ann. behav. med. (2012) 43:362–371
DOI 10.1007/s12160-012-9346-9

ORIGINAL ARTICLE

AIDS-Related Stigma, HIV Testing, and Transmission Risk Among Patrons of Informal Drinking Places in Cape Town, South Africa

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Published online: 25 February 2012

Abstract
Background AIDS-related stigma as a barrier to HIV testing has not been examined within the context of high at risk environments such as drinking venues. Of particular importance is whether AIDS-related stigma is associated with HIV transmission risks among people who have never been tested for HIV.
Purpose We examined: (1) AIDS-related stigma as a barrier to testing, controlling for other potential barriers, and (2) whether stigma is associated with HIV risks among HIV-untested individuals.
Methods We surveyed 2,572 individuals attending informal drinking establishments in Cape Town, South Africa to assess HIV testing status, AIDS-related stigma endorsement, and HIV transmission sexual risk behavior.
Results Endorsement of AIDS-related stigma was negatively associated with HIV lifetime testing. In addition, stigma endorsement was associated with higher HIV transmission risks.
Conclusion AIDS-related stigma must be addressed in HIV prevention campaigns across South Africa. Antistigma messages should be integrated with risk reduction counseling and testing.

Keywords HIV/AIDS-related stigma · HIV testing · HIV risk behavior · Alcohol · Substance use

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Introduction

In 2009, UNAIDS estimated that 5.6 million people were living with HIV/AIDS in South Africa, a prevalence higher than any other country [1]. In a major shift of South Africa's history of and stance on HIV, the South African government launched a voluntary HIV counseling and testing campaign in April 2010 [2]. A primary aim of this campaign was to have reduced the country's HIV incidence by 50% by June 2011 through voluntary HIV counseling and testing. Unfortunately, this ambitious goal was not achieved. HIV counseling and testing has the potential to reduce rates of both high-risk sex behavior and sexually transmitted infections [3, 4]. Moreover, HIV testing is necessary to place HIV-infected people in care and on antiretroviral therapy. While there is evidence that testing rates improved in South Africa from 2006 to 2009 by 36%, 40% of South Africans still have never been tested for HIV [5]. Given their likely role in the continued spread of HIV, individuals who have never been tested represent an important population for research on testing barriers and HIV risk.

Demographic and psychosocial barriers to HIV testing include low education, unemployment, and inaccurate HIV knowledge [6]. Research has also identified substance use and AIDS-related stigma as robust barriers to testing [7–9].

Hazardous drinkers, or individuals who reported drinking a maximum of six or more drinks in one occasion in the past month, are 86% less likely to get tested for HIV than individuals who reported drinking a maximum of five or less drinks in one occasion in the past month [7]. Other research has shown that heavy drinking (men having more than 14 drinks per week, women having more than seven drinks per week) injection drug users are less likely to have been tested for HIV than nondrinking and moderate drinking (having one or more drink in a week but less drinks than heavy drinkers) injection drug users [8]. These studies showing how alcohol use can pose a barrier to testing have been conducted primarily in the USA. Thus, research should examine whether this finding is generalizable to other samples; we are not aware of studies showing the relationship between alcohol use and HIV testing using samples in South Africa.

Numerous studies have demonstrated that endorsement of AIDS-related stigma is also associated with a lower likelihood of testing [9–11]. Individuals who hold negative stereotypes about and attitudes towards people living with HIV/AIDS are less likely to get tested for HIV for fear of discrimination, rejection, and isolation [12]. One study of Black South Africa showed that individuals who had never been tested for HIV ascribed greater shame, guilt, and social disapproval to people living with HIV/AIDS than those who had been tested [9]. While studies on stigma typically control for potential demographic confounders, it has not been shown whether stigma is negatively associated with HIV testing (i.e., a potential barrier) over and above other key risk factors, such as alcohol use. Of particular importance is whether stigma is negatively associated with testing in social settings where drinking is prevalent because these same venues are often targeted by voluntary HIV counseling and testing campaigns. Messages put forth by various campaigns typically include slogans like, “know your status” placed on billboards or posters displayed inside or outside the venues.

