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Poverty and Risky Sexual Behaviours: Evidence from Tanzania

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ABSTRACT

Background: This paper investigates the influence of socioeconomic status on specific HIV/AIDS knowledge and the relationship between poverty and risky sexual behaviour in Tanzania. Poverty is one of the key factors that influence exposure of both men and women to the risk of contracting HIV. Poorer men and women are more likely than wealthier men and women to be exposed to HIV infection because they engage in higher-risk sexual behaviour.

Methods: Analysis involved the use of data from the 2010 Tanzania Demographic and Health Survey (DHS). Data analysis involved univariate analysis for dependant and independent variables, bivariate analysis, and thereafter multivariate logistic analysis for generating the odds ratio and confidence intervals (CIs) for each predictor.

Results: We found that education, wealth, mobility, employment, and media exposure have a strong association with knowledge that a healthy-looking person can have HIV/AIDS. Poverty influences higher-risk sexual behaviour for both men and women—defined here as sex with a non-marital, non-cohabiting partner. Poverty and lack of education among men and women are associated with lower rates of condom use. Results also show that poorer men are more likely than richer men to report paying for sex.

Conclusion: Poverty, lack of education, low mobility, and earlier sexual debut are among the major factors associated with risky sexual behaviour. More efforts on poverty reduction, more investment in education, and better facilitation of easy access to media need to be undertaken in order to reduce the vulnerability of poor people to contracting HIV/AIDS.

Keywords: Poverty, risky sexual behaviours, HIV/AIDS, vulnerability

INTRODUCTION

As the United Nations has observed, “poverty increases vulnerability to HIV/AIDS” (UNAIDS 2005). The HIV burden is concentrated in the poorest regions of the world, and HIV prevalence among people living in slums is high compared with that of people in other formal urban settlements. Although poorer people are at higher risk of HIV/AIDS, the ways in which poverty influences poorer people to engage in higher-risk sexual behaviour, which exposes them to the risk of HIV infection, are not well understood.

Empirical studies have been conducted to explain the relationship between poverty and sexual risk-taking behaviour. Fenton (2004), who studied how to prevent HIV/AIDS by reducing poverty, argues that lack of knowledge, which results from poor access to relevant information, is the major obstacle to practice of safer sexual behaviour. Lack of knowledge due to limited access to information is more common among the poor than among people of higher socioeconomic status.

Cohen (1997) argues that the poor are more vulnerable to HIV/AIDS because they lack access to methods for practicing safer sex, which might be more costly for them than for people of higher socioeconomic status. Also, he argues that poverty influences women to engage in early sexual relationships and informal prostitution. Moreover, women are less empowered economically, legally, culturally, and socially compared with men, particularly in Africa, which is a key factor in HIV transmission. Many women depend on their male partners for income, food, clothing, and so forth, which can reduce their power to negotiate for safer sex. In general, women may engage in risky sexual behaviour out of economic need.

People with higher socioeconomic status may initially engage in higher-risk sex, but once they become informed about the risk of contracting HIV/AIDS, they start to practice safer sex, including condom use, having fewer sexual partners, and being less involved in higher-risk behavior, such as having sex with commercial sex workers. Thus over time HIV/AIDS prevalence among the wealthier population starts to decline, and the distribution of the HIV/AIDS epidemic shifts to the poorer population, most of whom have little or no education (and thus may be less informed about HIV/AIDS) and also lack the resources to protect themselves against HIV infection (Lagarde et al. 2001).

Tanzania is one of the countries affected by the HIV/AIDS pandemic. The estimated prevalence of HIV among the adult population is 5.7 percent. In Tanzania the primary mechanism for the transmission of HIV is unprotected heterosexual intercourse, which contributes to about 80 percent of all infections (TACAIDS 2008). Due to this, government policy on HIV/AIDS focuses on sensitization campaigns, raising awareness, and the "A,B,C" safer-sex practices (**A**bstaining, **B**e faithful to one partner, use a **C**ondom) as central measures for reducing HIV infections in Tanzania (TACAIDS 2008). Despite these policy strategies, the results have not been satisfactory, particularly in some regions where HIV prevalence has increased, for example in Iringa region, where HIV prevalence has increased to 16 percent, the highest of any region in Tanzania (TACAIDS et al. 2008).

There is growing evidence that the HIV/AIDS epidemic spreads quickly in conditions of persistent poverty, income inequalities, gender inequities, and social disorders (Barnett and Whiteside 2002). Booysen et al. (2002) analyzed the relationship between poverty, risky sexual behaviour, and vulnerability to HIV/AIDS, using DHS data from South Africa. Their findings showed that women from poorer households were less knowledgeable about HIV/AIDS than wealthier women. They concluded that, because women in general had similar HIV vulnerability, more needed to be done to determine which factors apart from HIV/AIDS knowledge and socioeconomic status influence women's vulnerability to HIV/AIDS.

This paper applies the approach used by Booysen and Summerton in their 2002 paper on "Poverty, Risky Sexual Behaviours and Vulnerability to HIV Infection: Evidence from South Africa" to data from Tanzania (Booysen and Summerton 2002). However, this paper uses a slightly different methodology than the study by Booysen et al., which used the concentration index approach to measure health inequalities at the household level and used the wealth index as the only indicator of socioeconomic status. This paper does not use the concentration index approach. Instead, to investigate whether poorer people in Tanzania are—as Booysen and Summerton (2002) found in South Africa—less likely to be informed about HIV/AIDS and more likely to engage in higher-risk sexual behaviour than individuals of higher socioeconomic status, this paper uses the wealth index as an indicator of poverty and uses other socioeconomic indicators (education, age, marital status, mobility, employment status, urban-rural residence, media exposure, and age at first sexual intercourse) at the individual level.

RATIONALE/JUSTIFICATION OF THE STUDY

First, the study will contribute to the body of knowledge on how poverty and other socioeconomic factors influence higher-risk sexual behaviour. Second, the study is intended to shed light on the relationship between risky sexual behaviour and poverty. The objective is to help planners and policymakers in government agencies and NGOs develop substantive, alternative policy interventions to address the spread of HIV/AIDS and its consequences. Third, the study will offer empirical evidence of the association between poverty and higher-risk sexual behaviour for use in short-term and long-term interventions, especially among vulnerable populations.

LITERATURE REVIEW

The Economic Approach to Human Behaviour

Sexual behaviour can be analyzed using economic theory if and only if the assumption of rational choice among individuals holds. Economists study sexual activities (as they do other human activities) as markets, with costs and benefits, where individuals who engage in these activities gain mutually in an exchange (Philipson and Posner 1993). In non-market activities, "shadow prices" rather than monetary prices represent costs to individuals of receiving benefits. For example, if a rational individual has two options—safe sex and risky sex—and decides to choose risky sex, a shadow price (expected cost) of being involved in risky sexual activity is the risk of contracting HIV.

Despite the risks involved in higher-risk sex, individuals who derive low satisfaction from their lives are more likely to engage in risky sexual activities. A poor person may resort to prostitution to make a living and is likely to have difficulties in accessing information about safe sex. Hallman (2004) argues that the poor are more likely to engage in higher-risk sexual activities as a result of economic hardships. For instance, due to economic hardship a poor person may migrate from one area to another in search of opportunities and may establish new sexual relations, which might expose them to the risk of HIV infection.

Related Research on Poverty, Risky Sexual Behaviour, and Vulnerability to HIV/AIDS

Bloom and Sevilla (2001) established that poverty has a direct link with HIV/AIDS. Their findings make two important observations. First, the poorest women start sexual activities at early ages compared with wealthier women, thus having relatively more exposure to the risk of HIV infection. Second, the poorest women are less likely to engage in safe sex compared with wealthier women, making them more vulnerable to HIV infection.

