

ORIGINAL RESEARCH ARTICLE

HIV/AIDS Related Knowledge and Perceived Risk Associated with Condom Use among Adolescents in Uganda

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Abstract

While considerable attention has been paid to sexual behaviors among HIV high-risk populations in Africa, few studies have looked at the adolescent population. Using data from the 2004 National Survey of Adolescents in Uganda, logistic regression models were fitted to examine the odds that HIV/AIDS related knowledge and perceived risk of HIV infection are associated with condom use among adolescents. After including demographic measures, findings indicated that correct knowledge of condom use, as well as positive attitudes towards the use of condoms are associated with the likelihood that adolescents used condoms. Self assessment of the risk of HIV infection was not predictive of condom use, nor was knowing someone with AIDS. These findings further emphasize the need to encourage condom use and help protect adolescents at risk of HIV infection (*Afr J Reprod Health* 2011; 15[1]: 57-63).

Résumé

Connaissance liées au VIH/SIDA et le risque aperçu qui est lié à l'emploi des préservatifs chez les adolescents en Ouganda. Alors qu'on a consacré beaucoup d'attention au comportement sexuel chez les populations à grand risque du VIH en Afrique, peu d'études ont consacré à la population adolescente. A l'aide des données tirées de l'Enquête Nationale de 2004 sur les adolescents en Ouganda, nous avons monté des modèles de la régression logistique afin d'examiner le fait que la connaissance liée au VIH/SIDA et le risque perçu de l'infection du VIH sont liées à l'usage des préservatifs chez les adolescents. Après avoir appliqué les mesures démographiques, les résultats ont montré que la bonne connaissance de l'emploi des préservatifs, aussi bien que les attitudes positives envers l'emploi des préservatifs sont liées à la possibilité de l'emploi des préservatifs chez les adolescents. L'auto-évaluation du risque de la séropositivité n'a pas prédit l'emploi des préservatifs ni le fait de connaître quelqu'un atteint du SIDA. Ces résultats mettent davantage l'accent sur la nécessité d'encourager l'emploi des préservatifs et d'aider à protéger les adolescents à risque d'être atteints de la séropositivité (*Afr J Reprod Health* 2011; 15[1]: 57-63).

Keywords: Condoms; AIDS; Adolescents

Introduction

According to the United Nations AIDS epidemiological updates, 33.2 million people live with HIV/AIDS throughout the world, among whom 15.4 million are women and 2.5 million are children under 15 years of age.¹ The same report indicates that Sub-Saharan Africa accounts for 68 percent of all people HIV-infected. It was estimated that by 2008, 1.1 million people in Uganda were already infected with HIV/AIDS.² The single most important determinant of HIV infection among young people in Africa is having unprotected sex with a person who is infected with HIV virus.³

Studies report that changes in sexual behavior partially accounted for the decline in HIV prevalence in Uganda⁴ in the later 1990s, as well as in the rest of Africa.⁵⁻⁷ In Uganda in the late 1980s and early 1990s, public education campaigns focused on reducing the transmission of HIV through a program called "ABC" – which emphasized abstinence (Abstain), monogamy (Be

faithful), and condom use (Condoms).⁴ This public education program, particularly the emphasis on abstinence, was also utilized in school HIV/AIDS educational programs (see <http://www.avert.org/aids-uganda.htm>). The implementation of these educational efforts did result in a decline in HIV in Uganda.⁴ Thus, behavioral models⁸⁻⁹ provide a conceptual framework for understanding how individuals adopt and maintain changes in behavior to reduce their risk of HIV infection. Behavioral models suggest that behavior change is influenced by the extent to which an individual feels personally at risk of getting a disease perceived to have serious consequences, is aware of ways to avoid infection, believes that the benefits of taking preventive action against the disease outweigh the costs, and believes that such measures would work.¹⁰

The goal in this study is to examine how HIV/AIDS related knowledge and perceived risk are correlated with condom use. First background on condom use, HIV/AIDS related knowledge and perceived risk, as well

as other demographic measures associated with HIV-infection is provided.

