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## Protective Factors and HIV Risk Behavior among South African Men

G Anita Heeren<sup>1</sup>, Larry D. Icard<sup>2</sup>, Ann O’Leary<sup>3</sup>, John B. Jemmott III<sup>1,4</sup>, Zolani Ngwane<sup>5</sup>, and Xoliswa Mtose<sup>6</sup>

<sup>1</sup>University of Pennsylvania, Perelman School of Medicine, Department of Psychiatry, Philadelphia PA, United States

<sup>2</sup>Temple University, College of Health Professions and Social Work, Philadelphia PA

<sup>3</sup>Centers for Disease Control and Prevention, Atlanta GA

<sup>4</sup>University of Pennsylvania, Annenberg School for Communication, Philadelphia PA, United States

<sup>5</sup>Haverford College, Department of Anthropology, Haverford PA

<sup>6</sup>University of Fort Hare, Faculty of Education, East London, South Africa

### Abstract

The primary mode of HIV transmission in South Africa is heterosexual sexual behavior. HIV prevention research specifically focusing on men in South Africa is limited. We assessed self-reported HIV risk behaviors in 1,181 men ages 18 to 45 years in randomly selected neighborhoods in Eastern Cape Province, South Africa. Older men were less likely to report having multiple partners. Religiosity was a protective factor for condom use and unprotected sex with steady partners. Discussing using condoms was a protective factor for condom use and unprotected sex with both steady and casual partners. Having a child was associated with decreased condom use with steady partners and employment was associated with decreased condom use with casual partners. The findings suggest the need for HIV risk-reduction behavioral interventions tailored for South African men with regard to age, religiosity, and types of sexual partners. Implications for behavioral interventions to reduce HIV risk are discussed.

### Keywords

South Africa; men; protective factors; condom use; human immunodeficiency virus

## INTRODUCTION

South Africa has the highest number of people living with HIV in the world. According to national estimates, the proportion of people infected with HIV increased from 10.6% in

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Address correspondence to Dr. John B. Jemmott III, University of Pennsylvania, Perelman School of Medicine, Department of Psychiatry, 3535 Market Street, Suite 520, Philadelphia PA 19104-3309 United States. Telephone: 215-573-9366. FAX: 215-573-9303. jjemmott@asc.upenn.edu.

2008 to 12.3% in 2012.<sup>1</sup> HIV prevalence among South African men peaked at 24.2% between ages 35 and 39 years.<sup>1</sup> Although the primary mode of HIV transmission in South Africa is heterosexual sexual behavior,<sup>2</sup> HIV prevention research focusing on South African men is limited.<sup>3</sup> Considerable research has examined sexual risk factors related to the transmission of HIV, but less research has been conducted on factors associated with reduced risk of transmission. Risk factors are conditions or characteristics that increase the likelihood of a disease or adverse circumstances, whereas protective factors or more precisely direct protective factors<sup>4</sup> are conditions or characteristics that lessen the likelihood of a disease or adverse circumstances. In the context of HIV/AIDS prevention, risk factors increase the likelihood of exposure to HIV, while protective factors decrease, moderate, or mediate the likelihood of exposure.<sup>4-6</sup>

Research on protective factors has largely focused on youth development, antisocial behavior, and resilience.<sup>7-10</sup> Despite the large number of studies on factors associated with the risk of exposure to HIV, fewer studies have focused on understanding correlates of reduced exposure to HIV. A study of inner city sexually active African American and Latino male and female adolescents found dispositional optimism to be a protective factor in resisting exposure to HIV.<sup>11</sup> Another study reported the protective benefits of living with mothers and supportive families for high-risk African American female adolescents being less likely to report sex with a non-steady partner or having unprotected sex with a steady partner.<sup>10</sup> Completion of a high school education was found to be a protective factor related to non exposure to HIV among South African women.<sup>12</sup> A longitudinal study reported delayed onset of drunkenness as a protective factor for sexual risk behavior among adolescents in a metropolitan area in the U.S.<sup>13</sup> Focusing on communication as a protective factor, a life-skills HIV/AIDS prevention program for Mexican elementary school students reported enhancing fourth grade students' intentions, attitudes, and self-efficacy to talk with adults about sexually difficult topics<sup>14</sup> and a prospective study tied parental communication to reduced unprotected sex among African American and Latino adolescents.<sup>15</sup> A review of epidemiological, risk and protective factors, and intervention studies on young men who have sex with men concluded with the recommendation for future research on factors that protect and promote.<sup>16</sup>