Furthermore, empirical evidence shows that poverty hinders people from practicing safe sex because they lack access to means of protection. This argument is supported by a survey study by MacPhail and Campbell (2001) in Khutsong, South Africa. The survey included a group of young people age 13-25. Results indicated that lack of access to condoms due to their inability

to afford the costs of acquiring condoms was the main reason that they practiced unprotected sex. Results also indicated that economic hardship was the main reason for young women engaging in sexual relationships at an early age.

Collins and Rau (2000) have observed that poverty is likely to be associated with lack of education, and lack of education implies that messages regarding the risk of contracting HIV/AIDS and prevention measures are often inaccessible. Nattrass (2002) argues that not only does poverty cause young women to engage in commercial sex activities to support their livelihood, which thus exposes them to the risk of HIV infections, but also that HIV/AIDS can cause further poverty. Once a person contracts HIV/AIDS as a result of poverty, the sick person will need costly treatments, so that over time the situation will worsen and may even cause the family to lose all their resources and end up in absolute poverty.

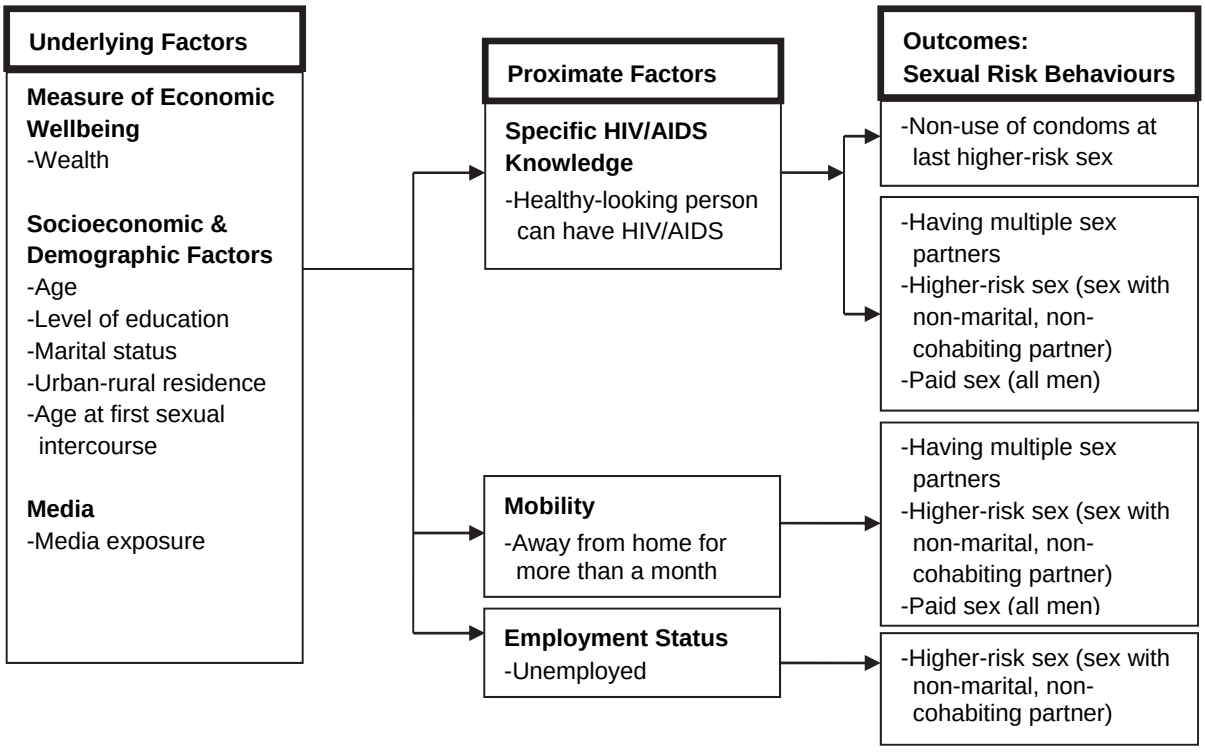
Although some evidence shows that HIV prevalence is associated with poverty, as measured by per capita income (Bloom and Sevilla 2001), in other parts of sub-Saharan Africa, HIV/AIDS is often associated with wealth. At the macroeconomic level, South Africa and Botswana, which are regarded as the strongest economies or as rich countries in sub-Saharan Africa, have the highest rates of HIV prevalence compared with poorer countries in the region (UNAIDS 2005). At the micro level, Shelton and colleagues found wealth and positive HIV serostatus to be positively related (Shelton et al. 2005).

Luke (2006) studied markets for risky sex in Kisumu, Kenya, focusing on the consistency of condom use by the same man with different sexual partners. Her results showed that sexual relationships that involved largely economic returns were highly associated with higher expectations of risky sex. This finding indicates that there is a market for risky sex, especially for women who anticipate earning higher incomes in exchange for sex.

CONCEPTUAL FRAMEWORK

Globally, an underlying cause of many diseases is poverty. A poor person has less access to health care services. Figure 1 provides a schematic display of the interrelationships among wealth, socioeconomic characteristics, specific HIV/knowledge, and risky sexual behaviour. Wealth, socioeconomic background, and media exposure are likely to have significant impact on risk of HIV/AIDS among individuals. For instance, individuals with less education, those living in rural areas, and those without media exposure are less likely to know that a healthy-looking person can have HIV/AIDS, and thus they are more likely to practice high-risk sexual behaviours (non-use of condoms at last higher-risk sex, multiple sexual partners, non-marital partners, and paid sex).

Figure 1. Schematic display of the interrelationships among poverty, HIV/AIDS knowledge, and sexual risk behaviours



Likewise, wealth, marital status, and place of residence (urban-rural) influence individual mobility. Individuals who migrate from one area to another, particularly from rural to urban areas, mainly for economic reasons, are more likely to adopt new sexual behaviours than those who do not move. This may happen particularly when they leave their families behind and initiate new sexual relationships. Men who travel due to the nature of their jobs are more likely to establish new sexual relations that often are higher-risk. Similarly, women working away from home may engage in transactional sex to earn an income.

RESEARCH QUESTIONS

The main research question is to investigate whether poorer people are less likely to be informed about HIV/AIDS and more likely to engage in sexual risk behaviours than people with higher socioeconomic status.

In addressing the above research question, analysis focuses on the following:

i. Analyzing the influence of socioeconomic status on knowledge that a healthy-looking person can have HIV and

ii. Analyzing the relationship between poverty and risky sexual behaviour in Tanzania.

RESEARCH METHODOLOGY

Data and Sample Size

The basis for our analysis is the 2010 Tanzania DHS, with a national stratified probability sample of 12,666 individuals. Analysis is based on respondents age 15-49. The sample included a total of 2,527 men and 10,139 women. In the interviewed households, 10,522 women were identified for individual interview, with a response rate of 96 percent (10,139 women). From the same households 2,770 men were identified for individual interview, with a response rate of 91 percent (2,527 men). Data were collected by the National Bureau of Statistics in collaboration with ICF Macro.

