ORIGINAL ARTICLE

Bringing it home: community survey of HIV risks to primary sex partners of men and women in alcohol-serving establishments in Cape Town, South Africa

Seth C Kalichman,1 Eileen Pitpitan,2 Lisa Eaton,1 Demetria Cain,1 Kate B Carey,3 Michael P Carey,3,4 Ofer Harel,1 Vuyelwa Mehlomakhulu,5 Leickness Chisamu Simbayi,5 Kelvin Mwaba6

ABSTRACT

Background Concurrent sexual relationships facilitate the spread of HIV infection, and sex with non-primary partners may pose particularly high risks for HIV transmission to primary partners.

Objective We examined the sexual and alcohol-related risks associated with sex partners outside of primary relationships among South African men and women in informal drinking establishments.

Methods Men (n=4959) and women (n=2367) with primary sex partners residing in a Xhosa-speaking South African township completed anonymous surveys. Logistic regressions tested associations between having outside partners and risks for sexually transmitted infections (STI)/HIV.

Results Forty-four percent of men and 26% women with primary sex partners reported also having outside sex partners in the previous month. Condom use with outside partners was inconsistent for men and women; only 19% of men and 12% of women used condoms consistently with outside sex partners. Multivariable regressions for men and women showed that having outside partners was significantly associated with having been diagnosed with an STI, consuming alcohol in greater frequency and quantity, alcohol use during sex, meeting sex partners in alcohol-serving venues, and higher rates of unprotected sex.

Conclusions Having outside sex partners was associated with multiple risk factors for HIV infection among South African shebeen patrons. Social and structural interventions that encourage condom use are needed for men and women with outside partners who patronise alcohol-serving venues.

INTRODUCTION

Countries throughout southern Africa have established generalised HIV epidemics. Multiple sexual partnerships facilitate the rapid spread of HIV infection with potential to amplify generalised epidemics.1 Mathematical models suggest sexual relationships that overlap in time, or that concurrent partnerships are especially at high risk for HIV transmission.2,4 Of particular importance for the spread of HIV may be risks posed to primary sex partners of individuals who also have outside partners. Studies in Uganda show that outside partners are more common among men than women, and that the HIV status of outside partners is often unknown.2 A study of 15–29-year-olds in Kenya found that 11% of married men and 3% of married women had outside sex partners.5 Studies have shown that HIV transmission occurs in committed relationships, and risk to primary partners can result from HIV entering the relationship via a third person.6 Estimates suggest that as many as half of all HIV infections in Africa may occur in stable primary-partnered relationships.7

Risks to primary partners may be further amplified because consistent condom use is infrequent in primary relationships. South Africa has one of the world’s most significant HIV epidemics, and yet, only 15% of men and 18% of women report consistent or even occasional condom use.8 Risks to primary partners may, however, be offset by using condoms with outside partners. There is evidence that men with outside partners use condoms more often than men in exclusive primary relationships.5 However, it remains unclear how condom use varies across primary and non-primary partners.

Informal drinking venues (ie, shebeens), located in urban townships, are important in sexual risks.10 In South Africa, the majority of shebeen patrons meet sex partners in drinking venues.11 12 Meeting sex partners in shebeens is associated with having multiple partners and higher rates of unprotected sexual behaviours.13 14 Drinking venues may, therefore, serve as an intersection between high-risk networks and the general population. Because alcohol use reliably predicts inconsistent condom use,10 the risks posed to primary partners may also be higher among persons who drink alcohol at shebeens and have outside partners. To our knowledge, there are no previous studies of condom use with concurrent outside sex partners in the context of alcohol-serving venues in southern Africa.

Here we report an anonymous venue-based cross-sectional survey of men and women in current primary relationships who drink in South African shebeens. We focused on sexual behaviours and condom use in both primary and outside partners. In addition, we compared sexual risk and...
protective behaviours among persons with primary and outside partners with individuals who exclusively had primary partners. We hypothesised that individuals with outside sex partners would demonstrate higher sexual risks, including higher rates of unprotected sex and alcohol use during sex.

