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Determinants of perceived barriers to condom use among HIV-infected middle-aged and older African-American men

Christopher Lance Coleman, MPH PhD APRN-BC ACRN [Assistant Professor]

Center for Health Disparities Research, Center for Gerontologic Nursing Science, Graduate Program in Public Health Studies, Fellow of the Institute on Aging, Pennsylvania School of Nursing, Pennsylvania, USA

Katherine Ball, MPH [Postgraduate Student]

University of Pennsylvania School of Nursing, Philadelphia, Pennsylvania, USA

Abstract

Title—Determinants of perceived barriers to condom use among HIV-infected middle-aged and older African-American men

Aim—This paper is a report of a study to describe which determinants best predict perceived barriers to condom use during sexual encounters among human immunodeficiency virus human immunodeficiency virus-infected African-American men, middle-aged and older, living in the United States of America.

Background—While the global epidemic of acquired immunodeficiency syndrome infection is a well-documented phenomenon with national and international implications, prevalence statistics indicate that middle-aged and older African-American (non-Hispanic) men have not benefited from the prevention efforts implemented during the past two decades.

Method—A cross-sectional design using a survey and convenience sampling was adopted between September 2003 and July 2004 to recruit $n = 130$ middle-aged human immunodeficiency virus-infected African-American men from infectious disease clinics from the Mid-Atlantic region in the United States of America. The survey covered demographics, perceived health beliefs, spiritual well-being and symptoms related to human immunodeficiency virus.

Findings—Stepwise multiple regression showed having fewer human immunodeficiency virus-related symptoms associated with the human immunodeficiency virus ($P = 0.004$) and being single ($P = 0.05$) were perceived as barriers to condom use during sexual encounters ($R^2 = 0.029$, $P = 0.046$).

Conclusion—Tailored interventions are needed for African-American men, middle-aged and older, infected with human immunodeficiency virus nationally and worldwide that are designed to decrease perceived barriers in order to increase condom use.

Keywords

African-American men; acquired immunodeficiency syndrome knowledge; barriers to condoms; condoms; human immunodeficiency virus; nursing; self-efficacy

Correspondence to C.L. Coleman: e-mail: colemanc@nursing.upenn.edu

Author contributions CC was responsible for the study conception and design and CC and KB were responsible for the drafting of the manuscript. CC performed the data collection and data analysis. CC obtained funding and KB provided administrative support. CC and KB made critical revisions to the paper. CC provided statistical expertise. CC supervised the study. KB performed list searches.

Introduction

The global epidemic of human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS) infection is a well-documented phenomenon. With the development of highly active antiretroviral therapy, infection with the HIV has been transformed from a fatal diagnosis to a chronic illness. Consequently, rates of longer-term survivorship among HIV-infected individuals are increasing. In the United States of America (USA), AIDS prevalence statistics for minority men are staggering. In 2004, 44% of the 30,851 men diagnosed with AIDS were Black (non-Hispanic) men, while White men accounted for 34% of AIDS cases [Centers for Disease Control and Prevention (CDC) 2004]. In 2004, Black (non-Hispanic) men comprised 50% of the 32,948 new cases of HIV (CDC 2004). The most common modes of HIV transmission among Blacks (non-Hispanic) were men having sex with men (MSM), followed by heterosexual contact and injection drug use (CDC 2004). The Joint United Nations Programme on HIV/AIDS estimates that approximately 5–10% of global HIV infections occur among MSM (UNAIDS 2006). While estimates from this mode of exposure vary between countries, this is also the primary mode of exposure in the developing world (UNAIDS 2006).

Background

With the use of antiretroviral therapy, infection rates and mortality from AIDS are stabilizing in the USA. However, unlike younger adults, older adults have traditionally not been viewed as an at-risk population and have largely been excluded from public health campaigns and programmes targeting infection prevention and control. Consequently, the incidence and prevalence of HIV/AIDS are increasing among middle-aged and older populations in the USA (Williams & Donnelly 2002, Coleman 2003, Goodroad 2003, Savasta 2004).

