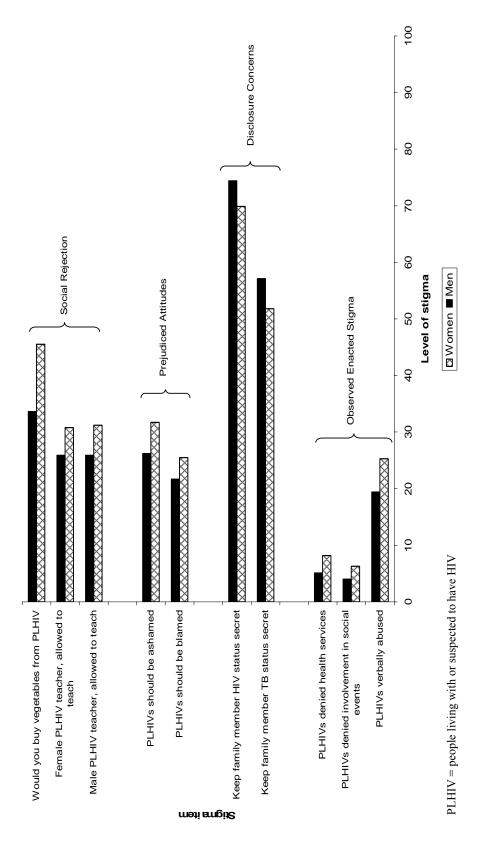| Independent variables	Women age 15-49		Men age 15-54	
	N	%	N	%
Risk awareness				
Perceived risk of HIV infection				
No risk	1,751	25.52	1,835	34.42
Small risk	2,036	29.66	1,723	32.31
Moderate risk	1,406	20.49	986	18.49
High risk	1,670	24.33	788	14.78
Sexual behavior				
Ever used condoms				
No	6,236	89.12	3,653	68.16
Yes	761	10.88	1,707	31.84
Number of lifetime sexual partners				
2 or less	6,099	87.17	1,932	36.05
3 or more	898	12.83	3,428	63.95
AIDS stigma				
Social rejection				
No stigma	3,111	44.47	2,997	55.93
Some stigma	3,885	55.53	2,362	44.07
Disclosure concerns				
No stigma	1,593	22.76	1,108	20.67
Some stigma	5,404	77.24	4,252	79.33
Prejudiced attitudes				
No stigma	4,216	60.25	3,502	65.34
Some stigma	2,781	39.75	1,858	34.66
Observed enacted stigma				
Knows no- one with HIV/AIDS	4,211	60.19	2,562	47.80
Knows someone with HIV/AIDS but did has not observed discrimination	1,135	16.22	1,368	25.52
Knows someone with HIV/AIDS and has observed discrimination	1,651	23.59	1,430	26.68
Tested for HIV	2,095	29.95	1,156	21.59

[1]All figures in the table are adjusted for the complex survey design and analytic weights.

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AIDS Stigma

Table 1B also shows that overall, the most common dimension of AIDS stigma is disclosure concerns; a high proportion of women (77 percent) and men (79 percent) reported that they would not want others to know that their family member had HIV or tuberculosis. Another dimension of AIDS-stigma, social rejection follows and is higher among women (55 percent) than men (44 percent). Women are also more likely to have prejudiced attitudes than men (40 percent versus 35 percent, respectively). About 16 percent of women and 26 percent of men report that they know someone with HIV but have not observed discrimination against persons living with HIV. About a quarter of both women and men reported that they know someone with HIV and know someone who has been discriminated against because they were suspected of being HIV positive.

Figure 1 visually presents the individual AIDS stigma items that contribute to each dimension of AIDS stigma (see Table 1A for the corresponding percentages). The figure shows that the most prevalent disclosure concern (found in approximately 70 percent of women and 74 percent of men) is the belief that TB infection among family members should be kept secret. Both sexes believe that HIV infection among family members should be kept secret, although fewer believe this about HIV than TB (52 percent of women versus 57 percent of men).

Figure 1. Distribution and dimensions of AIDS stigma by gender, Zimbabwe, 2005-06[3]

PLHIV = people living with or suspected to have HIV

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[3] The level of stigma for each item under social rejection dimension reflects the distribution of respondents who reported 'no' to the item; whereas for prejudiced attitudes and disclosure concerns, the level of stigma reflects the percent distribution of "yes/agree" responses to the items under each dimension. Observed enacted stigma reflects the distribution of respondent's who have observed discrimination against persons suspected to be living with HIV.

The most important social rejection contributor to AIDS stigma is the belief that it is not safe for someone to buy vegetables from a shopkeeper or vendor suspected to be HIV positive (45 percent of women versus 34 percent of men).

Finally, with respect to prejudiced attitudes toward persons suspected to be HIV positive, 32 percent of women and 26 percent of men report that persons infected with HIV should be ashamed of themselves. Approximately 25 percent of women and 22 percent of men support the belief that persons suspected to be HIV positive deserve to be blamed.

HIV Testing Uptake

Table 2 shows the reasons why respondents have or have not been tested for HIV. Among respondents who agreed to be tested for HIV, 33 percent of women and 53 percent of men did so voluntarily; 46 percent of women and 27 percent of men reported that service providers offered testing and they accepted the offer (for women, this was mostly the case in the context of antenatal care, data not shown); and 21 percent of women and 20 percent of men reported that the test was required. The most common reasons for never having been tested for HIV are lack of access to HIV testing services and fear of test results. Women (38 percent) are more likely than men (24 percent) to have not been tested for HIV due to fear of finding out that they were HIV positive or because they believed that nothing could be done if they were found to be HIV positive. Less common reasons cited for not being tested are the perception of having no risk of HIV infection among those who were not sexually active (10 percent of women versus 19 percent of men) and concerns about the confidentiality of the test result (4 percent of women versus 8 percent of men).

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Table 2. HIV testing uptake among women and men who have ever had sex, by pathways to being tested and reasons for not having been tested, Zimbabwe DHS, 2005-06[1]

Uptake of HIV testing	Women		Men	
	N	%	N	%
Tested for HIV	2,095	NA	1,156	NA
Volunteered for a test	695	33.17	616	53.29
Accepted to be tested when offered	962	45.92	309	26.73
Was required to be tested	438	20.91	231	19.98
Not tested for HIV	4,764	NA	4,183	NA
Perceived no risk of infection/not sexually active	462	9.70	788	18.84
Lack of access to testing services	1,443	30.29	1,239	29.62
Fear of test results	1,798	37.74	988	23.62
Concerned about confidentiality	182	3.82	352	8.42
Other reasons	879	18.45	816	19.51

[1] Percentages may not add to 100 due to missing values.
NA = not applicable

Characteristics and Behaviors Associated with Ever Having Been Tested for HIV

Table 3 shows the bivariate associations between pathways to HIV testing and the individual characteristics and sexual behaviors considered in the present analysis. Respondents who reported as having some social rejection and prejudiced attitudes stigma were less likely to get tested for HIV. In addition, women and men who reported as having some social rejection stigma were less likely to volunteer to test and accept a test when offered, compared to those who reported as having no stigma. Similarly, respondents who reported as having prejudiced attitudes stigma were less likely to volunteer to test for HIV compared to those having no stigma. Conversely, respondents who reported as having some disclosure concerns stigma were more likely to get tested for HIV than those who reported as having no disclosure concern stigma. As regards observed enacted stigma, respondents who indicated that they knew no one with HIV were less likely to get tested for HIV than those who reported that they either knew someone

with HIV but had not observed any discrimination or knew someone with HIV and had observed discrimination.

A clear pattern on the association between age and pathways to HIV testing emerged for women but not for men. In general, the likelihood of testing declined with increasing age. In addition, women and men living in urban areas were more likely to get tested for HIV than their counterparts living in rural areas, across all three pathways to HIV testing. As expected, respondents who had secondary or higher education were more likely get tested for HIV compared with those with primary or less education. Never married respondents, especially women, were more likely to volunteer to test for HIV compared to their counterparts who were ever married. On the contrary, ever married respondents were more likely to test for HIV when offered or required to do so, compared to never married respondents. Similarly, employed women and men were more likely to volunteer to test for HIV compared to unemployed women and men. Overall, the likelihood of testing increased with increased exposure to mass media. Moreover, adults living in wealthier households were more likely to get tested than those in poorer households.

Across all three pathways to HIV testing, HIV-related knowledge and beliefs were associated with greater likelihood of testing for HIV. Respondents who believed that abstinence and being faithful to one's sexual partner can prevent HIV infection were more likely to test for HIV. Similarly, respondents who believed that a healthy looking person can have HIV were more likely to get tested for HIV than those who did not believe so. There was no clear pattern of association between risk awareness, condom use, having multiple lifetime sexual partners, and the likelihood of getting tested.

