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Does HIV testing improve attitudes towards people living with and affected by HIV/AIDS?

A comparison of attitudes towards people living with HIV/AIDS (PLWHA) among individuals who know their HIV/AIDS status and those who do not

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Abstract

This paper uses data derived from the 2004 Botswana AIDS Impact Survey (BAISII) to investigates the impact of HIV testing on individuals' attitudes towards people living with and affected by HIV/AIDS (PLWHA) in Botswana.

HIV/AIDS prevalence rates in Botswana are some of the highest of any country in the world. While VCT is the gateway to a number of programs that offer free HIV/AIDS prevention, testing, treatment and care services, the low utilization of these services has failed to reflect both seriousness of the epidemic or the fact that the services are offered free of charge. Entrenched negative attitudes, stigma and fear of discrimination (NACA 2003) and lack of male involvement (UNFPA, 2003, NACA 2003) have been blamed for the underutilization of these services.

The results show that HIV testing does have an impact on attitudes towards PLWHA. Having ever tested for HIV was associated with increased odds of expressing positive attitudes towards PLWHA. The timing of the HIV test did not show any discernable influence on attitudes towards PLWHA. Among those who tested, it was not important whether such a test was undertaken during the year prior to the survey or not; while learning of one's HIV status through obtaining the test results was associated with increased likelihood of having positive attitudes towards PLWHA compared to those who tested but never obtained their HIV test results. Attitudes towards PLWHA were also significantly related to exposure to HIV information; awareness of HIV commemorative events; and level of formal education.

Introduction & background

Botswana has one of the highest HIV prevalence rates of any country in the world. The HIV/AIDS epidemic has started to reverse some of the significant gains that the country had made over the last four decades. Between 1992 and 2002 the HIV prevalence rate among antenatal clinic attendees aged 15 - 49 years in Botswana increased from 13.8 to 35.4 percent (NACA, 2003), and reached 37.4 percent in 2003 (GoB, 2003). In all districts HIV prevalence rates among pregnant women remains over 20 per cent, with some districts exceeding 50 per cent (NACA, 2003). Mortality across all age groups is on the rise and life expectancy has declined, and could be as low as 29 years by 2010 according to some United Nations estimates. Owing to increased HIV/AIDS related morbidity and mortality, Botswana's human development index has declined from 71 to 122 in 1999/2000 (NACA, 2003).

The severity of the HIV epidemic has accorded it emergency status, and government has developed a multi-sectoral approach to try and contain its spread. A key part of the government's response to the epidemic is the delivery of free counseling, testing and treatment for those who are infected. While the country's highly accessible modern health care infrastructure is being used to deliver these services to even some of the most remote areas of the country, the response to these programs was initially slow. While the utilization of these services has gained momentum, thanks to aggressive information, education and behavioral change campaigns, the utilization of these services still remains relatively lower than would otherwise have been anticipated.

The HIV/AIDS epidemic has unfortunately been accompanied by a twin epidemic of stigma, fear, denial and negative attitudes. The effects HIV knowledge and information; HIV related stigma, misconceptions and negative attitudes on the effectiveness and utilization of HIV services are increasing occupying a larger volume of social research into the epidemic in Sub-Saharan Africa. Most such research so far suggest that stigma, fear of discrimination could present serious bottlenecks to the increased and sustained utilization of VCT services if they are not addressed.

While information about HIV/AIDS transmission and prevention is relatively more accessible now, the transformation in attitudes seems to lag behind the acquisition of information and knowledge. In Botswana, fear of stigma and discrimination (Weiser 2006)'and lack of male involvement (UNFPA, 2003; NACA, 2003) are some of the reasons advanced to explain why the country's high HIV prevalence rates, coupled with significantly high levels of knowledge of HIV has so far failed to generate an influx of people seeking VCT services, given the highly accessible health infrastructure that is being used to deliver free services. While information about HIV is more readily accessible than at any time before, misconceptions and inaccurate knowledge about the epidemic have persisted. This inaccurate knowledge has in turn resulted in HIV related stigma and discrimination which is helping to create conditions favorable to the spread of HIV by driving the epidemic underground and