Condom use

Research shows that condom use is the most effective method, other than abstinence, for preventing the spread of HIV-infection and other sexually transmitted infections (STI), especially among the highest risk populations.¹¹ Other findings indicate, that although most adolescents have tried using condoms at least once, use remains inconsistent and rare.¹²⁻¹⁵ In spite of efforts by national HIV prevention programs to reduce or eliminate the cost of condoms in many African countries, adolescents still report affordability as a reason for not using them.¹⁶⁻¹⁷ On the other hand, Hughes and his colleagues¹⁸ report that even when condoms are given free to the general public, they are often not used.

AIDS related knowledge

The literature seems to suggest that knowledge does not necessarily result in behavioral changes, nor does it influence risk perception of sexually transmitted infections.¹⁹⁻²¹ Some people who contract sexually transmitted infections often underestimate the sexual risk of a partner.²²⁻²³ Other findings show that sex education tends to be conservative, encouraging delayed sexual onset and fewer partners rather than safer sex. In Uganda, some health workers were found to be judgmental when young people approached them on matters of sex education.²⁴ These findings suggest that some adolescents are not well grounded in HIV/AIDS knowledge, rendering them unprepared to practice safe sex through condom use.

Perceived risk

Research seems to show that being personally affected by HIV/AIDS, especially having seen a close person die of AIDS, may be associated with higher perceived risk of HIV infection.²⁵⁻²⁶ Perception of personal vulnerability leads to adopting protective behaviors.²⁷⁻²⁸ Therefore, knowing someone who died of AIDS is expected to influence condom use as a protective measure against HIV infection. However, Kibombo, Neema, and Ahmed²⁹ found no strong association between knowing someone with HIV, and engaging in high risk behaviors among adolescents in Uganda. It is, however, expected that the perception of HIV/AIDS risk will be associated with increased condom use, even if it is not associated with other high risk behaviors.

Demographic and background factors associated with HIV-infection

The risk of HIV-infection varies by gender, age, and ethnicity. Women are more likely than men to become infected with sexually transmitted diseases.³⁰⁻³⁶

Teenagers are at an increased risk of HIV infection because they often engage in unprotected sexual intercourse.³⁷ Sometimes there is pressure for girls to prove their fertility before marriage, while boys may face pressure to prove manhood by impregnating a girl, or by having many sexual partners.³⁸⁻³⁹ Although the risk of HIV infection is high among young men and women, often they do not perceive their risk to be high.⁴⁰ Ethnicity may also influence sexual behavior through cultural beliefs and practices.⁴¹⁻⁴³

Religious views and being in school also influence attitudes about HIV/AIDS and the perception of risk.⁴⁴ Community practices and national policies in Uganda have been influenced by religion. Religious groups have been blamed⁴⁵ as one of the sources of resistance to the inclusion of condoms in school-based HIV/AIDS education programs in Uganda. In addition, researchers⁴⁶ found that youth who are not in school have a less positive attitude towards the use of condoms, report more sexual abuse by adults, and are more likely to have more than one sexual partner than their counterparts in school.

Whereas the review of the available literature demonstrates a number of factors that are likely to influence condom use, HIV/AIDS related knowledge and perceived risk stand out. However, the literature generally lacks information about how these factors affect adolescents' condom use; yet adolescents are at risk of HIV-infection given that 63 percent of all women and 47 percent of all men in Uganda had sex before the age of 18 years⁴⁷. Therefore, the purpose of this study is to examine the extent to which HIV/AIDS related knowledge and perceived risk are associated with condom use among adolescents. It is anticipated that findings in this study will contribute to knowledge needed to promote condom use, which is critical to fighting the AIDS epidemic in Africa and could play an important role in global HIV reduction. Based on the behavior model, it is hypothesized that the likelihood of using a male condom when adolescents engage in heterosexual intercourse is associated with a high perceived risk of contracting HIV/AIDS, correct knowledge of HIV/AIDS, and positive attitudes towards condom use.