Table 3. Bivariate associations of sociodemographic, HIV knowledge, risk awareness, sexual behavior, and AIDS stigma correlates of pathways to HIV testing among women and men who have ever had sex, Zimbabwe DHS, 2005-06

Independent variables	Women age 15-49 (N=6,997)				Men age 15-54 (N=5,359)			
	% Not tested	Pathways to HIV testing			% Not tested	Pathways to HIV testing		
		% Volunteered for test	% Offered and accepted test	% Testing required		% Volunteered for test	% Offered and accepted test	% Testing required
Sociodemographic characteristics								
Age (years)								
15-24	64.61	11.12	16.71	7.56	81.33	11.15	4.86	2.66
25-34	67.12	10.02	15.61	7.26	76.36	13.04	5.99	4.61
35-44	77.29	9.21	9.71	3.79	75.97	12.31	6.84	4.88
45+	85.70	6.88	4.34	3.09	80.97	7.04	5.60	6.40
Residence								
Urban	61.65	15.72	15.17	7.46	70.77	16.80	6.55	5.88
Rural	74.87	6.63	12.94	5.57	83.87	7.72	5.21	3.19
Education								
Primary or less	80.44	5.58	9.54	4.45	88.15	4.57	3.38	3.90
Secondary or higher	62.68	13.04	16.74	7.54	74.18	14.52	6.81	4.49
Marital status								
Never married	70.42	16.45	9.31	3.83	80.05	12.04	4.64	3.27
Ever married	70.02	9.38	14.13	6.46	77.70	11.29	6.26	4.76
Religion								
Traditional	78.65	7.54	10.30	3.52	83.84	8.20	4.08	3.89
Apostolic	73.38	7.17	12.52	6.93	80.46	10.00	5.25	4.29
Pentecostal	62.94	13.33	16.14	7.59	68.35	17.17	8.88	5.60
Protestant	67.57	11.00	15.17	6.25	73.55	15.66	6.83	3.96
Roman Catholic	68.23	12.92	13.63	5.22	74.65	12.80	7.50	5.05
Employment status								
Unemployed	70.13	8.88	14.83	6.16	82.04	9.03	5.16	3.77
Employed	69.88	11.55	12.16	6.41	77.14	12.37	5.98	4.51

(Cont'd)

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Table 3 – Cont'd

Independent variables	Women age 15-49 (N=6,997)				Men age 15-54 (N=5,359)			
	Pathways to HIV testing				Pathways to HIV testing			
	% Not tested	% Volunteered for test	% Offered and accepted test	% Testing required	% Not tested	% Volunteered for a test	% Offered and accepted test	% Testing required
Exposure to mass media								
Low media exposure	77.92	4.87	11.62	5.59	87.82	5.36	4.32	2.50
Medium media exposure	65.35	12.39	15.49	6.77	79.30	10.88	5.69	4.13
High media exposure	57.12	19.46	16.30	7.12	67.21	18.92	7.39	6.48
Household Wealth								
Poorest	81.62	4.76	10.14	3.48	88.37	5.29	3.72	2.62
Poor	75.50	6.01	12.22	6.27	85.65	7.33	4.44	2.58
Middle	71.97	6.55	14.53	6.95	81.05	8.39	6.19	4.38
Richer	64.49	11.81	16.12	7.58	77.01	12.47	5.81	4.72
Richest	60.06	18.27	14.98	6.69	66.36	19.65	7.82	6.17
HIV knowledge								
Abstinence belief								
No	76.04	8.27	9.10	6.60	80.21	10.30	5.63	3.86
Yes	68.63	10.34	14.85	6.17	78.16	11.68	5.79	4.37
Being faithful belief								
No	74.45	8.34	10.99	6.23	78.85	10.82	6.13	4.20
Yes	69.03	10.32	14.39	6.26	78.33	11.63	5.71	4.33
Condom use belief								
No	75.41	7.85	10.55	6.19	79.89	11.16	4.38	4.57
Yes	68.49	10.55	14.68	6.27	78.10	11.59	6.05	4.26
Healthy-looking person can have HIV								
No	73.88	7.13	12.16	6.83	87.16	6.67	4.14	2.03
Yes	68.90	10.56	14.23	6.30	77.77	11.86	5.89	4.48

(Cont'd)

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Table 3 – Cont'd

Independent variables	Women age 15-49 (N=6,997)				Men age 15-54 (N=5,359)			
	Pathways to HIV testing				Pathways to HIV testing			
	% Not tested	% Volunteered for test	% Offered and accepted test	% Testing required	% Not tested	% Volunteered for a test	% Offered and accepted test	% Testing required
Risk awareness								
Perceived risk of HIV infection								
No risk	65.06	11.83	15.65	7.46	76.96	11.86	6.18	5.00
Small risk	71.34	10.30	12.44	5.92	77.52	12.93	5.20	4.35
Moderate risk	67.56	10.02	16.02	6.40	81.40	9.37	5.50	3.74
High risk	73.45	8.26	12.51	5.79	79.51	10.54	6.47	3.49
Sexual behavior								
Ever use of condoms								
No	70.67	9.04	13.84	6.45	79.90	9.92	5.81	4.37
Yes	64.97	17.36	13.00	4.67	75.20	14.94	5.68	4.18
Number of lifetime sexual partners								
2 or less	70.25	9.46	13.89	6.39	78.94	11.49	5.41	4.17
3 or more	68.68	13.19	12.77	5.35	78.10	11.53	5.98	4.39
AIDS stigma								
Social rejection								
No stigma	63.62	12.76	16.69	6.93	75.57	13.36	6.81	4.26
Some stigma	75.20	7.68	11.39	5.72	82.00	9.18	4.45	4.37
Prejudiced attitudes								
No stigma	68.17	11.29	14.86	5.68	77.12	12.90	5.71	4.27
Some stigma	72.91	7.89	12.07	7.13	80.82	8.90	5.88	4.40
Disclosure concerns								
No stigma	72.68	9.04	12.44	5.84	80.50	11.14	4.73	3.63
Some stigma	69.28	10.21	14.13	6.38	77.86	11.61	6.04	4.49

(Cont'd)

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Table 3 – Cont'd

Independent variables	Women age 15-49 (N=6,997)				Men age 15-54 (N=5,359)			
		Pathways to HIV testing				Pathways to HIV testing		
	% Not tested	% Volunteered for test	% Offered and accepted test	% Testing required	% Not tested	% Volunteered for a test	% Offered and accepted test	% Testing required
Observed enacted stigma								
Knows no one with HIV	72.61	8.65	13.01	5.73	83.01	9.05	4.52	3.42
Knows someone with HIV but has not observed discrimination	66.61	12.89	14.73	5.77	74.78	13.96	6.09	5.17
Knows someone with HIV and has observed discrimination	65.89	11.21	14.97	7.93	73.60	13.60	7.71	5.09

Table 4 presents the results of the regression analysis that identifies the association of AIDS stigma with pathways to HIV testing in women after confounding correlates are controlled for. The results show that social rejection stigma reduces the odds of volunteering for a test (relative risk ration [RRR] = 0.86, p<0.001), accepting testing when it is offered (RRR = 0.92, p<0.01), and being tested when doing so is required (RRR = 0.87, p<0.001) rather than not being tested for HIV. In contrast, prejudiced attitudes stigma increase the odds of being tested when testing is required rather than not being tested (RRR = 1.15, p<0.05). Knowing someone who has HIV but not having observed discrimination against persons suspected to be HIV positive is also associated with increased odds of volunteering for a test (RRR = 1.32, p<0.05) rather than not having been tested for HIV. Similarly, knowing someone with HIV as well as knowing someone who has been discriminated against because they are suspected to be HIV positive increases the odds of volunteering for a test (RRR = 1.42), accepting testing when it is offered (RRR = 1.24), and being tested when doing so is required (RRR = 1.37) All of these associations are significant at the 5 percent level.