A large nationally representative survey in South Africa found that over 60% of men reported not using a condom the last time they had sex with a woman who was not a spouse or cohabiting partner in the past year.<sup>17</sup> A study in the Eastern Cape Province found that only 47.1% of men used a condom the last time they had sex<sup>18</sup> and only 15.4% reported using condoms consistently and correctly in the past year.<sup>18</sup> Several studies have revealed high rates of multiple partnerships in South African men,<sup>19</sup> including men in Eastern Cape Province.<sup>18,20</sup>

Several variables may be protective factors with regard to these sexual risk behaviors in South African men. For instance, younger age was a protective factor for condom use in a household survey of South Africans ages 18 years and older in Free State Province. Younger participants were more likely to report using condoms.<sup>21</sup> However, older age was a protective factor for multiple partnerships in a community survey of people age 18 years and older in alcohol-serving establishments in Cape Town, South Africa.<sup>22</sup> Older men were less

likely to report having both primary and outside partners than were younger men. This pattern of higher rates of condom use and multiple partnerships in younger men compared with older men has been consistently observed in the South Africa National HIV Prevalence Surveys.<sup>19</sup>

Studies on religion and health generally indicate that religiosity has a positive effect on physical health.<sup>23</sup> Although studies have also linked religiosity to HIV protective behaviors,<sup>24</sup> most of the research on religiosity and sexual behavior has focused on youth and women,<sup>25,26</sup> and few studies have focused on adult men. One study found that religiosity was associated with having fewer extramarital sexual partners among men in Ghana.<sup>27</sup> Communication about condom use is also emphasized as an important factor for reducing exposure to HIV and several studies have tied such communication to increased condom use in men.<sup>28–33</sup> Although public health researchers have long recognized the importance of fatherhood in the promotion of optimum health and the reduction of health problems among men,<sup>34</sup> little is known about the relation between having a child and HIV sexual risk behavior among men. This study was guided by the hypothesis that older age, religiosity, having children, and communication about condoms are associated with South African men's sexual risk behaviors.

## METHODS

The participants were residents of townships and a semi-rural area near East London in Eastern Cape Province, South Africa who completed a baseline questionnaire as part of a neighborhood-based health-promotion intervention trial. As reported elsewhere, participants enrolled in the trial during a 25-month period beginning in November 2007.<sup>35,36</sup> We identified 206 neighborhoods defined as geographical clusters tied to census data in the catchment area and randomly selected 44 for the trial. Before recruiting from a neighborhood, research team members met with community leaders to enlist their support. We then held a meeting to inform men about the study and advertised it using posters and other materials. We employed a recruitment strategy designed to reach a diversity of men who fit eligibility criteria. We used venue-based recruitment, seeking participants in a variety of venues where recruiters would be likely to encounter men.

IsiXhosa-speaking research staff recruited men at different hours of the day and days of the week at a variety of venues in the selected neighborhoods (e.g., streets, taxi ranks, marketplaces, and shebeens [people's homes that are dedicated to alcohol sale and drinking]). Taxis are a commonly used mode of transportation by the residents of the area of the study, an essential mode of transportation because there is no public transportation and most people do not own vehicles. Marketplaces in the neighborhoods are where a diversity of people, including men, shop. Shebeens are venues where high-risk men may be found. Recruiters informed potential participants about the study, obtained their consent to screen them, and conducted a brief screening interview to determine their eligibility and willingness to participate. Besides the eligibility criteria, the screening interview included questions about where the men lived and their age, employment status, and marital status to permit comparison of the participants with eligible men who declined to participate.