Methods

Participants

The data used in this study were collected in 2004 in a nationally representative survey of adolescents 12-19 years of age. The Uganda survey was part of a larger multi-country study of adolescent sexual and reproductive health issues under the Guttmacher Institute's project called Protecting the Next Generation (PNG): Understanding HIV Risk Among Youth, and is supported by the Bill and Melinda Gates Foundation. The primary objective of the PNG project was to establish a knowledge base of policy-relevant evidence that would provide new depths of understanding of adolescents' sexual and reproductive health behavior and practice. In

Uganda, Uganda Bureau of Statistics conducted the survey in collaboration with ORC Macro, Makerere Institute of Social Research, and Guttmacher Institute.

The sensitive nature of the questions administered in the survey necessitated having informed consent forms obtained from parents or guardians and the respondents. The data were obtained using a two stage stratified random sample that included 7,106 households listed for initial screening. After the initial interview in each household, individual surveys were administered in person to adolescents, resulting in 6,659 interviews. However, only 913 adolescents reported sexual activity and another 7 individuals were further dropped from the sample, because of missing data on condom use, thus this study was limited to 906 adolescents (n=906).

Measures

Dependent variable: Condom use was measured by the question that asked the adolescents if they ever used a condom for any purpose. This dichotomous measure was coded 1= yes, if they had ever used a condom, 0 if otherwise.

Primary independent variables: HIV/AIDS related knowledge was measured by questions that asked respondents to indicate if people can reduce their chances of getting HIV-infection by (a) not having sex at all (b) having one partner who is not infected (c) using a condom always (d) avoiding sharing injections. These questions were summed to form a scale that ranged from 0 to 4, with a high score representing more knowledge of how to reduce the risk of HIV infection.

Perceived risk of contracting HIV/AIDS was measured in two ways; first by the question "Do you think your chances of getting HIV/AIDS are great, moderate, small, or you have no chance at all?" The scale ranged from 1 to 4 (1=no risk at all, 4=great risk). Mean substitution was used to account for the 4.6% that were missing data. The second measure of perceived risk measured knowing or not knowing someone who has HIV/AIDS. This measure was a dichotomous variable coded 0=No, 1=Yes.

A second way of measuring HIV/AIDS related knowledge focused on adolescents' knowledge of condom use. Participants were asked to report if they had ever seen a male condom in demonstration. Also, they were asked if they agreed or disagreed with the following statements: (a) a male condom should be put on before sexual intercourse (b) a male condom should be put on only if the penis is fully erect (c) a male condom should be used more than once. Correct responses were coded 1, and incorrect responses were coded 0. Responses were then summed to form a scale from 0 to 4, with higher scores indicating more correct knowledge of condom use.

Attitudes towards condoms were measured by agreement or disagreement with the following statements: (a) using a male condom reduces sexual pleasure (b) using a male condom is a sign of not trusting your partner (c) it is embarrassing to buy or ask for male

condoms. Adolescents were further asked to indicate how confident they were in male condom use. For each question, positive attitudes towards condom use were coded as 1, and negative attitudes as 0. The questions were then summed to form a scale ranging from 0 to 4, with a higher score reflecting more positive attitudes toward condom use.

Background and demographic measures included age, measured in years from 12 to 19. Gender was a dichotomous measure (female=0, male=1). The sample also represented different ethnic groups in Uganda categorized according to the regions where they lived. Dummy variables were created based on the following categories: Baganda, Westerner (Munyankole, Mukiga, Munyoro, Mutoro, & Other Westerner), Easterner (Musoga, Mugishu, Iteso, & Other Easterner), Northerner (Achoi, Langi, & Other Northerner), and Others (Other Ugandans and Non-Ugandans). Education was categorized into primary and secondary schooling. Dummy variables for religion were created based on the following categories: Catholic, Protestant, Pentecostal, Muslim, and Other religions.

Data Analysis

Given that the dependent variable is dichotomous, models were estimated using logistic regression techniques. The coefficients are presented as odds ratios indicating the likelihood (versus not) of ever using a condom for a unit increase in the independent variables. The bivariate relationship between each primary independent variable (ways to reduce risk, perceived risk, know someone with AIDS, knowledge of condom use, and attitudes towards condoms) and condom use was modeled first. Next all primary independent variables were entered together in a multivariate model predicting the likelihood of condom use. Finally, background and demographic variables were included and adjusted odds ratios for the primary independent variables are presented. Prior to presenting the multivariate models, descriptive statistics for each variable in the analysis are presented.

