

NIH Public Access

Author Manuscript

J Evid Based Soc Work. Author manuscript; available in PMC 2015 October 20.

Published in final edited form as:

J Evid Based Soc Work. 2014 October 20; 11(5): 437-444. doi:10.1080/15433714.2012.759468.

Multiple Partners and Condom Use among Students at a South African University

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Abstract

The prevalence of HIV in sub-Saharan Africa is the highest in the world. Young people, including university students, are at risk. Many sexually active young people have multiple partners, but little is known about how university students who have multiple partners differ from those who do not. This study examined such differences among randomly selected first-year students at a university in the Eastern Cape Province, South Africa who completed a confidential questionnaire via audio computer-assisted self-interviewing. Of 201 participants, 93 (46.3%) reported sexual

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intercourse in the previous 3 months. Of those, 52 (55.91%) reported sexual intercourse with more than one partner in the past 3 months. Controlling for gender, students who reported multiple partners were younger at first coitus, had a greater number of lifetime coital partners, reported more frequent coitus and unprotected coitus but a lower proportion of condom-protected coital acts in the past 3 months, than did those reporting only one partner. However, those reporting multiple partners and one partner did not differ in religiosity, drinking problems, or victimization by childhood sexual abuse. HIV/STD risk reduction interventions must address unprotected coitus and failure to use condoms among university students reporting multiple partners.

Keywords

Multiple sexual partners; Condom use; HIV; STD; University students

The prevalence of HIV among young people 18 to 29 years of age in sub-Saharan Africa is high. In South Africa, among people ages 20 to 24 years the prevalence of HIV was 8% in men and 17% in women. Among those ages 25 to 29 years, the prevalence was 22% in men and 32% in women (UNAIDS, 2010). South Africa, like many other sub-Saharan countries, has a generalized HIV epidemic, which means that HIV has spread beyond high-risk groups to the general population (UNAIDS, 2006). Curbing the spread of HIV in a generalized epidemic requires interventions delivered in a variety of venues to reach all subpopulations that engage in HIV risk behaviors because intervening only with high-risk groups would not be sufficient to stem such an epidemic (Merson, Dayton, & O'Reilly, 2000). University students are the most capable and promising members of all societies and constitute the next generation of a nation's leadership in all sectors (Lule & Gruer, 1991). Reducing the number of university students who contract HIV is critically important to curb the devastating ramifications of a generalized HIV epidemic on the human resources infrastructure and economic future of sub-Saharan African countries.

Although monogamous relationships are the most common relationships between a man and a woman, evidence suggests that many sexually active people, including those in sub-Saharan Africa, have more than one sexual partner (Morris & Kretzschmar, 1997; Todd et al., 2009). For instance, in one study, conducted in five urban communities in sub-Saharan Africa, 26.5% of men and 14.4% of women reported being involved in multiple relationships (Lagarde et al., 2001). In South Africa, traditional cultural beliefs that define manhood through the number of children that a man has increase the acceptability of men having multiple partners (Kaufman, Shefer, Crawford, Simbayi, & Kalichman, 2008). Accordingly, it has been argued that these cultural practices and beliefs provide justification and tolerance for multiple sexual partners, which contribute to the spread of sexually transmitted diseases (STDs), including HIV (Leclerc-Madlala, 2009).

Quite a part from multiple partners, the failure to use condoms consistently is an important factor contributing to an increase risk of HIV acquisition and transmission. Studies have found that only 26.0% of men and 14.2% of women reported condom use at the last intercourse, which suggests that although condoms are freely available, the use of condoms is inconsistent (Carter et al., 2007). Moreover, the risk posed by having multiple partners

would be enhanced if a person also engaged in other sexual risk behaviors, including failure to use condoms (Kalichman, Cain, & Simbayi, 2011). However, little is known about the other sexual risk behaviors of people who have multiple partners, or about differences between people who have multiple sexual partners and those who have only one partner.

This study examined multiple partnerships and other sexual risk behaviors among first-year students at a university located in the Eastern Cape Province, South Africa. The students completed the confidential baseline survey of a health behavior intervention trial (Heeren, Jemmott, Ngwane, Mandeya, & Tyler, 2012). We examined whether students reporting multiple sexual partners would report engaging more frequently in other sexual risk behaviors than would those reporting only one partner.

Methods

The Institutional Review Board at the University of Pennsylvania and the Ethics Committee at the University of Fort Hare approved all procedures. We conducted the study at a university located in a rural area in Eastern Cape Province, South Africa. The prevalence of HIV among university students in the Eastern Cape region at 6.4% ranked the highest of the 5 regions in to which institutions were clustered in a national surveillance survey, and among Black students in the Eastern Cape region, the prevalence was 8.4% (Higher Education HIV and AIDS Programme (HEAIDS), 2010). We conducted all research activities in English, the language of instruction at the university.