METHODS
Participants
Participants were 7326 residents (4959 men, 2367 women) in 10 sections of three primarily Xhosa-speaking townships just outside Cape Town, South Africa. All participants were aged 18 years or older (median=30, IQR 50). Nearly all (98%) participants identified as Black African, 51% were unemployed and 50% had not matriculated school.

Research setting and procedures
The townships that participated in the current study were located 20 km from Cape Town’s central business district. Residents were primarily of Xhosa cultural heritage. Neighbourhoods were defined as areas approximately ½ km wide that contained at least one informal shebeen. We used methods described by Weir et al to perform rapid community assessments, and identified 10 shebeens separated by at least 1 km from each other. We selected shebeens that served at least 75 patrons per week. Field workers that conducted the surveys were eight indigenous men and women from communities similar to our selected townships and spoke both Xhosa and English.

Participants were approached individually and asked to complete anonymous surveys. All men and women aged 18 years and older were eligible for the study. Participants were surveyed inside the shebeen (84%) and on the adjacent street (16%) of the selected alcohol-serving establishments. All participants surveyed outside the venues indicated that they did drink at a shebeen during the previous month. Participants who agreed (95%) were given a nine-page self-administered anonymous survey that required 15–20 min to complete. Participants were compensated with a keychain or shopping bag for taking the time to complete the survey. Surveys were printed in English and Xhosa. Verbal consent was obtained to avoid collecting participant names at any time. Participants were not reviewed in the field, and names were not collected to protect participant anonymity. Data collection occurred between 2009 and 2012, and the institutional review boards of the University of Connecticut, Brown University and the Human Sciences Research Council of South Africa approved the procedures.

Measures
Participants were asked to report demographic characteristics, alcohol use, shebeen attendance, HIV risk history and sexual behaviours.

Demographic and health characteristics
Participants reported their age, race, cultural heritage, education, marital status and employment status. Participants also indicated if they had been treated for an STI and whether they had been tested for HIV and, if so, their most recent test result.

Alcohol use
Frequency of drinking was measured by asking participants how often they drank alcohol in the past month. This measure defined a standard alcohol drink as a single shot of spirits, 340 ml bottle/glass of beer, one bottle of cider or one glass of wine. Frequency of binge drinking was assessed by asking participants the number of times in the past month they drank five or more drinks on one occasion, as well as an item asking how often they drank enough to feel intoxicated. Responses included (a) nearly every day, (b) 3–4 times a week, (c) 1–2 times a week, (d) monthly.

Alcohol use in relation to sexual behaviour
Participants reported the number of times in the previous month that they drank alcohol before having sex, and the number of times they had a sex partner who drank alcohol before having sex. Open-response formats were used to indicate the number of events. Participants also reported whether they had met a sex partner at a shebeen in the previous month.

Primary and outside sex partners
Separate items asked participants (a) whether they currently had a primary or main sex partner and (b) whether they currently had a casual/outside sex partner (yes or no). Participants were asked to indicate how often they use condoms with their primary partner. Responses indicated: never, half the time, less than half the time, more than half the time and always. The same measure was repeated to assess condom use with outside partners.

Sexual behaviors
Participants reported the number of male and female sex partners they had in the past month, and the number of specific sex acts in which they engaged (vaginal and anal intercourse with and without condoms). All the sex behaviour questions were asked with regard to the past month (30 days) and used open-response formats, where participants wrote a number in a blank space. We selected a 1-month time frame and open-response formats to improve recall accuracy, and to provide unanchored responses. We calculated the percentage of occasions of intercourse protected by condoms for vaginal and anal intercourse separately. Consistent condom use was defined as using a condom during every (100%) occasion of intercourse in the time frame.

