

Social and psychological factors associated with willingness to test for HIV infection among young people in Botswana

THABO T. FAKO

Department of Sociology, University of Botswana, Gaborone, Botswana

Abstract

In spite of extensive campaigns to promote voluntary counselling and testing through the radio, television, newspapers and mass rallies, testing for HIV remains a challenge in Botswana. Using a representative sample of 1,294 students from secondary schools and tertiary institutions, the study investigates the effects of socio-demographic background variables, family coherence, interpersonal relations, sexual experience and knowledge about sexual health, on willingness to test for HIV infection. The results show that willingness to test for HIV infection was negatively associated with being sexually active and having a number of partners. Indicators of family, coherence, psychological bonding and personal adjustment such as common residence among parents, emotional support from the family attachment to parents, happiness with life in general and satisfaction with life as a student were associated with willingness to test. The importance of sexual activity, number of partners, happiness with life in general, level of attachment to father and physical fights with other children were identified as the social and psychological predictors of willingness to test for HIV using multiple logistic regression. The study highlights the importance of continued education about voluntary counselling and testing among sexually active young people, especially those from poorer backgrounds in rural areas.

Introduction

It is increasingly recognized that voluntary counselling and testing (VCT) play a critical role in HIV-1 prevention, early diagnosis of HIV infection as well as timely therapeutic or prophylactic interventions (Gage & Ali, 2005). VCT is a pivotal entry point to help people avoid HIV and cope better with existing infection, enable pregnant women to reduce the HIV transmission risk to their babies, and to increase openness about the epidemic (Jackson, 2002). HIV testing and counselling have been shown to promote risk reduction in certain groups, behaviour change and reduced transmission (Peltzer et al., 2004). However, not all who may be at risk for HIV infection are willing to be tested, and offering the test alone does not improve uptake (Peckham & Edwards, 2003).

Young people are the most vulnerable and the most affected section of the global population. It is estimated that at least half or more of all HIV infections (almost 7,000 daily) worldwide occur among young people aged between 15 and 24 years (UNAIDS, 2004). The situation is especially serious in developing countries where young people form a significant number and where the HIV epidemic has been most severe (UNAIDS, 2004).

While much effort has been invested towards improving knowledge about HIV/AIDS among young people (Kiragu, 2001; Jackson, 2002), not as much effort has been spent identifying the class of factors that promote a favourable disposition towards (or willingness to) testing for HIV infection or to experiencing actual testing. A few studies examining factors associated with HIV testing have been undertaken (Gage & Ali, 2005). Studies in Sub-Saharan Africa have been focused on women attending pre-natal clinics (Ekanem & Gbadegesin, 2004), but little information on HIV testing across different populations has yet been published (Peltzer et al., 2004). As a result, people's willingness to test for HIV infection among different sectors of the population remains largely unexplored and not adequately documented. With young people at the centre of the epidemic, it is important to understand the extent to which they are willing to test for HIV infection, and the factors associated with such willingness.

Studies have identified several reasons for HIV testing. These include planned marriages, new relationships, distrust of a sexual partner, illness, death of a partner, the desire to protect others (such as a partner or a baby), encouragement and support by peers, history of weight loss, history of drug use, syphilis and genital herpes (Shuter et al., 1997;

Jackson, 2002; Ekanem & Gbadegesin, 2004; Gage & Ali, 2005). In addition, individuals may be required to take an HIV test for reasons such as being charged with rape, travel to some countries, life assurance policies beyond a certain amount, mortgage bond for housing, long and costly training programmes, entering a pension scheme, participating in contact sports, obtaining some medical benefits, employment, etc. (Jackson, 2002).

Reasons for failing to test include fear of infection, fear of inappropriate HIV screening without consent and counselling, fear of learning that one is HIV-positive, fear of partner's reactions, belief that one is unlikely to be exposed to HIV, the assumption that there is little that one can do about being HIV-positive, perceived stigma and fear of discrimination if seropositive and concerns over privacy and who will gain access to information about one's HIV status (Campbell & Bernhardt, 2003; Burns et al., 2004; Isezuo & Onayemi, 2004; Peltzer et al., 2004; Gage & Ali, 2005). HIV testing is stressful even when the process is regarded positively. It is characterised by a pattern of worry involving three phases of the experience of (1) deciding to test, (2) testing, and (3) thinking about what's next (Ransom et al., 2005). It has been shown that even medical doctors are worried about the possibility of testing positive (Moodley et al., 2002).