Participants

In November 2008, near the end of the academic year, the university's administration provided a list with names, gender, nationality, and contact details of all first-year students (1,209 South Africans and 260 non-South Africans, for a total of 1,469 students). We used a standard recruitment protocol to invite them to participate in the trial, oversampling non-South African students. Using computer-generated number sequences, we randomly selected 240 students such that the sample included equal numbers of male and female and South African and non-South African students.

Students ages 18 to 24 years who had been randomly selected and who planned to remain as students at the university for the next 2 academic years were eligible. Recruiters contacted the randomly selected students to determine their eligibility, willingness, and availability to participate in a health promotion program. They invited eligible students to participate in "Wake Up," a health promotion project designed to understand students' behaviors that may create health risks such as heart disease, cancer, and STIs, especially HIV, and to find ways to teach students how to reduce these risks. Recruiters scheduled those who agreed to participate for the baseline data collection when they returned for the beginning of their second year in January 2009. This article is based on the data from the students who completed the baseline data collection.

Data Collection and Measures

The participants completed confidential questionnaires via audio computer-assisted selfinterviewing (ACASI). They answered a series of questions about their socioeconomic

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background and sexual behavior. Vaginal intercourse was defined as "your penis in a female's vagina" (male version) or "a male's penis in your vagina" (female version). Participants were asked whether they ever had heterosexual anal intercourse, performed oral sex, received oral sex, were sexually abused, and were pregnant or caused a pregnancy. They were also asked about their age at first vaginal intercourse, number of lifetime partners, and whether they used oral contraception at most recent vaginal intercourse. A series of questions concerned their sexual behavior in the previous 3 months: Frequency of sexual intercourse was the number of times they had sexual intercourse. Frequency of unprotected sexual intercourse was the number of times they had sexual intercourse. Frequency of condom use was a rating on a scale from 1 (never) to 5 (always). Multiple partners was the report of having 2 or more vaginal partners in the previous 3 months. The students also completed a measure of religiosity (7 items; alpha = .86) and the CAGE, which assesses problem drinking (Cook, Chung, Kelly, & Clark, 2005; Ewing, 1984).

We took several steps to increase the validity of self-reported sexual behavior. To facilitate the students' ability to recall, we asked them to report their behaviors during a brief period (i.e., past 3 months), wrote the dates comprising the period on a whiteboard, and gave them calendars clearly highlighting the period. We stressed the importance of responding honestly, informing them that their responses would be used to create health promotion programs for other students like themselves and that we could do so only if they answered the questions honestly. We assured the participants that their responses would be used on the questionnaires. Participants signed an agreement pledging to answer the questions honestly, a procedure that has been shown to yield more valid self-reports regarding sensitive issues (Sudman & Bradburn, 1974). In addition, the use of ACASI may have encouraged more truthful self-reports of sexual risk behavior (Metzger et al., 2000; Turner et al., 1998).

Data Analysis

The data were analyzed with descriptive statistics, multiple regression, and logistic regression. Comparisons of students reporting multiple partners and one partner controlled for gender since gender is associated with sexual behavior. Multiple regression analysis was used to analyze continuous variables. A log transformation was applied to variables that were positively skewed, including age at first sex, number of lifetime sexual partners, and frequency of sexual intercourse and unprotected sexual intercourse. The value of 1.0 was added to the variable prior to transformation because some of the variables had a value of 0. Table 1 presents the means (SD) and numbers (%) for the sexual behaviors by whether the student reported multiple partners or one partner. Although the log-transformed values were analyzed, the raw values are presented in the table. Logistic regression analysis was used for binary outcomes. Proportional odds logistic regression was used to analyze the ordinal variable frequency of condom use. Regression coefficients and corresponding 95% confidence intervals are reported for binary and ordinal variables. The .05 alpha level, two tailed was used for all significance tests. Data analysis was performed using SAS 9.2.

Results

Background Characteristics

The participants were 107 females and 94 males 18 to 25 years of age (mean = 20.8 years). The participants came from all parts of South Africa, and from other parts of Africa, which include Botswana, Cameroon, Congo, Kenya, Lesotho, Nigeria and Zimbabwe. Of the 201 participants, 166 (82.6%) lived on campus, and 199 (99.0%) were never married.

A total of 132 (65.6%) participants had ever had sexual intercourse. Their mean age at first intercourse was 17.60 (SD = 2.24) years. Of the sexually experienced participants, 93 (69.9%) reported having sexual intercourse within three months prior to the data collection, and 41 (44.1%) of the latter had multiple sexual partners. A greater percentage of males (61.5%; 32/52) as compared with females (17.1%; 7/41) reported having multiple partners, P < .0001. A total of 45 (48.4%) of the participants scored 2 or higher on the CAGE indicating a drinking problem.