In addition to creating a potential barrier to voluntary HIV counseling and testing, AIDS-related stigma may be associated with HIV transmission risks in high-risk venues [12]. Research on gay men suggests the existence of such an association. For example, it has been shown that internalized homophobia, a form of stigma against homosexuality directed at the self, prospectively predicts HIV sexual risk behavior among gay men [13]. Another study on AIDS-related stigma found that stigma was prospectively associated with unprotected receptive and insertive anal intercourse among HIV seronegative or status unknown partners of HIV positive men who have sex with men [14]. Given their role in unknowingly spreading HIV, the association between AIDS-related stigma and HIV risks is particularly important among people who have never been tested for HIV. In addition, significant resources are directed toward identifying individuals who do not know their HIV status. Determining the role of AIDS-related stigma in HIV testing uptake and HIV transmission risks is therefore paramount to informing targeted voluntary HIV counseling and testing campaigns.

The current study tests two main hypotheses. First, we hypothesized that AIDS-related stigma would be associated with a lower likelihood of lifetime HIV testing among men and women attending informal drinking establishments (shebeens) in a Cape Town South Africa township, over and above demographic characteristics and alcohol use. These venues are often run out of people’s homes or garages. We examined our hypotheses in this context because drinking venues are often targets of voluntary HIV counseling and testing campaigns. Also, shebeens are often places where sex partners meet [15, 16], making them an important moderator in the relationship between alcohol and HIV risk [17]. Second, we hypothesized that compared to not endorsing stigma, endorsement of AIDS-related stigma would be associated with higher HIV transmission risk behaviors among persons not tested for HIV.

Method

Participants and Setting

Participants were men and women attending shebeens in a periurban township in Cape Town, South Africa. The township is located within 20 km of Cape Town’s central business district and consists of both people of mixed race (i.e., Coloureds) and Black Africans. A relatively new township, the community was established in 1990 and is one of the first townships in South Africa to racially integrate. Large numbers of indigenous Black Africans started settling in and around the township during the 1990s after government policies of racial segregation during Apartheid ended. The township sampled for this study, therefore, offers the opportunity to survey men and women of varying cultures residing within one South African community.

Venue Selection

Using an adaptation of the Priorities for Local AIDS Control Efforts community mapping methodology [18], we located and defined alcohol-serving establishments in the township for the current study. Alcohol-serving venues were systematically identified by approaching a total of 210 members of the community at public places such as bus stands and markets, and asking them to identify places where people go to drink alcohol. Venues were eligible if they had space for patrons to sit and drink, reported >50 unique patrons per

week, had >10% female patrons, and were willing to have the research team visit periodically over the course of a year.

Procedure

Anonymous surveys were collected between October 2009 and April 2011 at a total of ten alcohol-serving venues. Individuals inside the venues were approached by field workers to complete the nine-page survey questionnaire, which took on average 10–15 min to complete. Field workers approached venue patrons after they had entered the shebeen but before they had more than one drink. Participant privacy was ensured by making sure that the participant did not write his or her name or any other directly identifying information on the survey. Black African field workers spoke Xhosa and English, and Coloured field workers spoke Afrikaans and English. Surveys were administered in participants' preferred language. When assistance was required, participants were read the survey questions and responded on their own survey forms. Participants were given a small token of appreciation for completing surveys, such as a keychain or coffee mug. Surveys were repeated four times over a 1-year period. A total of 3,642 individuals were approached to participate, and 3,350 (92%) agreed. Surveys were data scanned, and manual checks were performed to identify errors. All study procedures were approved by the ethical review boards in the USA and South Africa.

Measures

Measures were adapted from previous research conducted in South Africa and were administered in the three languages spoken throughout the township: English, Xhosa and Afrikaans. All of the measures were translated and back translated to produce parallel forms.

Demographics

Participants were asked to report age, education, gender, ethnicity, employment, marital status, having children, having electricity, and having indoor running water.

HIV Testing Status

Participants were asked to respond yes/no to the following item, "Have you ever been tested for HIV?" Immediately following they were asked, "What was the result of your most recent HIV test?" Response choices were, "HIV positive," "HIV negative," "Don't know," and "Refuse to answer."