Results

Descriptive Results

Just over half of the adolescents (55%), reported that they had ever used a condom (Table 1). Adolescents reported on average being highly aware of ways to reduce the risk of HIV/AIDS; on a scale from knowing 0 to 4 ways to reduce risk, their mean score was 3.69. On average, adolescents also perceived their risk of getting HIV/AIDS as being moderate to great. Also 80 percent of the youth reported knowing someone with AIDS. Correct knowledge of condom use was also relatively high with an average mean score of 3.02, based on a scale from 0 (correct responses) to 4 (correct responses). Attitudes towards condom use, however, were less positive on

Table 1: Descriptive Statistics, Factors influencing condom use among adolescents in Uganda, (N=906)

Characteristics	Mean	Std dev	Range
Dependent variable			
Ever used condoms	0.55	(0.50)	0=no, 1=yes
Primary independent variables			
Awareness of ways to reduce risk of AIDS	3.69	(0.78)	0 to 4 ways to reduce risk
Risk of getting AIDS	3.27	(1.03)	1=no chance at all to 4=great
Know someone with AIDS	0.80	(0.40)	0=no, 1=yes
Correct knowledge of condom use	3.02	(1.06)	0 to 4 correct responses
Attitude towards condom use	1.72	(1.25)	0 = very negative to 4= very positive
Background and demographic variables			
Age	17.04	(1.78)	12 years to 19 years
Male	0.47	(0.50)	0=female, 1=male
Religion			
Catholic	0.43	(0.49)	0=no, 1=yes
Protestant	0.33	(0.47)	0=no, 1=yes
Pentecostal	0.07	(0.26)	0=no, 1=yes
Muslim	0.13	(0.34)	0=no, 1=yes
Other religion	0.03	(0.17)	0=no, 1=yes
Ethnicity			
Baganda	0.18	(0.38)	0=no, 1=yes
Westerner	0.28	(0.45)	0=no, 1=yes
Easterner	0.29	(0.45)	0=no, 1=yes
Northerner	0.22	(0.41)	0=no, 1=yes
Other ethnicity	0.03	(0.17)	0=no, 1=yes
Secondary school	0.26	(0.44)	0=primary, 1=secondary

Source: National Survey of Adolescents, 2004, Uganda

Table 2: Odds of condom use among adolescents in Uganda (N=906)

Characteristics	Bivariate	Multivariate	Adjusted
	Odds ratios (95% CI)	Odds ratios (95% CI)	Odds ratios (95% CI)
Awareness of ways to reduce risk of AIDS	1.263 (1.064 – 1.499)	1.009 (0.828 – 1.230)	0.969 (0.784 – 1.199)
Risk of getting AIDS	1.257 (1.103 – 1.434)	1.166 (1.008 – 1.349)	1.116 (0.947 – 1.314)
Know someone with AIDS	2.127 (1.527 – 2.962)	1.783 (1.240 – 2.563)	1.472 (0.987 – 2.195)
Correct knowledge of condom use	2.287 (1.951 – 2.680)	2.207 (1.711 – 2.400)	1.971 (1.636 – 2.375)
Attitude towards condom use	1.499 (1.340 – 1.676)	1.278 (1.131 – 1.444)	1.245 (1.088 – 1.426)

Source: National Survey of Adolescents, 2004, Uganda

average with a mean score of 1.72 on a scale ranging from 0 (very negative) to 4 (very positive).

The age of the participants ranged from 12 to 19 years with a mean age of 17 years. Female participants were slightly more represented (53%) compared to their male counterparts (47%). Religious diversity was manifested in the sample with the majority of the participants being Catholic (43%) or Protestant (33%), and only a few reporting affiliation with Islam (13%), Pentecostal religions (7%), or other religions (3%). The single biggest ethnic tribe was Baganda (18%), Northerners (Langi & Acholi) being 22%, Westerners (Munyankole, Mukiga, Munyoro, Mutoro, & Other Westerner) and Easterners (Musoga, Mugishu, Iteso, & other Easterner) being 28 to 29%. Most of the adolescents were in primary school (74%) with only 26% of the participants attending secondary school.

