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Social vulnerability and HIV testing among South African men who have sex with men (MSM)

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Summary

This study examined whether social vulnerability is associated with HIV testing among South African MSM. A community-based survey was conducted with 300 MSM in Pretoria in 2008. The sample was stratified by age, race, and residential status. Social vulnerability was assessed using measures of demographic characteristics, psychosocial determinants, and indicators of sexual minority stress. Being Black, living in a township and lacking HIV knowledge reduced MSM's likelihood of ever having tested for HIV. Among those who had tested, lower income and not self-identifying as gay reduced men's likelihood of having tested more than once. Lower income and internalized homophobia reduced men's likelihood of having tested recently. Overall, MSM in socially vulnerable positions were less likely to get tested for HIV. Efforts to mitigate the effects of social vulnerability on HIV testing practices are needed in order to encourage regular HIV testing among South African MSM.

Introduction

Recent research suggests that there is a widespread presence of men who have sex with men (MSM) across Africa and that there is an elevated risk for HIV infection among these populations.[1,2] Attempts to assess and respond to this public health problem have thus far been inadequate.[3] Accordingly, there is a dearth of information regarding HIV testing

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Declarations

There are no conflicts of interest to report.

Dr. Sandfort had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. The research protocol was approved by the Institutional Review Boards at the New York State Psychiatric Institute and the South African Human Sciences Research Council.

T. Sandfort and V. Reddy originated the study. J. Knox and T. Sandfort led the writing of the article. Data collection and analysis was conducted by S. Maimane, H. Yi, and J. Knox in consultation with T. Sandfort and V. Reddy. All of the authors contributed ideas, interpreted findings, and reviewed drafts of the article.

practices among MSM in Africa. The little information that is available suggests that HIV testing is low among MSM populations.[4]

HIV testing is an important component of HIV prevention efforts. Data drawn from HIV testing allow public health officials to assess HIV prevalence and incidence rates in target populations. On the individual level, regular HIV testing is increasingly being viewed as a gateway behaviour for other HIV prevention actions.[5] Knowing one's HIV status allows those who are infected to maximize the benefits of early HIV treatment and interventions to reduce the likelihood of further transmission.[6] Researchers predict that using universal testing and treatment as a strategy to decrease the rate of transmission of HIV could result in an incidence rate of less than one case per 1,000 people in ten years, reducing the worldwide prevalence of HIV to less than 1% within 50 years.[7]

Little is currently known about HIV testing practices among South African MSM.[8] A cross-sectional survey conducted among South African MSM living in townships found a low proportion of men testing regularly for HIV, especially among highly sexually active MSM. [9] Hence, the proportion of MSM with accurate knowledge of their HIV-status was low. Structural barriers to HIV testing, such as not knowing where to test or not being able to afford to test, did not appear to influence decisions not to get tested. However, fear of being stigmatized as gay and HIV-positive was a powerful deterrent.

A previous study found that being younger, Black, a student or unemployed, less educated and of lower socioeconomic status decreased the likelihood of having tested for HIV among South African MSM.[8] This led these authors to suggest that social position appears to influence HIV testing before concluding that further research on this topic is needed. In response, the current study set out to explore the concept of social vulnerability as it relates to HIV testing among South African MSM.

In order to examine whether characteristics of social vulnerability are associated with HIV testing among South African MSM, we first needed to define social vulnerability in this context and identify the indicators that comprise it. We hypothesized that age, race, level of education and employment status, which are markers of social vulnerability among the general South African population and associated with knowing one's HIV status,[10] also affect gay and other MSM. Because of the poverty and lack of resources characteristic of South African townships, we identified living in a township (as opposed to living in the city) as an explicit indication of social vulnerability. There are a few additional indicators of social vulnerability which are specific to gay and other MSM and which are likely to affect HIV testing behaviour. One such indicator is stigmatisation and discrimination. Studies have demonstrated that the social costs of HIV (stigmatization and rejection resulting from a potential positive diagnosis) are influential barriers to getting tested.[11, 12] We expected more broadly that indicators of sexual minority stress including discrimination related to sexual orientation and gender expression, concealment of sexual orientation, and internalized homophobia would be associated with less testing. Other indicators of social vulnerability could be the absence of certain psychosocial determinants. For instance, lack of social support and lack of HIV related knowledge are often seen as barriers to HIV preventive behaviours.[13, 14] Therefore, we included these factors in our analysis of the effects of social vulnerability on HIV testing among South African MSM.