AIDS-Related Stigma Endorsement

We used items taken from a scale previously developed and used in South Africa [19] to assess AIDS-related stigma endorsement. For the sake of survey brevity and reducing likelihood of participant fatigue, we only included four items from this scale. These items were "People who have AIDS are dirty"; "People who have AIDS should be ashamed"; "People who have AIDS should be isolated"; and "I do not want to be friends with someone who has AIDS." These items were chosen because they assess the basic components of stigma, namely labeling, stereotyping, separation, status loss, and discrimination [20]. Participants responded either "Yes, I agree" (1) or "No, I don't agree" (0) for each item. We used this dichotomous response format because previous research has shown that in attitude research, low education participants are less likely to utilize a response scale with more than two response options [21]. The four items were summed to index AIDS-related stigma endorsement (α=0.64).

Alcohol Use

Current quantity and frequency of alcohol use was assessed with the first three items on the alcohol use disorder identification test (AUDIT) [22]. The first three items on the AUDIT assess quantity and frequency of alcohol consumption, and have been shown to be as reliable and valid as the full-length ten-item scale [23]. *Alcohol frequency*: Participants were asked to report how often they have a drink containing alcohol; responses ranged from 1 being "never" to 5 being "more than four times a week". *Alcohol consumption*: Participants reported how many drinks containing alcohol they have on a typical day when they are drinking; responses ranged from 1 being "I don't drink" to 6 being "ten or more". *Binge drinking*: Participants reported how often they have six or more drinks in a single occasion; responses ranged from 1 being "never" to 5 being "daily or almost daily."

Drug Use

In separate items, participants were asked to report how often they used four different drugs in the past 4 months: "marijuana (dagga)," "glue, petrol or sprits," "methamphetamine (tik)," and "injected a drug with a needle" with responses as "never," "a few times," "weekly," and "daily." Because data on the drug use items were positively skewed (i.e., relatively low numbers of individuals reporting more frequent drug use), responses were collapsed and coded as 0 (never) and 1 (at least a few times). Then, the dichotomous items were summed to index drug use in general or "any" drug use.

HIV Risk

HIV risk was conceptualized in terms of risk behaviors and risk history. Specifically, participants were asked about their sexual behaviors, alcohol and drug use (as described above), and infection history. *Sexual risk behaviors*: Participants used an open response format to report the number of the following during the past 4 months: male sexual partners, female sexual partners, times of unprotected vaginal sex (i.e., without condoms), protected vaginal sex, unprotected anal sex, protected anal sex, times drank alcohol before sex, and times used drugs before sex (summed number of male and female sexual partners to index "total partners"). We used an open response format to avoid anchored responses that can result from use of closed-ended formats [24]. We created a variable "percent protected intercourse" by dividing total number of condom-protected vaginal and anal acts (summed) by total protected and unprotected vaginal and anal acts (summed). For this variable, participants who reported zero male or female sex partners or zero unprotected acts in the last 4 months were coded as 100% protected. Participants were also asked to respond "yes" or "no" to four items regarding their sexual behavior at the bar. Specifically, they reported whether they came to the bar tonight to look for a sex partner, whether they ever met a new sex partner at the bar, whether they used a condom the last time they met a new sex partner at the bar, and whether they ever had sex on the premises of the bar. Participants also reported whether they have sold sex (for money, alcohol, drugs, or a place to stay) or bought sex both in their lifetimes and in the last 4 months. *Sexually transmitted infection history*: Participants were asked to report whether they have ever been diagnosed with a sexually transmitted infection and whether they have been diagnosed with a sexually transmitted infection in the last 4 months. We used a 4-month recall period for many of our assessments because previous research suggests that this period provides optimal recall for drug use and sex behaviors [25].

Data Analyses

Analyses were performed in four stages. First, we conducted descriptive analyses of AIDS-related stigma endorsement and HIV testing. Second, we used hierarchical logistic regression to assess whether endorsement of stigma predicts HIV testing status (i.e., never been tested for HIV=0 vs. tested for HIV at least once in the past=1) over and above demographics and alcohol and drug use. The demographic characteristics of age (continuous), gender (0=female, 1=male), race (0=Coloured, 1=Black), education (continuous), employment (0=not employed, 1=employed), marital status (0=not married, 1=married), and having children, electricity, and indoor water (0=no, 1=yes) were entered as predictors in the first step of the model. The second step included nonredundant substance use behaviors, alcohol frequency, alcohol consumption, binge drinking, and any drug use (all continuous except for the last). The third step in the model included AIDS-related stigma. Results are reported as odds ratios with 95% confidence intervals.

