HIV Testing and Public Health in Uganda

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Abstract

Purpose
Identifying individuals with HIV is crucial for prevention and treatment purposes. However, studies in this area are scarce in literature. The purpose of this study is to examine HIV testing behavior across demographic characteristics and HIV risk behavior among Ugandan adults.

Rationale
Information from this study may increase knowledge in that area; assist in the effective implementation of policies; and it may assist in the efficient allocation of resources to effectively control AIDS.

Methods
Data used in this study was drawn from 416 Ugandan adults that responded to a survey in 2010. Descriptive statistics and cross tabulations are utilized to analyze patterns of HIV testing across demographic characteristics and HIV risk behavior

Findings
Findings show that, the more educated and individuals that lived in urban areas were more likely to test for HIV as opposed to the less education and those living in rural areas. More than half of those that said they had never tested for HIV also reported they never or sometimes use condoms. More than half of those who reported they had never tested for HIV also said they never or sometimes discuss safe sex.

Key Words: HIV, AIDS, testing for HIV, HIV Treatment, HIV prevention, Uganda, Africa.

Introduction

Over thirty years since diagnosis in 1981 in US, challenge to control HIV remains with millions of new infections annually worldwide. The heaviest HIV/AIDS burden remains in Sub-Sahara Africa where 23 out of the 34 million individuals worldwide that are currently infected with the virus live (WHO 2010). The World Health Organization (WHO) reported 1.8 million HIV/AIDS related deaths worldwide in 2010 and 2.7 million new infections of which sub-Sahara Africa accounted for about 1.8 million new infections. A major strategy to control the spread of HIV is identification of those with the virus because, knowing one's HIV status is a gateway to prevention, treatment and support services. However, identification of HIV cases is only possible through testing. Unfortunately, 60 percent of those with HIV worldwide do not know they are infected since they have never tested; a threat to public health because they may infect new cases (WHO 2012). As the international community increases universal access to HIV control measures especially in poor nations, it is crucial to understand HIV testing behavior of individuals in sub-Sahara Africa in this region.

This study analyzes HIV testing behavior in Uganda. Some of the questions answered in this study include: Are individuals testing for HIV? What predicts HIV testing behavior? Do individuals that have not tested for HIV engage in HIV risk behavior? Descriptive statistics and cross tabulations are utilized to analyze patterns of HIV testing across demographic characteristics and HIV risk behavior. Findings show that the more educated and those that live in rural areas are more likely to test for HIV as opposed to the less education and those that live in rural areas.

More than half of those that had never tested had not disclosed their HIV status to their sexual partners; fail to discuss safe sex; or use condoms regularly. These findings are staggering, raising concerns like undermining public health's efforts to control HIV in poor nations.

Literature Review

Transmission Control

Timely testing is important because early HIV diagnosis may enhance public health's efforts of prevention and treatment. Noteworthy is the fact that between HIV infection and diagnosis, infected individuals may infect others if they engage in HIV risk behavior (CDC 2003). An advantage with early testers is that, once diagnosed affected individuals may be empowered to take greater control of their health and the community through counseling on how to engage in safe sex practices such as regular condom use, having only one sex partner, discussing safe sex, and the like. Some studies reveal a reduction in HIV risk behavior following diagnosis (Finlayson et al. 2011). For example, Marks (2005) meta-analysis study conducted in US shows a reduction in the prevalence of high-risk behavior after those tested discovered they had the virus. Weinhardt's et al. (1999) study also reveals increased condom use among study participants after being diagnosed with HIV.

Health Outcomes

Not only is early diagnosis of HIV crucial for identifying and empowering those infected to control their health, but it also results in better health outcomes. Currently many poor nations can access free HIV preventive and treatment services to some degree. For instance, since 2004 Uganda has had significant access to free HIV highly active antiretroviral drugs (HAART) that can effectively control HIV from replicating itself (USDS 2012). Initiation is based on the WHO guidelines based on clinical and immunological assessments such as CD4 cell-count and the manifestation of specific HIV/AIDS opportunistic illnesses (WHO 2008). Free access to HAART in poor nations as mandated by WHO may only be initiated if the CD4 cell-count is 200 or below; or if the infected person has experienced any of the AIDS definitive illnesses like Kaposi's sarcoma, wasting syndrome, pulmonary tuberculosis, Pneumonitis, Lymphoma of brain, and the like (Laing and Hodgkin 2006).

