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Community factors shaping HIV-related stigma among young people in three African countries

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Abstract

Despite the high prevalence of HIV/AIDS that exists in many sub-Saharan African countries, very little is known of the prevalence and context of HIV-related stigma in these settings. This paper seeks to understand the community-level factors associated with HIV-related stigma among young people in three culturally contrasting African countries: Burkina Faso, Ghana and Zambia. Using nationally representative data on young people (15–24) from Burkina Faso, Ghana and Zambia, the analysis examines the economic, demographic and behavioral dimensions of community environments that shape HIV-related stigma among young people. The results demonstrate a clear influence of the community environment on shaping HIV-related stigma among young people. The elements of the community that were significantly associated with HIV-related stigma were the economic and behavioral aspects of the community environment, and there was no evidence of relationships between demographic patterns and HIV-related stigma. Behavioral change interventions must address HIV-related stigma in order to encourage behavior change, and must take into account the social, economic and cultural environments in which young people exist.

Keywords

stigma; youth; Africa; community

Introduction

In nearly 20 sub-Saharan African countries an estimated 5% or more of young women 15–24 are HIV positive, and more than one half of those newly infected with HIV today are between 15 and 24 years old, such that an estimated 11.8 million young people are now living with HIV/AIDS (Ainsworth & Over, 1997; UNICEF, 2002; UNAIDS, 1999). Much has been written of the stigma and discrimination that surrounds HIV/AIDS in sub-Saharan Africa, and the barriers this creates in the effective delivery of HIV testing and prevention efforts (Mhloyi, 1992; Muyinda, Seeley, Pickering, & Barton, 1997). However, there has been little consideration of the role of the wider community in shaping the attitudes of young people (Dias, Matos, & Goncalves, 2006; Muyinda et al., 1997). An understanding of the factors associated with attitudes toward HIV/AIDS is essential for the creation of community-based interventions that aim to dissolve stigmatizing perceptions (Parker & Aggleton, 2003). This paper seeks to understand how the community environment shapes the HIV/AIDS attitudes of among young people in three African countries: Burkina Faso, Ghana and Zambia.

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HIV/AIDS stigma and discrimination

Herzlick and Pierret (1993) note that the HIV/AIDS epidemic provides an example of how an illness can adopt a popular negative imagery, creating a sense of fear and discrimination among the population (Herzlick & Pierret, 1993; Muyinda et al., 1997). The association between HIV/AIDS and sex, the lengthy incubation period and the fatal nature of AIDS, have all acted to promote fear of the illness and discrimination toward those with HIV/AIDS (Muyinda et al., 1997). Previous studies have shown that even three decades into the global HIV/AIDS epidemic stigma surrounding HIV/AIDS remains highly prevalent in both developed and developing nations (Busza, 1999; CDCP, 2000; Herek, Capitanio, & Widaman, 2002; London & Robles, 2000; Taylor, 2001). HIV transmission is often closely associated with stigmatized behaviors (injecting drug use or multiple sexual partners) and marginalized sub-groups (men who have sex with men or commercial sex workers) and thus those with HIV are presumed to be associated with these behaviors or groups (Brooks, Etzel, Hinojos, Henry, & Perez, 2005; Letamo, 2003; Parker & Aggleton, 2003).

Studies from Botswana and Zambia found that stigma against those with HIV acts as a barrier to participation in voluntary counseling and testing programs (Letamo, 2003; Nyblade & Field, 2002). Mhloyi (1992) suggests that the fear of stigma following a positive HIV test may result in an individual under-utilizing health and social services, with the fear of social ostracism preventing HIV-positive individuals from disclosing their serostatus or accessing services. Despite the high prevalence of HIV/AIDS that exists in many sub-Saharan African countries, very little is known of the prevalence and context of HIV-related stigma in these settings. Several studies have examined levels of knowledge of HIV/AIDS and the presence of misconceptions surrounding HIV/AIDS, using this information to argue the basis for HIV-related stigma (Aggleton, 2000; Letamo, 2003). Other studies have described the role of discrimination and stigma in limiting the utilization of HIV services (Adebajo, Bamgbala, & Oyediran, 2003; Muyinda et al., 1997). Few studies, however, have described the determinants of HIV-related stigma in African settings. More specifically, there is an absence of studies that have examined how community environments shape attitudes toward HIV/AIDS. Castro and Farmer (2005) argue that the study of HIV-related stigma is often decontextualized from larger social processes, ignoring the social, cultural and economic environment in which stigma occurs. An understanding of the role of the community in influencing HIV/AIDS attitudes is essential for the development of community-based efforts to reduce HIV transmission, particularly among young people who are currently facing the burden of the HIV epidemic in sub-Saharan Africa.

