HIV/AIDS among adolescents in urban informal settlements in Kenya: What predicts the likelihood of HIV testing?

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Introduction

Adolescents' sexual behaviors place them at a high risk of acquiring HIV and other sexually transmitted infections. The high incidence of HIV/AIDS among young people has stimulated research and programmatic efforts to address adolescent sexual health. In sub-Saharan Africa, the region hardest hit by the HIV/AIDS pandemic, the youth are a central focus of research and prevention efforts. While much research has focused on the correlates of sexual activity and condom use among adolescents, HIV testing and its determinants are largely understudied in this age-group. Yet, HIV counseling and testing is widely considered an important and cost-effective component of HIV prevention and treatment (1, 2).

An estimated 1.2 million Kenyans aged 15 years and above are HIV positive (3). Prevalence rates for HIV in Kenya are estimated at 7% (4) based on the 2003 Kenya Demographic and Health Survey (KDHS). Among young people aged 15-19, the prevalence rate is 1.6%, and the rate rises to 6% among 20-24 year olds. The dramatic increase in prevalence rates between 15-19 year olds and 20-24 year olds suggests that a large number of young people are infected during adolescence. Young women are more likely to be infected than men in the same age group. In the two informal settlements where we conduct our study HIV prevalence rates among adolescents less than 20 years living in the two informal settlements are 6.2% among females and 3.0% among males (5).

Voluntary counseling and testing is an important component of government efforts to address HIV/AIDS and substantial efforts have been made by the Kenya government and national and international development partners to increase access to VCT in Kenya. Through collaborative efforts by the government and other primary stakeholders, the number of VCT facilities, nationally, increased from 3 to over 500 between 2000 and 2005 (6). Correspondingly, annual VCT service uptake increased from 1000 to 380,000 between the two years (6) With respect to testing, the 2003 KDHS shows that 18.2% of women aged 15-49 and 22.8% of men of the same age group had ever been tested for HIV and knew their HIV status (4). The VCT to population ratio is highest for Nairobi (around one site for every 25,000 people) (6). The Kenyan government recognizes the importance of establishing and promoting adolescent-friendly voluntary counseling and testing (VCT) services in enhancing adolescents' sexual and reproductive health. Thus, one of the objectives under the 2005-2015 plan of action under the Adolescent Reproductive Health Development Policy (7) is to improve access to and utilization of sustainable youth-friendly reproductive health services that are linked appropriately to other services. Few studies are available on VCT use in urban informal settlements in sub-Saharan Africa, but studies of factors associated with HIV testing in other urban settings have found that individuals with lower levels of access to and use of healthcare facilities had a lower likelihood of testing (8).

To explore the linkages among young people's sociodemographic characteristics, HIV-related psychosocial attributed, and HIV testing behavior, we draw on data collected from young people living in two informal settlements in Nairobi, Kenya's capital city. Specifically, we investigate differences among young people who request for an HIV test, those who are offered the test, those required to take a test, and those who have never been tested. Through the lens of the

health belief model, we also investigate reasons why adolescents get tested, and conversely, for those who have never been tested, why they do not get tested.

Methods

Study Design, Participants and Procedures

This paper draws on data collected under the Transition-To-Adulthood (TTA) project a component of the 5-year Urbanization, Poverty and Health Dynamics (UPHD) project, which investigates inter-linkages between migration, poverty, and key health outcomes at four stages of the life cycle, namely childhood, adolescence, adulthood, and old age. The TTA's general objective is to identify protective and risk factors in the lives of adolescents growing up in two informal settlements (Korogocho and Viwandani) in Nairobi and to examine how these factors influence their transition to adulthood. The study is nested in the Nairobi Urban Health and Demographic Surveillance System (NUHDSS), which covers about 60,000 people living in 23,000 households in the two settlements. For the TTA project, a random sample of adolescents was selected from 2007 NUHDSS household records. Allowing for annual attrition rates of 15% and 20% for Korogocho and Viwandani, respectively and given the 3-year follow-up period, 2478 and 3028 young people were recruited from Korogocho and Viwandani, respectively. During the first wave of data collection (October 2007 to June 2008), 4058 (75% response rate) adolescents were interviewed. Of these 4028 (99%) responded to the question on HIV testing and comprise the sample for this study. A comprehensive interview questionnaire was administered that included questions covering sociodemographic characteristics; key health and other concerns; sexual behavior. The questionnaire also includes a module on HIV knowledge, HIV testing experiences, and reasons for getting (or not getting) tested. The questionnaire was administered in Swahili. The NUHDSS and UPHD have ethical approval from the Kenya Medical Research Institute's ethical review board. All fieldworkers are trained on research ethics and must obtain verbal or signed informed consent from respondents before interviews. For respondents aged 12-17, consent is also requested from the parent or guardian.