Men were eligible to participate if they were between the ages of 18 and 45 years, lived in selected neighborhoods, reported engaging in vaginal intercourse in the previous 90 days, and had a photo ID or were willing to have their picture taken for identification purposes. Men were excluded if they were mentally impaired or had plans to relocate beyond a reasonable distance from the study site within the next 15 months. Transportation was provided to participants to and from the study site. Institutional Review Board #8 at the University of Pennsylvania, which was the designated IRB under the federal wide assurance of the University of Pennsylvania and the University of Fort Hare, reviewed and approved the study.

## Measures

Eligible men met with research assistants in a private room in a research facility on a college campus. Data were collected using audio computer-assisted self-interviewing (ACASI), which provided both audio and video presentation of the questions and response options on a laptop computer. The research assistants instructed the participants in how to use the ACASI and were available in the room to answer participants' questions or provide other assistance they might need in using ACASI. The measures, which had been pilot tested with over 250 men, were available in isiXhosa (following translation and back translation from English), English, and a combination of isiXhosa (audio) and English (visual).

We assessed consistent condom use during vaginal intercourse in the past 3 months separately for steady partners (a woman with whom they had a romantic relationship for at least 6 months), and casual partners. Men who reported at least 1 vaginal intercourse act in the past 3 months and whose number of reported condom-protected vaginal intercourse acts equaled their number of vaginal intercourse acts were coded as practicing consistent condom use. Men who reported at least 1 vaginal intercourse act and whose reported number of condom-protected vaginal intercourse acts was less than their number of vaginal intercourse acts were coded as not practicing consistent condom use. We assessed unprotected vaginal intercourse (0=did not have vaginal intercourse or always used condoms, 1=did have vaginal intercourse without using a condom) in the past 3 months separately for steady and casual partners. In addition, we assessed multiple vaginal intercourse partners in the past 3 months (0=reported having 0 or 1 partner, 1=reported having 2 or more partners regardless of type of partner).

Seven items measured religiosity, for example, "About how often do you go to church, worship services, or other religious activities?" and "How often do you read the Bible or other religious works?" Responses ranged from 1 (never) to 5 (once a week or more) for frequencies of these activities. The mean of these seven items was used to create the variable religiosity ( $\alpha = 0.88$ ). Discussing condom use with steady partners and casual partners in the past 3 months was measured separately with binary variables (1=no, 2=yes). We also assessed sociodemographic variables, including age, employment status, and having at least one child.

## Data Analysis

Descriptive statistics, including means, standard deviations, and percentages were used to describe the sociodemographic characteristics of the sample. Among men reporting both steady partners and casual partners, generalized linear models with logit link were used to test within-individual differences in the binary variables consistent condom use and unprotected sex with steady partners compared with casual partners. Pearson product-moment correlations were used to analyze zero-order associations between potential protective factors and HIV sexual-risk behaviors. Multiple logistic regression was used to analyze the binary outcomes consistent condom use and unprotected sex. Separate analyses were performed regarding sexual behavior with steady partners and casual partners. If a man reported both types of partners, he was included in both analyses. The models included age, religiosity, having a child, being employed, and discussing condom use with the specific type of partners. Multiple logistic regression was also used to analyze the binary outcome, reporting multiple vaginal sex partners. The model included age, religiosity, having a child, and being employed. Odds ratios and corresponding 95% confidence intervals are reported for the logistic regression analyses. The  $p < .05$ , two-tailed statistical significance criterion was employed. All analyses were completed using SAS V9.2

## RESULTS

Of the 1,317 eligible men, 1,181 (89.7%) were enrolled in the study and attended baseline data collection. The age of the men ranged from 18 to 45 years with a mean age of 26.7. As shown in Table I, 43.9% had completed high school and 24.6% were employed. About 5.8% were married, 40.6% had children, 80.0% reported having a steady partner, 51.1% reported having a casual partner, and 41.7% reported having multiple partners in the past three months.