Data analyses
We examined demographic characteristics, alcohol use and sexual practices among men and women who reported outside sexual partners in the past month compared with men and women who only reported having a primary sex partner in the past month. Sample size was estimated by the expected prevalence rates of outside sex partners based on previous research. We first compared relationship groups on demographic characteristics followed by comparisons for alcohol use and sexual behaviours. We also performed logistic regression analyses with relationship groups as the independent variable, and separately for men and women, to test our hypothesis that multiple independent risk behaviours would differentiate the relationship groups. Multivariable models simultaneously tested non-overlapping factors, again separately for men and women that were found significantly (p<0.05) associated with having outside partners in bivariate models. Multivariable models report ORs adjusted for all variables in the model. Analyses used a complete case approach to missing values (<5% missing on any variable). Results report ORs with 95% CIs.
RESULTS

Results showed 1097 (15%) participants did not report any sex partners in the previous month, and were excluded from further analyses. Among sexually active men, 95% (3986/4220) reported a primary sex partner; 27% (1075/3986) of these men reported that they were married. Similar results were found for women, with 95% (1788/1882) reporting primary partners, of whom 24% (454/1788) were married. The remaining analyses only included the 3986 men and 1788 women who had primary partners. Demographic and health characteristics of men and women who had outside sex partners compared with men and women who had only primary sex partners are shown in table 1. Men who had outside sex partners were younger, had fewer years of education, were more likely to use condoms most of the time with their primary partners (see table 3). By contrast, 938 (33%) used condoms consistently with their primary partner groups and condom use.

Alcohol use

As expected, given the study venues, alcohol use was common in this sample. In addition, alcohol use was more frequent, heavier and more likely to reach levels of intoxication among men and women who had outside partners. (see table 2) More than one in four men and women with outside partners reported meeting a sex partner at a shebeen in the previous month. For men and women, having outside sex partners was associated with the participant as well as their sex partners drinking alcohol before sex.

Condom use with primary and outside partners

For men, 2495 (63%) used condoms less than half the time they had sex with their primary partner, 396 (10%) used condoms most of the time and 80 (12%) used condoms consistently with their primary partners. Men with outside partners reported higher rates of unprotected vaginal and anal intercourse, but more frequent use of condoms in the past month compared with men with only primary partners (see table 3).

Sexual behaviours

Men with outside partners reported higher rates of unprotected vaginal and anal intercourse, but more frequent use of condoms in the past month compared with men with only primary partners (see table 3). By contrast, women with outside partners only indicated higher rates of unprotected vaginal and anal intercourse, with no association between partner groups and condom use.

Table 1 Demographic characteristics of primary-partnered men and women who do not report outside partners and those who do

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th></th>
<th>Women</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Primary partner only (n=2236)</td>
<td>Primary and outside partners (n=1750)</td>
<td>OR</td>
<td>95% CI</td>
</tr>
<tr>
<td>Employed</td>
<td>1271 57 957 55</td>
<td>957 55</td>
<td>1.08</td>
<td>0.96 to 1.23</td>
</tr>
<tr>
<td>Education</td>
<td>1155 51 776 40</td>
<td>Reference</td>
<td>0.91</td>
<td>0.75 to 1.12</td>
</tr>
<tr>
<td>Grade</td>
<td>792 36 762 44</td>
<td>Reference</td>
<td>1.32**</td>
<td>1.07 to 1.61</td>
</tr>
<tr>
<td>Higher</td>
<td>285 13 209 12</td>
<td>Reference</td>
<td>1.25**</td>
<td>1.10 to 1.41</td>
</tr>
<tr>
<td>HIV tested</td>
<td>1623 73 1222 71</td>
<td>Reference</td>
<td>1.10</td>
<td>0.96 to 1.27</td>
</tr>
<tr>
<td>HIV status</td>
<td>84 5 57 4</td>
<td>Reference</td>
<td>82 7 51 12</td>
<td>Reference</td>
</tr>
<tr>
<td>HIV+</td>
<td>1478 85 1078 74</td>
<td>0.36**</td>
<td>0.21 to 0.61</td>
<td>968 84 280 67</td>
</tr>
<tr>
<td>HIV−</td>
<td>150 9 268 18</td>
<td>0.39**</td>
<td>0.25 to 0.59</td>
<td>81 7 83 19</td>
</tr>
<tr>
<td>Unknown</td>
<td>34 2 64 4</td>
<td>0.95</td>
<td>0.59 to 1.50</td>
<td>19 2 13 3</td>
</tr>
<tr>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Age</td>
<td>33.6 9.9 30.3 8.2</td>
<td>0.96**</td>
<td>0.95 to 0.97</td>
<td>30.7 11.6 29.9 7.4</td>
</tr>
</tbody>
</table>