The current study was conducted in Tshwane, the greater Pretoria metropolitan area. While there is an active health-focused LGBT community center ("OUT WELL-BEING") in Tshwane, opportunities for MSM to socialize are limited. There are several commercial gay clubs and bars, predominantly catering to White gay men, a bar/sauna, and several social networks available, such as a church group. For black gay men and other MSM, resources

are more limited. In the townships around Pretoria, men meet each other in so-called friendship circles and in clubs or bars that cater to the general public and in which gay men create their own space. Clubs or bars specifically targeting black gay men do not exist.

Methods

Men were eligible to participate in the study if they (1) lived in the greater Pretoria metropolitan area; (2) were between 18 and 40 years old; (3) reported having had oral, anal, or masturbatory sex with at least one man in the preceding year, regardless of involvement with women and including men who self-identify as gay; and (4) were conversant in English. To promote heterogeneity in the sample, our goal was to stratify participants by age (MSM above and below 25 years of age), race and socioeconomic status (white MSM, black MSM living in townships and black MSM living in the city of Pretoria). Because accessibility to MSM in South Africa varies based on race and socioeconomic status, multiple recruitment strategies were deployed in order to accomplish this goal. White men were recruited at a local gay night club. Resourced, black men were invited to attend social events at an LGBT community centre. For under-resourced, black men, social functions were held in various locations throughout local townships and attendees were invited to participate in the study. Informed consent was obtained verbally by the interviewers. Once confirmed, all participants were asked to fill out the questionnaire on the spot. Interviews were administered using Computer-Assisted Self-Interviewing in order to minimize social desirability bias. Privacy was maintained by having participants complete the survey in quiet, usually adjacent rooms. A total of three hundred men were surveyed for the project. Participants were compensated financially for their time. Participant recruitment and data collection were conducted from October to December 2008.

The survey collected information on HIV testing and indicators of social vulnerability, including: demographic characteristics, sexual identity and gender expression, sexual minority stress, social support, HIV knowledge, and sexual risk behaviours. Sexual identity and gender expression were assessed in three ways: sexual self-identification, femininity and concealment of sexual orientation. Sexual minority stress was assessed in two ways: internalized homophobia and sexual orientation based discrimination, both using previously validated scales.[15, 16] Sexual orientation-based discrimination was assessed in two ways: discrimination in the past year and lifetime institutional discrimination. Since the distribution of these two variables was positively skewed, the logged value of lifetime discrimination (Skewness = 1.89, Kurtosis = 4.10) and the logged value of discrimination in the past year (Skewness = 1.02, Kurtosis = 0.83) were used. Lack of social support was assessed in two ways, general lack of social support and lack of gay community involvement. Lack of HIV knowledge was measured using 15 items from previously validated instruments.[17, 18] HIV sexual risk was assessed using a previously validated tool with demonstrated re-test-reliability,[19, 20] and which was previously adapted for other studies.[21] The distribution of the variable of interest, number of acts of unprotected anal intercourse (UAI), was positively skewed so the logged value of UAI (Skewness = 1.47, Kurtosis = 1.38) was used.

HIV testing was measured by asking participants if they had ever tested for HIV. If they responded affirmatively, participants were asked to provide the year and month that they were first tested for HIV. Participants were then asked the number of times they had been tested for HIV. Participants were subsequently asked to provide the year and month that they were last tested for HIV.

Univariate analyses were conducted to examine variability and central tendency of the study variables. Bivariate analyses were run to test for associations between characteristics of

social vulnerability, ever having tested for HIV, time of HIV testing, and frequency of HIV testing. All predictors of HIV testing that were significant at $p < .10$ were included in multiple logistic regression models. Multiple logistic regression models were run to test which variables predicted (1) ever tested vs. never tested; and among those tested, (2) tested multiple times vs. tested once, and (3) tested in the past year vs. not tested in the past year. SPSS 17.0 was used for all statistical analyses.

Results

Participants

Participants' age ranged from 18–40 years with a mean of 26.1 years (SD = 5.9). Two thirds (66.3%) of participants were Black and one third (33.7%) were White. Over half of the participants (52.6%) reported living in a township, all of whom were Black. Participants ranged in educational level from having not completed primary school to holding post-graduate degrees. Half (49.8%) had more than a high school education. Two thirds (68.0%) of participants reported being employed. One quarter (24.2%) were students. Over half of the sample (53.2%) reported earning less than 4500 rand per month. The majority (84.6%) of participants self-identified as gay. A quarter of the participants (23.9%) reported being diagnosed with a sexually transmitted infection (STI) in the past year.