Of the men who had a steady partner, 88.0% reported having sex with a steady partner in the past 3 months, 32.9% reported using condoms consistently on those occasions, 59.1% had unprotected sex with steady partners, and 70.7% reported discussing condom use with a steady partner. Of the men who had a casual partner, 79.6% reported having sex with a casual partner in the past 3 months, 52.7% reported consistent condom use on those occasions, 37.6% had unprotected sex with casual partners, and 64.6% reported discussing condom use with a casual partner. Among men who reported both steady partners and casual partners ( $N = 443$ ), the odds of consistent condom use were lower with steady partners compared with casual partners (odds ratio [OR] = 0.26, 95% confidence interval [CI]: 0.20, 0.34) and the odds of unprotected sex were higher with steady partners compared with casual partners (OR = 3.44, 95% CI: 2.70, 4.38). In contrast, the odds of discussing condom use did not vary significantly with steady compared with casual partners (OR = 1.13, 95% CI: 0.88, 1.45).

As the Pearson product-moment correlations in Table II reveal, age was negatively associated with reporting sex with multiple partners in the past 3 months. Higher scores on religiosity were associated with more consistent condom use and less unprotected sex with steady partners and not having multiple partners. Men who reported having a child were less likely to report having multiple partners. Being employed was associated with less

consistent condom use with casual partners. Discussing condom use with partners was associated with more consistent condom use and less unprotected sex with both steady partners and casual partners.

Table III presents results of the multiple logistic regression analyses on consistent condom use and unprotected sex by type of partner. Religiosity and discussing condom use with partner were associated with more consistent condom use with steady partners, whereas having a child was associated with less consistent condom use with such partners. Age and being employed were not significantly related to consistent condom use with steady partners. Religiosity and discussing condom use with partner were associated with lower odds of unprotected sex with steady partners, whereas age, having a child, and being employed were unrelated to unprotected sex with steady partners.

Being employed was associated with lower odds of consistent condom use with casual partners, whereas discussing condom use was associated with a higher odds of consistent condom use with such partners. Discussing condom use was associated with lower odds of unprotected sex with casual partners. No other variables were significantly related to consistent condom use or unprotected sex with casual partners.

As shown in Table IV, age was the only variable associated with having multiple sexual partners in the multiple logistic regression analysis. The older the man, the lower the odds of having multiple sexual partners in the past 3 months.

## DISCUSSION

The results indicate that some of our *a priori* hypothesized correlates of sexual risk behavior were indeed associated with sexual outcomes. Greater religiosity was associated with more consistent condom use and less unprotected sex with steady partners, although not with casual partners. Religious beliefs tend to emphasize altruism; accordingly, future research might explore whether altruistic motives are likely to be stronger for steady partners, whom the man presumably cares about more than casual partners. Although, consistent with a study in Ghana,<sup>27</sup> we also found a bivariate correlation indicating that religiosity was associated with a reduced likelihood of reporting multiple sexual partners, this relation was not significant in the multiple logistic regression analyses that included the predictors simultaneously. As we hypothesized, men who discussed condom use, both with steady and casual partners, were more likely to report consistently using condoms and less likely to report having unprotected sex with partners of each type. This pattern of results is consistent with findings from a study in Zambia that found that communication about condoms was associated with safer sexual behavior in couples.<sup>33</sup> Similarly, a study in a township near Cape Town, South Africa also found that discussing condom use with sexual partners was associated with increased condom use.<sup>37</sup>