Study settings

The three study settings represent differing economic and cultural environments, with differing impacts of the HIV/AIDS epidemic. Demographic and health indicators for Burkina Faso are poor; with an age structure in which 46% are under 14 years and an HIV prevalence rate of 4.2%. Levels of literacy are low, with only 17% of women and 37% of men aged over 15 years literate (CIA, 2005a). Compared to the other two study countries, demographic and health indicators for Ghana are favorable, with an age structure in which 38% of the population are aged under 14 years and an HIV prevalence of 3.1%. Levels of literacy are comparable to those found in Zambia, with 83% of males and 67% of females aged over 15 years literate (CIA, 2005b). Zambia has a young age structure, with 46% of the population aged less than 14 years, and the low life expectancy at birth of 35 years reflects the significant impact of the HIV/AIDS epidemic. Levels of literacy are higher in Zambia than the two other study countries, with 87% of males and 75% of females aged over 15 years literate (CIA, 2005c). Zambia stands out in terms of the impact of the HIV/AIDS epidemic, with 16.5% of the adult population currently infected with HIV, compared to 6.5 and 3.1% in Burkina Faso and Ghana, respectively.

Data and methods

The data used in this analysis are from the Demographic and Health Surveys (DHS) conducted in the three study countries (Burkina Faso, 2003; Ghana, 2003; and Zambia, 2001–2002). The three countries were selected from the 24 African countries that had DHS data available within the last five years and included a comparable module on HIV/AIDS knowledge, attitudes and practices. The DHS collect nationally representative samples of women of reproductive age (15–45) and men (15–59). Questionnaires are conducted with all eligible women and men in each sampled household, collecting data on fertility, family planning, and child health, in addition to demographic and socioeconomic data. The DHS collect data on the knowledge of transmission routes of HIV, attitudes toward condom use, and attitudes toward others with HIV/AIDS.

The samples for analysis are women and men aged 15–24. The sample sizes are Burkina Faso (males 1158, females 3620), Ghana (males 1478, females 1628) and Zambia (males 721, females 2805). The DHS data provide the individual, household and community-level data for the analysis. Community factors are created from the DHS data; this entailed averaging individual data to the Primary Sampling Unit (PSU) level (the PSU denotes the community in this analysis) producing derived community-level factors.

The dependent variable for analysis is a continuous variable measuring young people's attitudes toward those with HIV/AIDS. The index is based on four questions, asked in each of the three countries: "*If a relative of yours became sick with the virus that causes AIDS would you be willing to care for her or him in your own household?*" (1=no), "*Should youth age 12–14 be taught about using a condom to avoid AIDS?*" (1=no), "*If you knew that a shopkeeper or food seller had the AIDS virus would you buy food items from them?*" (1=no), and "*If a member of your family got infected wit the virus that causes AIDS would you want it to remain a secret or not?*" (1=yes). The index was created by the summation of the answers to these four questions, and thus ranges from 0 to 4, with 4 representing the least supportive attitudes.

A multilevel modeling technique was employed to account for the hierarchical structure of the data and to facilitate the estimation of community (PSU) level influences on HIV-related stigma (Goldstein, 1995). Separate multilevel linear models are fitted for males and females in each of the three countries using the MLwiN software package (CMM, 2007). The variables to be entered into the models are grouped into individual/household and community variables: the same independent variables are entered into all six models (Table 1). Three dimensions of the community were considered: economic, demographic and behavioral (Table 2). Only those community variables that were statistically significant in at least one country for one gender are presented in the final analysis. A Bonferroni procedure was used for multiple tests of significance (Simes, 1986). The analysis aimed to identify how the attitudes of young people were shaped by the behaviors of older people in their community. Community-level behavioral variables were thus created by aggregating individual responses from men and women aged over 35 in the community, and linking these by community identifier to the young people's data.