However, even before progressed HIV, individuals with the virus can access prevention services and to some degree treatment for HIV opportunistic infections. Unfortunately, those who may benefit from such services do not know they are infected because they either have never tested, or they test late with progressed disease. Even in the US with well established HIV surveillance with testing centers around the nation, a significant number of individuals test late, which is a problem because late testers are often diagnosed with progressed disease; increasing morbidity, mortality and health care costs. For example, according to the US Centers for Disease Control and Prevention (2003), in 2000 about 30% of those with HIV did not know their status because they had never tested. Although accurate data on HIV testing behavior in Uganda does not exist, it is anticipated that the late testing problem is more severe in poor nations. The literature on what predicts HIV testing behavior is in its infancy and extremely scarce. However, drawing from health seeking behavioral studies may help understand what may predict HIV testing behavior.

Potential Determinants of HIV Testing Behavior

Socioeconomic Status

Demographic characteristics that may affect HIV testing behavior may include education, gender, age, poverty, and location all of which are under one umbrella, social economic status. For instance, one study shows a correlation between testing for HIV and education with the more educated being more likely to test early as opposed to the less educated (CDC 2003). Health seeking behavioral studies such as that of Frie et al. (2010) based on 24 European countries also found that the more educated were more likely to consult doctors if they had a back ache, sore throat, sleeping problems, or a headache.

Gender

Gender may also predict HIV testing behavior. For instance, Bond's et al. (2005) found in their study conducted in Philadelphia that women were significantly more likely to have tested for HIV as opposed to males. Drawing from health seeking behavioral studies, it is also well documented that women are more likely to seek help from health care professionals early in the disease progression process as opposed to males who often visit physicians when they are ill (Galdas et al. 2005).

Lawler (2009) also found that from an international perspective, males are more reluctant to seek preventive care as opposed to females; and more likely to seek health care with progressed disease as opposed to women. Even in other serious illness such as prostate cancer, for instance, Shepherd (2003) found that males often seek help in later stages of the disease. Some scholars attribute male delayed health seeking behavior to social, psychological and structural barriers such as a threat to masculinity or embarrassment (George and Fleming 2004).

Age

On the other hand, studies are inconclusive about the relationship between HIV testing behavior and age. For instance, in Nelson's (2010) study, early testers were more likely to be younger as opposed to their older counterparts. Mugavero et al. (2007) also found that late testers were more likely to be older and female. On the contrary, the CDC (2003) reveals that late testers were more likely to be between ages 18 to 29 as opposed to the older.

Poverty

Poverty may also predict HIV testing behavior as it is true in health seeking behavioral studies. For instance, in a study conducted in Nigeria, Abdulraheem (2007) found that poverty was a major obstacle for seeking health care from professionals. The relationship between health seeking behavior and poverty is also supported in Ahmed et al. (2005) study conducted in Bangladesh.

Geographical Location

Another HIV testing behavior predictor as seen in health seeking behavioral studies may be Geographical location with individuals living in urban areas being more likely to visit health care professionals as opposed to those in rural areas. For example, in Mazumdar et al. (2009) study conducted in India, geographical location was a hindrance for women to access health care. Some scholars have attributed this relationship to structural obstacles such as lack or cost of transportation, distance, or travel time to and from facilities (Peters et al. 2008).

HIV Transmission risk behavior

Some of the few existing studies reveal that individuals with HIV who have never tested often engage in HIV transmission risk behavior (Finlayson et al. 2011). For instance, Lapidus's et al. (2006) found that individuals that indicated they had never tested also reported engagement in HIV risk behavior. Other risk behaviors missing in the literature but examined in this study include: If those that never tested use condoms regularly, discuss safe sex, or if they disclose their HIV status to their sex partners. However, before proceeding to the findings, a discussion of the study methodology will follow.