Table 4. Relative risk ratios and 95 percent confidence intervals from multinomial logistic regression analyses of the odds of pathways to HIV testing by AIDS stigma, sociodemographic characteristics, HIV knowledge, risk awareness, and sexual behavior among women who have ever had sex (N = 6,997), Zimbabwe DHS, 2005-06[1]

Independent variables	Pathways to HIV testing		
	Volunteered for a test vs. not tested	Offered and accepted vs. not tested	Testing required vs. not tested
	RRR (95% CI)	RRR (95% CI)	RRR (95% CI)
AIDS stigma			
Social rejection (ref: no stigma)			
Some stigma	0.86*** (0.79-0.93)	0.92** (0.85-0.98)	0.87** (0.79-0.96)
Prejudiced attitudes (ref: no stigma)			
Some stigma	0.96 (0.84-1.08)	0.91† (0.82-1.01)	1.15* (1.01-1.32)
Disclosure concerns (ref: no stigma)			
Some stigma	1.01 (0.91-1.12)	1.03 (0.94-1.13)	0.93 (0.82-1.06)
Observed enacted stigma (ref: knows no one with HIV)			
Knows someone with HIV but has not observed discrimination	1.32** (1.07-1.64)	1.11 (0.91-1.36)	1.03 (0.77-1.37)
Knows someone with HIV and has observed discrimination	1.42*** (1.16-1.74)	1.24* (1.04-1.49)	1.37** (1.08-1.74)
Sociodemographic characteristics			
Age (ref: 15-24)			
25-34	0.83 (0.68-1.02)	0.79** (0.67-0.94)	0.82 (0.66-1.04)
35-44	0.69** (0.53-0.88)	0.45*** (0.36-0.56)	0.37*** (0.27-0.51)
45+	0.61** (0.42-0.89)	0.21*** (0.14-0.32)	0.19*** (0.10-0.35)
Residence (ref: urban)			
Rural	1.05 (0.78-1.39)	1.26† (0.96-1.63)	0.81 (0.56-1.17)
Education (ref: primary or less)			
Secondary or higher	1.48*** (1.18-1.85)	1.40*** (1.17-1.67)	1.43** (1.12-1.85)
Marital status (ref: ever married)			
Never married	1.01 (0.77-1.34)	2.18*** (1.59-2.99)	2.33*** (1.47-3.69)

(Cont'd)

Table 4 – Cont'd

Independent variables	Pathways to HIV testing					
	Volunteered for a test vs. not tested		Offered and accepted vs. not tested		Testing required vs. not tested	
	RRR (95% CI)		RRR (95% CI)		RRR (95% CI)	
Religion (ref: traditional)						
Apostolic	0.90	(0.67-1.22)	1.12	(0.87-1.46)	1.61**	(1.10-2.38)
Pentecostal	0.99	(0.72-1.36)	1.36*	(1.01-1.81)	1.70**	(1.11-2.60)
Protestant	0.95	(0.70-1.28)	1.37*	(1.06-1.80)	1.46†	(0.98-2.19)
Roman Catholic	1.03	(0.73-1.49)	1.23	(0.89-1.71)	1.28	(0.78-2.09)
Employment status (ref: unemployed)						
Employed	1.06	(0.89-1.25)	0.72***	(0.62-0.84)	0.94	(0.77-1.16)
Exposure to mass media (ref: low media exposure)						
Medium media exposure	1.71***	(1.35-2.16)	1.13	(0.94-1.37)	1.20	(0.93-1.56)
High media exposure	2.27***	(1.67-3.08)	1.17	(0.89-1.55)	1.27	(0.87-1.87)
Household wealth (ref: poorest)						
Poor	1.28	(0.91-1.80)	1.07	(0.83-1.37)	1.50*	(1.04-2.16)
Middle	1.30	(0.91-1.84)	1.34*	(1.04-1.73)	1.88**	(1.30-2.72)
Richer	1.66**	(1.13-2.43)	1.48**	(1.01-2.00)	1.67*	(1.07-2.60)
Richest	1.98**	(1.26-3.10)	1.47*	(1.00-2.17)	1.56	(0.90-2.71)
HIV knowledge						
Abstinence belief (ref: no)						
Yes	0.93	(0.73-1.17)	1.28*	(1.03-1.58)	0.95	(0.73-1.24)
Being faithful belief (ref: no)						
Yes	0.91	(0.72-1.13)	1.07	(0.87-1.31)	0.81	(0.62-1.05)
Condom use belief (ref: no)						
Yes	1.11	(0.89-1.38)	1.27**	(1.05-1.54)	0.98	(0.76-1.25)
Healthy-looking person can have HIV (ref: no)						
Yes	1.06	(0.78-1.44)	1.13	(0.88-1.46)	0.90	(0.65-1.24)

(Cont'd)

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Table 4 – Cont'd

Independent variables	Pathways to HIV testing		
	Volunteered for a test vs. not tested	Offered and accepted vs. not tested	Testing required vs. not tested
	RRR (95% CI)	RRR (95% CI)	RRR (95% CI)
Risk awareness			
Perceived risk of HIV infection (ref: no risk)			
Small risk	0.69*** (0.56-0.86)	0.61*** (0.50-0.75)	0.73* (0.56-0.96)
Moderate risk	0.67*** (0.52-0.85)	0.81* (0.66-1.00)	0.76† (0.57-1.02)
High risk	0.60 (0.47-0.77)	0.73** (0.59-0.89)	0.76* (0.57-1.00)
Sexual behavior			
Ever used condoms (ref: no)			
Yes	1.41** (1.11-1.79)	0.90 (0.70-1.15)	0.77 (0.54-1.10)
Number of lifetime sexual partners (ref: 2 or less)			
3 or more	1.41** (1.12-1.78)	1.13 (0.91-1.42)	1.05 (0.76-1.45)

[1] All figures are adjusted for analytic weights and standard errors are adjusted to account for the complex survey design.   *$p<0.05$, **$p<0.01$, ***$p<0.001$, †$p<0.10$
ref. = reference category for each variable.   RRR = relative risk ratio   CI = confidence interval

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Several individual and behavioral variables considered as potentially important in the decision to undergo HIV testing are found to be significant factors in this sample of women. Age has a significant effect on HIV testing uptake; the odds of having ever been tested decrease with increasing age across all three pathways to HIV testing. Educational attainment is also a strong predictor of HIV testing uptake. Compared to those with primary or less education, having secondary or higher education predicts increased odds of volunteering for a test (RRR = 1.48, p<0.001), accepting testing when it is offered (RRR = 1.40, p<0.001), and being tested when doing so is required (RRR = 1.43, p<0.001) rather than not having been tested for HIV. Marital status is another important predictor of HIV testing uptake in women. Never having been married is a positive predictor of accepting testing when it is offered (RRR = 2.18, p<0.001) and when the test is required (RRR = 2.33, p<0.001). Religion shows a significant effect on HIV testing uptake, particularly when testing is offered or required. Exposure to mass media is associated with volunteering to be tested rather than not being tested for HIV; compared with those with low media exposure, women having medium or high media exposure are more likely to volunteer for a test rather than not be tested for HIV. Compared with people living in the poorest households, people living in richer households have higher odds of volunteering for a test and accepting testing when it is offered. In contrast, people in poorer or middle-wealth households have higher odds of being tested when doing so is required.

Women's beliefs and knowledge concerning the fact that abstinence and consistent and correct use of condoms can prevent HIV infection significantly predict the odds of accepting testing when it is offered (RRR = 1.28, p<0.05 and RRR = 1.27, p<0.01, respectively), rather than not being tested for HIV. Self-perceived risk of HIV infection is inversely associated with uptake of testing across all three pathways of HIV testing. Ever use of condoms increases the

odds of volunteering for a test (RRR = 1.41, p<0.01). The high-risk behavior of having had three or more lifetime sexual partners is also associated with the probability of volunteering for a test rather than not having been tested for HIV.

As can be seen in Table 5, the stigma dimensions of social rejection, prejudiced attitudes, and disclosure concerns are not significant predictors of HIV testing uptake in men as opposed to women. For men, the only stigma dimension that is a significant covariate in the model is knowing someone with HIV and having observed persons suspected to be HIV positive being discriminated against. These experiences increase the odds of volunteering for a test (RRR = 1.38, p<0.001), accepting testing when it is offered (RRR = 1.62, p<0.001), and being tested when doing so is required (RRR = 1.51, p<0.05), rather than not having been tested for HIV.