Studies of HIV/AIDS provide evidence that stigma and negative attitudes towards HIV generally, and negative attitudes towards people living with and affected by HIV in particular, have persisted despite increased knowledge, and continue to affect the effectiveness of HIV prevention, treatment; care and support programs. Gregory et al. found that while overt expressions of stigma and support for coercive forms of addressing HIV in the US have declined throughout the 1990's, almost at the same time, there was an increase in inaccurate beliefs about HIV especially the related to the risk posed by casual social contact (2002). Another study in the high HIV prevalence province of Yunan in China found evidence both strong support for coercive measures of controlling the epidemic, such as compulsory testing and premarital examination, and overly negative attitudes towards PLWHA (Hesketh et al., 2005). A study of attitudes towards uptake of VCT services among South African miners identified fear of testing positive; stigmatization, disease and death as significant barriers to the uptake of these services, with only 14 percent indicating that they would access VCT services even if antiretroviral therapy became available (Day, et al., 2003)..

Whether VCT can motivate a change in risk behavior, or reduce HIV related stigma, is subject to more research. A review of 35 studies found mixed evidence of the effect of HIV counseling and testing on risk-reducing and help seeking behavior (Walitski et al., 1997); while some studies in Southern Africa have documented conclusive evidence of a significant relationship between stigma or negative attitudes towards HIV and the use of HIV services. In study of HIV testing and attitudes towards HIV testing in a black township in Cape Town, South Africa, Kalichman et al., (2003) found that individuals who had not been tested for HIV were more likely to express negative attitudes and ascribe shame, guilt and social disapproval of PLWHA, than those who have tested and that individuals who tested and did not learn of their results were also found to have more negative attitudes compared to those who learnt of their results. Wenger et al. found that HIV testing and exposure to education about HIV infection resulted in increased communication with sexual partners about the risk of HIV infection (1992).

Knowledge of one's HIV status is an important factor in controlling the spread of the epidemic; however the fear of stigma and social disapproval reduces the likelihood of informing a sexual partner about a positive HIV test result. A study of 413 HIV positive individuals in South Africa found that 42 percent of them had sex during the three months prior to the survey, without disclosing their status to their partner. The study found a close association between HIV related stigma and discrimination and non-disclosure of (a positive) HIV status to sex partner and HIV transmission risk behaviors like multiple sexual partnerships and unprotected sexual intercourse (Simbayi et al., year). An examination of a number of cross sectional surveys of six countries (five in sub-Saharan Africa) found that despite many obstacles, VCT acceptability was high among women attending antenatal clinics (Cartoux et al., 1998). An analysis of VCT among women attending antenatal care in Botswana

indicated that a very high percentage of women who are offered HIV testing accept to test, and a significant proportion do learn of their test the results (Rakgoasi, 2001).

Voluntary HIV counseling and testing (VCT) is a key one of the cornerstones of Botswana's efforts to control and ultimately reverse the spread of HIV, and an entry point for anyone who wishes to take advantage of the free counseling, testing and treatment services. Pregnant women are encouraged to undergo HIV testing as part of the antenatal care program's strategy of prevention of mother to child transmission of HIV (PMTCT) children, while the rest of the population is encouraged to do so through voluntary HIV counseling and testing. In addition, HIV information, education and communication campaigns and HIV commemorative events are being used as vehicles for disseminating information about HIV. The question therefore is what is the impact of HIV testing on attitudes towards PLWHA in Botswana? What is the role of exposure to HIV information and commemorative events on attitudes towards PLWHA?

This paper is premised on the fact that prior to HIV testing, an individual goes through extensive counseling, the purpose of which is to make sure that they ready to accept their status, especially in the case that they test HIV positive. The process of counseling also seeks to inculcate non-discriminatory and accepting attitudes towards PLWHA. As such, it is hypothesized that, controlling for confounding variables, individuals who undergo HIV testing should display more accepting attitudes towards PLWHA than those who never under went testing. In addition, those who get to learn of their test results are expected to have more positive and accepting attitudes towards PLWHA than those who tested but never learnt of their results.