Methods

There were 416 individuals that responded to a survey. Two hundred and twenty four were university students and 192 were from the general public. Two hundred and eighty five of the respondents resided or worked in the city and 131 lived in the village and generally engaged in agricultural activities. The average age was 25 with a standard deviation of 6.4. The youngest respondent was 18 and the oldest was age 60. Seventy percent of the participants were ages 18 to 25, 16% were 26 to 30 and 14% were over age 30. About 43% of the respondents were female. Eighty one percent were Christian and 19% were Muslim or of another religion. Sixty two percent of the respondents were single, separated or widowed, and 38% were married or co-habiting. About 24% of the respondents had primary or no education, 20% had some high school, and 56% had some college education. The average number of school years was 7.2. with a standard deviation of 4.4.

The median monthly income was $7 (US), less than one dollar a day. About 44% had never tested for HIV, and 56% indicated they had tested for HIV. About 68% of the respondents had not, and 33% had tested for HIV in the last 12 months. Sixty Seven percent of the respondents had sexual intercourse before, and 33% indicated they never had sex. Sixty percent indicated they were sexually active and 40% said they were not sexually active. Fifty six percent indicated they had a boyfriend or girlfriend. Eighty percent indicated they currently had a sex partner, and 20% had no sex partner. Sixty three percent had one or no sex partner, and 37% had more than one sex partners in the last 12 months. Sixty percent thought their sex partner was faithful, and 40% indicated they did not think their partners were faithful. 78% of the respondents indicated that they never or sometimes use as a condom, and only 23% always used a condom.

About 55% reported they never or sometimes discuss safe sex as opposed to the 45% always discussed safe sex. Fifty three percent of the respondents had never disclosed their HIV status to their sex partners, and 47% had disclosed.

Measures

Demographic Characteristics Measures

To examine the existence of a relationship between HIV testing behavior and the characteristics of participants, I used four variables namely; (a) age, (b) education, (c) gender, and (d) location. Age was measured in the number of years but later coded 1 for ages 18 to 25, 2 for 26 to 30 and 3 for 31-60. Education was measured in the number of years and later coded 1 for less than high school education and 2 for some college education. Gender was measured with 1 for female and 2 for male. Location was measured with 1 for live in the city and 2 for live in rural area. The major variable was "ever tested for HIV" and it was based on a question that have you ever tested for HIV? Ever tested was then measured with 0 for no, I have never tested and 1 for yes I have ever tested.

HIV Risk Behavior Measures

Correlates of HIV testing behavior and HIV risk behaviors were examined utilizing seven indicators, namely: (a) condom use frequency, (b) afford a condom, (c) discuss safe sex, (d) disclosed, (e) sexually active, (f) if sex partner is faithful, and (g) tested in last 12 months. How often do you use a condom measured condom use frequency and was measured with 1 for always and 2 for sometimes or never use a condom. Afford a condom was measured by asking respondent that, how often can you afford a condom and it was recoded, 1 for I can always afford and 2 for never or sometimes cannot afford a condom. Asking if respondent discusses safe sex measured discuss safe sex recoded 1 for always discuss and 2 for never or sometimes discuss safe sex. Disclosed was based on a question that, did you disclose your HIV status to your partner? And it was measured with 0 for no I have not and 1 for yes, I disclosed. Asking respondent if he or she was sexually active measured sexually active and it was coded 0 for no, not sexually active and 2 for yes, sexually active. Sex partner faithful was measured by asking respondent that, do you think your sex partner is faithful to you and it was coded 0 for No, and 1 for yes, I think my sex partner is faithful. Tested in the last 12 months was based on asking if respondent tested for HIV in the last 12 months and it was measured with 0 for no, and 1 for yes I tested for HIV in the last 12 months. Other relevant variables in the measurement of HIV testing behavior and HIV risk behavior such as number of sex partners are not included in this study because their results were not significant.