Table 5. Relative risk ratios and 95 percent confidence intervals from multinomial logistic regression analyses of the odds of pathways to HIV testing by AIDS stigma, sociodemographic characteristics, HIV knowledge, risk awareness, and sexual behavior among men who have ever had sex (N=5,359), Zimbabwe DHS, 2005-06[1]

	Pathways to HIV testing		
	Volunteered for a test vs. not tested	Offered and accepted vs. not tested	Required vs. not tested
Independent variables	RRR (95% CI)	RRR (95% CI)	RRR (95% CI)
AIDS stigma			
Social rejection (ref: no stigma)			
Some stigma	0.91† (0.83-1.01)	0.97 (0.86-1.10)	1.09 (0.94-1.25)
Prejudiced attitudes (ref: no stigma)			
Some stigma	0.96 (0.83-1.11)	1.04 (0.87-1.24)	1.01 (0.81-1.25)
Disclosure concerns (ref: no stigma)			
Some stigma	0.94 (0.83-1.04)	1.10 (0.94-1.30)	1.18† (0.98-1.43)
Observed enacted stigma (ref: knows no one with HIV)			
Knows someone with HIV but has not observed discrimination	1.35** (1.10-1.68)	1.19 (0.88-1.61)	1.36† (0.96-1.92)
Knows someone with HIV and has observed discrimination	1.38** (1.10-1.72)	1.62*** (1.22-2.17)	1.51* (1.07-2.14)
Sociodemographic characteristics			
Age (ref: 15-24)			
25-34	1.37* (1.03-1.81)	1.17 (0.78-1.75)	2.28** (1.37-3.80)
35-44	1.21 (0.86-1.69)	1.27 (0.81-2.01)	2.42** (1.34-4.35)
45+	0.85 (0.56-1.28)	1.18 (0.70-1.99)	3.21*** (1.72-5.99)
Residence (ref: urban)			
Rural	0.84 (0.62-1.13)	1.53* (1.01-2.13)	0.65† (0.40-1.07)
Education (ref: primary or less)			
Secondary or higher	1.76*** (1.34-2.31)	1.82*** (1.30-2.56)	1.11 (0.76-1.62)
Marital status (ref: ever married)			
Never married	0.82 (0.62-1.09)	0.65* (0.43-0.97)	1.00 (0.62-1.61)

(Cont'd)

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Table 5 – Cont'd

Independent variables	Pathways to HIV testing		
	Volunteered for a test vs. not tested	Offered and accepted vs. not tested	Required vs. not tested
	RRR (95% CI)	RRR (95% CI)	RRR (95% CI)
Religion (ref: traditional)			
Apostolic	1.21 (0.92-1.58)	1.48* (1.04-2.10)	1.11 (0.74-1.66)
Pentecostal	1.76*** (1.32-2.35)	2.23*** (1.51-3.29)	1.45 (0.92-2.29)
Protestant	1.55*** (1.20-2.00)	1.73** (1.21-2.47)	1.05 (0.69-1.60)
Roman Catholic	1.34* (0.99-1.82)	1.60* (1.05-2.41)	1.24 (0.78-1.97)
Employment status (ref: unemployed)			
Employed	1.28* (1.02-1.61)	1.01 (0.75-1.37)	0.99 (0.69-1.41)
Exposure to mass media (ref: low media exposure)			
Medium media exposure	1.29† (0.98-1.70)	1.05 (0.76-1.46)	1.47† (0.96-2.26)
High media exposure	1.56** (1.11-2.20)	1.07 (0.68-1.67)	2.16** (1.25-3.71)
Household wealth (ref: poorest)			
Poor	1.20 (0.81-1.76)	1.12 (0.71-1.78)	1.33 (0.72-2.46)
Middle	1.12 (0.75-1.67)	1.38 (0.87-2.20)	2.11** (1.16-3.82)
Richer	1.48† (0.98-2.23)	1.54† (0.93-2.53)	1.38 (0.70-2.70)
Richest	2.03** (1.26-3.29)	2.41** (1.28-4.51)	1.45 (0.66-3.20)
HIV knowledge			
Abstinence belief (ref: no)			
Yes	0.94 (0.70-1.26)	1.01 (0.67-1.51)	1.01 (0.63-1.61)
Being faithful belief (ref: no)			
Yes	1.35* (1.01-1.80)	0.82 (0.58-1.17)	1.11 (0.72-1.70)
Condom use belief (ref: no)			
Yes	0.81 (0.63-1.05)	1.23 (0.85-1.77)	0.81 (0.55-1.19)
Healthy-looking person can have HIV (ref: no)			
Yes	1.11 (0.71-1.75)	0.81 (0.49-1.32)	1.44 (0.69-2.99)

(Cont'd)

Table 5 – Cont'd

Independent variables	Pathways to HIV testing		
	Volunteered for a test vs. not tested	Offered and accepted vs. not tested	Required vs. not tested
	RRR (95% CI)	RRR (95% CI)	RRR (95% CI)
Risk awareness			
Perceived risk of HIV infection (ref: no risk)			
Small risk	0.82† (0.66-1.02)	0.69** (0.51-0.93)	0.83 (0.60-1.17)
Moderate risk	0.62*** (0.47-0.81)	0.67* (0.46-0.96)	0.80 (0.52-1.22)
High risk	0.84 (0.63-1.12)	1.09 (0.76-1.56)	0.78 (0.50-1.26)
Sexual behavior			
Ever used condoms (ref: no)			
Yes	1.68*** (1.36-2.09)	1.14 (0.85-1.55)	1.18 (0.82-1.68)
Number of lifetime sexual partners (ref: 2 or less)			
3 or more	0.97 (0.80-1.18)	1.13 (0.86-1.48)	1.01 (0.73-1.38)

All figures are adjusted for analytic weights and standard errors are adjusted to account for the complex survey design.   RRR = relative risk ratio $p < 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$
ref. = reference category for each variable.   CI = confidence interval

Unlike women, men age 25-34 are more likely than those age 15-24 to volunteer for a test rather than not be tested for HIV. Similarly, men age 25-34 (RRR = 2.28, p<0.01), age 25-44 (RRR = 2.42, p<0.01), and age 45+ (RRR = 3.21, p<0.001) are more likely than those age 15-24 to be tested when doing so is required, rather than not be tested for HIV. Residence is another strong predictor of HIV testing uptake for men. Compared with living in an urban areas, living in a rural area increases the odds of accepting testing when it is offered (RRR = 1.53, p<0.05).

Similar to what is observed for women, marked education differences in HIV testing uptake are evident for men. Men with secondary or higher education are more likely to volunteer for a test (RRR = 1.76, p<0.001) and accept testing when it is offered (RRR = 1.82, p<0.001) compared with those with primary or less education (although educational status is not associated with being tested when doing so is required rather than not being tested for HIV). Never having been married is associated with decreased odds of accepting testing when it is offered (RRR = 0.65, p<0.05).

Religion has a significant impact on HIV testing uptake in men: being affiliated with the Pentecostal, Protestant, or Catholic religions is associated with increased odds of volunteering for a test and accepting testing when it is offered. High exposure to mass media is also an important predictor of volunteering for a test and being tested when doing so is required.

Overall, HIV-related knowledge is not a significant predictor of HIV testing uptake in men, with the exception that men who believe that being faithful to one's partner can prevent HIV infection are more likely to volunteer for a test rather than not be tested for HIV compared to men who do not believe that being faithful can prevent HIV infection.

Perceived risk of HIV infection is a strong predictor of some pathways to being tested for HIV. Compared with having no perceived risk of infection, those who perceive themselves as

having a moderate risk of infection are less likely to volunteer to be tested (RRR = 0.62, p<0.001) or to accept the test when it is offered (RRR = 0.67, p<0.05) compared with not having been tested for HIV. Ever use of condoms is associated with increased odds of volunteering to be tested compared to not being tested for HIV (RRR = 1.68, p<0.001).

Characteristics and Behaviors Associated with Reasons for Not Being Tested for HIV

Table 6 presents descriptive statistics for the sample of women and men who reported never having been tested for HIV by reason for not having been tested. Women and men who held some social rejection stigma were more likely to report lack of access to HIV testing services as reasons of not being tested for HIV. On the other hand, women and men who held no social rejection stigma were more likely to report fear of testing results and concerns about confidentiality as reasons of not being tested for HIV. These patterns by reasons for not testing were similar for prejudiced attitudes stigma, but generally reversed for disclosure concerns stigma.

As regards background characteristics, there were no clear patterns by age except older women were more likely to report no risk as a reason for not testing. Women and men living in rural areas were much more likely to report lack of access to HIV testing services as a main reason of not being tested for HIV, compared to their counterparts living in urban areas. Furthermore, those living in urban areas were more likely to report no risk of HIV infection, fear of testing results and concerns about confidentiality as reasons of not being tested, compared to their counterparts living in rural areas. Respondents having secondary or higher education were more likely to report fear of testing results and concerns about confidentiality as reasons of not being tested, compared to those with primary or less education. Unemployed women and men

were more likely to report lack of access to HIV testing services as a barrier to testing, whereas employed women and men were slightly more likely to report no risk for HIV infection as a reason for not testing. Exposure to mass media and wealth status were strongly negatively associated with reporting lack of access and strongly positively associated with reporting fear of testing results as reasons for not being tested for both women and men.