In 2000, approximately 15% of all AIDS cases reported in the USA occurred in adults over 50; this figure represents a fivefold increase in the cumulative number of cases during the previous decade (CDC 2004). By December 2004, CDC reported that nearly 115,000 cases of individuals diagnosed with AIDS were aged 50 or older. Prevalence statistics about middle-aged and older Black (non-Hispanic) men indicate that they have not benefited from the HIV prevention efforts implemented during the past two decades. Since the early 1980s, Black (non-Hispanic) men have comprised most cases of AIDS in all age categories (young, middle-aged and older adults). Currently, epidemiological data show that the rate of AIDS diagnosis for Black (non-Hispanic) men is eight times the rate for White men (CDC 2004). With an estimated 39.5 million cases of HIV/AIDS worldwide (UNAIDS 2006), it is essential that we gain a richer understanding about the prevalence of risky sexual behaviours among men who are HIV-seropositive.

AIDS knowledge

Recent studies report that beliefs about risky sexual behaviour may be responsible for the increasing trend towards engaging in high-risk HIV behaviours observed in middle-aged and older adults. High-risk behaviours, including unprotected sex and intravenous drug use, appear to be related to an increase of HIV/AIDS cases among this segment of the US population. Despite engaging in these high risk behaviours, older adults are less likely to perceive themselves to be at risk for HIV infection and to adopt safer sexual behaviours (Goodroad 2003).

In a study of people aged 50 years and older conducted by Maes and Louis (2003), only 28% of participants agreed that AIDS is a problem in older people. Respondents in that study reported that they were not worried about getting AIDS, and felt their chance of getting it was very low. Furthermore, they believed that older people are at less risk for AIDS than younger

people. Because they do not perceive themselves to be at risk, older adults are much less likely to adopt safer sex strategies such as using condoms or to be tested for HIV infection (Lekas *et al.* 2005). Stall and Catania (1994) were among the first to document a lower prevalence of reported condom use among middle-aged and older sexually active persons who engaged in high-risk behaviours compared with younger persons.

A variety of factors, including social stereotypes about elder sexuality, limited information about HIV infection from healthcare providers and a general lack of AIDS knowledge are likely to be related to this lack of perceived risk among older adults. Despite the results of numerous studies indicating that older adults continue to express themselves sexually, older adults are often stereotyped as asexual beings; hence, healthcare providers frequently omit the sexual history during their assessment of older patients (Marcus 2002, Eldred & West 2005, Levy-Dweck 2005). A further study of primary care physicians indicated that providers were less likely to consider testing for HIV-1 antibodies in the over-50 age group, less likely to discuss symptoms suggestive of HIV infection, and to counsel older patients about HIV testing (Lekas *et al.* 2005).

Because middle-aged and older adults are not receiving information from healthcare providers or being targeted in prevention campaigns, they may be less knowledgeable about HIV transmission or disease progression to AIDS compared with their younger counterparts. Wright *et al.* (1998) reported that a third of their sample of older adults lacked knowledge about the factors associated with HIV transmission. These findings were supported by Maes and Louis (2003), who reported a decrease in AIDS knowledge correlated with an increase in age. Collectively, all information gained about the sexuality of older adults, their engagement in HIV risk behaviours, and their overall lack of perceived susceptibility of contracting HIV infection underscores that prevention efforts to promote safer sex strategies such as condom use must target this population.

In addition to lack of AIDS knowledge and perceived HIV risk other factors, barriers to condom use, condom use self-efficacy and religion/spirituality may also be more correlated with HIV prevention behaviours among middle-aged and older adults, particularly when they are a member of an ethnic minority group.