Third, we conducted analyses to examine HIV transmission risk among the 801 participants who reported that they had never been tested for HIV. If we confirm our hypothesis that AIDS-related stigma is negatively associated with HIV testing, these additional tests will determine whether those individuals who have never been tested and endorse stigma are at relatively high risk of HIV infection. In our third stage of analyses, we dichotomized the AIDS-related stigma variable into stigma endorsement (i.e., endorsing at least one item) and nonendorsement (not endorsing any of the four items). To assess HIV transmission risk differences between AIDS-related stigma endorsers and nonendorsers we used chi-square tests for categorical variables and t tests for continuous variables. For all analyses, we used $p<0.05$ to define statistical significance. Finally, we conducted a multivariate logistic regression analysis to examine which risk characteristics that were independently associated with stigma endorsement in bivariate analyses would remain significant when controlling for other significant risk factors (at the level $p<0.10$).

Results

Participants were approached at ten different shebeens and 3,350 agreed to complete surveys. Of these participants, 718 (21.4%) had previously completed a survey on a prior occasion. These duplicate responses ($n=718$) as well as missing data on HIV testing status ($n=60$) were removed, leaving 1,407 men and 1,162 women (3 gender unknown) in all further analyses.

A total of 41% of participants endorsed at least one AIDS-related stigma item. The most frequently endorsed stigma item was "I do not want to be friends with someone who has AIDS" ($n=587$, 23%). The second most frequently endorsed item was "People who have AIDS should be isolated" ($n=425$, 17%), followed by "People who have AIDS are dirty" ($n=414$, 16%). The item "People who have AIDS should be ashamed" was the least endorsed ($n=405$, 16%). One in five (22%) participants endorsed one of the AIDS-related stigma items, 10% endorsed two items, 5% three items, and 3% endorsed all four items.

HIV Testing

Sixty-nine percent ($n=1,771$) of the sample reported having ever been tested for HIV, leaving 31% ($n=801$) of the

sample who reported having never been tested. Participants also indicated one of four responses regarding the results of their most recent HIV test. Of the participants who have been tested for HIV, 126 (7%) reported the result as "positive," and 1,642 (93%) did not respond "positive". Specifically, these participants checked one of the three alternative responses: 1,483 (84%) participants responded "negative", 83 (5%) responded "don't know", and 76 (4%) responded "refuse to answer."

Demographic variables significantly predicted likelihood of reporting HIV testing [χ^2 (9)=97.69, p<0.001] (Table 1). Specifically, participants who were older, male, and did not have any children were less likely to report being tested for HIV. The second step of the regression model showed that inclusion of alcohol and drug use as predictors did not significantly explain testing, over and above demographics [χ^2 (4)=7.28, p>0.10]. Finally, results from the last step of the model showed that AIDS-related stigma endorsement is associated with reporting HIV testing, over and above demographics and alcohol and drug use [χ^2 (1)=7.94, p< 0.01]. As we hypothesized, participants who endorsed more AIDS-related stigma were less likely to have been tested for HIV.

Table 1 Hierarchical logistic regression predicting HIV testing (N=2,572; 0=untested, 1=tested)

Model	B (SE)	OR	OR 95% CI	
			Lower	Upper
Step 1				
Age	−0.03 (0.01)	0.98***	0.97	0.99
Male	−0.74 (0.10)	0.48***	0.39	0.59
Black	0.00 (0.11)	1.00	0.82	1.23
Education	0.11 (0.06)	1.11†	0.99	1.25
Employed	0.04 (0.10)	1.04	0.85	1.27
Married	0.10 (0.12)	1.10	0.87	1.40
Children	0.53 (0.11)	1.71***	1.37	2.12
Electricity	0.04 (0.22)	1.04	0.68	1.59
Indoor water	0.10 (0.17)	1.10	0.79	1.54
χ^2 (9)=97.69***				
Step 2				
Alcohol frequency	0.05 (0.05)	1.05	0.95	1.15
Alcohol consumption	0.05 (0.03)	1.05	0.98	1.12
Binge drinking	−0.08 (0.05)	0.93	0.84	1.02
Drug use	−0.14 (0.07)	0.87†	0.76	1.00
χ^2 (4)=7.28				
Step 3				
AIDS-related stigma sum	−0.13 (0.05)	0.88**	0.80	0.96
χ^2 (1)=7.94**				