Data Description

In this study, four types of risk sexual behaviour are studied:

i. Higher-risk sex (with non-marital, non-cohabiting partner)

ii. Non-use of condoms at last higher-risk sex

iii. Having multiple sex partners

iv. Paid sex in the past 12 months

Dependent Variables

i. **Knowledge that a healthy-looking person can have HIV/AIDS:** This variable captures specific knowledge about HIV/AIDS for both men and women. The base for this variable is men and women who have ever heard of AIDS. The information used to assess this variable is response to the question of whether those men and women who have heard of AIDS know that even a healthy looking person can have HIV/AIDS. The variable is recoded as a binary variable. It takes the value of zero for those who have ever heard of HIV/AIDS but do not believe a healthy looking person can have HIV/AIDS, and it takes the value of one for individuals who have ever

heard of HIV/AIDS and believe a healthy looking person can have HIV/AIDS. Men and women who have never heard of HIV/AIDS are excluded from analysis.

ii. **Higher-risk sex:** In the study, the term "higher-risk sex" refers to men and women who have had sex in the last 12 months with a non-marital, non-cohabiting partner. This is a binary variable. Those who have not had higher-risk sex take the value of zero, and those who have had higher-risk sex in the past 12 months take the value of one. For men, the weighted sample (N) is 1,861, and the unweighted sample is 1,750. When considering the unweighted sample, there are 777 men who did not have sex in the last 12 months. For women the weighted sample is 7,960, while the unweighted sample is 7,585. In the unweighted sample, there are 2,554 women who had no sex in the last 12 months. Both men and women who have not had sex in the last 12 months are excluded from the analysis. Those who had sex in the last 12 months are in the denominator, and the numerator includes those who had sex with a non-spousal, non-cohabiting partner in the last 12 months.

iii. **Non-use of condoms at last higher-risk sex:** This variable includes all men and women who had higher-risk sex in the last 12 months in the denominator. This is a binary variable. Those who did not use condoms during their most recent higher-risk sex are coded as zero and those who used condoms are coded as one. For men, the weighted sample is 841, and the unweighted sample is 772. Using the unweighted sample, a total of 1,755 men did not have higher-risk sex in the last 12 months. For women, the weighted sample is 1,800, and the unweighted sample is 1,493. Using the unweighted sample, there are 8,646 women who did not have higher-risk sex. Both men and women who did not have higher-risk sex in the last 12 months are excluded from the analysis.

iv. **Having multiple sex partners:** The variable includes men and women who had sex in the last 12 months. This also is a binary variable, which takes the value of zero if an individual did not sex or had sex with only one partner and takes the value of one if an individual had sex with more than one sex partner in the last 12 months. For women, the weighted sample is 10,139, and the unweighted sample is 10,139. There

are no missing values. For men, the weighted sample is 2,527, and the unweighted sample is 2,527. There are also no missing values among men.

v. **Paid sex:** This variable includes men who had sex in the last 12 months. This variable is available only for men. It is a binary variable where those who did not pay for sex in the last 12 months are recoded with zero value, and it takes the value of one if an individual had paid sex. The weighted sample is 2,527, and the unweighted sample is 2,527. There are no missing values.

Independent Variables

i. **Wealth quintiles:** This variable is used as a measure of economic wellbeing. The index is constructed by DHS using principal component analysis to assign indicator weights based on household ownership of assets. This is a key variable of interest, and all five wealth quintiles will be used in analyzing the relationship between poverty and risky sexual behaviours. All quintiles are used so as to be able to compare the poor and the rich.

ii. **Level of education:** This is one of the key variables, which captures socioeconomic characteristics of the population. This variable is recoded into three categories: no education, primary education, and secondary/higher education.

iii. **Age:** Age is used to compare sexual behaviour among men and women in different age groups so as to identify tangible policy actions focused on certain age groups. Age is recoded into four groups for both men and women (15-19, 20-29, 30-39, and 40-49), and are all included in the model.

iv. **Type of place of residence:** This variable captures type of place of residence, whether urban or rural. This variable is used as a controlling variable to see how urban or rural residence is associated with HIV/AIDS knowledge and higher-risk sexual behaviours.

v. **Employment status:** This variable captures all men and women who worked in the 12 months preceding the survey. This variable is included because it is a source of empowerment for both men and women.

vi. **Media exposure:** This variable captures how individuals are exposed to media. It includes frequency of listening to radio and frequency of watching television.

vii. **Mobility:** Mobility is likely to influence sexual behaviour. Some people move from one area to another looking for jobs or business opportunities, while others have jobs that require them to travel frequently, for example, truck drivers. In this study those who have been away for more than 1 month in the last 12 months are considered to be mobile, and those who have not been away from home for more than 1 month in the last year are considered not mobile.

viii. **Marital status:** This variable captures the marital relationships between men and women. This variable is recoded into three categories: never-married, currently married, and formerly married.

ix. **Age at first sexual intercourse**: This variable captures the age at which an individual initiated sexual activities. The variable is recoded into four categories: no intercourse, which includes those who have never had sex, age 8-15, age 16-20, and age 21+. Those who have never had sex are excluded in the analysis.

Data Analysis

The analysis investigates the relationship between wealth, other socioeconomic factors, and risky sexual behaviour, so as to establish evidence on how wealth and other socioeconomic factors of men and women influence risky sexual behaviours in Tanzania.

Univariate and Bivariate Analysis

Univariate analysis is done for each dependent and independent variable. Univariate analysis is done to analyze observations included in each variable as well as the number of missing values. Bivariate analysis is done between each dependent variable and independent variables to show how each dependent variable varies by each independent variable.

Multivariate Analysis

All the dependent variables are dummy variables or categorical variables. Multivariate logistic regressions analysis is used to determine which of the socioeconomic status/poverty characteristics are independently associated with knowledge that a healthy-looking person can have HIV and risky sexual behaviour among men and women.

The regression model equation is expressed as;

$$\text{In (Odds)} = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \ldots\ldots\ldots\ldots\ldots + \beta_k X_k \ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

Where α = model constant, β = is the parameter estimate for the predictors, and X_k represents each independent variable. Five models are run to establish the relationship between poverty proxies, media exposure, knowledge that a healthy-looking person can have HIV, and characteristics of risky sexual behaviours.

EMPIRICAL ANALYSIS

This section presents results on the relationship between poverty, knowledge that a healthy-looking person can have HIV, and risky sexual behaviours, based on univariate analysis, bivariate analysis, and multivariate logistic regression results.

Univariate Analysis

Men: Table 1 shows that, among all men, 13 percent do not know that a healthy-looking person can have HIV/AIDS. Also, 26 percent had no sex in the last 12 months, 53 percent had sex with one partner, and 21 percent had sex with more than one partner. Among men who had sex in the last 12 months, 33 percent had higher-risk sex. Among those who had higher-risk sex, 36 percent did not use condoms at last higher-risk sex in the last 12 months. Among all men, 7.5 percent had paid sex in the last 12 months.

Women: Table 1 also shows that, among all women, 15 percent do not know that a healthy-looking person can have HIV/AIDS. Among women, 21.5 percent had no sex in the last 12 months, 75 percent had sex with one partner, and 3.5 percent had sex with more than one partner. Among women who had sex in the last 12 months, 18 percent had higher-risk sex. Among women who had higher-risk sex, 58 percent did not use condoms at last higher-risk sex in the last 12 months.

Table 1. Univariate analysis for dependant variables

	Frequency	Percentage	Sample Size (N)
MEN			
Healthy-looking person can have HIV/AIDS			
Does not know	330	13.0	
Knows	2,197	87.0	2,527
Had sex in last 12 months			
Had no sex	666	26.0	
Had sex with one partner	1,338	53.0	
Had sex with 2+ partners	523	21.0	2,527
Higher-risk sex in last 12 months			
No	1,686	66.7	
Yes	841	33.3	2,527
Used condom at last higher-risk sex			
No	304	36.0	
Yes	537	64.0	841
Number of sex partners in last 12 months			
0/1	2,004	79.0	
2+	523	21.0	2,527
Had paid sex in last 12 months			
No	2,338	92.5	
Yes	189	7.5	2,527
Total sample size		**2,527**	
WOMEN			
Healthy-looking person can have HIV/AIDS			
Does not know	1,541	15.0	
Knows	8,598	85.0	10,139
Had sex in last 12 moths			
Had no sex	2,179	21.5	
Had sex with one partner	7,603	75.0	
Had sex with 2+ partners	357	3.5	10,139
Higher-risk sex in last 12 months			
No	8,339	82.2	
Yes	1,800	17.8	10,139
Used condom at last higher-risk sex			
No	1,045	58.0	
Yes	755	42.0	1,800
Number of sex partners in last 12 months			
0/1	9,782	96.5	
2+	357	3.5	10,139
Total sample size		**10,139**	

Bivariate Analysis

Appendix Table 2 presents results of bivariate analysis for men and for women.