In Botswana, voluntary HIV counselling and testing plays a key part in HIV-related prevention and care. It has enabled the government to provide antiretroviral medication to those that tested positive to HIV since January 2002 (AVERT, 2005). In 2004, in order to increase use of free antiretroviral treatment (ARV) programmes, Botswana began routine, non-compulsory HIV screening in prenatal clinics and other health care settings (Centers for Disease Control and Prevention, 2004). Although testing for HIV infection, a pre-condition for receiving antiretroviral medication, has improved among pregnant women, people seem to be afraid to get tested, and characteristics of those who are not willing to test have not been systematically documented.

This study identifies and documents social and psychological factors, including; features of family coherence, interpersonal relationships and personal adjustment that are associated with willingness to test for HIV infection among young people in Botswana. It is important to obtain information beyond antenatal clinics about those who are willing or not willing to test for HIV if strategies for increasing testing rates are to be improved.

Methods

The data were collected using a 76-item self-administered questionnaire, which solicited informa-

tion on demographic and background characteristics of respondents, family coherence and psychological bonding of children with their parents, interpersonal relations and personal adjustment, sex life and the extent to which sex was discussed within the family. The questionnaire was distributed among students from a national sample of 84 educational institutions comprising of community junior secondary schools (CJSS) that teach the first three levels of secondary school, senior secondary schools that teach the last 2 years leading to a school-leaving certificate and post-secondary institutions in both urban towns and rural villages. In each selected institution, random samples of students were selected at each level of education.

Willingness to test for HIV infection was measured by responses to a questionnaire item that asked respondents the question: 'How would you describe your feelings about being tested for HIV infection?' Response categories included: 'very comfortable about testing for HIV'; 'somewhat worried about testing for HIV'; 'very worried about testing for HIV'; and, 'I would never test for HIV infection'. For purposes of analyses, the first category was regarded as reflecting responses of those who were 'willing to test for HIV infection', while the remaining three categories were regarded as reflecting, to varying degrees, responses of those who were essentially 'not willing to test for HIV infection'.

All variables analysed were categorical or converted into categorical format. This enabled contingency table analysis and Chi-square tests of association and independence to be used to investigate the nature and strength of associations between willingness to test for HIV infection and independent variables. Bivariate analyses were done to investigate whether and how willingness to test for HIV infection among students was dependent on socio-demographic background, the extent of coherence and psychological bonding among members of the family, aspects of interpersonal relations sexual activity and knowledge about sex.

Multiple logistic regression analyses with stepwise variable selection were performed using the measure of effective productivity for HIV infection as dependent variable. Variables that were found to be explanatory factors during bivariate analyses were included in the model. The objective was to determine which of these factors continued to be significant determinants of a student's willingness to test for HIV infection. The percentage of respondents correctly classified as willing or not willing to test for HIV infection was used to assess the goodness of fit of the model.

Indicators of family coherence, psychological bonding and interpersonal relations that were significant predictors of effective productivity were

included in a multiple logistic regression analysis. Forward stepwise logistic regression analysis was used to determine the optimal model for predicting willingness to test. The search for the optimal model was done by fitting hierarchical models of increasing complexity using conditional likelihood ratio criterion as implemented in SPSS version 12.

Results

The sample consisted of 1,294 students of whom 674 (52.7%) were willing to test, 606 were not willing to test and 14 eligible participants (1.1%) did not respond to the item on willingness to test for HIV infection. There were 54.6% female, 56.7% from urban areas and 53.9% who were sexually

active. Most students led relatively happy lives with only 17.6% not happy with life in general, 18.3% not happy with life as students, and 17.6% receiving virtually no emotional support from their families.

Table I shows the distribution of respondents by willingness to test for HIV infection and socio-demographic background variables. The results show that students whose homes were in towns and cities were more willing ($p = 0.002$) to test for HIV than students whose homes were in traditional villages, agricultural lands and cattle posts. There was a significant relationship between gender and willingness to test for HIV infection among students ($p = 0.001$). Girls tended to be more willing to test for HIV infection (56.8%) than boys (47.6%).

Table I. Distribution of respondents by willingness to test for HIV infection and socio-demographic background variables.