Women and men with knowledge of HIV prevention methods and those reporting that a healthy looking person can have HIV were generally less likely to report lack of access to testing services but more likely to report fear of testing result and concerns about confidentiality as reasons for not being tested than those who did not have such knowledge. Respondents who had ever used a condom were more likely to have cited fear of testing result as a reason of not testing for HIV. Women and men who reported three or more lifetime sexual partners were less likely to report no risk and lack of access as reasons for not testing for HIV than respondents who had two or fewer partners. On the other hand, women and men with three or more lifetime sexual partners were more likely to report concerns about confidentiality as a reason for not testing for HIV than those with two or fewer partners.

Table 6. Bivariate associations of sociodemographic, HIV knowledge, risk awareness, sexual behavior, and AIDS stigma correlates of reasons of not being tested among women and men who have ever had sex, Zimbabwe DHS, 2005-061

Independent variables	Women age 15-49 (N = 4,763)					Men age 15-54 (N = 4,171)				
	% No risk	% Lack of access	% Fear of testing results	% Concerned about confidentiality	% Other	% No risk	% Lack of access	% Fear of testing results	% Concerned about confidentiality	% Other
Sociodemographic characteristics										
Age (years)										
15-24	7.64	32.05	36.56	3.36	20.38	18.15	32.46	24.01	6.78	18.60
25-34	7.78	29.37	41.12	3.98	17.75	17.05	28.12	25.27	9.85	19.71
35-44	10.60	27.63	39.65	4.76	17.36	19.93	27.57	22.98	7.84	21.68
45+	20.03	34.76	24.94	2.31	17.96	23.20	30.00	19.51	9.41	17.88
Residence										
Urban	12.63	7.51	50.48	4.87	24.52	23.83	10.15	29.57	8.72	27.72
Rural	8.27	41.28	31.60	3.31	15.54	15.80	41.44	20.00	8.23	14.53
Education										
Primary or less	9.45	42.88	28.80	2.66	16.21	16.76	43.43	16.56	7.04	16.22
Secondary or higher	9.99	19.13	45.68	4.84	20.45	19.89	22.56	27.23	9.13	21.19
Marital status										
Ever married	13.78	24.39	37.53	2.95	21.34	18.53	29.28	22.95	9.22	20.02
Never married	9.34	30.81	37.76	3.89	18.21	19.50	30.43	25.13	6.60	18.35
Religion										
Traditional	6.86	42.04	33.51	1.72	15.87	15.49	34.09	22.96	7.27	20.18
Apostolic	8.33	37.32	30.86	2.50	20.99	22.35	32.14	19.91	8.05	17.55
Pentecostal	13.16	19.71	46.80	5.06	15.27	22.02	19.30	29.17	12.46	17.05
Protestant	11.00	24.09	41.29	6.02	17.60	21.00	25.75	24.01	9.47	19.76
Roman Catholic	8.80	25.42	42.17	2.66	20.96	17.50	23.75	27.88	7.93	22.94
Employment status										
Unemployed	8.98	33.41	35.99	2.98	18.64	17.24	33.03	23.53	9.51	16.69
Employed	10.71	25.80	40.24	5.05	18.19	19.34	28.39	23.67	8.02	20.58

(Cont'd)

Table 6 – Cont'd

Independent variables	Women age 15-49 (N = 4,763)					Men age 15-54 (N = 4,171)				
	% No risk	% Lack of access	% Fear of testing results	% Concerned about confidentiality	% Other	% No risk	% Lack of access	% Fear of testing results	% Concerned about confidentiality	% Other
Exposure to mass media										
Low media exposure	7.93	42.77	30.65	3.70	14.95	14.95	45.36	17.88	8.80	13.02
Medium media exposure	11.40	20.47	42.01	3.80	22.32	19.75	28.80	23.55	7.22	20.90
High media exposure	12.43	5.59	54.75	4.28	22.95	21.99	10.67	31.75	10.49	25.09
Household wealth index										
Poorest	7.63	51.44	23.23	1.78	15.92	13.99	49.50	16.20	6.80	13.52
Poor	8.56	45.31	29.87	2.56	13.70	18.21	42.94	16.60	6.02	16.24
Middle	7.20	34.15	36.74	5.51	16.40	14.47	39.09	21.93	8.97	15.54
Richer	11.31	15.91	47.10	4.15	21.53	19.56	19.26	27.70	10.85	22.64
Richest	13.61	4.12	52.37	5.40	24.51	26.29	6.58	32.30	8.17	26.66
HIV knowledge										
Abstinence belief										
No	11.78	35.42	31.86	3.06	17.89	19.64	34.08	20.54	7.53	18.20
Yes	9.21	29.13	39.08	3.99	18.59	18.72	29.04	24.02	8.54	19.68
Being faithful belief										
No	9.48	37.64	29.59	2.43	20.86	24.17	27.10	19.16	4.91	24.66
Yes	9.73	28.70	39.51	4.11	17.94	17.97	30.04	24.33	8.98	18.67
Condom use belief										
No	11.72	34.14	30.28	2.55	21.31	19.12	32.55	27.50	7.01	18.82
Yes	9.11	29.21	39.86	4.18	17.65	18.77	29.04	23.84	8.70	19.64
Healthy-looking person can have HIV										
No	12.59	41.04	24.53	2.03	19.80	22.70	36.28	16.58	6.24	18.21
Yes	9.29	28.68	39.69	4.08	18.26	18.53	29.12	24.16	8.59	19.61
Sexual behavior										
Ever use of condoms										
No	9.70	31.12	37.23	3.82	18.13	20.79	30.50	21.14	8.70	18.86
Yes	9.54	23.04	42.22	3.79	21.41	14.37	27.66	29.23	7.78	20.96

(Cont'd)

Table 6 – Cont'd

Independent variables	Women age 15-49 (N = 4,763)					Men age 15-54 (N = 4,171)				
	% No risk	% Lack of access	% Fear of testing results	% Concerned about confidentiality	% Other	% No risk	% Lack of access	% Fear of testing results	% Concerned about confidentiality	% Other
Number of lifetime sexual partners										
2 or less	10.39	30.68	36.48	4.09	18.36	25.72	31.59	16.37	7.96	18.37
3 or more	4.81	27.71	46.46	1.91	19.11	14.90	28.52	27.74	8.68	20.16
AIDS stigma										
Social rejection										
No stigma	8.59	21.11	46.56	4.49	19.25	19.11	23.27	28.21	9.54	19.87
Some stigma	10.47	36.83	31.47	3.34	17.90	18.50	37.12	18.20	7.10	19.08
Prejudiced attitudes										
No stigma	10.07	25.34	41.60	4.65	18.34	18.74	27.15	24.68	9.67	19.76
Some stigma	9.10	37.83	31.89	2.54	18.63	19.00	34.13	21.68	6.14	19.05
Disclosure concerns										
No stigma	9.93	35.58	30.93	2.02	21.54	14.77	32.69	23.29	8.04	21.20
Some stigma	9.61	28.61	39.92	4.39	17.47	19.93	28.81	23.70	8.52	19.05
Observed enacted stigma										
Knows no one with HIV	9.53	31.59	34.36	3.93	20.59	18.60	30.88	20.91	8.51	21.10
Knows someone with HIV but has not observed discrimination	10.44	20.25	46.60	2.36	20.35	19.88	27.57	25.39	9.09	18.07
Knows someone with HIV and has observed discrimination	9.58	33.83	40.67	4.51	11.40	18.27	29.13	27.32	7.58	17.70

Table 7 presents the multivariate regression results for women. It can be seen that social rejection stigma decreases the odds of not having been tested for HIV because of fear of the test results (RRR = 0.75, p<0.001) and because of concerns about confidentiality (RRR = 0.81, p<0.01) compared with not having been tested because of perceiving no risk of HIV infection. Disclosure concerns stigma are predictive of not having been tested for HIV due to concerns about confidentiality rather than not perceiving oneself as being at risk of HIV infection (RRR = 1.33, p<0.05).