Wealth: Among men, wealth has a significant association with HIV/AIDS knowledge, non-use of condoms at last higher-risk sex, and having more than one sexual partner. Higher-risk sex (that is, sex outside of marriage/cohabitation) and paid sex are not significantly associated with wealth. HIV/AIDS knowledge increases with an increase in wealth, non-use of condoms decreases with an increase in wealth, and having multiple sexual partners is negatively associated with wealth. An increase in wealth reduces the rate of having multiple sexual partners.

Among women, wealth is significantly associated with HIV/AIDS knowledge, higher-risk sex, and non-use of condoms at last higher-risk sex. Having multiple sexual partners (two or more partners) is found to have an insignificant association with wealth. Knowledge of HIV/AIDS is positively associated with wealth, while higher-risk sex increases with an increase in wealth. Non-use of condoms decreases with an increase in wealth.

Highest level of education: Among men, education has a significant association with all dependant variables except paid sex in the last 12 months. HIV/AIDS knowledge increases with an increase in education level, while higher-risk sex also increases with an increase in education. Non-use of condoms at last higher-risk sex decreases with an increase in education. Having sex with more than one partner decreases with an increase in education.

Among women, education has a significant association with all dependant variables. HIV/AIDS knowledge increases with an increase in education level, while as with men, higher-risk sex among women is significantly associated with education level. Among women, non-use of condoms at last higher-risk sex decreases as education level increases. Among all women, having more than one sexual partner is inversely associated with level of education.

Age: Among men, age is not associated with HIV/AIDS knowledge. However, age is significantly associated with higher-risk sex, non-use of condoms at last higher-risk sex, and paid sex. The rate of having higher-risk sex decreases with an increase in age. Also, non-use of condoms decreases with an increase in age. Having more than one sexual partner increases with an increase in age, while paid sex has an inverse association with age.

Among women, age also is not significantly associated with HIV/AIDS knowledge. Having higher-risk sex and having more than one sexual partner are inversely associated with age. Having higher-risk sex and having more than one sexual partner both decrease with an increase in age. However, an increase in age is associated with an increase in non-use of condoms at higher-risk sex.

Type of place of residence: Among men, type of place of residence (urban-rural) is not significantly associated with higher-risk sex and paid sex, but is associated with HIV/AIDS knowledge, non-use of condoms, and number of sexual partners. Men living in rural areas are less knowledgeable about HIV/AIDS compared with men living in urban areas. Having more than one sexual partner is more common among men in rural areas compared with men in urban areas.

Among women, rural or urban residence is significantly associated with HIV/AIDS knowledge, higher-risk sex, and non-use of condoms at last higher-risk sex, but is not associated with having multiple sexual partners. Women in rural areas are less knowledgeable about HIV/AIDS compared with women in urban areas, but women in rural areas are less likely to have had higher-risk sex compared with women in urban areas. Non-use of condoms at last higher-risk sex is more common in rural areas compared with urban areas.

Employment status: Among men, employment is significantly associated with higher-risk sex and number of sexual partners. Higher-risk sex is more common among men who are unemployed compared with men who are employed. Having multiple sexual partners is more common among men who are employed compared with men who are not employed.

Among women, employment is significantly associated with HIV/AIDS knowledge, higher-risk sex, non-use of condoms at last higher-risk sex, and having multiple sexual partners. Unemployed women have less HIV/AIDS knowledge than employed women. Also, higher-risk sex is more common among women who are unemployed compared with women who are employed. Non-use of condoms at last higher-risk sex is higher among employed women than among unemployed women. Having multiple sexual partners is more common among employed women compared with unemployed women.

Mobility: Among men, mobility is the only factor significantly associated with higher-risk sex and paid sex. Having higher-risk sex is higher among men who are mobile compared

with men who are not mobile, as is also the case with paid sex. Among women, mobility is significantly associated with HIV/AIDS knowledge, higher-risk sex, non-use of condoms, and having multiple sexual partners. Higher-risk sex, non-use of condoms, and having multiple sexual partners are more common among mobile women compared with women who are not mobile. However, mobile women have more knowledge about HIV/AIDS.

Media exposure: Among men, media exposure (listening to the radio and watching television) has a significant association with HIV/AIDS knowledge, higher-risk sex, and non-use of condoms. The association is not significant with having multiple sexual partners and paid sex. Among women, frequency of listening to the radio is significantly associated with HIV/AIDS knowledge and non-use of condoms, but not significantly associated with higher-risk sex and having multiple sex partners. Frequency of watching television is significantly associated with HIV/AIDS knowledge, higher-risk sex, non-use of condoms at last higher-risk sex, and having multiple partners.

Empirical Analysis of Poverty, Other Socioeconomic Status, and Knowledge that a Healthy-Looking Person Can Have HIV/AIDS

Table 2 shows results of multivariate analysis of poverty and other socioeconomic status measures with knowledge that a healthy person can have HIV/AIDS among men and women age 15-49 who have heard of HIV/AIDS. This part answers the first objective, which was to determine whether poorer people are less likely to be informed about HIV/AIDS compared to wealthier people.

Men: Among men, media exposure (frequency of listening to radio) and level of education are significantly associated with knowledge that a healthy-looking person can have HIV. Men who do not listen to radio at all are less likely to know if a healthy-looking person can have HIV/AIDS (O.R = 0.54, 95% C.I [0.31 -0.96]) compared with men who listen to radio almost every day. Also, men with no education are less likely to know if a healthy-looking person can have HIV/AIDS (O.R = 0.23, 95% C.I [0.11- 0.48]) compared with men with secondary or higher education. All other factors are found to be insignificantly associated with knowledge that a healthy-looking person can have HIV.

Table 2. Odds of knowledge that a healthy-looking person can have HIV by socioeconomic status and poverty for men and women

	Men		Women	
	O.R.	**[95% Conf. Interval]**	**O.R.**	**[95% Conf. Interval]**
Wealth quintiles				
Poorest	0.91	.4149237 - 2.009516	0.62**	.3928492 - .9638371
Poorer	1.18	.5300944 -2.609582	0.68*	.4415646 - 1.06447
Middle	1.34	.5990008 - 2.996425	0.71	.4671776 - 1.09337
Richer	1.34	.6068057 - 2.967439	0.89	.5892422 - 1.337767
Richest (Reference)				
Mobility in last 12 months				
Not mobile	0.85	.4579204 - 1.586658	0.83*	.6759138 - 1.022866
Mobile (Reference)				
Marital status				
Never-married	0.71	.347939 - 1.467151	0.79	.5313487 - 1.164294
Currently married	0.98	.495141-1.956438	0.83	.6263516 - 1.108503
Formerly married (Reference)				
Frequency of listening to radio				
Not at all	0.54**	.3081034 -.958893	0.52***	.4197053 - .6439932
Occasionally	1.11	.6707228 -1.825869	0.78**	.6227851 - .9870514
Almost every day (Reference)				
Highest level of education				
No education	0.23***	.107066 -.4805604	0.46***	.3191939 - .6608347
Primary education	0.66	.3393188 -1.28627	0.65***	.4821143 - .8766929
Secondary/higher education (Reference)				
Employment status				
Unemployed	0.61	.2430039 - 1.53004	0.59***	.457663 - .7845598
Employed (Reference)				
Frequency of watching television				
Not at all	0.53	.2402696 -1.175699	0.56**	.3552199 - .8726942
Occasionally	0.87	.4105228 -1.883407	0.67*	.427603 - 1.064022
Almost every day (Reference)				
Type of place of residence				
Urban	1.71	.8223005 - 3.580006	1.19	.8836348 - 1.610656
Rural (Reference)				
Age at first sexual intercourse				
8-15	1.06	.5600394 - 2.015201	1.23	.9374159 - 1.62725
16-20	0.97	.5802975 - 1.636951	1.14	.8736878 - 1.495698
21+ (Reference)				
Age group				
15-19	0.88	.4013407 - 1.960325	0.77	.5642223 - 1.064852
20-29	1.21	.6826387 - 2.128735	0.90	.7142442 - 1.144434
30-39	1.27	.7340269 - 2.187564	0.97	.7844955 - 1.196674
40-49 (Reference)				