Results

For both genders in all countries, young people with higher levels of knowledge of transmission routes for HIV had more supportive attitudes toward those with HIV (see Tables 3 & 4). Older males (20–24) in Burkina Faso and Ghana reported more supportive attitudes toward HIV/AIDS; although older females (20–24) in Zambia reported less supportive attitudes. Only for females in Zambia was primary education associated with the reporting of supportive HIV/AIDS attitudes. Females in Zambia and males and females in Burkina Faso with higher or

secondary education reported more supportive HIV/AIDS attitudes. For females in all three countries, having a child was associated with the reporting of more supportive HIV/AIDS attitudes, although there was no similar effect identified for males. With the exception of females in Zambia, respondents who reported that they had heard of family planning also reported more supportive HIV/AIDS attitudes. For males in Burkina Faso and Ghana exposure to media was associated with the reporting of more supportive HIV/AIDS attitudes. For females in Burkina Faso, living in a larger household was associated with the reporting of less supportive HIV/AIDS attitudes. For males in Ghana and Zambia, being employed was associated with more supportive attitudes toward HIV/AIDS. In all settings, for both males and females, living in a wealthier household was associated with more supportive attitudes toward HIV/AIDS.

There were no community-level demographic characteristics significantly associated with the reporting of attitudes toward HIV/AIDS in any of the three countries. In all three countries, residency in a community in which men aged over 35 had less supportive HIV/AIDS attitudes was associated with the reporting of less supportive attitudes among young men. Similarly for women, residency in a community in which women aged over 35 reported less supportive attitudes toward HIV/AIDS was associated with the reporting of less supportive HIV/AIDS. Interestingly, for women in Burkina Faso residency in a community in which men aged over 35 had less supportive HIV/AIDS attitudes was also associated with the reporting of less supportive attitudes. In Ghana, a higher mean age at first sex for men aged over 35 in the community was associated with the reporting of more supportive HIV/AIDS attitudes for young males, while in Zambia residence in a community in which a higher percentage of men over 35 reported risky sexual behavior was associated with the reporting of less supportive HIV/AIDS attitudes among young males. A larger percentage of males employed in the community was associated with the reporting of more supportive HIV/AIDS attitudes among young women in Burkina Faso and young men in Zambia. Similarly, a larger percentage of women employed was associated with the reporting of more supportive HIV/AIDS attitudes among young women in Ghana. A greater mean number of years of education for males in the community was associated with the reporting of more supportive HIV/AIDS attitudes among young men in Ghana. A significant random intercept term remained for both genders in all countries after the inclusion of individual, household and community-level variables in the models, indicating that there remains unexplained community variation in the reporting of attitudes to HIV/AIDS.

Discussion

The results demonstrate a clear influence of the community environment on shaping HIV-related stigma among young people in the three African countries studied. In some settings, young people living in communities with higher levels of male education or in which a higher percentage of males or females were employed had significantly more supportive attitudes toward those with HIV. These results are consistent with previous studies that have demonstrated relationships between lower levels of economic development and HIV-related stigma (Chen, Choe, Chen, & Zhang, 2005; Malcom et al., 1998). Higher level of employment and education indicate not only greater economic development but also increased opportunities for individuals to accrue social capital. This process provides not only greater economic resources to individuals, but also provides exposure to new ways of thinking, new sources of information, and generally greater social-networking, resulting in the erosion of less supportive attitudes toward those with HIV.

In a study of contextual influences on HIV-related stigma in China, Chen et al. (2005) found that individuals living in communities in which they felt there was a high degree of risk-taking behavior were more likely to hold stigmatizing attitudes, suggesting that perception of high

risk leads to fear of infection. In the present study, for young males, residency in a community in which risky sexual behaviors and earlier sexual debuts were less prevalent in older males acted to reduce HIV-related stigma. Thus, there may be a protective effect of non-risky behaviors among older people on the attitudes held by younger people, suggesting that an opposite process to that identified in the China study; that the observance of non-risky behavior by young males acts to reduce their fear or misconceptions surrounding HIV. This relationship may be mediated by the presence of HIV education programs in the community, that allow young males to make the link between the behavior observed and the risk of HIV. However, data on the presence of HIV education at the community level was not available and further research into the effect of such programs on young people's attitudes toward HIV is warranted.

There is some evidence that young people who lived in communities in which older people had less supportive attitudes toward those with HIV were less likely to have supportive attitudes. People living in the same communities may share common beliefs and ideals, and these may be passed on through generations, thus perpetuating HIV-related stigma. The less supportive attitudes toward those with HIV held by both young and old people may be the product of exposure to a shared environment; this may include a lack of HIV services/education programs or the presence of marginalized sub-groups disproportionately affected by HIV (commercial sex workers). It is interesting, however, that this shared environment creates HIV-related stigma among both young and old people. Additionally, in the absence of HIV education, young people may be relying on their parents for HIV education, and may be forming their attitudes based on those of their elders. Thus any intolerant attitudes among parents and older people will act to influence HIV-related stigma among young people.