Perceived barriers to condom use

Barriers to condom use have been explored in a variety of vulnerable populations, including HIV-positive adults (Crepaz & Marks 2003, Reilly & Woo 2004); MSM (Peterson *et al.* 2003, Davidovich *et al.* 2004) and African-Americans (Thorburn *et al.* 2005). Within these various populations, researchers have identified many factors perceived by study participants as barriers to using condoms or engaging in safer sexual behaviours.

Antiretroviral therapy has made it possible to reduce viral loads to undetectable levels in some individuals, and there is some evidence that people who have knowledge of their own undetectable viral load and/or do not perceive HIV as a threat due to an increase in the availability of effective therapies may not use condoms consistently (Halkitis *et al.* 2004). Gagnon and Godin (2000) found that perceptions that HIV infection can be successfully treated lessened some men's concern over infection and their subsequent intentions to use condoms. A study conducted by Martin *et al.* (2001) with HIV-positive gay men reported that those with undetectable viral loads reported more episodes of unprotected anal intercourse at follow-up than did those with detectable viral loads. These findings are supported by the results of another study conducted in a similar population, which found that reduced concern about HIV stemming from advances in HIV treatment was associated with increased sexual risk-taking (Crawford *et al.* 2003).

Other factors that have been identified as perceived barriers to condom use include drug and/or alcohol use before or during sexual activity (Peterson *et al.* 2003, Timpson *et al.* 2003, Halkitis *et al.* 2004, Essien *et al.* 2005). Additional factors include beliefs that unprotected intercourse is more sensually exciting and gratifying and that condoms disturb the love-making process and reduce sexual pleasure (Peterson *et al.* 2003; Davidovich *et al.* 2004); sex on the spur of the moment (Peterson *et al.* 2003); lack of knowledge about effective use of condoms (Peterson *et al.* 2003); HIV conspiracy beliefs (Essien *et al.* 2002, Bogart & Thorburn 2005); and that unprotected intercourse enhances trust and intimacy in relationships (Davidovich *et al.* 2004).

Additional barriers to condom use and HIV prevention behaviours include the perceptions that known and/or trusted partners as well as monogamous relationships are 'safe', rendering condom use unnecessary, or that if a person has already had sex without a condom it is too late to protect against HIV, making future HIV prevention behaviours useless (Peterson *et al.* 2003, Thorburn *et al.* 2005).

Religiosity and HIV sexual risk

A growing body of evidence suggests that there may be a relationship between religiosity and sexual risk-taking behaviour. In their study of 34 heroin and cocaine users, Avants *et al.* (2003) found that strength of spiritual/religious faith was an independent predictor of sex-related HIV preventive behaviour. Similar findings from a study of 522 adolescents suggested that those with higher religiosity scores were more likely to have used a condom in the past 6 months and possessed more positive attitudes towards condom use (McCree *et al.* 2003).

Zaleski and Schiaffino (2000) surveyed 230 college students and found that greater extrinsic and intrinsic religiosity was associated with less sexual activity and condom use. Another study of 369 male college students also found that participants reporting a higher importance of religion were less likely to report using adequate contraception (Dodge *et al.* 2005). Collectively, these results suggest that in some populations religiosity may act as a barrier to condom use, therefore increasing HIV sexual risk-taking behaviours; in others, religiosity and spirituality may exert a protective effect against sexual risk-taking.

The study

Aim

The aim of this study was to describe which determinants best predict perceived barriers to condom use during sexual encounters among HIV-infected African-American men, middle-aged and older, living in the USA.

Methodology

A cross-sectional survey was administered to a sample of 130 HIV-infected middle-aged and older African-American men recruited using convenience sampling from two infectious disease clinics located within the Mid-Atlantic region of the USA. We recruited the study participants using flyers that were placed throughout both clinics. Participants were provided a private space within their respective sites to complete the survey. An honorarium of \$45.00 was paid for questionnaire completion.

Participants

A final sample of 130 HIV-infected middle-aged and older African-American men with a mean age of 46 years (range 40–65 years) meeting the inclusion criteria participated in the study. In order to participate, they were required to (1) give consent, (2) be 45 years and older, (3) be English-speaking and (4) be receiving care at their respective clinic site.