Variable	Willing to test %	Not willing to test %	χ^2	df	p value
Gender			10.903	1	0.001
Male	47.6	52.4			
Female	56.8	43.2			
Age - Group			70.763	4	<0.0001
22+	39.7	60.3			
20-21	39.0	61.0			
18-19	55.2	44.8			
16-17	58.1	41.9			
12-15	69.4	30.6			
Level of education			65.236	3	<0.0001
Senior tertiary	37.6	62.5			
Junior tertiary	41.2	58.8			
Senior secondary	56.4	43.6			
Junior secondary	63.9	36.1			
Type of primary school attended			2.608	1	0.106
Public/Government school	51.5	48.5			
Private school	57.2	42.8			
Type of secondary school attended			7.073	2	0.029
Correspondence, evening classes	53.1	46.9			
Public/Government school	51.2	48.8			
Private school	61.7	38.3			
Class of residential area			11.752	2	0.003
Low cost housing area	45.6	54.4			
Medium cost housing area	53.3	46.7			
High cost housing area	60.4	39.6			
Urban vs. rural residence			9.950	1	0.002
Rural	47.6	52.4			
Urban	56.5	43.5			
Mother's type of job			11.391	4	0.023
Unemployed	48.9	51.1			
Clerical, industrial, informal sector middle management	47.2	52.8			
Director, executive, professional	54.5	45.5			
Director, executive, professional	61.4	38.6			
Father's type of job			17.517	4	0.002
Unemployed	42.1	57.9			
Clerical, industrial, informal sector middle management	46.5	53.5			
Director, executive, professional	57.9	42.1			
Director, executive, professional	59.4	40.6			

Younger students (12–15 years) were significantly more willing to test for HIV infection ($p < 0.0001$) than older students (16 years and older). This difference persisted with different levels of education. For example, in both secondary and tertiary institutions younger students were more willing to test than older students. Students who attended private secondary schools were more willing to test compared to those who attended public/government schools or correspondence classes ($p = 0.029$). However, type of primary school attended (private or public/government) did not appear to affect willingness to test for HIV ($p = 0.106$).

Students with a higher socio-economic status, as measured by type of housing and type of job parents did, were significantly more willing to test for HIV than those of lower socio-economic status. For example, 60.4% of students living in high-cost areas were willing to test compared to 45.6% of those from low-cost housing areas. Similarly, 61.4% of those whose mothers had jobs of a high status (and 59.4% of those whose fathers had jobs of a high status) were willing to test compared to 47.2 and 46.5% of those whose mothers and fathers had jobs of a low status, respectively. These differences were significant at the $\alpha = 0.025$ level.

Table II shows the association between willingness to test for HIV and several independent variables. Some indicators of family coherence and psychological bonding with members of the family such as

common residence among parents, low levels of conflict among family members, attachment to parents and grandparents, emotional support from the family and discussing sex with members of the family were significantly related to willingness to test. The findings show that students whose parents lived together most of the time were significantly more willing to test ($p = 0.001$) than those whose parents lived together only sometimes or those whose parents never lived together. Students from families that enjoyed low levels of family conflict were more willing to test ($p < 0.004$) than those who came from families that endured high levels of conflict.

Students who reported being strongly attached to their mothers were significantly more willing to test ($p = 0.002$) compared to students who reported having no strong attachment to their mothers. Similarly, students who reported being strongly attached to their fathers were significantly more willing to test than those who were not strongly attached to their fathers ($p < 0.0001$). Students who were attached to maternal grandparents were more willing to test than those who were attached to paternal grandparents as well as those who were not attached to any grandparents ($p = 0.009$). Students who received high levels of emotional support from their families were more willing to test ($p = 0.030$) than those with low or moderate levels of emotional

Table II. Association between willingness to test for HIV infection and independent variables.

	χ^2	df	p value
(a) Family coherence & psychological bonding			
Marital status	7.398	2	0.286
Common residence among parents.	13.063	2	0.001
Emotional support from family	6.995	2	0.030
Attachment to father	18.421	1	<0.0001
Attachment to mother	9.570	1	0.002
Attachment to aunts and uncles	4.434	2	0.109
Attachments to grandparents	9.510	2	0.009
Religiosity of family	17.570	3	0.001
Religiosity of respondent	39.176	3	<0.0001
(b) Interpersonal relations			
Level of conflict in the family	8.863	1	0.003
Disagreement with mother	0.077	1	0.781
Disagreement with father	0.582	1	0.445
Physical fights with other children	22.307	3	<0.0001
Level of happiness with life in general	30.681	2	<0.0001
Level of satisfaction with life as a student	17.152	2	<0.0001
Relations with peers	6.142	1	0.013
(c) Sexual behaviours and knowledge			
Number of partners	77.269	2	<0.0001
Discussion of sex with family	14.080	3	0.003
Knowledge about condoms	0.465	1	0.495
Knowledge about STDs	3.137	1	0.077
Knowledge about HIV/AIDS	0.125	1	0.724
Overall knowledge about condoms, STDs and HIV/AIDS	0.414	1	0.520
Sexual activity	82.860	1	<0.0001

support from their families. Students who discussed sex with members of their families were more willing to test than those who never discussed sex with members of their families ($p = 0.003$).