HIV testing practices

Two thirds of the participants had ever been tested for HIV (67.7%). In bivariate models, race and residential status, employment status, educational attainment, lack of social support, internalized homophobia, and lack of HIV knowledge were related to ever testing for HIV at $p < .10$ (See Table 1).

Among those who had been tested for HIV (n = 203), 73.4% of them had been tested more than once (49.7% of the total sample). These men had been tested an average of 4.1 times (SD = 5.1). In bivariate models, age, employment status, educational attainment, income, student status, self-identifying as gay, feminine presentation, lack of social support, and discrimination in the past year (logged) were related to frequency of HIV testing at $p < .10$.

More than half of the men who had been tested (59.1%), had done so in the past year (40.0% of the total sample). In bivariate models, age, race and residential status, income, self-identifying as gay, having been diagnosed for an STI in the past year, concealing one's sexual orientation, internalized homophobia, and discrimination in the past year (logged) were related to time of HIV testing at $p < .10$ (see Table 2).

Social vulnerability and HIV testing

All variables that were associated with the outcome variable in bivariate analyses at $p <. .10$ (see Tables 1 & 2) were included in the corresponding regression model. In multivariate models, at $p < .05$, being Black and living in a township was negatively associated with having ever been tested for HIV (adjusted OR = 0.29, 95% CI: 0.15–0.57). Lack of HIV knowledge was also negatively associated with having ever been tested for HIV (AOR = 0.90, 95% CI: 0.80–1.00). Among those who had tested for HIV, having tested multiple times was negatively associated with lower income (AOR = 0.33, 95% CI: 0.12–0.87) and not self-identifying as gay (AOR = 0.21, 95% CI: 0.11–0.84). Unexpectedly, having tested multiple times was positively associated with lack of social support (AOR = 1.86, 95% CI: 1.06–3.26). Also among those who had tested for HIV, having been tested in the past year was negatively associated with being older (AOR = 0.32, 95% CI: 0.13–0.79), lower income (AOR = 0.26, 95% CI: 0.10–0.67), and internalized homophobia (AOR = 0.63, 95% CI: 0.43–0.94) (See Table 3).

Discussion

This study demonstrates multiple key findings. First, a high proportion (32.3%) of South African MSM in this sample had never been tested for HIV. The majority of these men (60.0%) had not been tested recently. Second, being Black, living in a township and lacking HIV knowledge reduced MSM's likelihood of ever having tested for HIV. Third, among MSM who had been tested, having lower income and not self-identifying as gay reduced men's likelihood of having tested multiple times. Fourth, having lower income and having more internalized homophobia reduced MSM's likelihood of recently having tested for HIV.

In summary, MSM in socially vulnerable positions were less likely to have ever tested for HIV, to have tested for HIV multiple times, and to have tested for HIV recently. These findings were achieved among a population in which this topic has not been assessed. This is not surprising given how little is currently known about the impact of HIV on African MSM.[3, 8]

This study examined a specific set of characteristics that were believed to define social vulnerability for this population in this setting. Counter to our hypotheses, two factors that were expected to be characteristics of social vulnerability (being younger and lacking social support) actually appeared to increase the likelihood of testing. Also, as the findings indicate, some factors of social vulnerability predicted HIV testing practices, while others did not. This indicates that certain markers of social vulnerability operate differently among South African MSM. For example, younger MSM might be less likely to be married or have children and more likely to be a part of a network that supports accessing HIV care. Or, social norms among South African MSM may not be encouraging of HIV testing, thus social support actually negatively predicts regular testing. It is also possible that other indicators of social vulnerability were not assessed by this study. Future research should examine the construct of social vulnerability more robustly and attempt to develop a conceptual framework for what constitutes social vulnerability specifically among South African MSM. Further research should also explore how this construct influences HIV testing practices.

There are several limitations to this study. First, the cross-sectional research design does not allow inference of causality. Second, these results were achieved among a convenience sample of MSM in Pretoria, South Africa, which may reflect certain biases and have limited generalizability. Third, even though Computer-Assisted Self-Interviewing was used, the data collected is self-reported and could have been biased by social desirability. Lastly, the constructs measured were developed in Western settings, and although their reliability and validity have been demonstrated, there may be additional culture-specific factors that have not been accounted for in the current study.