Findings and Discussion

I used descriptive statistics and cross tabulations to examine the relationships between testing for HIV across demographic characteristics as well as HIV risk behavior. In reference to education, those with more schooling were more likely to report having tested for HIV as opposed to the less educated, which relationship is supported in literature (Frie et al. 2010). For instance, as seen in table 2, 63% of those with some college education had tested, as opposed to only 47% of those with a high school education that had tested for HIV. Based on phi 0.154, these findings are highly significant at the 0.05 alpha level. This relationship may be attributed to the fact that education may have potential to empower individuals not only with more financial ability to access testing services, but also knowledge in reference to the importance of disease prevention and control.

Findings also reveal that university students were more likely to have tested as opposed to participants solicited from the general public. For instance, 62% of the university students stated they had tested as opposed to only 49% from the general public that had tested. This relationship was also highly significant at the 0.05 alpha level (Phi=-0.127) and it may partially be attributed to HIV control policies such as the Uganda Presidential Initiative on AIDS Strategy for Communication to Youth program initiated in the late 1980s to educate children beginning in elementary schools about sex and HIV protection behaviors (UMES, 2004). Another explanation factor may have been that, university participants lived in urban areas with easy access to HIV testing facilities as opposed to members of the general public many of whom lived in rural areas.

Findings also reveal that urban dwellers were more likely to have tested as seen in the table 2 with 60% of those that lived in the city indicating they had tested as opposed to only 46% of those in the village who said they had tested for HIV.

The relationship between geographical location and testing for HIV is also highly significant at the 0.05 level (Phi=10.124). One of the reasons why urban dwellers were more likely to have tested may be attributed to accessibility in terms of proximity to testing facilities as evidenced in health seeking behavioral studies (Peters et al. 2008).

Although the percentage of females (58%) that tested slightly superseded that of males (54%), results of HIV testing across gender are insignificant. Another relevant variable that was not included in the analysis because it did not yield significant results, but highlighted in literature as a good predictor of health seeking behavior is income. The reason the relationship between testing for HIV and income was insignificant in this study may have been because the median monthly income for all participants was only $7 (U), about less than $ 1 (US) a day.

HIV Risk Behavior

In examining relationship patterns of HIV testing and HIV risk behavior, findings reveal that about half (47 percent) of those that had never tested also had prior engagement in sexual intercourse. Likewise, 47 percent of those that had never tested were also sexually active. Results also show that 99% of those who had ever tested had also tested in the last 12 months. This shows a potentially strong relationship (Phi=0.593) between previous testing for HIV and testing within the last 12 months indicating that such individuals may be testing for HIV regularly. However, it is not clear if those that had tested in the last 12 months were first time testers or if they were testing again. If they were regular testers, it would be good news to public health.

Findings also reveal that 73% of those that had tested also reported they had disclosed their HIV status to their partner. The relationship between HIV testing and disclosure is strong and significant (Phi = 0.417), which is somewhat good for public health's HIV control efforts. Again, the above outcome may be attributed to institutional strategies such as counseling and empowering those that test to disclose their status to their sex partners in an attempt to help those involved take better control of their health. However, the danger to public health remains because of the significant number of respondents (27%) who had never tested and had not disclosed their status to their partners. If those that had never tested had the virus, there is potential to pass it on to their partners.

Moreover, more than one half (52 %) of those that had never tested also said they never or sometimes use condoms. Only 36% of those that had never tested said they always use a condom. These findings are also highly significant at the 0.05 alpha level (Phi =-.137). Of course failure to use a condom by such a large percentage of individuals that have never tested for HIV may be of danger to public health. One of the reasons that may explain that failure may be lack of access to condoms in terms of availability and cost, which reason may be explained by findings in this study. For instance, about 56% of the participants who indicated they had never tested for HIV also reported they can never, or can only afford a condom sometimes. Again, these results are highly significant at the 0.05 alpha level (Phi = -0.149).