Objectives

The aim of this paper is to examine the relationship between HIV counseling and testing and attitudes towards people living with HIV/AIDS (PLWHA) in Botswana. The paper will investigate if HIV testing influences an individual's attitude towards PLWHA, specifically the paper will seek to provide answers to the following questions:

1. What is the patterns and prevalence of HIV testing in Botswana?
2. Does HIV testing influence attitudes towards PLWHA?
    a. Are individuals to have tested less likely to express negative attitudes towards PLWH?
    b. Are individuals who have tested but did not get the test results less likely to express negative attitudes towards PLWHA?
3. What other factors have a significant impact on an individual's attitude towards PLWHA?

Data sources

Data for this analysis are derived from the 2004 Botswana AIDS Impact Survey (BAISII). BAISII is the latest of a series of nationally representative demographic surveys of population aged 10 64 years. The survey documented knowledge, attitudes, behavior, and cultural factors that might influence HIV infection; prevention; and impact mitigation; and also

conducted voluntary HIV testing among population aged 18 months to 64 years, in order to generate a nationally representative population-based estimate of HIV/AIDS prevalence.

The survey used the 2001 Population Housing Census as a sampling frame. The sample was stratified according to administrative districts and major population centres. A two-stage stratified probability sample design was used to select the sample. The first stage was the selection of the Primary Sampling Units (PSUs), in this case census enumeration areas (EAs). These were selected with probability proportional to a measure of size (PPS), where measures of size (MOS) were the number of households in each EA. At the second stage of sampling, the households were systematically selected from a fresh list of occupied households obtained from the sampled EAs. The survey utilized four different types of questionnaires, namely household; individual; workplace and community questionnaires.

Response rates

Four hundred and sixty enumeration areas throughout the country were selected with probability proportional to size, and 8 380 households were drawn systematically for inclusion in the survey. Of these, 7,600 households were successfully interviewed, yielding a household response rate of 92 percent. A total of 16,992 eligible respondents aged 10-64 were identified from the 7,600 households, of whom 15,878 were successfully interviewed, yielding an individual response rate of 93 percent.

Methods

The analysis uses bi-variate and logistic regression analysis to explore the relationship between HIV testing and attitudes towards PLWHA. The three questions relating to attitudes towards PLWHA are 'dummy coded' and summed to produce an indicator of the strength of an individual's attitudes towards PLWHA. This composite variable ranges from zero, indicating those individuals with the most negative attitudes; to three for those individuals are expressed only positive attitudes. The results of the gross effects model are presented first, followed by those of the net effects model. The gross effects model investigates the impact of a single independent variable on the dependent variable, without any control variables, while the net effects model controls for confounders.

Sample restriction and characteristics

The sample used in this analysis was restricted to individuals aged between 15 and 49 years of age, yielding a total sample size of 6,853 respondents, who form the basis of this analysis. The sample was weighted to make it nationally representative. Females constituted over half of all respondents (55%); and a fifth of the sample was urban. Almost 40 percent of the sample was less than 24 years of age while just under a fifth were over 40 years of age. Close to half of the respondents (47%) had secondary education, and one in four had primary education, while 13 percent had post secondary education.