Not all results were in the predicted direction. Having a child was associated with less condom use with steady partners. Future research might explore whether this occurred because of less concern for contraceptive reasons in such a relationship. While all of the variables we examined were hypothesized “protective” factors, we found that employment



was actually associated with *less* condom use with casual partners. Viewing employment as a proxy for socioeconomic status, this finding is in accord with a large nationally representative survey in South Africa linking higher levels of education in men to a reduced likelihood of condom use with a woman who was not a spouse or cohabiting partner.<sup>17</sup> The findings for age were mixed. Consistent with a study in Cape Town, older age was associated with lower odds of having multiple partners.<sup>22</sup> However, contrary to a study in Free State Province,<sup>21</sup> younger participants were not more likely to report using condoms.

Overall, consistent condom use was low in this study irrespective of type of sexual partner, but consistent condom use was especially low with steady partners. Other surveys conducted in sub-Saharan Africa have reported lower rates of condom use with steady partners as opposed to casual partners.<sup>22,38</sup> We found that only 52.7% of men with casual partners reported always using condoms with their casual partners in the past three months. Similarly, a study in Cape Town found that only 58.5% of men who had both primary and outside partners reported always using condoms with their outside partners in the past 30 days.<sup>22</sup>

The limitations of this study should be considered. The sample consisted of South African men in the Eastern Cape who volunteered for a health promotion trial; accordingly, our findings may not be generalizable to all South African men. The study used a cross-sectional design, which limits our ability to establish temporal precedence and draw causal inferences. The use of self-reports of behavior, which may be subject to social desirability response bias, is also a limitation, though the use of ACASI may have to some degree mitigated this bias.

## Conclusion

In conclusion, this is perhaps the first study to examine protective factors associated HIV sexual risk behavior specifically in a large sample of men who have sex with women in a generalized heterosexual HIV epidemic. Developing effective strategies to reduce HIV infections requires understanding factors that place individuals at risk and understanding factors associated with a low probability of exposure to HIV. The candidates for protective effects against HIV risk behaviors cover a very broad range of variables (e.g., biological, psychological, family, peer, and community). In agreement with the literature at this conceptual stage of HIV research on protective factors more systematic studies on protective factors against exposure to HIV are needed. Further distinctions among the range of potential protective factors are necessary for advancing research to detect causal effects and advance practice.

Understanding the dynamics of condom use behavior among men requires a better understanding of the dynamics of their sexual relationships and the context within which condom use is (or is not) negotiated. Interventions must include content regarding steady and casual partners separately, with attention to those factors that are likely to promote safer sexual behavior with each partner type. A focus on positive, protective factors in the context of sexual health or any other behavioral arena can assist, not only with intervention development to improve functioning in that arena, but also with the identification of life experiences that promote overall health and well-being. So-called “deficit models” can also

be helpful in this regard, but a positive frame may at times help to illuminate factors that would otherwise be elusive.

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**Table I**

## Sociodemographic Characteristics of Men, Eastern Cape Province, South Africa, 2007–2009

Characteristics	
Mean (SD) Age	26.7 (6.64)
No. (%) Completed High School	514/1181 (43.9%)
No. (%) Employed	290/1181 (24.6%)
No. (%) Married	68/1181 (5.8%)
No. (%) Have a child	480/1181 (40.6%)
Mean (SD) Religiosity	3.29 (1.12)
No. (%) Steady partner in past 3 months	945/1181 (80.0%)
No. (%) Casual partner in past 3 months	602/1181 (51.0%)
No. (%) Having multiple sexual partners in past 3 months	492/1180 (41.7%)
No. (%) Vaginal sex with steady partners in past 3 months	832/945 (88.0%)
No. (%) Vaginal sex with casual partners in past 3 months	479/602 (79.6%)
No. (%) Consistent condom use with steady partners in past 3 months	274/832 (32.9%)
No. (%) Consistent condom use with casual partners in past 3 months	252/478 (52.7%)
No. (%) Unprotected sex with steady partners in past 3 months	558/945 (59.1%)
No. (%) Unprotected sex with casual partners in past 3 months	226/601 (37.6%)
No. (%) Discussed using condoms with steady partner in the past 3 months	668/945 (70.7%)
No. (%) Discussed using condoms with casual partner in the past 3 months	388/601 (64.6%)

Behaviors in concert with steady partners are limited to participants who had a steady partner in the past 3 months. Behaviors with casual partners are limited to participants who had a casual partner in the past 3 months.