Furthermore, 54 percent of the respondents who had never tested also said they never or sometimes discuss safe sex, say condom use. This relationship is highly significant at the 0.05 level (Phi = -0.143) and may be a public health threat because it may increase HIV transmission. Failure to discuss safe sex may be attributed to powerlessness whereby individuals may perceive safe sex discussion without access to protective mechanisms like condoms meaningless.

Further still, more than half (53%) of those who had never tested also reported they thought their sex partners were not faithful. This finding is bewildering because many of the participants may be aware of the dangers of HIV. The question would be, if they do not trust their partners, why would they fail to test for better health outcomes. The answer to this question could also be a sense of powerlessness to take control of their health. As seen above, a good number of participants indicated they could not afford condoms.

Conclusion

In conclusion, the benefits of testing early for HIV cannot be undermined. Individuals that are diagnosed early may not only be able to access treatment services for better health outcomes, but also preventive services such as counseling that may help them take better control of their lives like engagement in HIV risk free sexual behavior. However, findings in this study show that a significant number of respondents (56%) had not tested.

Although there were no gender differences in HIV testing, the more educated and individuals living in urban areas were more likely to have tested as opposed to the less educated and those in rural areas. In the analysis of HIV testing behavior across HIV risk behaviors, results show a significant number of those that had never tested engaging in HIV risk behaviors as reported by 52 percent of those that had never tested indicating they never or sometimes use condoms; and the 54 percent who said they never or sometimes discuss safe sex. A major finding study may be that socioeconomic status is a major determinant for HIV testing behavior whereby those with higher SES may be more likely to test as opposed to those with lower SES.

Table 1: Characteristics of Participants, Ugandan Adults 2010

Measure	N	%	Mean/Median	SD
Gender				
Female	178	43%		
Male	238	57%		
Age	388		25 [a]	6.4
Ages 18-25	275	71%		
Ages 26-30	61	16%		
Over age 30	52	13%		
Marital				
Single, never married, separated or widowed	254	62%		
Married or cohabiting	157	38%		
Years of schooling	388		7.2 [a]	4.4
Education				
Primary or no education	99	24%		
Some high school education	83	20%		
Some college education	230	56%		
Location				
Urban dwellers	285	68%		
Village dwellers	131	32%		
Religion	331	81%		
Christian	79	19%		
Muslim				
Salary				
No income	88	36%		
Less than $1 (US) a day	26	12%		
Less than $2 (US) a day	35	16%		
Over $5 (US) a day	74	33%		
Tested for HIV				
Has never tested for HIV	182	44%		
Tested at least once for HIV	232	56%		
Monthly Family Income			$7[b] (US)	
N	416			

Source. Data collected in Uganda, 2010
[a] Mean.
[b] Median.

Table 2: Cross Tabulations Analyzing HIV Testing Behavior, Ugandan Adults 2010

	Ever Tested for HIV		
	No	Yes	Phi
Demographic Characteristics			
Less than high school education	53%	47%	.154***
Some college education	37%	63%	
General Public	51%	49%	-.127***
University Students	38%	62%	
Village	54%	46%	-124***
City	40%	60%	
Male	46%	54%	
Females	42%	58%	
HIV Risk Behavior			
Never Tested	44%	56%	
Never or sometimes uses a condom	52%	48%	-137***
Always uses a condom	36%	64%	
Never or sometimes afford a condom	56%	44%	-.149***
Always Afford a condom	40%	60%	
Never or sometimes discusses safe sex	54%	46%	-143***
Always Discusses safe sex	40%	60%	
Had not disclosed to the partner	70%	30%	.417***
Had disclosed to the partner	27%	73%	
Sexually active respondent	47%	53%	-.088**
Not sexually active	38%	62%	
Respondent thinks sex partner is faithful	43%	57%	
Respondent think sex partner is not faithful	53%	47%	
Tested for HIV in last 12 months	1%	99%	.593***
Had not tested for HIV I last 12 months	64%	36%	

Source. Data collected in Uganda, 2010

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