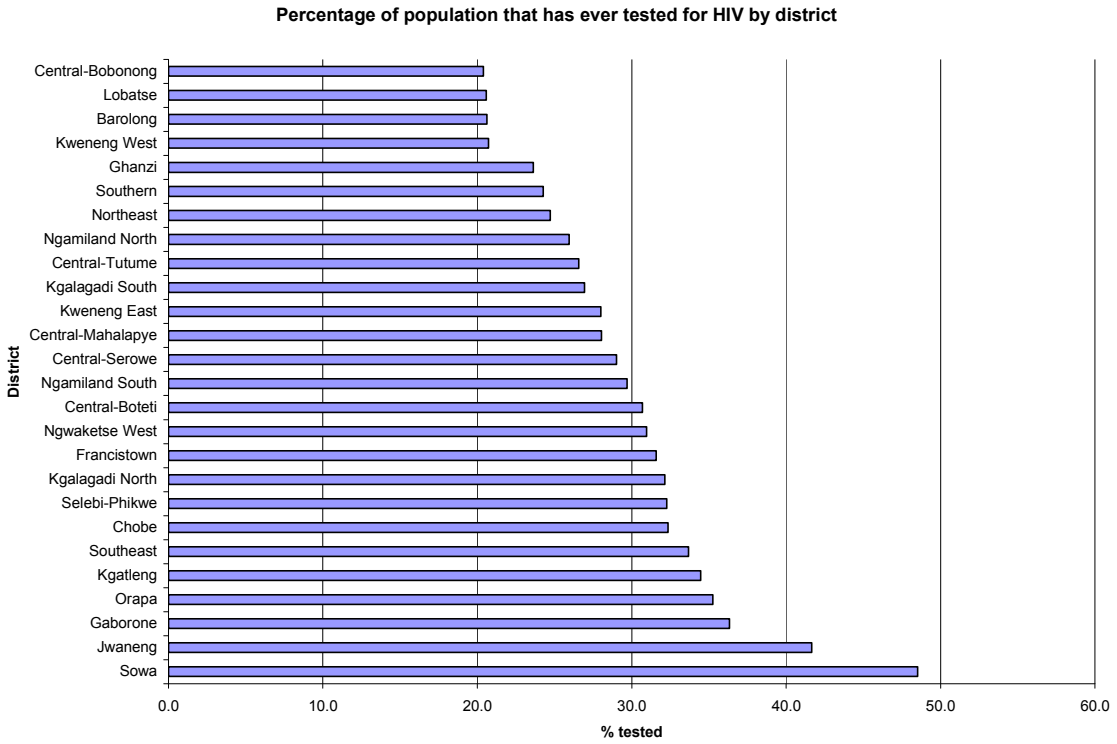
Results

HIV testing

Twenty-nine percent of respondents had undergone HIV testing at least once in their lives, 61 percent of whom tested in the last 12 months prior to the survey. A very high percentage (93%) of those who tested obtained the results of their test. There is a significant sex differential in HIV testing, with females more likely to have tested compared males. Over a third of females (35%) have tested at least once in their lives compared to males (23%), and a higher percentage of females tested in the 12 months before the survey (63%) compared to males (58%). However there is no significant sex differential in the proportion of both men and women who tested and obtained their test results.

The percentage of respondents who ever tested varies significantly by age. This percentage is lowest among 10-14 year olds (1%), and increases to 25 and 41 percent in the age groups 15-24 and 25-49 years, respectively, and just over a fifth of those aged 50-64 years. The percentage of those who tested in the last 12 months is highest among 15-24 year olds (68%) followed by those aged 50-64 years and 25-49 years (58%)

Education shows a direct relationship with percentage who ever tested. The percentage of those who ever tested increases from a fifth among those with primary education or less, to just fewer than a third (31%) among those with secondary education and over half (55%) among those with tertiary education.



The figure above shows the percentage of population who had ever tested in different districts in Botswana. A total of 12 districts recoded testing levels of over 30 percent, with two of these districts registering over 40 percent[1]. Just under a third (32%) of population in Selibe–Phikwe and Francistown (two of the districts with the highest HIV prevalence rates) had ever tested. A majority of rural districts have HIV testing rates that are lower than the average (29%) for the whole country.

Attitudes towards people living with HIV/AIDS

While nine out of every ten respondents indicated a willingness to look after a relative who has AIDS (92%), attitudes towards PLWHA generally were relatively more negative. Just under a third (30%) felt that an HIV positive teacher should not be allowed to continue teaching; over a third (34%) would like it kept a secret if their relative had AIDS and almost half (46%) would not buy from a shopkeeper if they knew he was HIV positive.

Just less than a third (31%) of respondents expressed totally positive attitudes towards PLWHA. That is, the answers they provided to each of the three questions that measure attitudes towards PLWHA were positive and supportive. On the other hand 10 percent of respondents expressed totally negative attitudes towards PLWHA, while 27 percent of respondents expressed two negative attitudes out of the three questions.

Exposure to HIV/AIDS information and media

Increasingly, HIV information and commemorative events are used to spread HIV messages and inculcate non-discriminatory and non-judgmental attitudes among the general public, towards PLWHA. Almost two thirds (64%) of the sample had seen or heard HIV/AIDS information during the four weeks before the survey and a large majority (83%) were aware of an HIV/AIDS commemorative event(s) in their community. Less than half (41%) had nevertheless discussed HIV/AIDS with anyone during the four week prior to the survey.