Binary Logistic Regression results

The first column in Table 2 gives the association between each primary independent variable and condom use individually (bivariate relationships). Each of the primary variables was significantly associated with the likelihood of ever using condoms. The more ways adolescents reported being aware of to reduce the risk of HIV/AIDS, the greater the odds they had ever used condoms. In addition, the greater they perceived their risk of getting HIV/AIDS, the more likely they were to have used condoms. Knowing someone that had AIDS increased the odds of using condoms. In particular, if youth indicated they knew someone with AIDS, they were 113% more likely to have ever used condoms. The strongest association between the primary independent variables and condom use was correct knowledge about using condoms. The more correct knowledge about condoms adolescents reported, the greater the likelihood

they had used condoms. Attitudes were also associated with condom use; the more positive the adolescent's attitude towards condoms, the greater the likelihood of use.

The second column in Table 2, provides the odds ratios for the primary independent variables when all were estimated simultaneously. Once all of the variables were included in the analyses in a multivariate model, awareness of ways to reduce the risk of HIV/AIDS was no longer significant. The relationship between the other primary factors and condom use remained significant, although the odds in each case were reduced. Correct knowledge about condoms continued to have the strongest association with condom use. Each correct response regarding condom use increased the likelihood of every using condoms by 120%.

Finally, the last column in Table 2 gives the adjusted odds of ever using condoms for the primary independent variables. These estimates are based on a multivariate model that included the primary variables, as well as background and demographic factors – age, gender, religion, ethnicity, and schooling. Once background factors were included in the analyses, only condom knowledge and attitudes remained associated with condom use. For each correct response regarding condom use, adolescents were almost two times more likely to have used condoms. In addition, the more positive they were towards condoms, the more likely adolescents were to have used condoms. The other primary measures, awareness of ways to reduce the risk of AIDS, perceived risk of getting AIDS, and knowing someone with AIDS, were not significantly associated with condom use.

Discussion

The primary objective in this study was to examine the relationship between HIV/AIDS related knowledge and perceived risk of HIV-infection as correlated with condom use among adolescents in Uganda. This is important because this age category is at risk of HIV-infection.³⁷ This is further backed by the fact that slightly less than half of the participants who were sexually active reported never using a condom,⁴⁸ which exposes them to the risk of HIV-infection. The future of Uganda entirely lies on the survival of these teens, therefore it is crucial to examine factors associated with condom use, given its proved efficacy in offering protection against the transmission of HIV to those who are sexually active. Consistent with the literature,¹⁹⁻²¹ findings in this study indicate that perceived risk does not necessarily translate into behavioral changes such as condom use; however, when perceptions of risk are accompanied by knowledge and positive attitudes, the likelihood adolescents have used a condom is significantly increased. Therefore, HIV/AIDS prevention programs targeting teens, should not just identify risk, but pass on correct knowledge of condoms and incorporate efforts to create a positive attitude towards condom use.

After accounting for background characteristics, this study found no relationship between knowing someone who has AIDS and an adolescent's likelihood of using a condom. Studies⁴⁹⁻⁵⁰ using data from South Africa have also found no association between condom use and knowing someone living with AIDS. This is in contrast with other studies,²⁵⁻²⁶ that have concluded the opposite. These contradictory findings may in part depend upon which background factors are considered in the analyses.

Conclusions

There is a strong association between condom related knowledge and condom use among adolescents in Uganda. In addition, adolescents' attitudes towards condoms are also correlated with condom use. Future studies should investigate further the relationship between condom related knowledge and attitudes towards condom use. Correct condom information and positive attitudes are more highly correlated with condom use than is perception of risk. It may be that risk perception is relative to time and requires further study. Adolescents might view themselves as being at a high risk when they are in a new relationship and therefore use condoms, but later they may abandon use as the relationship lasts longer.

These data do not allow us to determine causal order. It may be that adolescents that use condoms develop more correct knowledge and positive attitudes than those that do not use condoms. Longitudinal data are needed to sort out the causal direction of these relationships. Despite these limitations, findings in this study are important in estimating the likelihood that condom related knowledge and attitudes are correlated with condom use among adolescents, something that is crucial in designing or improving HIV/AIDS prevention programs in Uganda.

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