†p<0.10; *p<0.05; **p<0.01; ***p<0.001

Stigma Endorsement Among Persons Not Tested

Demographic Characteristics

Of the 801 participants who reported that they had never had an HIV test, 53% (n=426) endorsed none of the stigma items and were therefore classified as "stigma nonendorsers" and 45% (n=361) endorsed at least one stigma item and were classified as "stigma endorsers." Table 2 displays demographic characteristics of the participants by stigma endorsement. Stigma endorsers were less educated, more likely to be Coloured, and less likely to have electricity in their homes, compared with nonendorsers.

Alcohol Use

As seen in Table 3, there were no statistically significant differences between stigma endorsers and nonendorsers on alcohol frequency, consumption, binge drinking, and coming to the bar to drink. There were differences however in participants' drug use (also in Table 4). HIV-untested individuals who endorsed stigma reported more drug use in general than those who did not endorse stigma. Specifically, stigma endorsers were more likely to report using marijuana and injection drugs, and trended towards more methamphetamine use than stigma nonendorsers.

Sexual Risk

Table 4 shows that sexual risk behaviors significantly differed between AIDS-related stigma nonendorsers and endorsers. On average those who endorsed AIDS-related stigma reported having fewer sexual partners in the last 4 months than those who did not endorse AIDS-related stigma. However, stigma endorsers did have more risky sexual encounters, including being more likely to drink alcohol before sex, and trended towards being more likely to use drugs before sex compared to nonendorsers. Moreover, participants who endorsed AIDS-related stigma were 1.5 times more likely to report having come to the bar looking for a sex partner compared to their nonendorser counterparts (15.0% vs. 9.9%). Stigma endorsers were also less likely to report using a condom the last time they met a sex partner at the bar, were more likely to report having sex on the premises of the bar, and were more likely to report selling sex in exchange for money, alcohol, drugs, or a place to stay than stigma nonendorsers. Overall, individuals in our sample who endorsed AIDS-related stigma reported higher sexual risk behaviors than those who did not endorse stigma. HIV-untested participants who endorsed stigma (n=26, 7.2%) were more likely to report being diagnosed with a sexually transmitted infection in the last 4 months than those who did not endorse stigma (n=6, 1.4%), [χ^2 (1)=16.89, p<

Table 2 Demographics among HIV-untested stigma endorsers and nonendorsers

	Stigma endorser (n=361)		Stigma nonendorser (n=426)		
	Mean	SD	Mean	SD	t
Age	32.4	11.5	32.8	11.4	−0.51
Education	2.2	0.89	2.6	0.95	−5.60***
	n	%	n	%	χ^2
Gender					
Male	243	67.5	270	52.6	1.36
Female	117	32.5	155	36.5	
Ethnicity					
Black	171	47.5	250	58.8	10.24**
Coloured	184	51.1	169	39.8	
Other	5	1.4	6	1.4	
Employed					
Yes	153	42.6	220	51.8	6.53**
Married					
Yes	78	21.7	110	26.0	3.65
Children					
Yes	207	57.8	273	64.5	3.69
House has electricity					
Yes	325	90.8	404	95.1	5.54*
House has indoor water					
Yes	312	86.9	381	89.4	1.20

Education: 1=grade 7 or less, 2=grade 8–11, 3=grade 12, 4=beyond grade 12

†p<0.10; *p<0.05; **p<0.01; ***p<0.001

0.001]. Stigma endorsers and nonendorsers did not differ in ever being diagnosed with a sexually transmitted infection.