Table 7. Relative risk ratios and 95 percent confidence intervals from multinomial logistic regression analyses of the odds of not having been tested among women who have ever had sex by AIDS stigma, sociodemographic characteristics, HIV knowledge, risk awareness, and sexual behavior (N = 4,763), Zimbabwe DHS, 2005-061

Independent variables	Reason for not having been tested			
	Lack of access vs. no risk	Fear of test results vs. no risk	Concerned about confidentiality vs. no risk	Other vs. no risk
	RRR (95% CI)	RRR (95% CI)	RRR (95% CI)	RRR (95% CI)
AIDS stigma				
Social rejection (ref: no stigma)				
Some stigma	0.96 (0.87-1.06)	0.75*** (0.68-0.85)	0.81** (0.68-0.96)	0.84*** (0.76-0.93)
Prejudiced attitudes (ref: no stigma)				
Some stigma	1.09 (0.95-1.29)	1.01 (0.87-1.67)	0.90 (0.69-1.17)	1.16† (1.00-1.35)
Disclosure concerns (ref: no stigma)				
Some stigma	1.07 (0.93-1.24)	1.01 (0.88-1.16)	1.33* (1.04-1.72)	0.82** (0.71-0.95)
Observed enacted stigma (ref: knows no one with HIV)				
Knows someone with HIV but has not observed discrimination	0.76† (0.54-1.04)	1.01 (0.75-1.35)	0.57† (0.32-1.03)	0.85 (0.62-1.17)
Knows someone with HIV and has observed discrimination	1.06 (0.81-1.39)	1.00 (0.77-1.30)	1.07 (0.69-1.65)	0.50*** (0.37-0.68)
Sociodemographic characteristics				
Age (ref: 15-24)				
25-34	0.71* (0.52-0.97)	0.77† (0.56-1.30)	0.70 (0.42-1.16)	0.66** (0.47-0.90)
35-44	0.50*** (0.36-0.71)	0.53*** (0.38-0.74)	0.54* (0.31-0.94)	0.46*** (0.32-0.65)
45+	0.27*** (0.18-0.40)	0.20*** (0.14-0.30)	0.25*** (0.12-0.53)	0.27*** (0.18-0.41)
Residence (ref: urban)				
Rural	2.25*** (1.43-3.53)	1.06 (0.73-1.55)	1.09 (0.57-2.09)	0.79 (0.52-1.20)
Education (ref: primary or less)				
Secondary or higher	0.61*** (0.46-0.79)	0.89 (0.69-1.16)	1.11 (0.71-1.74)	0.89 (0.67-1.18)
Marital status (ref: ever married)				
Never married	1.92** (1.24-2.96)	2.55*** (1.71-3.80)	3.30** (1.45-7.50)	2.08*** (1.36-3.17)

(Cont'd)

Table 7 – Cont'd

Independent variables	Reason for not having been tested							
	Lack of access vs. no risk		Fear of test results vs. no risk		Concerned about confidentiality vs. no risk		Other vs. no risk	
	RRR (95% CI)		RRR (95% CI)		RRR (95% CI)		RRR (95% CI)	
Religion (ref: traditional)								
Apostolic	0.67*	(0.46-0.98)	0.69†	(0.47-1.02)	1.01	(0.45-2.21)	1.09	(0.73-1.64)
Pentecostal	0.49**	(0.31-0.75)	0.60*	(0.39-0.91)	1.19	(0.52-2.69)	0.47***	(0.29-0.74)
Protestant	0.64*	(0.43-0.95)	0.72	(0.49-1.07)	1.58	(0.73-3.42)	0.73	(0.48-1.12)
Roman Catholic	0.83	(0.51-1.36)	0.91	(0.56-1.47)	0.97	(0.37-2.52)	0.99	(0.59-1.65)
Employment status (ref: unemployed)								
Employed	0.80†	(0.64-1.01)	0.97	(0.78-1.20)	1.52*	(1.04-2.13)	0.86	(0.68-1.09)
Exposure to mass media (ref: low media exposure)								
Medium media exposure	0.68**	(0.52-0.91)	0.80	(0.60-1.05)	0.51**	(0.31-0.83)	1.06	(0.79-1.43)
High media exposure	0.61†	(0.36-1.03)	0.98	(0.65-1.47)	0.37**	(0.18-0.76)	1.12	(0.72-1.75)
Household wealth index (ref: poorest)								
Poor	0.78	(0.55-1.09)	1.02	(0.71-1.46)	0.71	(0.80-3.68)	0.73	(0.50-1.07)
Middle	0.79	(0.55-1.15)	1.40†	(0.96-2.05)	3.35***	(1.60-7.02)	1.06	(0.71-1.58)
Richer	0.39***	(0.25-0.61)	1.05	(0.68-1.63)	2.02	(0.86-4.73)	0.66†	(0.41-1.07)
Richest	0.20***	(0.10-0.40)	1.20	(0.68-2.10)	3.00*	(1.04-8.60)	0.76	(0.41-1.39)
HIV knowledge								
Abstinence belief (ref: no)								
Yes	1.15	(0.87-1.52)	1.15	(0.87-1.51)	1.06	(0.64-1.76)	1.21	(0.90-1.63)
Being faithful belief (ref: no)								
Yes	0.82	(0.62-1.09)	1.06	(0.80-1.41)	1.43	(0.82-2.51)	0.74*	(0.55-0.99)
Condom use belief (ref: no)								
Yes	1.28†	(0.99-1.65)	1.35*	(1.05-1.73)	1.95**	(1.17-3.27)	0.99	(0.75-1.28)
Healthy-looking person can have HIV (ref: no)								
Yes	1.65***	(1.21-2.23)	1.76***	(1.29-2.41)	2.16*	(1.09-4.26)	1.42*	(1.02-1.96)
Sexual behavior								
Ever used condoms (ref: no)								
Yes	1.08	(0.71-1.63)	1.05	(0.72-1.54)	1.06	(0.55-2.04)	1.18	(0.79-1.77)
Number of lifetime sexual partners (ref: 2 or less)								
3 or more	2.56***	(1.66-3.94)	3.57***	(2.36-5.41)	1.53	(0.75-3.15)	3.20***	(2.07-4.95)

All figures are adjusted for analytic weights and standard errors are adjusted to account for the complex survey design.

ref. = reference category for each variable.   RRR = relative risk ratio   CI = confidence interval   *p<0.05, **p<0.01, ***p<0.001, †p<0.10

Age is a strong predictor among women of not having been tested for HIV. Compared with women age 15-24, women age 35-44 and age 45+ are less likely to never have been tested due to lack of access to testing services, fear of test results, and concerns about confidentiality rather than because of no perceived risk of HIV infection. Living in a rural area is associated with increased odds of not having been tested for HIV because of lack of access to testing services (RRR = 2.25, p<0.01). Compared with women with primary or less education, women with secondary or higher education have lower odds of not having been tested for HIV because of lack of access to testing services (RRR = 0.61, p<0.001) rather than because of no perceived risk of HIV infection. Never having been married is associated with increased odds of not having been tested because of lack of access to testing services (RRR = 1.92, p<0.01), fear of test results (RRR = 2.55, p<0.001), and concerns about confidentiality (RRR = 3.30, p<0.01). Religion is also a determinant of not having been tested for HIV; persons affiliated with the Apostolic, Pentecostal, or Protestant religions have decreased odds of not having been tested because of lack of access to testing services rather than because of no perceived risk for HIV infection. Compared with unemployed women, employed women are more likely not to have been tested because of concerns about confidentiality rather than because of no perceived risk of HIV infection (RRR = 1.52, p<0.05).

Exposure to mass media in women is associated with decreased odds of not having been tested because of lack of access to testing services and concerns about confidentiality. Household wealth has inconsistent associations with the different reasons for not having been tested for HIV. Living in a richer household decreases the odds of not having been tested because of lack of access to testing services rather than no perceived risk of HIV infection compared with living in a poorer household. Conversely, living in a richer household increases the odds of not having

been tested because of concerns about confidentiality rather than not having been tested because of no perceived risk of HIV infection compared with living in a poorer household.

Among the HIV knowledge variables in women, the beliefs that use of condoms can prevent HIV infection and that healthy-looking persons can have HIV are associated with increased odds of not having been tested for HIV because of lack of access to testing services, fear of testing results, and concerns about confidentiality.

In the sexual behavior domain, the number of lifetime sexual partners is associated with not having been tested. However, among those who had never used condoms, having three or more lifetime sexual partners predicts increased odds of not having been tested because of lack of access to testing services (RRR = 2.56, $p < 0.001$) and fear of test results (RRR = 3.57, $p < 0.01$).

As in women, social rejection stigma reduces the odds in men of not having been tested for HIV because of fear of test results (RRR = 0.84, $p < 001$) (Table 8). Prejudiced attitudes stigma is a negative predictor of concerns about confidentiality (RRR = 0.71, $p < 0.001$) compared with no perceived risk of HIV infection. In addition, disclosure concerns stigma is negatively associated with not having been tested for HIV because of lack of access to testing services (RRR = 0.88, $p < 0.05$) and fear of test results (RRR = 0.82, $p < 0.01$).