Comparing Students Reporting Multiple Partners and One Partner

As indicated in Table 2, multiple regression analysis revealed that the students who had multiple sexual partners reporting a younger age at first coitus and a greater number of lifetime partners than did those who had only one partner, controlling for gender. In addition, those who had multiple partners reported more frequent coitus and unprotected coitus, but a lower proportion of condom-protected coital acts in the previous 3 months than did those who had only one partner.

A proportional odds logistical regression model revealed that those reporting multiple partners used condoms less frequently than did those who had only one partner. Logistic regression indicated that those who had multiple partners were more likely to have ever performed oral sex, were marginally more likely to have received oral sex, and were marginally more likely to have been pregnant or caused a pregnancy than those who had only one partner. Interestingly, the students with multiple partners were more likely than their peers to report using oral contraception at their most recent coitus. However, the two groups did not differ on heterosexual anal intercourse, history of childhood sexual abuse, or drinking problems. Finally, multiple regression indicated that the two groups did not differ in religiosity.

Discussion

The results of this study suggest important differences between students at a university in South Africa who have multiple sexual partners and those who have only one partner differences that place the former at higher risk of HIV transmission than the latter, not only because they have multiple sexual partners, but also because they engage in other HIV risk-associated sexual behaviors. We found that students who reported multiple partners also reported having unprotected coitus more frequently and using condoms less frequently than did their counterparts who reported having only one partner. As in other studies, gender was associated with sexual risk behaviors, including multiple partnerships (Jewkes, Wood, & Duvvury, 2010; Ragnarsson, Townsend, Thorson, Chopra, & Ekstrom, 2009). Our finding

that men were significantly more likely to be involved in multiple partnerships than were women is in accord with research documenting the traditional cultural belief that men should have more than one partner at a time (Lagarde, et al., 2001). However, the associations between multiple partnerships and other sexual risk behavior were significant even though the effects of gender were statistically controlled in regression analyses.

Besides these differences in condom use and unprotected coitus, we found that students who reported multiple partners started having coitus at a younger age and, over their lifetime, had coitus with a greater number of partners, both of which are associated with risk of STD. In other words, both the past and current behavior of the students who reported having multiple partnerships placed them at risk for STD. It might be argued that religiosity would reduce the likelihood of involvement in multiple partnerships, whereas drinking problems and history of childhood sexual abuse would increase the likelihood of involvement in such partnerships. However, this study did not find support for that view. Students who had multiple partners compared with those who had only one partner did not differ in religiosity, drinking problems, or victimization by childhood sexual abuse.

Recent randomized controlled trials conducted with HIV serodiscordant couples have highlighted the importance of multiple partnerships. For instance, the HPTN 052, a randomized controlled trial testing the efficacy of early antiretroviral therapy to prevent transmission of HIV in serodiscordant couples, found that early initiation of antiretroviral therapy occasioned a 96% reduction in infections in the uninfected partners and that the majority of infections in the early-treatment group were unlinked genetically to the HIV-positive partner, which underscores the importance of multiple partnerships (Cohen et al., 2011). Moreover, in Project Eban, the NIMH Multisite HIV/STD Prevention Trial for African American Couples, although a behavioral intervention increased condom use and decreased the frequency of unprotected intercourse, it did not reduce STD in African American serodiscordant couples (El-Bassel et al., 2010). Because if one partner in the trial tested positive for STD at baseline, both were treated, the researchers attributed the failure of the intervention to reduce STD to its lack of impact on multiple partnerships.

Several researchers have emphasized the distinction between concurrent partnerships and multiple partnerships that are not concurrent (Halperin & Epstein, 2004; Morris & Kretzschmar, 1997), but this study focused on multiple partnerships irrespective of whether they were concurrent. Although it has been argued that concurrent partnerships are the kinds of multiple partnerships most closely related to risk of STD, a recent population-based cohort study in South Africa linked multiple partnerships among men in a community, irrespective of concurrency, to women's 5-year risk of HIV acquisition (Tanser et al., 2011). Although it is well documented that multiple partnerships are important to risk of STD, including HIV, future research must provide greater empirical clarification on the relative importance of concurrent and other kinds of multiple partnerships.