Data collection

As the aim of this study was to describe the determinants of perceived barriers to use condoms, a survey booklet containing the following measures was used. Demographics collected were: age, income, sexual orientation, religious preference, religious well-being, relationship status, educational level and employment status. Other data collection instruments were the Spiritual Well-Being Scale (SWB), The Revised Sign and Symptom Checklist for Persons with HIV Disease (SSC-HIVrev), Health Belief Scale and AIDS Knowledge Scale. Pattern of condom use during anal, vaginal and oral sex was also assessed using dichotomous responses (yes or no).

Spiritual Well-Being Scale

The SWB has two subscales – Religious Well-Being (RWB) and Existential Well-Being (EWB) – each of which has 10 items. Response choices range from 1 (strongly disagree) to 6 (strongly agree). The RWB and EWB subscale scores can range from 0 to 60. The RWB subscale assesses relationship with God, whereas the EWB subscale assesses meaning and purpose. Ellison (1983) reported Cronbach's alpha values of 0.96 for RWB and 0.86 for EWB as well as face and construct validity. Cronbach's alpha for the subscales for the present study were: RWB $\alpha = 0.76$ (mean 44.5 ± 7.3) and EWB $\alpha = 0.82$ (mean 43.0 ± 8.2). The range of scores for RWB was 29–60, and 17–60 for EWB.

The Revised Sign and Symptom Checklist for persons with HIV disease

The SSC-HIVrev (Holzemer *et al.* 2001) is a 72-item scale that measures HIV symptoms experienced 'today' using an intensity scale mild to severe. No symptoms are checked if the respondent is not experiencing the symptoms. Traditional reliability estimates are not calculated as the symptoms can change from day to day. For this study, Part I of the scale containing 45 items was used as the remaining items pertain to gynaecological HIV-related symptoms. The mean symptom score was 32 ± 28.34 indicating that more than 50% of the symptoms were endorsed by the sample.

Health Belief Scale

The Health Belief Scale (Steers *et al.* 1996) was used to assess perceived barriers to condom use. This is a 28-item scale with five subscales: perceived health beliefs, including perceived susceptibility, severity, barriers, self-efficacy and social support. Respondents use a Likert format ranging from 1 = strongly agree and 5 = strongly disagree. Construct and content validity and Cronbach's alpha coefficients are reported for the subscales as follows: $\alpha = 0.83$ perceived susceptibility, $\alpha = 0.82$ perceived severity, $\alpha = 0.83$ perceived barriers and $\alpha = 0.90$ perceived self-efficacy (Steers *et al.* 1996). 'Perceived barriers' was treated as a dependent variable. Cronbach's alpha were calculated only for perceived barriers ($\alpha = 0.60$, mean score 15.13 ± 4.0 , range 4–20); and for perceived self-efficacy ($\alpha = 0.60$, mean score 20.27 ± 4.4 , range 17–41).

AIDS Knowledge Scale

The AIDS Knowledge Scale (Kelly *et al.* 1989) assesses knowledge of AIDS risk behaviours using a dichotomous format of 40 true and false items. Test/retest reliability (Kuder–Richardson) ranges from 0.73 to 0.83 (Kelly *et al.* 1989). Construct and content validity have also been reported (Kelly *et al.* 1989). The reliability calculation for the present study was 0.75 (mean scale score 31.1 ± 4.6 , range 14–37).

Data collection—The study was conducted between September 2003 and July 2004. During the study, flyers were posted and a large bulletin board was used to recruit the participants for the study within the clinic sites. The participants received a full explanation about the study

from the Principal Investigators. After receiving written consent, the participants completed the study survey. The average time required to complete the survey was 45 minutes.

Ethical considerations

An Institutional Review Board approved the study at each site. Upon reviewing purpose of the study, procedures, risk and benefits, and receiving signatory consent, the study questionnaire was administered. They received an explanation of their rights and that they could withdraw from the study at any time without affecting their health care. All measures to maintain confidentiality were implemented.