Table 8. Relative risk ratios and 95 percent confidence intervals from multinomial logistic regression analyses of the odds of not being tested among men who have ever had sex by AIDS stigma, sociodemographic characteristics, HIV knowledge, risk awareness, and sexual behavior (N = 4,171), Zimbabwe DHS, 2005-061

Independent variables	Lack of access vs. no risk		Fear of test results vs. no risk		Concerned about confidentiality vs. no risk		Other vs. no risk	
	RRR (95% CI)		RRR (95% CI)		RRR (95% CI)		RRR (95% CI)	
AIDS stigma								
Social rejection (ref: no stigma)								
Some stigma	1.03	(0.94-1.12)	0.84***	(0.77-0.94)	0.89†	(0.78-1.01)	0.98	(0.88-1.08)
Prejudiced attitudes (ref: no stigma)								
Some stigma	0.93	(0.82-1.06)	0.96	(0.83-1.11)	0.71***	(0.57-0.87)	0.90	(0.77-1.04)
Disclosure concerns (ref: no stigma)								
Some stigma	0.88*	(0.77-0.99)	0.82**	(0.72-0.93)	0.87	(0.74-1.04)	0.75***	(0.66-0.86)
Observed enacted stigma (ref: knows no one with HIV)								
Knows someone with HIV but has not observed discrimination	0.95	(0.75-1.19)	1.04	(0.82-1.33)	1.05	(0.77-1.42)	0.76*	(0.58-0.96)
Knows someone with HIV and has observed discrimination	0.96	(0.75-1.22)	1.23†	(0.96-1.58)	0.94	(0.67-1.32)	0.86	(0.66-1.12)
Sociodemographic characteristics								
Age (ref: 15-24)								
25-34	1.06	(0.78-1.45)	1.12	(0.81-1.53)	1.40	(0.91-2.16)	1.12	(0.80-1.56)
35-44	0.86	(0.59-1.23)	0.83	(0.57-1.22)	1.06	(0.63-1.77)	1.05	(0.71-1.55)
45+	0.55**	(0.37-0.82)	0.53**	(0.35-0.81)	1.00	(0.58-1.73)	0.65*	(0.42-1.00)
Residence (ref: urban)								
Rural	3.06***	(2.12-4.42)	1.48*	(1.05-2.09)	2.11***	(1.36-3.28)	0.65*	(0.45-0.96)
Education (ref: primary or less)								
Secondary or higher	0.64***	(0.51-0.81)	0.95	(0.73-1.23)	1.03	(0.73-1.44)	0.83	(0.64-1.09)
Marital status (ref: ever married)								
Never married	0.80	(0.59-1.09)	0.87	(0.63-1.20)	0.70†	(0.45-1.07)	0.74†	(0.53-1.03)

(Cont'd)

Table 8 – Cont'd

Independent variables	Reason for not having been tested			
	Lack of access vs. no risk RRR (95% CI)	Fear of test results vs. no risk RRR (95% CI)	Concerned about confidentiality vs. no risk RRR (95% CI)	Other vs. no risk RRR (95% CI)
Religion (ref: traditional)				
Apostolic	0.56*** (0.44-0.72)	0.74* (0.57-0.97)	0.90 (0.63-1.28)	0.77† (0.58-1.01)
Pentecostal	0.60** (0.42-0.86)	0.90 (0.63-1.26)	1.13 (0.73-1.74)	0.70† (0.48-1.01)
Protestant	0.84 (0.64-1.12)	0.78 (0.58-1.04)	1.10 (0.76-1.61)	0.92 (0.68-1.24)
Roman Catholic	0.87 (0.62-1.23)	0.91 (0.64-1.28)	0.80 (0.49-1.30)	1.08 (0.76-1.54)
Employment status (ref: unemployed)				
Employed	0.78* (0.62-0.98)	0.78* (0.62-1.00)	0.54*** (0.40-0.73)	1.02 (0.79-1.31)
Exposure to mass media (ref: low media exposure)				
Medium media exposure	0.78* (0.62-0.99)	0.87 (0.66-1.13)	0.72† (0.52-1.01)	1.07 (0.81-1.41)
High media exposure	0.81 (0.55-1.21)	1.09 (0.75-1.58)	1.12 (0.70-1.81)	1.41† (0.96-2.07)
Household wealth index (ref: poorest)				
Poor	0.84 (0.63-1.14)	0.85 (0.59-1.22)	1.04 (0.66-1.65)	0.88 (0.61-1.26)
Middle	0.91 (0.66-1.26)	1.35 (0.93-1.96)	1.66* (1.03-2.68)	0.93 (0.63-1.38)
Richer	0.64* (0.44-0.94)	1.36 (0.90-2.04)	1.76* (1.04-2.96)	0.67† (0.43-1.04)
Richest	0.31*** (0.17-0.53)	1.25 (0.75-2.08)	1.06 (0.54-2.11)	0.51** (0.29-0.87)
HIV knowledge				
Abstinence belief (ref: no)				
Yes	1.11 (0.83-1.49)	1.15 (0.84-1.59)	1.06 (0.69-1.61)	1.23 (0.90-1.70)
Being faithful belief (ref: no)				
Yes	1.20 (0.91-1.59)	1.55** (1.16-2.08)	2.14*** (1.35-3.38)	1.10 0.83-1.45
Condom use belief (ref: no)				
Yes	1.12 (0.86-1.44)	1.00 (0.76-1.31)	1.16 (0.79-1.69)	0.98 (0.74-1.30)
Healthy-looking person can have HIV (ref: no)				
Yes	1.24 (0.88-1.77)	1.22 (0.81-1.82)	1.49 (0.83-2.68)	1.04 (0.70-1.54)
Sexual Behavior				
Ever used condoms (ref: no)				
Yes	1.57*** (1.22-2.01)	1.65*** (1.28-2.12)	1.31 (0.93-1.84)	1.58*** (1.21-2.06)
Number of lifetime sexual partners (ref: 2 or less)				
3 or more	1.45*** (1.18-1.77)	2.67*** (2.14-3.32)	1.65*** (1.24-2.19)	1.62*** (1.30-2.02)

All figures are adjusted for analytic weights and standard errors are adjusted to account for the complex survey design.

ref. = reference category for each variable.   RRR = relative risk ratio   CI = confidence interval   *p<0.05, **p<0.01, ***p<0.001, †p<0.10

A number of individual characteristics distinguishes not having been tested for HIV for the selected reasons for not testing for HIV. Age is a strong predictor of not having been tested because of lack of access to testing (RRR = 0.55, p<0.01) and fear of test results (RRR = 0.53, p<0.01) for men age 45+ compared with men age 15-24. In addition, residence predicts not having been tested for HIV; compared with living in an urban area, those living in a rural area have increased odds of not having been tested for HIV because of lack of access to testing services (RRR = 3.06, p<0.001), fear of test results (RRR = 1.48, p<0.05), and concerns about confidentiality (RRR = 2.11, p<0.001). Educational attainment is also a determinant of not having been tested for HIV. Men who have secondary or higher education have lower odds of not having been tested for HIV because of lack of access to testing services rather than not having been tested because of no perceived risk of HIV infection. In contrast with the results in women, marital status is not associated with not having been tested for HIV men. Affiliation with the Apostolic or Pentecostal religions reduces the odds of not being tested because of lack of access to testing services and fear of test results compared with not having been tested for HIV. Compared with unemployed men, employed men are less likely to not to have been tested because of lack of access to testing services, fear of test results, and concerns about confidentiality. Living in a richer household reduces the odds of not having been tested for HIV because of lack of access to testing services, whereas living in a middle-wealth or poorer household increases the odds of not having been tested because of concerns about confidentiality.

The belief that being faithful to one's partner can prevent HIV/AIDS is associated with increased odds of not having been tested because of fear of test results (RRR = 1.55, p<0.01) and concerns about confidentiality (RRR = 2.14, p<0.001). Ever use of condoms (versus never use)

increases the odds of not having been tested for HIV because of lack of access to testing services and fear of test results. Reporting three or more lifetime sexual partners is associated with increased odds of not having been tested for HIV because of lack of access to testing services (RRR = 1.45), fear of test results (RRR = 2.67), and concerns about confidentiality (RRR = 1.65).

DISCUSSION

In an effort to improve the understanding of the barriers to the uptake of HIV testing services in Zimbabwe, this study examines the main factors accounting for being and not being tested for HIV among a nationally representative sample of women and men. Most notably, the study assesses the influence of AIDS stigma on uptake of HIV testing while controlling for confounding variables.

Relative to uptake of testing in other sub-Saharan African countries, uptake of testing in Zimbabwe is high (ORC Macro International, 2008), with Zimbabwean women (30 percent) being more likely to report having been tested for HIV than Zimbabwean men (22 percent). About a third of women and slightly above half of men reported that they had volunteered to have the test (i.e., client-initiated testing), whereas about 46 percent of women and 27 percent of men reported that testing was offered to them and they accepted (i.e., provider-initiated testing).