Note: ** p<0.01
Multivariable models

Logistic regressions comparing individuals with only primary sex partners with those with outside partners, for men and women separately, are shown in table 4. For men, having outside partners was significantly associated with younger age, greater education, having been diagnosed with an STI, alcohol use in relation to sex, meeting sex partners in shebeens and higher rates of unprotected vaginal intercourse. For women, results were similar; having outside partners was associated with STI diagnosis, alcohol use, alcohol use in sexual contexts, meeting partners in shebeens and unprotected vaginal and anal intercourse.

DISCUSSION

The current study found that 44% of primary-partnered men and 26% of primary-partnered women surveyed in informal drinking venues reported outside sex partners in the previous month. Having outside sex partners was associated with multiple risk factors for HIV infection, including having been diagnosed with an STI and higher rates of unprotected sex. Having multiple partners was also associated with greater use of alcohol, as well as greater use of alcohol by participants and their partners before sex. In addition, one in four men and women shebeen patrons with outside partners had recently met sex partners at drinking venues. These results confirm our study hypothesis, demonstrating that

Table 2  Alcohol use among primary-partnered men and women who do not report outside partners and those who do

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Primary partner only (n=2236)</td>
<td>Primary partner only (n=1324)</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Drinking frequency</td>
<td>2.61</td>
<td>1.84</td>
</tr>
<tr>
<td>Consumes 5+ drinks</td>
<td>2.04</td>
<td>1.88</td>
</tr>
<tr>
<td>Drinks to intoxication</td>
<td>0.90</td>
<td>1.44</td>
</tr>
<tr>
<td>Drank before sex*</td>
<td>1.8</td>
<td>3.5</td>
</tr>
<tr>
<td>Partner drank before sex*</td>
<td>0.5</td>
<td>1.8</td>
</tr>
<tr>
<td>Met partner in shebeen*</td>
<td>174</td>
<td>8</td>
</tr>
</tbody>
</table>

Note: n’s vary due to missing data; means and SDs for continuous sexual and condom use behaviours across partners in the past 30 days; ** p<0.01; N/A=not applicable

Table 3  Sexual behaviours and condom use among primary-partnered men and women who do not report outside partners and those who do

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Primary partner only (n=2236)</td>
<td>Primary partner only (n=1324)</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Unprotected vaginal intercourse</td>
<td>5.7</td>
<td>6.3</td>
</tr>
<tr>
<td>% Condom use Vaginal sex</td>
<td>40.9</td>
<td>45.3</td>
</tr>
<tr>
<td>Unprotected anal intercourse</td>
<td>0.2</td>
<td>1.5</td>
</tr>
<tr>
<td>% Condom use Anal sex</td>
<td>60.3</td>
<td>46.6</td>
</tr>
<tr>
<td>Total % condom Use</td>
<td>41.6</td>
<td>45.3</td>
</tr>
<tr>
<td>Condom use with primary partner</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Never</td>
<td>1311</td>
<td>58</td>
</tr>
<tr>
<td>&lt;Half the time</td>
<td>50</td>
<td>2</td>
</tr>
<tr>
<td>&gt;Half the time</td>
<td>198</td>
<td>9</td>
</tr>
<tr>
<td>Always</td>
<td>667</td>
<td>31</td>
</tr>
</tbody>
</table>