Data analysis

The Statistical Package for the Social Sciences (12th version) (SPSS Inc., Chicago, IL, USA) was used for the analysis. Frequencies and percentages were used to describe sample characteristics. Bivariate correlations were calculated for study variables and a stepwise multiple regression was used to the correlates associated with perceived self-efficacy of condom use. Statistical significance was set at $P < 0.05$ and all tests were two-tailed.

Results

Demographics

The final sample was 130 HIV-infected African-American men, middle-aged and older, with a mean age of 46 years ranging from 40 to 65 years. The majority of the study participants were single 100 (77%), identified as MSM 79 (60%), and the remainder 51 (40%) reported being heterosexual. Most of the study participants reported having yearly incomes less than \$10,000, and receiving mental health treatment 42 (32%) during the past year. While 101 (78%) answered items about AIDS knowledge correctly, 40 (25%) reported being knowledgeable about HIV/AIDS did not prevent them from engaging in high-risk sexual behaviour. For example, 47 (38%) did not use condoms during oral sex, 31 (25%) reported not using condoms during vaginal intercourse, and 27 (22%) indicated not using condoms when they engaged in anal intercourse.

We performed a stepwise multiple regression, using listwise deletion. Bivariate correlations were calculated for the study variables prior to performing the regression analysis.

Correlational analysis

The correlational analysis suggests higher religious well-being scores were associated with lower scores of perceived barriers to condom use, and with sexual orientation ranging from $r = -0.173$ to -0.151 . AIDS knowledge scores were associated with religious well-being scores ($r = 0.305$). Higher HIV symptom scores were associated higher scores of perceived barriers to condom use and decreased scores of AIDS knowledge ranging from $r = -0.195$ to -0.247 . Being single was associated with perceived barriers to condom use compared with those who were non-married ($r = -0.167$) (Table 1).

The independent variables entered into the equation were: religious well-being, AIDS knowledge and HIV symptoms. Relationship status and sexual orientation were dichotomous variables and the dependent variable was perceived barriers towards condom use. For our study, no relationship encompassed not being married, or not having a primary/steady partner.

A multiple stepwise regression was performed, and listwise deletion was used to manage missing data. Five predictor variables were used to determine the best fitting model to represent the determinants of perceived barriers towards condom use. The following criteria were used to determine which step a variable would be included in the model; probability of F to enter

≤ 0.05 , and F to remove was ≥ 0.10 . Each variable was included in the model until it no longer met the criteria. A total of 129 cases were included in the final two models (Table 2).

The regression analysis showed that HIV symptoms explained 6% of the variance in perceived barriers to condom use. However, the final model was a better fitting model with HIV symptoms and relationship status explaining 9% of the variance in perceived barriers. The Studentized Residuals and the Leverage values were assessed for outliers. The plot produced for the Studentized Residual indicated no outliers, and that the points were reasonably evenly distributed above and below the regression line, and did not exceed 2.5 ranging from -2.45 to 2.5 . The Leverage value did not exceed 1.00 and ranged from 0.000 to 0.094. Tolerances were checked and were not too low (ranging from 0.956 to 1.0).

Discussion

Study limitations

Although acceptable, a cross-sectional survey design limits the generalizability of the study findings. Additionally, this design limits our ability to account for any temporal effects on the study variables, as well as mitigating against drawing conclusion based on causality. It is also essential to acknowledge that the honorarium may have introduced sampling bias in some respondents; however, the participants were representative of the other patient populations with respect to income at both study sites.

As the advertisement was seen by an unknown number of potential participants, we have no way of calculating the response rate, and no way of estimating the bias that using this self-selecting group may have introduced. However, amongst those who showed an interest, 93% of the 140 men inquired about the study, and 130 agreed to participate between the two study sites.