Despite these limitations, these findings indicate that efforts need to be made to increase HIV testing among South African MSM. Specifically, efforts to mitigate the effects of social vulnerability on HIV testing practices are needed in order to encourage regular HIV testing among South African MSM. Scaling up HIV testing services in South Africa would profit from targeting lower income, black MSM living in townships. Efforts should also be made to strengthen MSM communities, especially among black MSM, resulting in reduced levels of internalized homophobia and the social support to self-identify as gay. The lack of attention to HIV prevention among MSM in South Africa thus far has resulted in a dearth of evidence to inform interventions that could aid this high risk population in the middle of a devastating epidemic.

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Table 1

Characteristics of social vulnerability by ever having tested for HIV

	Total		Never		Ever			
	%	N	%	N	%	N	$\chi 2$	*p*
Age							0.85	.36
24 or younger	52.2%	140	32.1%	45	67.9%	95		
25 or older	47.8%	128	37.5%	48	62.5%	80		
Race and residential status							24.53	< .01
Black in township	52.2%	151	45.7%*	69	54.3%	82		
Black in city	13.8%	40	25.0%	10	75.0%	30		
White in non-township	33.9%	98	16.3%*	16	83.7%	82		
Employed							3.76	.05
No	32.0%	95	40.0%	38	60.0%	57		
Yes	68.0%	202	28.7%	58	71.3%	144		
Educational attainment							3.29	.07
≤ Grade 12	50.2%	150	37.3%	56	62.7%	94		
> 12 Grade or diploma	49.8%	149	27.5%	41	72.5%	108		
Income							0.71	.40
Low income	53.2%	158	34.8%	55	65.2%	103		
High income	46.8%	139	30.2%	42	69.8%	97		
Student							1.16	.28
Yes	24.2%	72	37.5%	27	62.5%	45		
No	75.8%	225	30.7%	69	69.3%	156		
Self-identified gay							0.51	.48
No	15.4%	46	37.0%	17	63.0%	29		
Yes	84.6%	253	31.6%	80	68.4%	173		
STI past year							0.20	.66
Yes	23.9%	71	33.8%	24	66.2%	47		
No	76.1%	226	31.0%	70	69.0%	156		
Time of HIV Testing								
Never	33.4%	97	100%	97	-	-		

	Total		Never		Ever			
	%	N	%	N	%	N	χ2	*p*
> 1 year ago	25.2%	73	-	-	100%	73		
< 1 year	41.4%	120	-	-	100%	120		
Frequency of HIV testing								
Never	33.4%	97	100%	97	-	-		
Once	18.6%	54	-	-	100%	54		
> Once	51.3%	149	-	-	100%	149		
	M	SD	M	SD	M	SD	*t*	*p*
Femininity	2.9	1.1	2.8	1.1	2.9	1.1	−0.59	.55
Concealment of sexuality	2.6	1.4	2.8	1.4	2.5	1.3	1.58	.12
Lack of social support	1.8	0.9	2.0	1.0	1.7	0.8	3.14	< .01
Lack of gay community involvement	2.4	1.1	2.4	1.1	2.4	1.1	0.01	
Internalized homophobia	2.3	1.1	2.5	1.1	2.2	1.1	2.37	.02
Lifetime discrimination**	0.3	0.5	0.3	0.5	0.3	0.4	−0.96	.34
Past year discrimination**	0.8	0.8	0.8	0.7	0.8	0.8	−0.06	.95
Lack of HIV knowledge	3.5	2.5	4.2	.2.6	3.2	2.4	3.34	< .01
Number of UAI**	0.3	0.5	0.3	0.5	0.3	0.4	0.65	.52

Notes:

* indicates standardized residuals are >1.96 or < −1.96

** indicates that variables have been log transformed.

3 A high score indicates greater presence of the construct

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Table 2

Characteristics of social vulnerability by frequency and time of HIV testing among those tested