Several studies have shown that provider-initiated testing is associated with high-volume uptake of HIV testing and minimal delay between the first medical encounter and diagnosis of HIV infection (Ivers et al., 2007). The high level of volunteering to undergo the HIV test among men in Zimbabwe shows that the campaigns to promote testing have been more effective among

this group than among women. The lower levels of voluntary testing among women suggest the need to develop new methods to encourage voluntary testing among this group.

This study also highlighted reasons for not being tested for HIV in both women and men. Among the untested female and male respondents, the most commonly cited reason for not being tested is lack of access to testing services, followed by the fear of test results and the belief that nothing could be done if the respondent were found to be HIV positive. However, some respondents reported that they had not been tested because they perceived themselves as having no risk of HIV infection. Similar reasons have been cited as barriers to uptake of voluntary counseling and testing (VCT) for HIV in several African countries. For example, in Uganda, barriers to uptake of VCT include low perceived risk of HIV infection and lack of access to free testing whereas, in Zambia, a major barrier is fear of test results (Matovu et al., 2005; Nakanjako et al., 2007; Bakari, et al., 2007).

This study clearly suggests that AIDS stigma is a multidimensional construct. Four general domains of AIDS stigma emerged from this study: social rejection, prejudiced attitudes, disclosure concerns, and observed enacted stigma. In addition, the study showed that the most common form of AIDS stigma is built upon disclosure concerns (77 percent of women versus 79 percent of men), whereas knowing someone with HIV and having observed discrimination against those living with HIV are reported less often than the other stigma issues (24 percent of women versus 27 percent of men).

These results point to the need to promote accepting attitudes toward people living with HIV. Educational, advocacy, and community mobilization and social activism model interventions have been shown to be effective in reducing AIDS stigma (Herek et al., 2002; Hadjipateras, 2004; Brown et al., 2003; Parker and Aggleton, 2003). In Zimbabwe, antistigma

efforts were launched in 2005; these include mass media AIDS awareness campaigns and public testimonials from people living with HIV/AIDS (Department of International Development, 2008; Population Services International, 2008). These efforts are expected to facilitate a range of HIV prevention strategies, including provision of VCT services, adoption of condoms, and fidelity. However, many gaps still remain in determining the most effective means of producing lasting change in relation to AIDS stigma (Herek et al., 1998).

The analyses of AIDS stigma's association with pathways to HIV testing reveal several relationships. First, social rejection stigma is associated with HIV testing across all pathways to testing in women but not men. The negative link between social rejection stigma and uptake of HIV testing is consistent with recent empirical reports (Liu et al., 2005). Even though prejudiced attitudes and disclosure concerns stigma do not show any statistically significant association with pathways to HIV testing, their effects are in the expected negative direction. This is believed to be grounds for suggesting that policy aimed at increasing the demand for HIV testing should take into consideration the role of these dimensions of stigma as important factors along with the influence of social rejection.

Second, the data indicate a positive association between observed discrimination against those living with HIV and being tested for HIV. These findings are supported by other research that has shown that personally knowing someone who has HIV or AIDS is associated with an increased likelihood of being tested for HIV (Bond et al., 2005).

Several sociodemographic factors emerge in this analysis as important correlates of having ever been tested for HIV for both women and men. The findings of this study support those of other studies that found age, education, and marital status to be predictive of HIV testing (Renzi et al., 2001; Gage and Ali, 2005; Sherr et al., 2007; Glick and Sahn, 2005). However, this

study's findings about marital status are not in the same direction of effect for both genders; never-married women have higher odds of accepting HIV testing when it is offered, whereas never-married men have lower odds of accepting HIV testing when it is offered.

Our results highlight the need to target messages and interventions designed to promote acceptance of HIV testing services to never-married persons, particularly male adolescents and young adults. This population is, incidentally, the most vulnerable population to HIV infection in Zimbabwe.

The multivariate analyses show a strong association between religion and acceptance of HIV testing for men but not women. According to this study's findings, it seems that Pentecostal and Protestant leaders have done slightly better than traditional religious leaders in this area. In general, the association between acceptance of HIV testing and religion calls for a close working relationship between the Zimbabwe National AIDS Council and religious leaders in promoting VCT services and community discussions and social mobilization around HIV/AIDS.

Data from this study also provide further support for the positive role of mass media in ever being tested for HIV, particularly volunteering to be tested (Mbago, 2004). Thus, the ongoing and aggressive promotion of HIV testing services through the radio, newspaper, and television should be sustained in order to increase the demand for HIV testing services in Zimbabwe.

It is also noteworthy that significant predictors of HIV testing uptake include perceived risk of HIV infection and ever use of condoms. Indeed, a number of empirical findings point to a positive association between perceived risk of HIV infection and HIV testing (Bond et al. 2005, Stein and Nyamathi, 2000). This association is probably due to the fact that a sense of vulnerability to a threat motivates self-protective behaviors, including being tested for HIV.

However, the current study showed that perceived risk of HIV infection is negatively associated with volunteering for a test or accepting testing when it is offered. Thus, programs that help a population assess its risk may be helpful in guiding particularly the high-risk people toward voluntary HIV testing. Ever use of condoms is positively associated with volunteering to be tested for HIV in men, but not women. It is possible that ever use of condoms is a sign of caring for one's own health. People who are more likely to take care of their health in general may also be more likely to be tested for HIV. Thus, there is a need to intensify the ongoing social marketing of condoms so as to increase the rates of testing among sexually active persons in Zimbabwe.

Another important objective for our study is examining the influence of AIDS stigma on reasons for not being tested in women and men who report not having been tested for HIV. Respondents who hold social rejection stigma, thus those with misconceptions about HIV transmission, are less likely not to be tested because of fear of the test results. As expected, disclosure concerns are associated with increased odds of having concerns about the confidentiality of the test results for women but not men.

In addition, this study finds that several individual-level factors are associated with reasons for not being tested. Specifically, the study finds that age, education, religion, exposure to mass media, and household wealth had reduced odds of not getting tested for HIV because of lack of access to testing services compared with people who have no perceived risk of HIV infection. As expected, place of residence also distinguishes women and men who were not tested because of lack of access to testing services from those who were not tested because they perceived themselves to have no risk of HIV infection. This finding concerning those who reside

in a rural area underscores the importance of expanding voluntary counseling and testing services to rural areas.

As regards the sexual behavior domain, ever use of condoms is predictive of reasons for not being tested because of lack of access to testing services and fear of test results for men but not women. However, the high-risk behavior of having three or more lifetime sexual partners is a significant predictor of not being tested because of lack of access to testing services and fear of test results for both women and men.

The limitations of this study include the use of a cross-sectional design in which reasons for having ever been tested for HIV or reasons for not being tested might have arisen prior to the respondent's developing AIDS stigma, HIV knowledge, risk awareness, or sexual behavior. This limitation does not permit causal interpretation of the findings (Elwood, 1998).

The Cronbach's alphas of the AIDS stigma dimensions for disclosure concerns ($\alpha = 0.53$) and observed enacted stigma ($\alpha = 0.54$) are relatively low, indicating less than optimal internal consistency (but see Helmstadter, 1966). Additional studies are needed to improve the reliability and validity of these scales.

Other limitations of this study include the reliance on self-report measures of sexual behavior and HIV testing. In addition, the study does not include health-service structural barriers to HIV testing uptake.

Future studies examining predictors of uptake of HIV testing should include questions about attitudes and beliefs about HIV testing, the availability of HIV treatment, beliefs about HIV treatment, and health-care provider perceptions of testing. These factors merit inclusion in prospective studies as the landscape of HIV testing continues to change.

CONCLUSIONS

The current study is the first to report on the association between AIDS stigma and reasons for being or not being tested for HIV in a sample of women and men in Zimbabwe. The study indicates that more than eight years after HIV testing services became available in Zimbabwe, there is a still a need to expand HIV testing services. Prevention programs must create strategies to differentially reach high-risk groups. For example, HIV testing services could be implemented within workplaces for male adults and schools for young women and young men. In addition, there is an urgent need to intensify anti-AIDS stigma campaigns and HIV prevention interventions. Although Zimbabwe is experiencing a decline in HIV prevalence, the country still has one of the highest HIV prevalence rates in the world (UNAIDS, 2005). Therefore, it is imperative to continually identify all possible barriers that prevent HIV testing uptake, including AIDS stigma. This will enable the development and implementation of individual, societal, and structural interventions that might increase the demand for HIV testing services.

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