While we believe that our findings are compelling, they are not generalizable to all African-American HIV-seropositive middle-aged and older men. Additionally, formative work would have potentially provided rich data about the social norms related to condom use among this population, given that the predictors explained only 9% of the variance. Because the data are self-reported, more studies are needed to assess replicability. That said, our study has notable strengths. We have added to the knowledge about the determinants of perceived barriers to condom use for middle-aged and older African-American HIV-seropositive men.

Discussion of results

This study was conducted to determine the determinants of perceived barriers to condom use among HIV-seropositive African-American middle-aged and older male participants. The findings indicated that older participants who were single and experienced fewer HIV symptoms were likely to perceive barriers to condom use and thus engaged in unprotected sex, as 25% of the participants reported not using condoms during sexual encounters.

Additionally, our study has underscored the importance for nurses and other healthcare providers to examine the impact of relationship status among HIV-positive African-American middle-aged and older men as a potential risk factor for engaging in high-risk sexual behaviour. We suggest that single individuals may be at an increased risk due to the likelihood of engaging in sex with multiple partners. Given the current epidemiological profile of HIV/AIDS among African-American men, it is essential that we identify the factors associated with barriers to condom use, in particular for men who are HIV-seropositive. For our study participants, HIV symptoms and being single were found to be statistically significant predictors of perceived barriers to condom use.

The fewer HIV symptoms reported by participants were associated with their perceptions of perceived barriers to using condoms. We suggest that future research is needed to examine this finding in more depth because previous studies have reported that those with no HIV symptoms were less likely to use condoms (Remien *et al.* 2005, Elford 2006).

However, being single predicted how barriers to using condoms was perceived. Although this would require further study, we suggest that the single participants in the study may have lacked the social networks to support engaging in protective sexual behaviour. This might explain their perception of more barriers to using condoms during sexual encounters. Additionally, the single participants may have had anonymous partners whose HIV status was unknown, and so they may have not been inclined to disclose their HIV status. As the participants were all HIV-seropositive, and some reported not using condoms, it is critical that we intensify our empirical investigations to single individuals who are HIV-seropositive.

What is already known about this topic

- Condoms are effective in decreasing the likelihood of human immunodeficiency virus (HIV) transmission.
- HIV/acquired immunodeficiency syndrome (AIDS) has become a manageable chronic disease.
- The prevalence of HIV/AIDS is increasing among older adults.

What this paper adds

- Compared to those in relationships, single men were more likely to engage in risky sexual behaviours.
- Symptoms associated with HIV were related to perceived barriers to condom use.
- National and international sexual risk reduction programmes are needed for men who are positive on HIV testing and who are diagnosed with AIDS.

There are critical issues for nursing research that emerge from the data. Given that we have no nationally tested models of HIV intervention for HIV-infected middle-aged and older men, nursing research is clearly warranted to explore in more depth the factors associated with high-risk behaviour that are age-specific and culturally tailored. Second, we need a comprehensive understanding of social networking by single middle-aged and older African-American HIV-positive adults. Where do they get their social support? Are they marginalized from their community due to community norms? Are we using appropriate HIV prevention messages that specifically target this ageing population? It is critical that as nurse scientists and clinicians, we answer these questions as we ponder about the development of future prevention and intervention programmes. Having survived the devastation that was observed in the 1980s, it is very probable that most of these men have lost friends due to HIV/AIDS, as well as family relationships.

There is very little published data by nurse scientists about where HIV-seropositive African-American middle-aged and older men find social support to maintain low risk sexual behaviour. A better understanding of how these men congregate is essential for developing strategies that will be effective in reaching them. Knowing where and who their community is has the potential to allow assessment of whether marginalization has occurred, or if their social networks are not supportive of practising safe sex. As nurses, we are challenged to create programmes that are age-appropriate for this population. Because of the complexity of socially marketing HIV prevention messages that are appealing, it is essential to gain an in-depth understanding of the

social norms for middle-aged and older African-American men. This will require rigorous formative work as well as quantitative methods.