Participants

The sample comprised 4028 young people (51% males). Respondents were almost equally split by study site. Three quarters of respondents self-identified as Christians. Sixty-one percent of males and 53% of females were in school at the time of the survey. Eighteen percent of females were married compared to 4% of males. Twenty-two percent of females had ever been pregnant compared to 4% of males. Almost a third (34%) of respondents were sexually experienced. With respect to HIV testing and HIV-related psychosocial measures, 27% of respondents had been tested for HIV with almost twice as many females (35%) as males (19%) reporting an HIV test. About two-thirds (61%) of respondents perceived that they were at low risk for HIV infection and about half (51%) were not worried about being infected with HIV. Most (84%) respondent agreed that it is a good idea to use a condom for HIV prevention.

Results

Description of HIV testing behavior

About half of the males received their last test in a voluntary testing and counseling (VCT) center. However, the proportions differ based on the reason for testing: 60% of respondents who

requested for an HIV test got tested in a VCT compared to 29% and 7% of those offered the test and those required to take the test, respectively. Less than a third (29%) of females received their last test at a VCT center. As with males, a greater proportion of females who requested for an HIV test (53%) got tested in a VCT compared to those who were offered the test (16%) and those who were required to take the test (8%). Among women who were required to take the test, close to two-thirds (73%) received their HIV test in a government clinic or hospital. Overall, although the vast majority of respondents (over 90%) received counseling during their last HIV test, about 15% and 13% of males and females, respectively, who were required to take an HIV test did not receive counseling. Ninety-four percent and 95% of males and females respectively, received their HIV test results. However, there are differences in the proportions receiving their test results based on reason for testing. Only about 2% of males and females who requested the test did not receive their test results compared to 22% of males and 14% of females who were offered the test.

Predictors of HIV testing

To explore predictors of HIV testing, we compared four groups of respondents: young people who request for an HIV test, those who are offered the test, those required to take a test, and those who have never been tested. For males, HIV/AIDS knowledge was not associated with HIV testing. Males who disagreed that it was a good idea to use condoms to prevent HIV infection were 2.2 times more likely than those who agreed with the statement to have been offered the test. On the other hand, those who responded that they 'did not know' to the same question were more likely to have been required to take the test. Compared to males who felt that their risk for HIV was low, those perceiving a high risk for HIV infection were 4 times more likely to have been required to take the test than to have requested for the test. Relative to those who were not worried about being infected, those who were 'somewhat' worried were more likely to have been offered the test, but less likely to have been required to take the test. With respect to the sociodemographic and behavioral variables, only age, study site and sexual experience were significantly associated with testing status. Specifically, older males were less likely to have been offered the test or never have tested than to have requested the test. Males in Viwandani had a lower likelihood of never being tested compared to those in Korogocho. Last, males who had ever had sex had lower odds of never-testing than requesting the HIV test.

Among females, HIV knowledge did not predict HIV testing status. Compared to females who thought that it was a good idea to use condoms, those who responded that they 'did not know' were 10.9 times and 5.1 times more likely to have been required to take the test or never have had an HIV test than to have requested the test. Relative to females who perceived that their changes of getting HIV were low, those who perceived a high chance of infection were less likely to have never had a test than to have requested a test. Compared to females who were not worried about HIV infection, females who were somewhat worried about being infected with HIV were 2.0 times more likely to have been offered the test. Similar to their male compatriots, older females were less likely to have never had an HIV test than to have request the test. With respect to religion, Muslim females were more likely than Catholics to have never had an HIV test than to have requested a test. Marital status was not associated with HIV status. Females who had ever been pregnant were close to 40 times more likely to have been required to take the test and 3.9 times more likely to have been offered the test compared to those who had never been

pregnant. As with males, females who had ever had sex had lower odds of never-testing than requesting the HIV test.