	Once		> Once				> 1 Year Ago		Past year			
	%	N	%	N	χ2	*P*	%	N	%	N	χ2	*p*
Age					8.44	< .01					5.77	.02
24 or younger	35.8%	34	64.2%	61			29.3%	27	70.7%	65		
25 or older	16.3%	13	83.8%	67			47.4%	36	52.6%	40		
Race & residential status					1.71	.43					22.79	< .01
Black in township	30.5%	25	69.5%	57			56.0%*	42	44.0%*	33		
Black in city	30.0%	9	70.0%	21			43.3%	13	56.7%	17		
White in non-township	22.0%	18	78.0%	64			19.0%*	15	81.0%*	64		
Employed					5.57	.02					0.18	.68
No	38.6%	22	61.4%	35			35.8%	19	64.2%	34		
Yes	22.2%	32	77.8%	112			39.1%	54	60.9%	84		
Educational attainment					6.29	.01					2.16	.14
≤ Grade 12	35.1%	33	64.9%	61			43.7%	38	56.3%	49		
> 12 Grade or diploma	19.4%	21	80.6%	87			33.3%	35	66.7%	70		
Income					12.72	< .00					13.44	< .01
Low income	37.9%	39	62.1%	64			51.0%	49	49.0%	47		
High income	15.5%	15	84.5%	82			25.3%	24	74.7%	71		
Student					5.09	.02					0.18	.67
Yes	40.0%	18	60.0%	27			35.6%	16	64.4%	29		
No	23.1%	36	76.9%	120			39.0%	57	61.0%	89		
Self-identified gay					3.71	.05					5.09	.02
No	41.4%	12	58.6%	17			57.1%	16	42.9%	12		
Yes	24.3%	42	75.7%	131			34.8%	57	65.2%	107		
STI past year					0.32	.57					8.74	<.01
Yes	29.8%	14	70.2%	33			56.8%	25	43.2%	19		
No	25.6%	40	74.4%	116			32.2%	48	67.8%	101		
Time of HIV Testing					17.02	< .01						
> 1 year ago	43.8%	32	56.2%	41			-	-	-	-		

	Once		> Once				> 1 Year Ago		Past year			
	%	N	%	N	χ2	*P*	%	N	%	N	χ2	*p*
< 1 year	16.7%	20	83.3%	100			-	-	-	-		
Frequency of HIV Testing											17.02	< .01
Once	-	-	-	-			61.5%	32	38.5%	20		
> Once	-	-	-	-			29.1%	41	70.9%	100		
	M	SD	M	SD	*t*	*p*	M	SD	M	SD	*t*	*p*
Femininity	3.2	1.0	2.8	1.2	2.49	.01	3.0	1.2	2.9	1.1	0.67	.51
Concealment of sexuality	2.7	1.4	2.5	1.3	1.22	.22	2.8	1.3	2.4	1.3	1.94	.05
Lack of social support	1.4	0.7	1.7	0.9	−2.14	.03	1.8	0.8	1.6	0.9	1.24	.22
Lack of gay community involvement	2.3	1.0	2.5	1.1	−0.86	.39	2.3	1.0	2.4	1.1	−0.62	.53
Internalized homophobia	2.3	1.2	2.2	1.1	0.92	.36	2.6	1.2	2.0	1.0	3.53	< .01
Lifetime discrimination**	0.3	0.4	0.3	0.4	−1.10	.27	0.4	0.5	0.3	0.4	1.62	.11
Past year discrimination**	0.9	0.9	0.7	0.7	2.03	.04	0.9	0.9	0.7	0.7	2.44	.02
Lack of HIV knowledge	3.3	2.3	3.1	2.5	0.40	.69	3.1	2.5	3.1	2.4	−0.03	.99
Number of UAI**	0.3	0.4	0.3	0.4	0.14	.89	0.3	0.5	0.3	0.4	0.45	.65

Notes:

*indicates standardized residuals are >1.96 or < −1.96.

**indicates that variables have been log transformed.

[3]A high score indicates greater presence of the construct

Table 3

Regression Models Examining Social Vulnerability and HIV Testing Practices

	AOR (95% CI)	*p*	Wald
Ever tested (1) vs. never tested (0) (n=300)			
Black MSM in township	0.29 (0.15–0 .57)	<.001	12.77
Lack of HIV knowledge	0.90 (0.80– 1.00)	.049	3.86
Tested multiple times (1) vs. tested once (0) (n=203)			
Lower income	0.33 (0.12–0.87)	.026	4.97
Self-identified as non-gay	0.21 (0.11–0.84)	.021	5.31
Lack of social support	1.86 (1.06–3.26)	.032	4.60
Tested in the past year (1) vs. tested over a year ago (0) (n=193)			
Lower income	0.26 (0.10–0.67)	.005	7.81
Internalized homophobia	0.63 (0.43–0.94)	.024	5.12
Younger	3.11 (1.26–7.67)	.014	6.09

Note.

[1] All variables that were associated with the outcome variable in bivariate analyses at $p <$. 10 were included in each regression model.

[2] 10 participants did not indicate the date that they were tested and so they were excluded from relevant analyses.

[3] Only significant predictors are presented.