Exposure to HIV information and media is directly related to education level. A higher percentage of respondents with more years of education had seen or heard HIV/AIDS information four weeks before the survey; were aware of an HIV/AIDS commemorative event in their community and had discussed HIV/AIDS with someone four weeks prior to the survey. Exposure to HIV/AIDS events was higher among urban compared to rural respondents.

Logistic regression results

This section presents the results of the binary logistic regression model showing the likelihood of having positive attitudes towards PLWHA, given an individual's characteristics. The results of the gross effect model are presented first, followed by those of the net effects model.

The net effects model investigated the effects of three independent variables relating to HIV testing. These are whether an individuals has ever tested or

[1] These two are mining towns, and in each town there has been aggressive testing campaigns among mine employees, who form the majority of the population in each place.

not; among those who ever tested, whether they tested during the 12 months preceding the survey or earlier; and finally whether those who tested obtained their test results or not. This was done by running three different net effects models for each of the three variables.

Gross effects model

The gross effects regression model results indicate that HIV testing does have a significant association with an individual's attitudes towards PLWHA. The odds of expressing positive attitudes towards PLWHA were significantly higher among individuals who have ever tested *(Odds 1.736 p= 0.000)* compared to those who have not; and higher among those who tested and obtained their test results *(Odds= 2.098 p=0.000)* compared to those who did not obtain their results. However, among those who have ever tested, whether someone tested in the 12 months before the survey or not did not show any significant relationship to attitudes towards PLWHA.

The results also show that exposure to HIV information media has a significant impact on attitudes towards PLWHA. Individuals who reported seeing or hearing HIV/AIDS related messages *(Odds=2.115 p=0.000)* and being aware of an HIV/AIDS commemorative event *(Odds=2.609 p= 0.000)* as well as those who discussed HIV/AIDS with anyone prior to the survey *(Odds= 2.129 p= 0.000)* were significantly more likely to have positive attitudes towards PLWHA. Other variables that have a significant one-on-one relationship with attitudes towards PLWHA are age; education; marital status and residence.(Table 4)

Net effects model

The net effects model examines the relationship between an independent variable and the dependent variable, while simultaneously controlling for the effects of other variables in the model. The results of the net effects model are more authoritative compared to the gross effects model, so if ever there is a conflict in the results of the two models, the results of the former should supersede

Ever having tested for HIV

Having ever tested for HIV has a small but significant impact on attitudes towards PLWHA. The odds that someone who has ever tested will express positive attitudes towards PLWHA are 1.138 higher among this group compared to those who have never tested. However, being aware of an HIV commemorative event and having discussed HIV with anyone showed significant leverage on the odds of having positive attitudes towards PLWHA, regardless of whether one has ever tested or not. Being aware of an HIV/AIDS commemorative event increased the odds of having a positive attitudes towards PLWHA by 72 percent over those who were not aware of any HIV/AIDS commemorative event, while having discussed HIV/AIDS before the survey increased such odds by 25 percent compared to those who did nit discuss HIV/AIDS prior to the survey.

When other possible confounding variables are accounted for, the sex of respondent losses its significance, while the impact of age, is mixed, with younger respondents (below 29 years of age) being less likely to express

positive attitudes towards PLWHA compared to individuals aged 45-49 years. An individual's level of education shows significant leverage on attitudes towards PLWHA, with those individuals with primary and secondary education being only 32% and 72% likely to express positive attitudes towards PLWHA compared to those with tertiary education. Individuals who were ever married and those in cohabiting relationships were slightly more likely to express positive attitudes towards PLWHA compared to those who are never married (and not currently cohabiting). Compared to urban residents, the odds of having positive attitudes towards PLWHA among rural residents are lower by 14 percent.

Having tested in the 12 months before the survey

Whether an individual tested for HIV in the 12 months before the survey or not showed a small (but significant) relationship with attitudes towards PLWHA. The results show a small but statistically significant decline in the odds of having positive attitudes towards PLWHA among individuals who tested in the 12 months before the survey, compared to those who tested earlier *(Odds = 0.905 p= .000)*. Being aware of an HIV/AIDS commemorative event increased the odds of having positive attitudes by 65 percent over those individuals who were not aware of such an event; while having discussed HIV/AIDS increased such odds by 16 percent over those who never discussed HIV/AIDS.