Reasons for and against HIV testing

All adolescents who stated that they had ever been tested for HIV were asked why they went for HIV testing the last time they were tested, while those who had never been tested were asked why they had never been tested. HIV is predominantly transmitted via sexual intercourse, thus, reasons for testing (or not testing) may differ based on whether or not a person has ever had sexual intercourse. We examined reasons separately based on whether or not an adolescent had ever had sexual intercourse.

Respondents who had never been tested were asked to state the main reason why they had not been tested. Forty percent of males and 43% of females who had never had sex stated that the main treason why they had not been tested was because they were not sexually active, while 28% and 30% of males and females respectively, noted that they were not at risk for other reasons. Among those who had ever had sex, 37% of males and 44% of females reported that they had not been tested because they were not at risk. Close to a fifth of those who were sexually experienced had not been tested because they did not want to know their status. About 4% of respondents had not been tested because they did not know where to go for a test. Other reasons cited for never having an HIV test included fear that someone might see the respondent, the cost of the test, being afraid to know one's status, being too young, having no time, and fear of getting infected from the test.

Among males who had been tested, the predominant reason for getting tested was concern about own status (81% of those who had never had sex and 89% of those who were sexually experienced). Ten percent of males who never had sex had been encouraged to get tested by a counselor, peer educator, parents, or peers. For females, on the other hand, close to three-quarters (about 75%) of those who had never had sex got tested because they wanted to know their status compared to about a third (34%) of those who were sexually experienced. About 60% of females who had ever had sex received an HIV test because they were pregnant or it was a part of pre-natal care. Other reasons given by respondents for getting tested included pending marriage, told by partner to get a test, the test was required for a job or for school, or because they were donating blood.

Discussion

HIV testing carries with it several key benefits. Early knowledge of sero-status allows early treatment intervention to improve individual health outcomes and to reduce transmission to sexual partners and from mother-to-child (2, 9). Although this study was not designed as a test of the health belief model, we draw on the model's theoretical constructs to interpret study findings. As expected based on the health belief model, we observed that, at least for females, adolescents who perceived themselves to be at high risk for HIV were more likely to have requested for (and received) an HIV test. This echoes the voices of tested adolescents, majority of whom stated that they had been tested because they were concerned about their HIV status. Maguen and colleagues (10) also reported greater odds of HIV testing among American gay, lesbian, and bisexual adolescents who perceived themselves to be at risk for HIV. Of special note is that among young people who have never been tested and have had sexual intercourse, close to two-

fifths state that the reason they have not been tested is because they are not at risk. Thus, it is likely that young people are unable (or unwilling) to assess their risk of infection based on behavior. Public health professionals working with the youth can work with adolescents to enable them assess their levels of risk based on their behavior and consequently seek appropriate health services.

Unlike previous studies (10), we observed that several demographic characteristics (age, and schooling status) predicted HIV testing even when behavioral and psychosocial variables were included in the model. In particular, younger adolescents and those in school were significantly less likely to be tested even after controlling for sexual status. Further, majority of those who had never been tested report that they have not had an HIV test because they are not at risk (either because they have never had sex, trust themselves, or for other reasons). Thus, as stated earlier, a significant proportion of young people may be unable to make the link between behavior and risk of infection.

We note that adolescents who report a history of pregnancy were more likely to have ever been tested for HIV. There is widespread promotion of interventions to prevent mother-to-child transmission (PMTCT) in the region. Targeting pregnant adolescents is important in preventing pediatric HIV/AIDS; nevertheless, it is important that HIV testing interventions target both males and females who may not be reached through PMTCT initiatives (11).

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