* Significant at 0.10 level; ** Significant at 0.05 level; *** Significant at 0.01 level; Men's population size=2,044; Women's population size = 8,736

Women: Among women, wealth, mobility, media exposure (frequency of listening to radio and frequency of watching TV), education level, and employment status are associated with knowledge that a healthy-looking person can have HIV. Women in the poorest and poorer wealth quintiles are less likely to know that a healthy-looking person can have HIV/AIDS compared with the richest women. Women who are not mobile are less likely to know that a healthy-looking person can have HIV/AIDS compared with women who are mobile. Also, women who do not listen to the radio at all and those who listen occasionally are less likely to know that a healthy-looking person can have HIV/AIDS compared with women who listen to the radio almost every day.

Moreover, women with no education and women with a primary school education are less likely to be knowledgeable on specific HIV/AIDS issues compared with women with more education. Women who are unemployed also are less likely than women who are employed to know that a healthy-looking person can be infected with HIV/AIDS. Women who do not watch television at all and women who watch occasionally are less likely to know that a healthy-looking person can have HIV/AIDS compared with women who watch television almost every day.

Empirical Analysis of Poverty and Risky Sexual Behaviour

The tables below present four models establishing the relationship among wealth, poverty-related socioeconomic characteristics, and the four risky sexual behaviours studied. Each model presents data for men and for women.

Table 3. Odds of higher-risk sex by selected proxy indicators of poverty

	Men		Women	
	O.R.	**[95% Conf. Interval]**	**O.R.**	**[95% Conf. Interval]**
Wealth quintiles				
Poorest	1.50	.8624248 - 2.620982	1.61*	.9886479 - 2.635989
Poorer	1.68*	.9860528 - 2.858129	1.45	.909145 - 2.315578
Middle	1.35	.7935943 - 2.293232	1.15	.7246703 - 1.821016
Richer	1.15	.7391718 - 1.786827	1.45*	.980147 - 2.137766
Richest (Reference)				
Mobility in the last 12 months				
Not mobile	0.80	.5617737 - 1.143689	0.99	.7552205 - 1.322757
Mobile (Reference)				
Marital status				
Never married	1.38	.7756731 - 2.447277	2.76***	2.01201 - 3.7894
Currently married	0.15***	.0937758 - .2399867	0.02***	.0148827 - .0261985
Formerly married (Reference)				
Frequency of listening to radio				
Not at all	1.16	.7642099 - 1.76915	0.79	.5905245 - 1.055708
Occasionally	1.16	.8505617 - 1.572231	0.76**	.5935428 - .9701147
Almost every day (Reference)				
Highest level of education				
No education	1.29	.7003664 - 2.409343	0.82	.5401513 - 1.2384
Primary education	0.99	.6073506 - 1.618321	1.06	.7791154 - 1.452168
Secondary/higher education (Reference)				
Employment status				
Unemployed	0.63	.340056 - 1.162432	0.71**	.5314564 - .9504319
Employed (Reference)				
Frequency of watching television				
Not at all	0.54**	.294139 - .9768163	0.88	.5786261 - 1.330037
Occasionally	0.82	.4980881 - 1.363849	1.12	.7528817 - 1.683753
Almost every day (Reference)				
Type of place of residence				
Urban	0.84	.5586231 - 1.274193	1.03	.7648458 - 1.387809
Rural (Reference)				
Age at first sexual intercourse				
8-15	2.86***	1.785258 - 4.568121	1.60***	1.324958 - 2.895342
16-20	4.16***	2.734362 - 6.33135	1.32	.9163003 - 1.887493
21+ (Reference)				
Age in groups				
15-19	1.44	.7767107 - 2.653164	1.83***	1.16248 - 2.865704
20-29	1.56**	1.059476 - 2.303021	1.64***	1.219258 - 2.21206
30-39	1.08	.7208011 - 1.615639	1.56***	1.186282 - 2.059119
40-49 (Reference)				
Healthy-looking person can have HIV/AIDS				
Does not know	0.53**	.3240282 - .8650089	0.65***	.470445 - .8972546
Knows (Reference)				

* Significant at 0.10 level; ** Significant at 0.05 level; *** Significant at 0.01 level; Men's population size=2,044; Women's population size=8,736

Higher-Risk Sex (Sex with Non-Marital or Non-Cohabiting Partner)

Men: For men, wealth, marital status, and media exposure (frequency of watching television), age at first intercourse, age group, and HIV/AIDS knowledge influence higher-risk sex (that is, sex with a non-marital or non-cohabiting partner) (Table 3). Poorer men are more likely to have higher-risk sex compared with the richest men (reference group). Also, currently married men are less likely to have higher-risk sex compared with formerly married men.

Men who do not watch television at all are less likely to have higher-risk sex compared with men who watch television almost every day. Furthermore, men who become sexually active at age 8-15 or age 16-20 are more likely to have higher-risk sex compared with men who start sexual activity at age 21 or older. Men age 20-29 are more likely to have higher-risk sex compared with the reference group, men age 40-49. Men who do not know that healthy-looking people can have HIV/AIDS are less likely to have higher-risk sex compared with men who know that a healthy-looking person can have HIV/AIDS.

Women: Table 3 shows that among women wealth, marital status, media exposure (frequency of listening to the radio), employment status, age at first sexual intercourse, current age group, and knowledge that a healthy-looking person can have HIV influence women's higher-risk sex. The poorest women are most likely to have sex with a non-marital partner compared with the richest women, but all other wealth quintiles also are more likely to do so compared with women in the richest quintile (reference group). Never-married women are more likely to have higher-risk sex compared with formerly married women, but currently married women are comparatively less likely to do so. Women who listen to radio occasionally are less likely to have higher-risk sex compared with women who listen to the radio almost every day. Unemployed women are less likely to have higher-risk sex (O.R 0.71, C.I [0.53-0.95]) compared with employed women. Women who start sexual activity at age 8-15 are more likely to have higher-risk sex compared with women who start sexual activity at age 21 or older. All age groups below age 40 are more likely to have high-risk sex compared with women age 40-49. Women who do not know that a healthy-looking person can have HIV are less likely (O.R 0.65, C.I [0.47-0.89]) to have higher-risk sex compared with women who know a healthy-looking person can have HIV.

Non-Use of Condoms at Last Higher-Risk Sex

Men: Table 4 shows that among men who had higher-risk sex, wealth, education level, and age group are associated with the use of condoms at last higher-risk sex. Men in the poorest and poorer wealth quintiles are less likely to use condoms at last higher-risk sex compared with the richest men, as are men in the middle and richer quintiles compared with the richest men.

Men with no education are less likely (O.R 0.32. C.I [0.13-0.78]) to use condoms at last higher-risk sex compared with men with secondary or higher education. Furthermore, men age 15-19 are less likely to use condoms at last higher-risk sex compared with men age 40-49, the reference group.