Obtaining HIV test results

Having tested and obtained HIV test results increases the odds of having positive attitudes towards PLWHA by 18 percent compared to those individuals who tested but did not learn of their test results. At the same time, being aware of an HIV/AIDS commemorative event and having discussed HIV/AIDS with anyone before the survey increases the odds of expressing positive attitudes towards PWHA by 80 and 30 percent, respectively, over those who never attended any commemorative event or never discussed HIV/AIDS with anyone prior to the survey.

Among those who tested and obtained their test results, the odds of having positive attitudes towards PLWHA were higher (by 16%) among females compared to males, and being aged below 35 years of age was associated with between 30 and 40 percent decline in the odds of having positive attitudes towards PLWHA.

Discussion

HIV/AIDS mass media and commemorative events, together with promotion of voluntary HIV counseling and testing are being used to address the twin epidemic of stigma, fear, denial and negative attitudes towards PLWHA that has accompanied the HIV/AIDS epidemic. Stigma, fear, denial and negative attitudes towards PLWHA have had significant negative impact on the optimal and sustained use of HIV/AIDS services in Botswana and other sub-Saharan African countries badly affected by HIV/AIDS. This analysis shows that as of 2004, 29 percent of the population had ever tested for HIV. While this figure remains low given the high HIV prevalence and free HIV services, it nevertheless represents an almost doubling of the percentage of population that has ever tested since 2001, which stood at 15 percent of the population. (see CSO, 2001).

There is evidence of a link between HIV testing, exposure to HIV information and attitudes towards PLWHA. Evidence of an association between HIV testing and attitudes towards PLWHA was initially provided by a study in South Africa, which found that individuals who have never tested ascribed more stigma; shame; guilt and social disapproval of people living with HIV compared to those who have ever tested (Kalichman, S.C.; Simbayi, L.C. 2003) HIV testing is preceded by counseling, the aim of which is to help the individual deal with the results of the test, whatever they maybe. But most importantly, part of the message of counseling is the inculcation of positive, open and accepting attitudes towards PLWHA. Thus, undergoing HIV testing, regardless of whether one finally learns of the results, exposes the individual to personalized messages about HIV. The fact that individuals who have either undergone HIV testing have are more likely to have positive attitudes towards PLWHA demonstrates the potential role that HIV counseling and testing can play in inculcating positive and accepting attitudes towards those affected by HIV/AIDS.

Almost everyone who underwent HIV testing obtained their test results. This could be due to the utilization of rapid testing techniques that ensure that results are available within minutes instead of days and weeks as it used to be the case. The importance of not only testing, but getting to learn of the test results can not be over emphasized. Getting to learn one's HIV status through testing is an important component of the fight against the spread of HIV and HIV stigma. It therefore becomes imperative that in addition to promoting HIV testing, there should be concerted efforts to ensure that everyone who undergoes HIV testing get to learn of their test results.

HIV/AIDS media, public education campaigns and commemorative events are increasingly being used to disseminate HIV/AIDS messages and to fight stigma, fear and prejudice against PLWHA. It is evident from the results of this analysis that these events can play a significant role in HIV education and the fight against HIV stigma.

Limitations of this analysis

The analysis is based on secondary data. This limits the analysis to those variables in the dataset. This limits the rigor of analysis as some variables needed to thoroughly investigate the topic were not captured in the original survey. The second limitation relates to the measurement of stigma or negative attitudes. Despite the general understanding of the likely effect on stigma on the success of HIV intervention programs, its precise measurement presents many methodological challenges The definition of stigma itself is problematic because it is context specific; and might vary from country to country, or vary over time within the same community, depending on the laws, culture and values and level of development.

Questions that seek to measure stigma tend to focus more on attitudes than stigmatizing behaviour, and they tend to tap more into respondents' fear of the epidemic or fear of infection than their actions relative to PLWHA.Consequently stigma and discrimination are some of the most of the un-researched and poorly understood aspects of the HIV/AIDS epidemic. Due to these measurement challenges, the objective and valid measurement of stigma remain largely weak and the methods undeveloped. However, despite these limitations, the results point to an important connection between HIV testing, awareness of one's HIV status and attitudes towards PLWHA.