Young people with high level of knowledge of the transmission routes for HIV consistently had more supportive attitudes toward those with HIV, demonstrating the role that knowledge has in reducing the misconceptions that act to create fear and shape stigma. There is also evidence for the effects of social exposure, wealth and autonomy at the individual and household level in shaping HIV-related stigma. Older individuals, those with higher levels of education, and those exposed to media sources all had more supportive attitudes to those with HIV. These results likely reflect the increased social networking and exposure to information that come with age, participation in education and media exposure. Young women with a child and young men and women who had heard of family planning had more supportive HIV attitudes. This suggests a relationship between exposure to health services and information and the shaping of HIV attitudes; young women with a child are likely to have been exposed to health care services during pregnancy. Young people with access to more economic resources (employed males and those from wealthier households) also had more supportive HIV attitudes, likely a product of the greater opportunities for learning, social mixing and access to information that economic resources bring.

The three countries studied vary socially, economically and culturally, yet there was no clear demarcation of community effects across the three countries. For example, it may be expected that the effects of community economic indicators may be stronger in poorer countries (e.g., Burkina Faso), or that the effects of community sexual behavior may be more distinct in countries with a higher HIV prevalence (e.g., Zambia). There appears to be no clear association between country background characteristics and the community-level effects identified. However, more research is needed to understand not only how stigma is conceptualized in each of these settings but also to understand how the unique cultural and social characteristics of each country act to influence the mechanisms through which the community environment may shape young people's attitudes toward those with HIV/AIDS.

There are several limitations to this study. Firstly, the analysis of community influences on HIV-related stigma relies on community measures derived from individual-level data. While

this has been shown to be an effective proxy for community data (Blakely & Woodward, 2000), the continued presence of community- level variation demonstrates the need to collect data that directly measures some of the community forces on HIV-related stigma. Secondly, information on health facilities and ongoing educational and behavioral change activities in the community are missing from the analysis. The inability of the analysis to control for the health care environment in the community is reflected in the residual community-level variation in HIV-related stigma. The four questions which constitute the index of HIV/AIDS attitudes may be open to differing interpretations. The question on the need for serostatus to remain secret may reflect a desire for individual privacy or it may reflect a view that positive serostatus is shameful. The DHS remains the only comparable source of data on attitudes toward HIV/AIDS for many developing countries. In-depth, qualitative research is needed to understand both how these questions are interpreted by respondents and the dimensions of stigma in each of these settings.

Conclusion

This study has provided an important step toward our understanding of the ways in which HIV-related stigma among young people is influenced by community characteristics. The results clearly demonstrate that the individual–community interaction varies across the three study countries; further research is needed to examine the country-specific reasons for these variations. From a methodological perspective we need to place more emphasis on the collection of community-level data on the structural, behavioral and cultural dimensions of community environments that can reduce unexplained variations in HIV-related stigma. From a program perspective, HIV educational interventions should take into account the behavioral and economic community-level factors that currently shape young people's attitudes toward those with HIV. With the growing recognition of the burden of HIV/AIDS faced by young people in many parts of sub-Saharan Africa there is an increasing focus on interventions targeted toward youth. However, the results here demonstrate two important points; that interventions must address HIV-related stigma in order to encourage behavior change, and must take into account the social, economic and cultural environments in which young people exist.

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Table 1

Distribution of individual, household and community variables included in final analysis.