Condom use with outside partners

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Primary partner only (n=2236)</td>
<td>Primary partner only (n=1324)</td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td>95% CI</td>
</tr>
<tr>
<td>Condom use with outside partners</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Never</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>&lt;Half the time</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>&gt;Half the time</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Always</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Note: n’s vary due to missing data; means and SDs for continuous sexual and condom use behaviours across partners in the past 30 days; ** p<0.01; N/A=not applicable
Alcohol-serving establishments offer opportune venues for targeted STI/HIV prevention interventions in southern Africa. We found that 44% and 26% of primary-partnered men and women, respectively, reported recent outside relationship sex partners. Replicating past research,11 these high rates of multiple partners are greater than those reported in other settings.25,24 Interventions delivered at drinking venues have been effective in other countries and may be culturally adaptable for use in South Africa. For example, a multilevel peer counselling and social influence on HIV risk reduction that targeted female sex workers in drinking venues in the Philippines included manager training to reinforce employee health and health improvement programmes for women.25 Results showed significant increases in condom use at last sex, and reductions in STI compared with control sites.26 Similar structural interventions that encourage venue owners to institute health programmes may be effective in shebeens. A positive indicator that such interventions may be adapted for South Africa is the degree of cooperation we experienced from shebeen owners and employees in this study. In addition, we observed men using condoms more with outside partners, suggesting intentions to reduce STI risks. These strengths can be built on to implement structural interventions. Future research is needed to determine the degree to which behavioural intentions to meet outside sex partners at shebeens influence risk and risk-reduction practices. Better understanding of behavioural intentions, as well as behaviour change, will help inform social and structural interventions.

This project was supported by National Institute on Alcohol Abuse and Alcoholism Grants R01-AA017599.

### Key messages

- Alcohol-serving venues in South Africa are high-risk settings for HIV infection.
- Having outside sex partners is associated with multiple risk factors for HIV infection, particularly to primary partners.
- Interventions that discourage partner concurrency and encourage condom use are needed for men and women with outside partners who patronise alcohol-serving venues.

### Acknowledgements

This project was supported by National Institute on Alcohol Abuse and Alcoholism Grants R01-AA017399.

### Contributors

SCK conceptualised the study, contributed to data analyses and writing of the paper. EP contributed to the study conceptualisation, data analyses and writing of the paper. LE contributed to the study conceptualisation, data analyses and writing of the paper. DC contributed to the study conceptualisation and writing of the paper. VM contributed to the study conceptualisation and execution of the study. LCS contributed to the study conceptualisation and writing of the paper. KM contributed to the study conceptualisation and execution of the study.

### Funding

US NIH/AAIAA.

### Competing interests

None.

### Ethics approval


### Provenance and peer review

Commissioned; externally peer reviewed.

### Open Access

This is an Open Access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 3.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: http://creativecommons.org/licenses/by-nc/3.0/
REFERENCES


Bringing it home: community survey of HIV risks to primary sex partners of men and women in alcohol-serving establishments in Cape Town, South Africa

Seth C Kalichman, Eileen Pitpitan, Lisa Eaton, Demetria Cain, Kate B Carey, Michael P Carey, Ofer Harel, Vuyelwa Mehlomakhulu, Leickness Seth C Kalichman, Eileen Pitpitan, Lisa Eaton, Demetria Cain, Kate B Carey, Michael P Carey, Ofer Harel, Vuyelwa Mehlomakhulu, Leickness Chisamu Simbayi and Kelvin Mwaba

Sex Transm Infect published online December 13, 2012

Updated information and services can be found at:
http://sti.bmj.com/content/early/2012/12/12/sextrans-2012-050569

These include:

References
This article cites 26 articles, 2 of which you can access for free at:
http://sti.bmj.com/content/early/2012/12/12/sextrans-2012-050569#BIBL

Open Access
This is an open-access article distributed under the terms of the Creative Commons Attribution Non-commercial License, which permits use, distribution, and reproduction in any medium, provided the original work is properly cited, the use is non-commercial and is otherwise in compliance with the license. See: http://creativecommons.org/licenses/by-nc/3.0/ and http://creativecommons.org/licenses/by-nc/3.0/legalcode

Email alerting service
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Topic Collections
Articles on similar topics can be found in the following collections

Open access (223)
Drugs: infectious diseases (3182)
HIV / AIDS (2514)
HIV infections (2514)
HIV/AIDS (2514)
Condoms (761)
Reproductive medicine (1356)

Notes

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/