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Appendix

Table 1: Selected Sample Background Characteristics

	Number	Percent
Sex		
Male	274,888	45.5
Female	329,808	54.5
Age		
15-19	90,445	20.1
20-24	88,338	19.7
25-29	77,474	17.2
30-34	65,230	14.5
35-39	49,406	11.0
40-44	45,512	10.1
45-49	32,957	7.3
Education		
Primary	208,613	39.8
Secondary	248,803	47.4
Higher	67,352	12.8
Marital status		
Ever married	121,577	20.1
Cohabiting	124,169	20.6
Never married	358,210	59.3
Residence		
Urban	154,243	20.4
Rural	601,446	79.6

Table 2: Main research outcome variables

HIV Testing	Number	Percent
Have you ever tested for HIV?		
Yes	155,767	29.0
No	381,575	71.0
Did you test in the last 12 months?		
Yes	94,664	60.7
No	61,191	39.3
Were you told the results of the test?		
Yes	88,045	93.2
No	6,460	6.8
Did you tell anyone the results?		
Yes	76,930	87.4
No	11,123	12.6

Table 3: Attitudes towards people living with and affected by HIV/AIDS

Attitudes towards PLWHA	Number	Percent
Would you be willing to care for an HIV infected relative?		
Yes	489,454	92.2
No	41,176	7.8
Should an HIV positive teacher be allowed to teach?		
Yes	356,670	69.8
No	154,306	30.2
Would you buy from a shopkeeper if you knew he/she is HIV positive?		
Yes	282,060	53.7
No	243,551	46.3
Would you like it kept a secret if your relative has AIDS?		
Yes	174,852	33.7
No	343,404	66.3
HIV information in the 4 weeks before the survey?		
Yes	341365	63.7
No	194896	36.3
Ever attended an HIV commemorative event?		
Yes	283,600	83.0
No	57,991	17.0
Discussed HIV with anyone weeks before the survey?		
Yes	218,537	40.7
No	318,296	59.3
Indicator of attitudes (Composite variable derived from Teacher; Shopkeeper; HIV+ relative)		
Totally negative (0/3)	55,549	10.4
Negative (1/3)	143,639	26.8
Positive (2/3)	171,873	32.1
Totally positive (3/3)	164,917	30.8

Table 4: Odds ratios that an individual will have positive attitude towards PLWHA [Gross effects model]

Factor	Odds	Significance	95% C.I	
			Lower	Upper
Ever tested for HIV				
Yes	1.736	.000	1.571	1.918
No	1.000	--		
Tested during the 12 months prior to the survey?				
Yes	0.896	0.197	0.759	1.058
No	1.000	--		
Obtained HIV test results?				
Yes	2.098	.000	1.321	3.331
No	1.000			
Sex				
Male	1.000	--		
Female	1.069	.000	1.056	1.081
Age				
15-19	1.157	.000	1.125	1.191
20-24	1.336	.000	1.298	1.374
25-29	1.456	.000	1.415	1.499
30-34	1.480	.000	1.437	1.524
35-39	1.146	.000	1.110	1.183
40-44	0.988	.464	0.956	1.021
45-49	1.000	--		
Education				
Primary	0.183	.000	0.180	0.187
Secondary	0.515	.000	0.506	0.524
Tertiary	1.000	--		
Marital status				
Ever married	1.217	.000	1.199	1.235
Cohabiting	1.146	.000	1.129	1.163
Never married	1.000	--		
Residence				
Urban	1.000	--		
Rural	1.745	.000	1.722	1.768
HIV information in the 4 weeks before the survey?				
Yes	2.155	.000	1.939	2.396
No	1.000	--		
Ever attended an HIV commemorative event?				
Yes	2.609	.000	2.187	3.112
No	1.000	--		
Discussed HIV with anyone weeks before the survey?				
Yes	2.129	.000	1.935	2.341
No	1.000	--		

Table 5: Odds ratios that an individual who have ever tested will have positive attitude towards PLWHA (Net Effects model)