	Burkina Faso		Ghana		Zambia	
	Males *n*=1158	**Females *n*=3620**	**Males *n*=1478**	**Females *n*=1628**	**Males *n*=721**	**Females *n*=2850**
Individual						
Age						
15–19	57.3	55.6	58.5	51.8	59.1	53.4
20–24	42.7	44.4	41.5	48.2	40.9	46.6
Education						
None	51.3	65.1	11.7	19.1	3.7	10.1
Primary	24.7	18.3	23.6	22.7	59.6	56.7
Secondary/Higher	24.0	16.6	64.6	58.1	36.5	32.2
Currently employed	44.3	76.3	54.3	49.2	58.7	42.7
Number of household members	10 (1–34)	9.4 (1–33)	6.3 (1–40)	6.0 (0–40)	7.1 (1–23)	6.6 (1–26)
Has a child	6.7	42.2	7.3	31.5	6.4	51.6
Knowledge of AIDS*	3.7 (1–7)	1.4 (1–7)	3.8 (1–7)	6.5 (1–7)	3.9 (1–7)	3.8 (0–4)
Has heard of family planning methods	54.4	51.5	81.5	81.9	44.6	58.3
Household						
Ownership of assets**	3.5 (1–5)	3.2 (1–5)	2.9 (1–5)	2.9 (1–5)	2.1 (1–5)	2.2 (1–5)
Community Economic						
Percentage of men currently employed	0.63 (0–1)	0.66 (0–1)	0.67 (0–1)	0.68 (0–1)	0.58 (0–1)	0.61 (0–1)
Mean number of years education for men	2.6 (0–12)	2.9 (0–12)	7.1 (0–15)	7.5 (0–15)	6.9 (1–14)	6.9 (1–14)
Percentage of women currently employed	0.83 (0–1)	0.81 (0–1)	0.69 (0–1)	0.66 (0–1)	0.52 (0–1)	0.50 (0–1)
Mean number of years education for women	1.7 (0–9)	1.87 (0–9)	5.3 (0–13)	5.8 (0–13)	5.6 (0–13)	5.6 (0–13)
Behavioral						
Mean score on attitudes toward AIDS index for women aged over 35	0.7 (0–4)	0.7 (0–4)	1.8 (0–4)	1.7 (0–4)	0.8 (0–4)	0.89 (0–4)
Mean score on attitudes toward AIDS index for men aged over 35	1.2 (0.4)	1.2 (0–4)	1.4 (0–4)	1.4 (0–4)	0.7 (0–4)	0.6 (0–4)
Mean age at sex for men aged over 35	17.1 (13–22)	17.1 (13–22)	21.2 (14–32)	21.5 (14–32)	19.1 (12–31)	19.4 (12–31)

	Burkina Faso		Ghana		Zambia	
	Males *n*=1158	**Females *n*=3620**	**Males *n*=1478**	**Females *n*=1628**	**Males *n*=721**	**Females *n*=2850**
Percentage of men over 35 reporting risky sex	0.62 (0–1)	0.62 (0–1)	0.19 (0–1)	0.20 (0–1)	0.25 (0–1)	0.25 (0–1)

* Index ranges from 0 to 7 and includes; having heard of AIDS, knowing a healthy person can be HIV+, knowledge of mother to child transmission, knowing that abstinence, condom use, limiting number of sexual partners and monogamy are ways to prevent HIV.

** Asset score ranges from 0 to 5, and is composed of ownership of radio, clock, television, motor vehicle and bicycle.

Table 2

Operational definitions of community-level variables.

Community characteristic	Definition
Demographic	
Mean age at first birth for women	Mean age at first birth for women aged over 35 in the community
Mean age at marriage for women	Mean age at first marriage for women aged over 35 in the community
Mean number of children ever born	Mean number of children born to women aged over 35 in the community
Economic	
Percentage of men currently employed	Percentage of adult men currently employed in the community
Mean number of years of education for men	Mean number of years of education for adult men in the community
Percentage of women currently employed	Percentage of adult women currently employed in the community
Mean number of years education for women	Mean number of years of education for adult men in the community
Behavioral	
Mean age at sex for women	Mean age at first sex for all women aged over 35 in the community
Mean age at sex for men	Mean age at first sex for all men aged over 35 in the community
Sexual behavior of men	Percentage of men aged over 35 who report risky sex (sex with multiple partners with non-use of condoms) in the last 12 months
Sexual behavior of women	Percentage of women aged over 35 who report risky sex (sex with multiple partners with non-use of condoms) in the last 12 months
HIV/AIDS knowledge of men	Mean score on knowledge of HIV/AIDS index for all men aged over 35 in the community. Index ranges from 0 to 7 and includes; having heard of AIDS, knowing a healthy person can be HIV+, knowledge of mother to child transmission, knowing that abstinence, condom use, limiting number of sexual partners and monogamy are ways to prevent HIV
HIV/AIDS knowledge of women	Mean score on knowledge of HIV/AIDS index for all women aged over 35 in the community. Includes same elements as for men
HIV/AIDS attitudes of men	Mean score on attitudes toward others with HIV for men aged over 35 in the community. Index includes in Burkina Faso and Ghana: would care for a relative with HIV, does not think HIV+ status should be kept a secret, believes a HIV+ teacher should be allowed to teach, and believes children should be taught about condoms. In Zambia does not include believes a HIV+ teacher should be allowed to teach
HIV/AIDS attitudes of women	Mean score on attitudes toward others with HIV for women aged over 35 in the community. Includes same elements as for men

Note: All variables in the table were included in the analysis; those in italics were significant in at least one country and are thus presented in the final analysis.