Women: Table 4 also shows that among women who had higher-risk sex in the past year, wealth, mobility, marital status, education, employment status, media exposure (frequency of watching television) and age group are associated with use of condoms at last higher-risk sex. Women in the poorest and poorer wealth quintiles are less likely to use condoms at last higher-risk sex compared with the richest women. Also, women who are not mobile are less likely to use condoms at last higher-risk sex compared with women who are mobile. Currently married women are more likely (O.R 1.58, C.I [1.0-2.4]) to use condoms at last higher-risk sex compared with formerly married women, the reference group. Women with no education and women with a primary level of education are both less likely to use condoms at last higher-risk sex compared with women with secondary or higher-level education. Unemployed women are more likely (O.R 1.5, C.I [1.0-2.2]) to use condoms at last higher-risk sex compared with employed women. Women who do not watch television at all are less likely to use condoms at last higher-risk sex compared with women who watch television almost every day. Furthermore, women age 15-19 and women age 20-29 are more likely to use condoms at last higher-risk sex compared with women age 40-49, the reference group.

Table 4. Odds of non-use of condoms at last higher-risk sex among men and women who had higher-risk sex, by selected proxy indicators of poverty

	Men		Women	
	O.R.	**[95% Conf. Interval]**	**O.R.**	**[95% Conf. Interval]**
Wealth quintiles				
Poorest	0.29***	.1172141 - .7056033	0.42***	.2274472 - .7769957
Poorer	0.28***	.1180299 - .6782933	0.49**	.2687378 - .9145228
Middle	0.34***	.1568468 - .7364159	0.62	.3445463 - 1.126037
Richer	0.44**	.213378 - .9011452	0.92	.5571519 - 1.526423
Richest (Reference)				
Mobility in the last 12 months				
Not mobile	1.15	.7349101 - 1.791567	0.59***	.4397881 - .7884887
Mobile (Reference)				
Marital status				
Never married	0.64	.3118566 - 1.325945	0.78	.5217389 - 1.160533
Currently married	0.66	.3606456 - 1.215666	1.58**	1.012896 - 2.475512
Formerly married (Reference)				
Frequency of listening to radio				
Not at all	1.11	.5782748 - 2.128964	0.88	.6085842 - 1.271934
Occasionally	0.93	.6273881 - 1.379966	0.88	.6546571 - 1.197578
Almost every day (Reference)				
Highest level of education				
No education	0.32**	.1279948 - .7863682	0.46***	.2618072 - .8213112
Primary education	0.61	.3260882 - 1.133671	0.67*	.4481166 - 1.001848
Secondary/higher education (Reference)				
Employment status				
Unemployed	1.08	.5043071 - 2.311111	1.50**	1.041644 - 2.17308
Employed (Reference)				
Frequency of watching television				
Not at all	0.75	.3725844 - 1.497106	0.62*	.3527298 - 1.075709
Occasionally	1.08	.5670624 - 2.088788	0.83	.4945298 - 1.376514
Almost every day (Reference)				
Type of place of residence				
Urban	0.92	.4837071 - 1.743732	0.82	.5452794 - 1.231919
Rural (Reference)				
Age at first sexual intercourse				
8-15	1.89	.8417994 - 4.255843	0.96	.570331 - 1.626683
16-20	1.41	.6447086 - 3.075572	1.02	.6412873 - 1.635292
21+ (Reference)				
Age in groups				
15-19	0.40**	.1680878 - .9566822	1.76*	.970549 - 3.179626
20-29	0.85	.4459382 - 1.607179	1.50*	.9285605 - 2.424812
30-39	0.85	.4827801 - 1.481782	1.15	.6886022 - 1.913024
40-49 (Reference)				
Healthy-looking person can have HIV/AIDS				
Does not know	1.46	.7850306 - 2.710897	0.88	.5941549 - 1.319326
Knows (Reference)				

* Significant at 0.10 level; ** Significant at 0.05 level; *** Significant at 0.01 level; Men's population size=841; Women's population size=1,800

Multiple Sexual Partners (Having Two or More Sexual Partners in the Past Year)

Men: Table 5 shows that, among men who had sex in the past year, their marital status, media exposure, and age at first sexual intercourse is associated with the number of sexual partners in the past year. Never-married men are less likely to have two or more sexual partners compared with formerly married men, the reference group. Also, men who listen to the radio occasionally are more likely to have two or more sexual partners compared with men who listen to the radio almost every day. Men who do not watch television at all are less likely to have two or more sexual partners compared with men who watch television almost every day. Men who start sexual intercourse at age 8-15 and at age 16-20 are more likely to have two or more sexual partners compared with men who start sexual intercourse at age 21 and older.

Women: Table 5 also shows that among women who had sex in the past year, mobility, marital status, employment status, age at first sexual intercourse, and age group are associated with the number of sexual partners. Women who are not mobile are less likely to have two or more sexual partners in the past year compared with women who are mobile. Never-married women and currently married women are less likely to have two or more sexual partners compared with formerly married women. Unemployed women are less likely to have multiple sexual partners compared with employed women. Women who start sexual activity at age 8-15 are more likely to have multiple sexual partners compared with women who start sexual activity at age 21 and older. Women age 20-29 are more likely to have multiple sexual partners compared with women age 40-49, the reference group.

Table 5. Odds of having multiple sex partners in the past year by selected proxy indicators of poverty, among men and women who had sex in the past year

	Men		Women	
	O.R.	**[95% Conf. Interval]**	**O.R.**	**[95% Conf. Interval]**
Wealth quintiles				
Poorest	1.43	.7919273 - 2.587854	1.52	.7798859 - 2.965072
Poorer	1.48	.8434146 - 2.616932	1.14	.6090036 - 2.142883
Middle	1.68	.9893911 - 2.837322	1.09	.561135 - 2.143774
Richer	1.18	.7011396 - 2.011817	0.99	.579469 - 1.708217
Richest (Reference)				
Mobility in the last 12 months				
Not mobile	1.02	.7258891 - 1.44006	0.68**	.4700343 - .9759611
Mobile (Reference)				
Marital status				
Never married	0.59*	.3397831 - 1.039204	0.45***	.2570632 - .7977889
Currently married	1.18	.7335065 - 1.89921	0.23***	.1474748 - .361697
Formerly married (Reference)				
Frequency of listening to radio				
Not at all	1.02	.6715455 - 1.558881	0.88	.5912467 - 1.33025
Occasionally	1.35**	1.024457 - 1.785514	0.95	.6769739 - 1.344131
Almost every day (Reference)				
Highest level of education				
No education	1.43	.7749704 - 2.626302	1.11	.5638799 - 2.173791
Primary education	1.14	.7328763 - 1.770091	1.38	.7961768 - 2.400334
Secondary/higher education (Reference)				
Employment status				
Unemployed	0.58	.2914101 - 1.144079	0.48***	.3022131 - .7596624
Employed (Reference)				
Frequency of watching television				
Not at all	0.47**	.2528606 - .8694083	1.33	.5549645 - 3.188579
Occasionally	0.66	.3761146 - 1.153248	1.85	.9476714 - 3.610025
Almost every day (Reference)				
Type of place of residence				
Urban	0.69	.4410014 - 1.094485	0.96	.6161768 - 1.507986
Rural (Reference)				
Age at first sexual intercourse				
8-15	4.07***	2.402782 - 6.884113	1.89*	.993061 - 3.625913
16-20	3.91***	2.49838 - 6.115054	1.54	.8585065 - 2.777534
21+ (Reference)				
Age in groups				
15-19	0.92	.5014595 - 1.692727	1.62	.872594 - 3.012758
20-29	1.17	.8054134 - 1.716594	2.08***	1.334899 - 3.245625
30-39	0.85	.5836444 - 1.231427	1.44	.8969824 - 2.308646
40-49 (Reference)				
Healthy-looking person can have HIV/AIDS				
Does not know	1.03	.6797039 - 1.556734	0.71	.4465514 - 1.136596
Knows (Reference)				

* Significant at 0.10 level; ** Significant at 0.05 level; *** Significant at 0.01 level; Men's population size=2,044; Women's population size=8,736

Payment for Sex

This risk behaviour is covered for men only, since it is unusual for women to pay for sex. Table 6 shows that wealth, mobility, marital status, age at first sexual intercourse, and age group are associated with paying for sex.