Factor	Odds	Significance	95% C.I	
			Lower	Upper
Ever tested for HIV				
Yes	1.138	.000	1.118	1.159
No	1.000			
Sex				
Male	1.000	--		
Female	0.984	.063	0.988	1.017
Age				
15-19	0.853	.000	0.815	0.892
20-24	0.864	.000	0.828	0.902
25-29	0.839	.000	0.805	0.875
30-34	1.028	.193	0986	1.071
35-39	1.073	.001	1.028	1.120
40-44	0.961	.074	0.920	1.004
45-49	1.000	--		
Education				
Primary	0.328	.000	0.319	0.338
Secondary	0.718	.000	0.703	0.734
Tertiary	1.000	--		
Marital status				
Ever married	1.145	.000	1.115	1.175
Cohabiting	0.983	.001	0.962	1.004
Never married	1.000	--		
Residence				
Urban	1.000	--		
Rural	0.899	.000	0.883	0.916
HIV information in the 4 weeks before the survey?				
Yes	0.635	.005	0.462	0.874
No	1.000			
Aware of HIV/AIDS commemorative events?				
Yes	1.724	.000	1.673	1.776
No	1.000			
Discussed HIV with anyone weeks before the survey?				
Yes	1.254	.000	1.232	1.276
No	1.000			

Table 6: Odds ratios that an individual who tested 12 months before the survey will have positive attitude towards PLWHA compared to those who tested earlier (Net Effects model)

Factor	Odds	Significance	95% C.I	
			Lower	Upper
Tested during the 12 months prior to the survey?				
Yes	0.905	000	0.882	0.930
No	1.000			
Sex				
Male	1.000	--		
Female	1.076	0.000	1.047	1.106
Age				
15-19	0.802	.000	0.743	0.866
20-24	0.868	.000	0.816	0.923
25-29	0.940	.036	0.887	0.996
30-34	0.942	.045	0889	0.999
35-39	1.268	.000	1.194	1.346
40-44	0.824	.000	0.774	0.878
45-49	1.000	--		
Education				
Primary	0.362	.000	0.347	0.379
Secondary	0.709	.000	0.687	0.732
Tertiary	1.000	--		
Marital status				
Ever married	1.125	.000	1.084	1.167
Cohabiting	0.853	.000	0.826	0.880
Never married	1.000	--		
Residence				
Urban	1.000	--		
Rural	0.928	.000	0.902	0.955
HIV information in the 4 weeks before the survey?				
Yes	0.000	.996	0.000	.
No	1.000			
Aware of HIV/AIDS commemorative events?				
Yes	1.650	.000	1.565	1.739
No	1.000			
Discussed HIV with anyone weeks before the survey?				
Yes	1.163	.000	1.130	1.198
No	1.000			

Table 7: Odds ratios that an individual who tested and obtained their test results survey will have positive attitude towards PLWHA compared to those who tested but never learned of their test results. (Net Effects model)

Factor	Odds	Significance	95% C.I	
			Lower	Upper
Obtained HIV test results?				
Yes	1.183	.000	1.288	1.485
No	1.000	--		
Sex				
Male	1.000	--		
Female	1.166	.000	1.125	1.209
Age				
15-19	0.610	.000	0.555	0.671
20-24	0.593	.000	0.547	0.642
25-29	0.631	.000	0.585	0.682
30-34	0.715	.066	0.662	1.047
35-39	0.967	.408	0.893	0.652
40-44	0.598	.576	0.549	0.907
45-49	1.000	--		
Education				
Primary	0.414	.000	0.391	0.438
Secondary	0.792	.000	0.761	0.825
Tertiary	1.000	--		
Marital status				
Ever married	1.059	.020	1.009	1.111
Cohabiting	0.705	.000	0.677	0.734
Never married	1.000	--		
Residence				
Urban	1.000	--		
Rural	0.874	.000	0.842	0.907
HIV information in the 4 weeks before the survey?				
Yes	0.000	.996	0.000	.
No	1.000	--		
Aware of HIV/AIDS commemorative events?				
Yes	1.807	.000	1.689	1.933
No	1.000	--		
Discussed HIV with anyone weeks before the survey?				
Yes	1.296	.000	1.248	1.346
No	1.000	--		