Multivariate Model

Using a multivariate binary logistic model, we identified factors that were uniquely associated with stigma endorsement and nonendorsement (Table 5). In the model, we included all significant variables associated with stigma endorsement from bivariate analyses (using the level $p<$ 0.10). However, because the variables "Ever sold sex" and "Sold sex last 4 months" were both significant in bivariate analyses and were highly correlated, we only included "Sold sex last 4 months" in the multivariate model. Education, race, electricity in the home, ever meeting a new sex partner at the bar, using a condom the last time having a sex partner at the bar, ever having sex on the premises of the bar, any recent drug use, and being diagnosed with an STI in the last 4 months all emerged as significant variables associated with stigma endorsement and nonendorsement. Reporting higher education (OR=0.71, 95% CI 0.59–0.86), being Black as opposed to Coloured (OR=0.68, 95% CI 0.48–0.95), having electricity in the home (OR=0.48, 95% CI 0.25–0.92), ever meeting a new sex partner at the bar (OR= 0.58, 95% CI 0.36–0.91), and using a condom the last time having sex at the bar (OR=0.88, 95% CI 0.78–1.00) were associated with lower odds of endorsing AIDS-related stigma. Whereas reporting ever having sex on the premises of the bar (OR=2.73, 95% CI 1.16–6.45), using any drug in the last 4 months (OR=1.56, 95% CI 1.04–2.34), and being diagnosed with an STI in the last 4 months (OR=4.64, 95% CI 1.69–12.74) were associated with higher odds of endorsing AIDS-related stigma. There was also a marginal effect such that a higher number of recent sex partners (OR=1.05, 95% CI 1.00–1.11) was associated with higher odds of stigma endorsement. In sum, as we predicted, participants who endorsed AIDS-related stigma were at higher HIV transmission risk than participants who did not endorse AIDS-related stigma.

Discussion

Results of the current study suggest that AIDS-related stigma is negatively associated with HIV testing and thus may pose a significant barrier to testing among men and women attending drinking venues in Cape Town, South Africa. Endorsing AIDS-related stigma was associated with never having been tested for HIV even after controlling for demographic and contextually important barriers to testing, specifically alcohol and drug use variables. To our knowledge this is the first study to show that endorsing AIDS-related stigma is negatively associated with HIV testing among a sample of shebeen attenders. The results also showed that endorsement of AIDS-related stigma is related to higher HIV risk, indexed by sexual risk behavior and histories,

Table 3 Alcohol and drug use among HIV-untested stigma endorsers and nonendorsers

	Stigma endorser (n=361)		Stigma nonendorser (n=426)		
	n	%	n	%	χ^2
Alcohol frequency (how often do you have a drink containing alcohol?)					
Never	35	9.8	35	8.2	1.16
Monthly or less	84	23.5	97	22.8	
2–4 times a month	82	23.0	93	21.9	
2–3 times a week	98	27.5	126	29.6	
More than 4 times a week	58	16.2	74	17.4	
Alcohol consumption (how many drinks containing alcohol do you have on a typical day when you are drinking?)					
I don't drink	23	6.4	34	8.0	4.90
1–2	83	23.1	92	21.7	
3–4	95	26.4	100	23.6	
5–6	52	14.4	79	18.6	
7–9	32	8.9	28	6.6	
10 or more	75	20.8	91	21.5	
Binge drinking (how often do you have 6 or more drinks on one occasion?)					
Never	38	10.6	58	13.7	6.24
Less than monthly	71	19.8	87	20.6	
Monthly	77	21.5	91	21.6	
Weekly	133	37.2	159	37.7	
Daily/almost daily	39	10.9	27	6.4	
Came to bar to drink tonight	261	72.9	307	73.3	0.01
Drug use					
Marijuana use last 4 months	85	23.5	64	15.1	8.96**
Glue/petrol/use last 4 months	21	5.9	16	3.8	1.85
Methamphetamine use last 4 months	29	8.1	22	5.2	2.64†
Injection drug use last 4 months	13	3.6	6	1.4	3.90*
Any drug	102	28.3	77	18.2	11.29***

†p<0.10; *p<0.05; **p<0.01; ***p<0.001

drug use, and history of sexually transmitted infections. Based on these findings, we conclude that AIDS-related stigma must be addressed in campaigns aimed to increase voluntary HIV counseling and testing and reduce HIV risk.