Men in the poorest wealth quintile are more likely to pay for sex compared with the richest men. Men who are not mobile are less likely to pay for sex compared with men who are mobile. Never-married men and currently married men are less likely to pay for sex compared with formerly married men. Men who start sexual activity at age 8-15 and at age 16-20 are more likely to pay for sex compared with men who start sexual activity at age 21 and older. Men in all age groups under age 40 are more likely to pay for sex compared with men age 40-49, the reference group.

Table 6. Odds of paying for sex by selected proxy indicators of poverty, among men who had sex in the past year

	O.R.	[95% Conf. Interval]
Wealth quintiles		
Poorest	2.26*	.8999569 - 5.687189
Poorer	1.65	.6279681 - 4.314139
Middle	1.97	.7863525 - 4.933967
Richer	1.43	.4931519 - 4.17375
Richest (Reference)		
Mobility in the last 12 months		
Not mobile	0.58**	.3656306 - .9083557
Mobile (Reference)		
Marital status		
Never married	0.53*	.2655473 - 1.042973
Currently married	0.19***	.1037438 - .3709187
Formerly married (Reference)		
Frequency of listening to radio		
Not at all	1.02	.5026003 - 2.069203
Occasionally	1.34	.811561 - 2.210016
Almost every day (Reference)		
Highest level of education		
No education	0.85	.2977708 - 2.41324
Primary education	1.63	.7172593 - 3.70979
Secondary/higher education (Reference)		
Employment status		
Unemployed	0.57	.2079343 - 1.53769
Employed (Reference)		
Frequency of watching television		
Not at all	0.76	.2230352 - 2.582588
Occasionally	1.08	.36878 - 3.168704
Almost every day (Reference)		
Type of place of residence		
Urban	1.19	.5826553 - 2.464259
Rural (Reference)		
Age at first sexual intercourse		
8-15	2.09*	.9112809 - 4.821363
16-20	2.56**	1.235973 - 5.30153
21+ (Reference)		
Age in groups		
15-19	2.54*	.8681687 - 7.441641
20-29	2.67***	1.376333 - 5.199278
30-39	2.23***	1.229879 - 4.041975
40-49 (Reference)		
Healthy-looking person can have HIV/AIDS		
Does not know	0.51	.2245267 - 1.151049
Knows (Reference)		

* Significant at 0.10 level; ** Significant at 0.05 level; *** Significant at 0.01 level; Population size=2,044

DISCUSSION

The study found that education, wealth, mobility, employment, and media exposure are significantly associated with knowledge about HIV/AIDS. In particular, education is a key variable for both men and women, as men and women with no education are the least likely to know that a healthy-looking person can have HIV/AIDS. Media exposure is also important in influencing HIV/AIDS knowledge. Wealth status is significantly associated with women's HIV/AIDS knowledge, but not men's. The fact that women in the poorest wealth quintile are less knowledgeable about HIV/AIDS compared with the richest women suggests that they may be more vulnerable to the risk of contracting HIV/AIDS.

Poverty is associated with higher-risk sex for both men and women—defined here as having sex with a non-marital or non-cohabiting partner. Men and women in the poorest wealth quintile are more likely to have higher-risk sex compared with wealthier men and women and thus may have more risk of contracting HIV. Also media exposure is strongly associated with sexual behaviour. Men and women with more exposure to radio and television are less likely to have higher-risk sex.

Poverty is also associated with condom use for both men and women. Poorer men and women are less likely to use condoms than richer men and women, which may suggest a lack of the means to purchase condoms. Also, lack of education among both men and women plays a role, as people with no education are less likely to use condoms at higher-risk sex. This finding supports the study by Collins et al. (2000), which showed that poverty is associated with lack of education and suggests that lack of information about condoms and safer-sex leads to non-use of condoms and thus greater HIV/AIDS risk. Also, our results show that the poorest men are more likely to pay for sex, which may suggest that poor men may lack the means to maintain a household and to have a stable relationship.

Having multiple sexual partners is not associated with wealth or education among either men or women. However, both men and women who start sexual activity at an early age are more likely to have two or more sexual partners. Women who are not mobile are less likely to have two or more sexual partners, perhaps because they have fewer interactions with men compared with women who are mobile. Also travelling to a new place may influence a person to behave differently than if they remained in their community.

CONCLUSIONS, POLICY ISSUES, AND LIMITATIONS OF THE STUDY

Conclusion

In conclusion, the study found that:

1. Poverty has an effect on sexual behaviour for both men and women.

   i. Poorer men and poorest women are more likely to have higher-risk sex—that is sex with a non-marital or non-cohabiting partner.

   ii. Poorest men are more likely to pay for sex.

   iii. Poorer men and women are less likely to use condoms in higher-risk sex.

   iv. Poverty is associated with knowledge that a healthy-looking person can have HIV for women but not for men.

2. Employment is positively associated with high-risk sexual behaviours for women.

   i. Employed women are more likely to have higher-risk sex (non-marital partners) and to have multiple sexual partners.

   ii. Employed women are less likely to use condoms at last higher-risk sex.

   iii. Employed women are more knowledgeable about HIV/AIDS.

3. Education affects HIV/AIDS knowledge and condom use for both women and men but does not affect other high-risk sexual behaviour.

4. Media exposure has a positive effect on HIV/AIDS knowledge but also has a positive association with men's likelihood of having high-risk sex.

5. Type of place of residence, whether urban or rural, has no effect on HIV/AIDS knowledge or on sexual risk behaviour for both men and women.

6. Mobility has more influence on women than on men. Men who are not mobile are less likely to pay for sex, but otherwise mobility has no association with risky sex. For women, however, mobility is associated with knowledge of HIV/AIDS, use of condoms at last higher-risk sex, and having multiple sexual partners. Mobile women are more knowledgeable about

HIV/AIDS, are more likely to use condoms at last higher-risk sex, and are more likely to have multiple sexual partners.

7. Knowledge that a healthy-looking person can have HIV has an association with higher-risk sex for both men and women but not with other sexual risk behaviour. Perhaps unexpectedly, people who know that healthy-looking people can have HIV are more likely to have higher-risk sex (with a non-marital/non-cohabiting partner) than people who are not aware that healthy-looking people can have HIV/AIDS.

Policy Issues for Further Action

1. Policy initiatives should focus on the creation of income-generating activities among the poor.

2. Policy interventions to change sexual behaviour should be put in place with particular emphasis on the workplace.

3. Further research on the determinants of condom use (access, acceptability, and cost) is needed, particularly in poorer areas of the country.

4. Since the media play a role in increasing HIV/AIDS knowledge and influencing behaviour, efforts should be made to increase media coverage throughout Tanzania, with particular emphasis on rural areas. The policy should direct media programmes to all groups, including children, youth, and adults, with emphasis on rural areas. For media programmes to be most effective, they should be in local languages.

5. Increase investments in education for all Tanzanian youth. This may decrease early sexual debut and increase HIV/AIDS knowledge.

Limitations of the Study

1. DHS surveys do not collect data on household income or expenditure, which would be used to assess wealth status. The asset-based wealth index used in the study is the only proxy

indicator of household economic status. This index is not preferable in terms of comparability of wealth status due to differences in the level and distribution of wealth across the country.

2. DHS data are cross-sectional, and so cannot be used to determine causality. Therefore the conclusions about the relationship between dependent and independent variables in this study are limited to associations, not causal relationships.