Table 3

Multilevel linear regression model for attitudes towards HIV/AIDS among women aged 15–24 in three African countries.

	Burkina Faso	Ghana	Zambia
Individual			
Age 20–24	−0.001 (0.025)	−0.036 (0.053)	*0.101 (0.034)*
Education (None)			
Primary	0.039 (0.029)	−0.057 (0.073)	*−0.148 (0.050)*
Secondary/Higher	*−0.131 (0.039)*	0.093 (0.073)	*−0.215 (0.060)*
Index of knowledge of HIV	*−0.213 (0.078)*	*−0.148 (0.026)*	*−0.090 (0.036)*
Has a child	*−0.038 (0.013)*	*−0.234 (0.058)*	*−0.090 (0.035)*
Has heard of family planning methods	*−0.030 (0.013)*	*−0.059 (0.027)*	−0.026 (0.018)
Number of household members	*0.003 (0.001)*	*−0.075 (0.023)*	−0.005 (0.004)
Household			
Ownership of assets	*−0.050 (0.011)*	*0.095 (0.037)*	*−0.089 (0.021)*
Community Behavioral			
Mean score on attitudes toward AIDS index for women aged over 35	*0.317 (0.034)*	0.065 (0.039)	*0.204 (0.039)*
Mean score on attitudes toward AIDS index for men aged over 35	*0.034 (0.012)*	0.059 (0.131)	0.053 (0.028)
Economic			
Percentage of men currently employed	*−0.117 (0.035)*	*−0.378 (0.154)*	−0.031 (0.062)
Percentage of women currently employed	−0.048 (0.097)	0.005 (0.006)	−0.028 (0.067)
Random intercept term	*0.241 (0.012)*	*0.125 (0.011)*	*0.312 (0.017)*

Note: Figures are beta coefficient and (standard errors). Figures in italics are significant at the 5% level.

Table 4

Multilevel linear regression model for attitudes towards HIV/AIDS among men aged 15–24 in three African countries.

	Burkina Faso	Ghana	Zambia
Individual			
Age 20–24	*−0.121 (0.055)*	*−0.159 (0.056)*	−0.041 (0.065)
Education (None)			
Primary	−0.042 (0.071)	0.097 (0.057)	−0.088 (0.164)
Secondary/Higher	*−0.395 (0.092)*	−0.113 (0.101)	−0.309 (0.178)
Index of knowledge of HIV	*−0.089 (0.023)*	*−0.175 (0.059)*	*−0.042 (0.011)*
Exposure to media	*−0.201 (0.075)*	*−0.201 (0.088)*	0.099 (0.069)
Has heard of family planning methods	*−0.232 (0.059)*	*−0.183 (0.071)*	*−0.180 (0.067))*
Currently employed	0.016 (0.073)	*−0.141 (0.063)*	*−0.210 (0.075)*
Household			
Ownership of assets	*−0.056 (0.023)*	*−0.096 (0.034)*	*−0.084 (0.027)*
Community Behavioral			
Mean score on attitudes toward AIDS index for men aged over 35	*0.621 (0.035)*	*0.268 (0.046)*	*0.164 (0.060))*
Mean age at sex for men aged over 35	−0.022 (0.077)	*−0.012 (0.005)*	0.002 (0.004)
Percentage of men over 35 reporting risky sex	−0.002 (0.078)	0.080 (0.105)	*0.195 (0.088)*
Economic			
Mean number of years education for men	0.026 (0.018)	*−0.036 (0.013)*	0.014 (0.020)
Percentage of men currently employed	−0.130 (0.118)	−0.297 (0.172)	*−0.283 (0.140)*
Random intercept term	*0.251 (0.013)*	*0.317 (0.051)*	*0.129 (0.041)*

Note: Figures are beta coefficient and (standard errors). Figures in italics are significant at the 5% level.