Previous research has identified substance use and AIDS-related stigma as robust barriers to HIV testing. Specifically, individuals who engage in higher alcohol and/or drug use and those who endorse AIDS-related stigma beliefs are less likely to get tested for HIV in their lifetime, as compared to nonsubstance users and individuals who do not endorse AIDS-related stigma. In our study, we hypothesized that even after controlling for demographics and substance use, AIDS-related stigma would still be associated with a lower likelihood of lifetime HIV testing. Support for this hypothesis demonstrates that among individuals who engage in relatively regular and high amounts of alcohol consumption, endorsement of AIDS-related stigma decreases likelihood of testing even beyond that explained by alcohol use. Thus, our findings suggest that AIDS-related stigma is perhaps a more robust barrier to HIV testing than substance use. These results suggest that voluntary HIV counseling and testing campaigns should focus on the negative influences of stigma on individuals targeted for HIV testing, regardless of their substance use. We describe stigma as a barrier to testing, suggesting a causal direction. However, given that our data are cross-sectional, we cannot directly speak to the directionality of the relationship between stigma endorsement and testing. It is possible that the relationship is spurious; miseducation or misinformation about HIV and AIDS can directly influence stigma endorsement, as well as testing behaviors.

In contrast to previous research, in the current study, alcohol use was not significantly associated with HIV testing. In addition, there were no differences between stigma endorsers and nonendorsers in their drinking. One potential explanation for this finding is that participants were

Table 4 Sexual risk behaviors among HIV-untested stigma endorsers and nonendorsers

	Stigma endorser (n=361)		Stigma nonendorser (n=426)		
	Mean	SD	Mean	SD	t
% protected intercourse	67.06	39.57	70.10	40.86	−1.05
	n	%	n	%	χ^2
Sexual history last 4 months					
Total partners					
0	98	27.2	97	22.9	11.11*
1	135	37.5	208	49.2	
2	51	14.2	51	12.1	
3 or more	76	14.2	67	15.8	
Sex with alcohol					
0	185	51.8	224	53.8	9.63*
1	41	11.5	23	5.5	
2	20	5.6	31	7.5	
3 or more	111	31.1	138	33.2	
Sex with drugs					
0	308	86.0	384	91.6	7.07†
1	14	3.9	12	2.9	
2	9	2.5	4	1.0	
3 or more	27	7.5	19	4.5	
Came to bar looking for sex partner	53	15.0	41	9.9	4.63*
Sexual history at bar					
Ever met a new sex partner at this bar	61	17.0	95	22.4	3.44†
Last time had a sex partner at this bar, used a condom	67	18.8	82	19.4	10.22**
Ever had sex on the premises of this bar	27	7.5	11	2.6	10.27***
Sex work history					
Ever sold sex	47	13.2	36	8.5	4.46*
Ever bought sex	41	11.4	39	9.2	1.02
Sold sex last 4 months	34	9.5	21	5.0	6.09*
Bought sex last 4 months	37	10.3	30	7.1	2.56

†p<0.10; *p<0.05; **p<0.01; ***p<0.001

Table 5 Multivariate binary logistic model examining predictors of stigma endorsement (N=801)

Variable	B (SE)	OR	OR 95% CI	
			Lower	Upper
Education	−0.34 (0.10)	0.71***	0.59	0.86
Black	−0.39 (0.18)	0.68*	0.48	0.95
Employed	−0.27 (0.17)	0.77	0.55	1.06
Electricity	−0.73 (0.33)	0.48*	0.25	0.92
Number of sex partners last 4 months	0.05 (0.03)	1.05†	1.00	1.11
Number of sex acts with alcohol last 4 months	−0.00 (0.01)	1.00	0.98	1.01
Number of sex acts with drugs last 4 months	−0.02 (0.03)	0.98	0.92	1.04
Came to bar looking for sex partner	0.24 (0.26)	1.27	0.76	2.10
Ever met a new sex partner at this bar	−0.55 (0.24)	0.58*	0.36	0.91
Last time had a sex partner at this bar, used a condom	−0.13 (0.06)	0.88*	0.78	1.00
Ever had sex on the premises of this bar	1.01 (0.44)	2.73*	1.16	6.45
Sold sex last 4 months	0.29 (0.35)	1.33	0.67	2.65
Any drug use last 4 months	0.44 (0.21)	1.56*	1.04	2.34
Diagnosed with a sexually transmitted infection last 4 months	1.53 (0.52)	4.64**	1.69	12.74