3. Analysis is based on individual responses to survey questions. There are cases of misreporting, especially when dealing with issues related to sexual behaviour. For instance, women tend to under-report involvement in sexual activity, and men tend to over-report and exaggerate their involvement. Therefore, the findings may be biased due to the fact that men and women included in the sample misreport their number of sexual partners, age at first sex, condom use, and so forth.

However, despite these limitations there is reasonable confidence that the data used in this study are valid, since the information on the variables in the analysis is credible and reflects expectations.

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APPENDICES

Appendix Table 1. Univariate analysis for independent variables (weighted)

	Men		Women	
Categorical variables	**Number**	**Percent**	**Number**	**Percent**
Highest level of education				
No education	239	9.4	1,940	19.1
Primary education	1,710	67.7	6,553	64.6
Secondary education/higher education	578	22.9	1,646	16.3
Total	**2,527**	**100.0**	**10,139**	**100.0**
Wealth quintiles				
Poorest	401	15.9	1,681	16.6
Poorer	447	17.7	1,947	19.2
Middle	489	19.4	1,996	19.7
Richer	572	22.6	2,112	20.8
Richest	618	24.4	2,403	23.7
Total	**2,527**	**100.0**	**10,139**	**100.0**
Age groups				
15-19	645	25.5	2,172	21.4
20-29	756	29.9	3,577	35.3
30-39	651	25.8	2,712	26.8
40-49	475	18.8	1,678	16.5
Total	**2,527**	**100.0**	**10,139**	**100.0**
Type of place of residence				
Urban	693	27.4	2,892	28.5
Rural	1,834	72.6	7,247	71.5
Total	**2,527**	**100.0**	**10,139**	**100.0**
Employment status				
Unemployed	387	15.3	2,032	20.0
Employed	2,140	84.7	8,107	80.0
Total	**2,527**	**100.0**	**10,139**	**100.0**
Mobility in the last 12 months				
Not mobile	2,088	82.6	8,540	84.2
Mobile	439	17.4	1.599	15.8
Total	**2,527**	**100.0**	**10,139**	**100.0**
Age at first sexual intercourse				
No intercourse	483	19.1	1,403	13.8
8-15	452	17.9	2,790	27.5
16-20	1,288	50.9	4,986	49.2
21+	304	12.0	9,60	9.5
Total	**2,527**	**100.0**	**10,139**	**100.0**
Marital status				
Never married	1,046	41.4	2,540	25.1
Currently married	1,317	52.1	6,412	63.2
Formerly married	164	6.5	1,187	11.7
Total	**2,527**	**100.0**	**10,139**	**100.0**

Cont'd..

Appendix Table 1. Cont'd

	Men		Women	
Categorical variables	**Number**	**Percent**	**Number**	**Percent**
Frequency of listening to radio				
Not at all	378	14.9	2,868	28.3
Occasionally	650	25.7	3,452	34.0
Almost every day	1,499	59.3	3,819	37.7
Total	**2,527**	**100.0**	**10,139**	**100.0**
Frequency of watching television				
Not at all	1,049	41.5	6,563	64.7
Occasionally	978	38.7	2,168	21.4
Almost every day	500	19.8	1,408	13.9
Total	**2,527**	**100.0**	**10,139**	**100.0**
Sample size	**2,527**		**10,139**	

Appendix Table 2. Bivariate analysis

Categorical variables	Does not know if healthier person can have HIV/AIDS	Had higher-risk sex in last 12 months	Non-use of condoms at last higher-risk sex	2+ sexual partners in the past 12 months	Had paid sex in the last 12 months
MEN					
Highest level of education					
No education	30.3	39.6	61.4	31.2	5.6
Primary education	9.8	38.6	40.3	26.3	10.1
Secondary education/higher education	5.8	52.8	26.6	18.9	7.9
Wealth quintiles					
Poorest	21.9	38.2	53.6	23.2	9.9
Poorer	14.9	40.6	53.4	24.5	7.9
Middle	9.5	43.9	45.5	23.7	12.6
Richer	8.2	39.7	36.2	18.6	8.9
Richest	5.5	42.8	19.0	15.8	7.3
Age groups					
15-19	16.1	69.2	54.3	6.8	13.5
20-29	10.6	54.5	37.8	25.0	12.6
30-39	9.7	28.4	33.6	24.1	8.1
40-49	12.1	25.0	34.3	25.8	3.8
Type of place of residence					
Urban	5.3	41.8	24.8	19.5	8.7
Rural	13.5	40.2	45.2	27.8	9.4
Employment status					
Unemployed	14.6	64.2	40.2	12.0	8.5
Employed	11.1	39.7	39.3	26.5	9.3
Mobility in the last 12 months					
Not mobile	11.9	39.5	39.5	25.9	8.2
Mobile	8.6	48.5	39.0	24.2	14.1
Marital status					
Never married	12.3	76.2	42.6	18.8	15.4
Currently married	10.9	23.4	37.4	28.4	5.2
Formerly married	10.6	63.8	32.9	26.6	20.4
Age at first sexual intercourse					
8-15	12.9	44.9	40.9	27.6	10.1
16-20	10.7	46.1	38.9	28.6	10.2
21+	11.6	14.6	38.8	10.0	3.7
Frequency of listening to radio					
Not at all	25.2	38.3	50.0	24.3	7.3
Occasionally	10.4	45.4	42.9	29.8	11.9
Almost everyday	8.3	40.2	35.5	24.3	8.7
Frequency of watching television					
Not at all	17.8	34.8	52.4	24.7	7.6
Occasionally	7.5	44.5	36.2	26.9	11.2
Almost everyday	5.1	47.8	25.7	24.8	8.8

Cont'd..

Appendix Table 2. Cont'd

Categorical variables	Does not know if healthier person can have HIV/AIDS	Had higher-risk sex in last 12 months	Non-use of condoms at last higher-risk sex	2+ sexual partners in the past 12 months	Had paid sex in the last 12 months
WOMEN					
Highest level of education					
No education	22.3	13.5	75.9	3.5	-
Primary education	13.2	19.5	60.5	3.9	-
Secondary education/higher education	6.9	39.8	39.7	1.8	-
Wealth quintiles					
Poorest	21.9	18.3	74.9	5.3	-
Poorer	18.2	17.7	70.5	4.2	-
Middle	15.8	17.3	62.5	3.9	-
Richer	11.4	23.1	51.2	3.9	-
Richest	6.7	25.7	43.8	3.3	-
Age groups					
15-19	16.1	50.3	50.8	4.2	-
20-29	14.4	20.1	54.6	4.9	-
30-39	13.9	14.9	66.7	3.7	-
40-49	14.3	13.2	69.0	2.9	-
Type of place of residence					
Urban	8.4	26.1	49.0	3.7	-
Rural	16.7	18.5	62.9	4.2	-
Employment status					
Unemployed	18.2	28.3	42.9	2.1	-
Employed	13.9	19.4	61.5	4.4	-
Mobility in the last 12 months					
Not mobile	15.1	19.1	61.7	3.7	-
Mobile	10.9	28.9	44.5	6.1	-
Marital status					
Never married	13.2	80.6	53.2	4.9	-
Currently married	14.9	2.9	56.9	2.7	-
Formerly married	13.0	58.4	64.7	10.8	-
Age at first sexual intercourse					
8-15	15.3	24.5	62.1	5.1	-
16-20	13.9	19.6	55.6	3.9	-
21+	14.4	14.4	55.7	2.2	-
Frequency of listening to radio					
Not at all	22.6	21.1	68.1	4.1	-
Occasionally	13.3	21.7	58.2	4.5	-
Almost everyday	9.3	19.3	49.6	3.7	-
Frequency of watching television					
Not at all	17.4	16.9	66.3	3.8	-
Occasionally	10.6	29.5	52.5	5.9	-
Almost everyday	5.1	25.9	40.0	2.6	-

Note: Values in shaded cells are not significant at $P < 0.05$.