This study had several strengths. It was conducted with young people in the context of a generalized HIV epidemic where it is important to reach all subpopulations that engage in HIV risk behaviors (Merson, et al., 2000). Randomly sampling participants increased generalizability of the findings. A limitation of the study is the reliance on self-reports of

behavior, which can be influenced by socially desirable responding. However, the use of ACASI may have mitigated potential problems with self-report validity (Metzger, et al., 2000; Turner, et al., 1998). Another limitation is that the sample size was relatively small and results may not generalize to all university students in South Africa.

Future research must address these limitations. Given the importance of multiple partnerships to risk of STD, there is a need for further investigation into why students have multiple partners as opposed to one partner. There is also a need for effective risk-reduction strategies. Reducing multiple partnerships among university students would require research to identify locally informed and culturally relevant messages to raise personal awareness of the risks such partnerships impose and behavior-linked salient beliefs around sexual partnering that behavior-change interventions can target (Ho-Foster et al., 2010; Jemmott, 2012). By conducting research along these lines, it may be possible curb the spread of STD, including HIV, among university students in sub-Saharan Africa, where HIV is taking a large toll.

Acknowledgment

We wish to thank all team members of all departments involved in the development and conducting of the study. This study was made possible through grant award R34MH078803 from NIMH.

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Table 1

Adjusted self-reported sexual behaviors among university students reporting one partner versus multiple partners, Eastern Cape Province, South Africa, 2009.

Sexual behavior	All participants	One partner	Multiple partners
Mean (SD) Age at first coitus	17.60 (2.24)	18.29 (1.72)	16.73 (2.53)
Mean (SD) Number of lifetime coital partners	5.67 (5.99)	3.40 (3.56)	8.54 (7.16)
Mean (SD) Frequency of coitus in the past3 months	8.31 (7.08)	6.40 (5.63)	10.73 (8.02)
Mean (SD) Frequency of unprotected coitus in the past 3 months	2.05 (3.80)	1.27 (2.03)	3.05 (5.12)
Mean (SD) Proportion condom-protected coital acts in the past 3 months	.78 (.32)	.83 (.28)	.73 (.36)
Mean (SD) Frequency of condom use in the past 3 months	3.75 (1.35)	3.92 (1.25)	3.54 (1.45)
No. (%) Used oral contraception at last coitus	11 (15.49)	5 (11.11)	6 (23.08)
No. (%) Ever had heterosexual anal intercourse	8 (8.60)	3 (5.77)	5 (12.20)
No. (%) Ever performed oral sex	34 (36.56)	15 (28.85)	19 (46.34)
No. (%) Ever received oral sex	57 (61.29)	28 (53.85)	29 (70.73)
No. (%) Ever sexually abused	12 (12.90)	8 (15.38)	4 (9.76)
No. (%) Ever pregnant / caused a pregnancy	21 (22.58)	8 (15.38)	13 (31.71)

Note. Frequency of condom use was rated on a scale from 1 (never) to 5 (always).

Table 2

Significance Tests and Parameter Estimates Comparing Students who Reported One Partner versus Multiple partners on outcomes, Eastern Cape Province, South Africa, 2009

Outcome	Estimate ^a (95% CI)	<u>P</u> value ^b
Age at first coitus ^C	-0.07 (-0.13, -0.02)	.009
Number of lifetime coital partners ^C	0.49 (0.22, 0.75)	.0005
Frequency of coitus in the past 3 months ^C	0.49 (0.17, 0.81)	.003
Frequency of unprotected coitus in the past 3 months C	0.48 (0.09, 0.87)	.016
Proportion condom-protected coital acts in the past 3 months	-0.17 (-0.31, -0.02)	.024
Frequency of condom use in the past 3 months d	0.39 (0.16, 0.92)	.032
Used oral contraception at last coitus	5.49 (1.12, 26.86)	.036
Ever had heterosexual anal intercourse	1.79 (0.34, 9.32)	.487
Ever performed oral sex	4.04 (1.34, 12.21)	.013
Ever received oral sex	2.52 (0.95, 6.72)	.064
Ever sexually abused	0.81 (0.19, 3.39)	.770
Ever pregnant / caused a pregnancy	2.93 (0.93, 9.23)	.066
Problem drinking (CAGE > 1)	0.71 (0.27, 1.85)	.477
Religiosity	0.12 (-0.23, 0.47)	.491

<u>Note</u>. N = 93 for all outcomes except oral contraception use at last coitus where N = 71.

 a^{a} Estimate is the regression coefficient (multiple partners = 1; one partner = 0) for age at first coitus, number of lifetime coital partners, frequency of coitus and unprotected coitus, proportion condom-protected coital acts, and religiosity and the odds ratio for all other outcomes.

 ${}^{b}{}_{\mathrm{P}}$ value is the two-tailed significance probability.

^cLog transformed to correct positive skewness.

^d Frequency of condom use was rated on a scale from "1" (never) to "5" (always).