Stigma endorsement=1, nonendorsement=0

†p<0.10; *p<0.05; **p<0.01; ***p<0.001

surveyed at drinking venues where levels of alcohol use were high across all participant groups. The lack of association between alcohol use and stigma endorsement suggests that these two characteristics have different relationships to risk and testing behaviors and may require different approaches to intervention. Research is needed to further disentangle the complex pathways linking alcohol use, stigma, and HIV risk.

Research has focused on several psychosocial predictors of HIV transmission risk. However, little has been known about the relation between AIDS-related stigma and risk, particularly among those who have never been tested for HIV. We hypothesized that in addition to being negatively associated with testing, endorsement of AIDS-related stigma would be significantly associated with HIV transmission risk among untested shebeen patrons. Support for this hypothesis suggests that individuals who are less likely to get tested for HIV because of their stigma endorsement are *also* at risk of transmitting HIV. Thus, stigma seems to be especially harmful for individuals because it may prevent those who should be getting tested for HIV from ever doing so. Untested HIV infection is a well-recognized driver of HIV epidemics, and stigma challenges efforts to increase testing uptake. Future research should test process models to examine whether and how stigma prevents testing and leads to risk across time.

In our multivariate model, we found that stigma endorsement was not associated with more general sexual behavior (i.e., recent number of partners) but was associated with sexual behavior within the context of the shebeens. This finding points to the need for close examination of risk dynamics in drinking venues in order to adequately tailor interventions for sexual behavior in general, but also in specific settings. Among our shebeen patrons, behavior in the venues may be partly dictated by beliefs about HIV/AIDS perhaps in part due to the knowledge that these settings pose a higher risk for HIV transmission than in other settings. Interestingly, individuals who endorsed AIDS-related stigma were less likely to report ever meeting a new sex partner at the bar, but were *more* likely to report ever having sex on the premises of the bar. These results at first appear contradictory but may be an artifact of how participants define sex partners. That is, endorsing AIDS-related stigma may operate differently when choosing different types of partners. Stigma endorsers may have less desire to meet romantic sex partners at the shebeen than to meet and have casual sex partners in this type of social setting. Future research should more closely examine patterns of social and sexual behavior as related to stigma in these settings.

The limitations of the current study should be considered when interpreting the findings. As previously mentioned, the current data were cross-sectional, precluding causal conclusions regarding the relationships between variables. Given the potentially sensitive or stigmatizing questions that were included in the survey, self-report responses could have had the potential to be biased by social desirability. Finally, our sample consisted of South Africans attending an informal drinking establishment in a single township in Cape Town. Whereas this sample was suitable for the current study's aims, we have no knowledge about whether the findings are generalizable to the larger population. Given that participants were recruited inside these drinking establishments, another potential limitation is that some may have been under the influence of alcohol.

In conclusion, AIDS-related stigma may pose a significant barrier to HIV testing, including among individuals attending informal drinking establishments. Further, given that stigma endorsement was associated with higher risk among individuals who have never been tested for HIV is of concern to voluntary HIV counseling and testing campaigns. Individuals who endorse AIDS-related stigma are less likely to get tested than nonendorsers, and are more likely to report higher risk for contracting or infecting someone with HIV. Thus, untested persons at high risk for HIV represent a difficult, yet imperative population to reach with voluntary HIV counseling and testing campaigns. For these individuals, stigma endorsement will likely both keep them from getting tested and continue to be associated with higher risk. In light of these findings, voluntary HIV counseling and testing campaigns in South Africa should directly address stigma as a barrier to testing and a potential transmission risk factor within the context of high-risk venues.

Acknowledgments This project was supported by National Institute of Alcohol Abuse and Alcoholism grant R01 AA018074 and National Institute of Mental Health grant R01MH094230.

Conflict of Interest Statement The authors have no conflict of interest to disclose.

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