**Table II**  
 Pearson product-moment correlations (significance probabilities) between potential protective factors and HIV sexual-risk behaviors.

Potential protective factor	HIV sexual-risk behaviors				
	Consistent condom use with steady partner	Unprotected sex with steady partner	Consistent condom use with casual partner	Unprotected condom use with casual partner	Multiple sexual partners
Age	0.049 (.156)	-0.037 (.250)	-0.069 (.130)	0.024 (.557)	-0.135 (<.0001)
Religiosity	0.156 (<.0001)	-0.141 (<.0001)	0.046 (.319)	-0.034 (.406)	-0.063 (.030)
Have child	-0.041 (.238)	0.020 (.549)	-0.054 (.241)	0.047 (.252)	-0.059 (.044)
Employed	-0.003 (.928)	-0.022 (.490)	-0.099 (.030)	0.060 (.142)	-0.010 (.732)
Discussed condom use with steady partner	0.148 (<.0001)	-0.101 (.002)			
Discussed condom use with casual partner			0.184 (<.0001)	-0.121 (.003)	

Behaviors in concert with steady partners are limited to participants who had a steady partner in the past 3 months. Behaviors with casual partners are limited to participants who had a casual partner in the past 3 months.

**Table III**

Multiple logistic-regression-analysis odds ratios (OR) and 95% confidence intervals (CI) for relations of potential protective factors to consistent condom use and unprotected sex in the past 3 months, by type of partner (steady or casual)

Potential protective factor	Consistent condom use		Unprotected sex	
	OR (95% CI)	P value	OR (95% CI)	P value
Steady partners				
Age	1.02 (1.00, 1.05)	.092	0.99 (0.97, 1.01)	.352
Religiosity	1.32 (1.15, 1.52)	<.0001	0.79 (0.70, 0.89)	.001
Have child	0.68 (0.48, 0.97)	.034	1.23 (0.90, 1.67)	.186
Employed	0.92 (0.64, 1.30)	.624	0.95 (0.70, 1.29)	.725
Discussed condom use partner	1.94 (1.36, 2.77)	.0002	0.68 (0.51, 0.92)	.012
Casual partners				
Age	0.98 (0.95, 1.02)	.287	1.00 (0.97, 1.03)	.960
Religiosity	1.07 (0.90, 1.28)	.440	0.96 (0.82, 1.13)	.618
Have child	0.82 (0.53, 1.28)	.393	1.26 (0.84, 1.86)	.260
Employed	0.63 (0.40, 0.99)	.045	1.33 (0.90, 1.97)	.156
Discussed condom use partner	2.33 (1.56, 3.48)	<.0001	0.59 (0.42, 0.84)	.003

Behaviors in concert with steady partners are limited to participants who had a steady partner in the past 3 months. Behaviors with casual partners are limited to participants who had a casual partner in the past 3 months. If a man reported both types of partners, he was included in both analyses.

**Table IV**

Logistic-regression-analysis odds ratios (OR) and 95% confidence intervals (CI) for relations of potential protective factors to having multiple sexual partners in the past 3 months

Potential protective factor	OR (95% CI)	P value
Age	0.96 (0.94, 0.98)	<.0001
Religiosity	0.92 (0.83, 1.02)	.125
Have child	1.04 (0.80, 1.37)	.754
Employed	1.07 (0.81, 1.42)	.618

Multiple sexual partners is report of vaginal sex with 2 or more partners.