However, there was no significant relationship ($p < 0.109$) between 'attachment to aunts and uncles' and willingness to test for HIV. There was no significant relationship ($p = 0.286$) between marital status of parents and willingness to test. There was also no relationship between mere disagreements with mother ($p = 0.781$) or disagreements with father ($p = 0.445$) and willingness to test for HIV.

Some indicators of interpersonal relations and psychological adjustment were also associated with willingness to test. For example, 61.6% of students who had never fought with other children as they were growing up were willing to test compared to only 41.8% of those who had frequently fought with other children. Students who got along with peers were more willing to test than those who did not get along well with their peers ($p = 0.013$). Similarly, 62% of students who were very happy with life in general were willing to test compared to 41.3% of those who were not happy with life in general. Those who were very happy with their lives as students were more willing to test than those who were not happy with their lives as students ($p < 0.0001$).

Students who came from families that they regarded as being highly religious were more willing to test ($p = 0.001$) than those who came from families that they regarded as not very religious. By the same token, students who regarded themselves to be highly religious were more willing to test than those who regarded themselves as not very religious ($p = 0.0001$).

The majority of students who reported not being sexually active (66.6%) were willing to test compared to only 40.9% of those who reported being sexually active. Similarly, students who reported never having had a partner were more willing to test ($p < 0.0001$) than those who reported having a partner.

There was no association between overall knowledge about condoms and willingness to test ($p = 0.495$); between overall knowledge about sexually transmitted diseases (STDs) and willingness to test ($p = 0.495$); and between overall knowledge about HIV/AIDS and willingness to test ($p = 0.724$).

Results of stepwise multiple logistic regression analyses

Of the 14 factors identified in Table II, only five remained significant after stepwise regression. Table III shows factors that were retained as significant in the final model. The odds ratio in the last column of Table III reflect the odds of a student with an attribute indicated in the first column being willing to test for HIV infection compared to a student in the reference category where the odds are set to 1. For example, for the binary factor 'sexual activity', the reference category is 'sexually active'.

The results indicate that sexual activity was the most important single predictor of willingness to test for HIV infection. A student who was not sexually active was twice as willing to test (odds ratio (OR) = 2.20) as one who was sexually active. Other predictive factors included number of sexual partners, happiness with life in general, level of attachment to father and physical fights with other children.

Table III. Variables in the Final Logistic Regression Model for willingness to test for HIV infection.

	χ^2	Df	p value	Odds ratio
(a) Sexual activity				
Sexually active				1.00
Not sexually active	28.870	1	0.000	2.20
(b) Number of partners	32.913	2	0.000	1.00
Has one or more partners				
No longer has a partner	29.793	1	0.000	0.31
Never had and does not intent to have a partner	0.107	1	0.743	1.05
(c) Happiness with life in general	12.116	2	0.002	1.87
Very happy with life				
Happy with life	10.958	1	0.001	1.32
Not happy with life	2.427	1	0.119	1.00
(d) Level of attachment to father				
Attached to father	7.824	1	0.005	1.46
Not attached to father				1.00
(e) Physical fights with other children	8.557	3	0.036	1.00
Very often				
Sometimes	5.762	1	0.016	1.68
Rarely	1.435	1	0.231	1.29
Never	5.810	1	0.016	1.69

A student who never had, and did not intend to have, a partner was as likely to test as one who had one or more partners (OR = 1.05). One who used to have, but no longer had a partner was only three out of ten times as likely to test as one who had one or more partners. One who was 'very happy' with life in general was almost twice more likely to test than one who was 'not happy' with life in general (OR = 1.87). One who was just 'happy' with life in general was a little more likely to test than one who was 'not happy' with life in general (OR = 1.32). One who was 'attached' to his/her father was one-and-a-half times more likely to test than one who was 'not attached' to his father (OR = 1.46).

A student who only sometimes fought with other children was one-and-a-half times more likely to test than one who fought with other children very often (OR = 1.68). Similarly, one who never fought with other children was one-and-a-half times more likely to test than one who fought with other children very often (OR = 1.69). One who rarely fought with other children was a bit more likely to test than one who fought with other children very often (OR = 1.29).