The published research about HIV and ageing well documents the risks and prevalence rates among middle-aged and older adults. In particular, it is empirically evident from an epidemiological perspective that African-American men continue to be disproportionately affected compared with other ethnic groups. Our findings also underscored that the African-American men who participated in the study perceived barriers to the use of condoms, particularly those who were not in a monogamous relationship.

Conclusion

We recommend that nurse scientists examine the prevalence of perceived barriers to condom use among HIV-infected populations who are middle-aged and older. Although the precursors of non-condom use are complex, more studies are critical as the prevalence of HIV/AIDS is increasing among older adults in particular ethnic minorities. The development of age-appropriate interventions by nurses is needed.

In the domain of nursing research, we have much more to learn about ageing populations who are HIV-infected. Knowing the antecedents to high-risk sexual behaviour among middle-aged and older adults will guide the work of future nurse investigators developing interventions for this population that is often underneath the radar. Additionally, clear international relevance and implications emerge from the study. Similar to the USA, the prevalence of HIV-infected men globally is alarming, particularly among MSM. Developing worldwide interventions to decrease the transmission rate of HIV among men is paramount. Similar to the USA, stigma experienced by HIV-infected men is palpable.

In the USA and other countries, we suggest that stigma is likely to be associated with non-disclosure of HIV status and risky sexual behaviour. Therefore, it is essential that considerable strategies are initiated by nurse scientists nationally and internationally to reduce high-risk sexual behaviours among HIV-positive men. The UNAIDS (2006) report is a call for the world to develop intellectual partnerships to curb the stigma experienced by HIV-positive MSM.

Studies report that, due to stigma, these men may also have sex with women for fear of being identified. Given that the prevalence of HIV infection worldwide among women is an estimated 17.7 million (UNAIDS 2006), further research which provides a sound framework for nurses to deliver care to this population is critical. A research agenda that focuses on decreasing stigma and increasing awareness and disclosure to sexual partners is clearly warranted. Research programmes that can effectively help HIV-positive men to acquire competencies that result in decreased stigma and increased disclosure of HIV status to their sexual partners have the potential to reduce transmission of HIV for both men and women worldwide.

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Table 1
Intercorrelations among independent variables of perceived barriers, religious well-being, acquired immunodeficiency syndrome (AIDS) knowledge, human immunodeficiency virus (HIV) symptoms, relationship status and sexual orientation (*n* = 130)

	Perceived barriers	Religious well-being	AIDS knowledge	HIV symptoms	Relationship status [†]	Sexual orientation [‡]
Perceived barriers	1.00					
Religious well-being	0.151 *	1.00				
AIDS knowledge	0.123	0.305 **	1.00			
HIV symptoms	-0.247 **	-0.077	-0.195 *	1.00		
Relationship status [†]	-0.167 *	-0.108	-0.077	-0.103	1.00	
Sexual orientation [‡]	-0.110	-0.173 *	-0.110	0.195 *	0.077	1.00

[†] Single men were coded as 1 and non-single as 0.

[‡] Heterosexuals were coded as 1 and non-heterosexuals as 0.

* ≤0.05.

** ≤0.01.

Stepwise multiple regression analysis of perceived self barriers as a function of demographic variables, religious well-being, acquired immunodeficiency syndrome (AIDS) knowledge, human immunodeficiency virus (HIV) symptoms, relationship status and sexual orientation (*n* = 129)

Table 2

Variable	<i>B</i> (95% CI)	<i>B</i> (SE)	β	<i>P</i>	<i>R</i> ²
Step 1 [†] (HIV symptoms)	-0.029 (-0.049 to -0.009)	0.010	-0.249 [*]	0.004	0.061
Step 2 (relationship) [‡]	-1.460 (-2.89 to -0.026)	0.725	-0.171 [*]	0.046	0.090

[†] Higher scores indicate more HIV symptoms.

[‡] 0 = no relationship; 1 = relationship.

^{*} ≤0.05.