The percentage of students correctly classified ranged from 62.8% when only sexual activity was added to the model to 64.9% when all five factors were added to the model. The addition of more factors to the model improved the overall percentage of students correctly classified only a little, but the overall predictive power of the model improved significantly ($p < 0.0001$).

Discussion

The study found that just over half of the students were willing to test for HIV infection. However, students who were most at risk by virtue of being sexually active were the least willing to test. Similar results have been found in neighbouring South Africa where the majority of students had been sexually active, half of whom used condoms, but only one fifth willing to test (Peltzer et al., 2004). Research among heterosexuals across Europe has also shown that individuals reporting risk behaviours never sought voluntary testing (Renzi et al., 2004). This is consistent with research which shows that HIV-infected participants were less likely to have been tested than HIV-uninfected participants (Murphy et al., 2002).

In both secondary and tertiary institutions, younger students were more likely to test than older students. Students in the lower educational levels were more willing to test than students in the higher levels. Testing rates have been shown to decrease by 2.5% with each yearly increase in age (Gage & Ali, 2005). This suggests that as young people in school grow older and reach higher levels of education, they

are more likely to become sexually active and less willing to test for HIV. These findings are contrary to what obtains in the general population and in samples of more inclusive age groups, where higher educational levels significantly increase the probability of testing (Renzi et al., 2004; Lee et al., 2005).

Testing rates have been shown to increase with socio-economic status and to be significantly lower in the poorest neighbourhoods than in the wealthiest neighbourhoods (Gage & Ali, 2005). This study has also shown that students with a relatively privileged background, as shown by attending private secondary schools, living in high-cost housing areas, and having parents who had jobs of a higher status were more willing to test than those with a less privileged background.

Testing rates have been found to vary by geographic location (Gage & Ali, 2005), and urban dwellers have been found to be more willing to undergo testing for HIV than rural villagers (Alemu et al., 2004). This study has also found that students from urban areas were more willing to test than those from rural areas.

Although knowledge about HIV has been associated with willingness to test for HIV (Gage & Ali, 2005; Lee et al., 2005), for this sample of young people in the school system in Botswana, it was found that knowledge about HIV/AIDS, sexually transmitted diseases and condoms had no impact on willingness to test.

The findings show that although marital status of parents had no association with students' willingness to test, students whose parents lived together most of the time, and those who lived with their parents most of the time were more willing to test than those who did not. The quality of interaction within the family as reflected by low levels of conflict within the family, discussion of sex between parents and their children, receiving emotional support from the family and psychological bonding with members of the family were found to have an impact on willingness to test.

The findings supported research by Bond et al. (2005) who found willingness to test to be associated with being a girl. Other attributes consistent with cultural expectations for girls were associated with willingness to test. These attributes included enjoying good interpersonal relations as reflected by absence of physical fights with other children, low levels of conflict with peers, getting along with peers, being very happy with life in general, being happy with life as a student, coming from religious families and being highly religious.

When stepwise logistic regression analysis was used to determine the optimal model for predicting willingness to test, sexual activity emerged as the most important single predictor of willingness to test. This was followed by number of sexual part-

ners, happiness with life in general, level of attachment to father and physical fights with other children. Using the derived model, the willingness (to test or not to test) of almost two out of three students could be correctly determined given information on the five predictors in the final model.

Conclusions

The lesson drawn from the study is that those at greater risk are less willing to test than those not at risk of HIV infection. Fear of testing is greater among those students who are sexually active, have multiple partners, are not happy with life in general, are not attached to their fathers and have endured a life in which they frequently fought with other children as they grew up.

The study highlights the importance of a coherent family background, psychological bonding among members of the family, a positive socialization environment, social and psychological adjustment outside the family context and a favourable socio-economic background in shaping attitudes of young people regarding testing for HIV.

Efforts should be geared towards encouraging those not yet at risk to test early so that they can start living positively before becoming sexually active. This might mean lowering the age limit of those who qualify for voluntary counselling and testing. Education about voluntary counselling and testing should be improved and intensified among sexually active young people, especially those from poorer backgrounds in rural areas.

The study has certain limitations. First, the data were based on self-reports, and the interpretation and understanding of each questionnaire item was not established. Second, people's willingness to test for HIV is a private and delicate matter, which may be over-reported for the sake of perceived social correctness. Further research should compare factors associated with the stage of 'actual testing' for HIV and factors associated with the 'contemplative stage' that 'willingness to test' represents.

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