



Southern African Lesbian and Bisexual Women Responses to Symptoms of Sexually Transmitted Infections

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Abstract

Sexually transmitted infection (STI) in lesbian and bisexual women is a relatively unexplored topic, particularly for women from low- and middle-income countries. Despite perceptions that women who have sex with women (WSW) are at negligible risk of contracting STI, existing research demonstrates that WSW do become infected with STI. Given the opposition between assumptions of invulnerability and the observed risks, we explored how WSW would respond to symptoms of STI (i.e., wait until symptoms passed, see a medical doctor, and inform sexual partners). We used data collected as part of a collaboration between academic researchers and community-based LGBTQ organizations in Botswana, Namibia, South Africa, and Zimbabwe. Chi-squared tests were used to test whether participants' responses to hypothetical STI symptoms varied in relation to several intrapersonal, interpersonal, and structural factors. Multivariable logistic regression (backward) was used to assess whether these variables were independently associated with women's responses. Most women would be proactive in response to potential STI symptoms and would see a medical doctor. However, most women would not inform their sexual partner of symptoms of STI. Findings demonstrate several intrapersonal, interpersonal, and structural factors that influence WSW's health agency, and show a clustering of high-risk factors among women who would not be proactive about their health. Our findings suggest the need for improved health and health care of WSW in Southern Africa.

Keywords Lesbian and bisexual women · Sexually transmitted infections · Healthcare behavior · Southern Africa · Sexual orientation

Introduction

Sexually transmitted infections (STIs) in women who have sex with women (WSW) are relatively unexplored, especially among women from low- and middle-income countries. One of the reasons for this is that WSW are assumed to be at no or low risk of contracting STI (Bauer & Welles, 2001; Mora & Monteiro, 2010; Power, McNair, & Carr, 2009). However, WSW have been shown to engage in STI-related risk behaviors (Gorgos & Marrazzo, 2011; Kerr, Ding, & Thompson, 2013) and do become infected with STI (Bailey, Farquhar, Owen, & Mangtani, 2004; Fethers, Marks, Mindel, & Estcourt, 2000; Marrazzo, Stine, & Koutsky, 2000; Zaidi, Ocholla, Otieno, & Sandfort, 2016). A recent systematic review of 22 studies found that self-reported lifetime prevalence of STI was estimated to be 2.3–56% among lesbian-identified women (Takemoto et al., 2019). Among WSW more generally, lifetime STI prevalence estimates range from 21% (Bauer & Wells, 2001) to 53% (Muzny, Sunesara, Martin, & Mena, 2011). Some research

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has found that Hepatitis A, trichomoniasis, syphilis, and human papilloma virus can be transmitted between female sexual partners (Gorgos & Marrazzo, 2011; Kerr et al., 2013). Moreover, studies suggest that some WSW who also have sex with men are more likely to engage in high-risk behaviors that increase their risk of STIs, compared to other women (Bailey et al., 2004; Kalichman, Simbayi, Kaufman, Cain, & Jooste, 2007; Poteat et al., 2014; Singh, Fine, & Marrazzo, 2011).

Excluding WSW from risk group categories has created a false sense of invulnerability to STI, including HIV, has impeded their access to tailored health information, and has compromised their capacity to make informed decisions when addressing their health (Daly, Spicer, & Willan, 2016; Poteat et al., 2014). Moreover, heteronormative healthcare structures, sometimes characterized by culturally insensitive or discriminatory healthcare providers, alienate and discourage WSW from seeking necessary medical care (Kerker, Mostashari, & Thorpe, 2006; Saulnier, 2002; Stevens, 1995).

Women's response to symptoms of STI can be affected by various intrapersonal (e.g., low perceived personal STI risk), interpersonal (e.g., healthcare providers conveying misinformation to WSW about their STI risk; providers' homophobic attitudes), and structural factors (e.g., lack of access to WSW-specific care) (Doull et al., 2018; Gorgos & Marrazzo, 2011; Matebeni, 2009; Müller, 2013; Müller & Hughes, 2016; Smith, 2015; Tallis, 2009; Tat, Marrazzo, & Graham, 2015) that might prevent women from addressing symptoms. Understanding how WSW respond to potential STI symptoms, and the factors that affect those responses, is essential to inform public health programs that encourage and support WSW to take care of their health. This is particularly relevant in regions such as Southern Africa, where women's health agency is further compromised by comparatively limited social acceptance (Rule & Mncwango, 2006) and homophobic violence, including "corrective" rape (Human Rights Watch, 2011) and where, with the exception of South Africa, same-sex sexual practices are criminalized (Beresford, Schneider, & Sember, 2010; Human Rights Watch, 2003; U.S. Department of State, 2010).

Constitutional laws prohibiting sexual orientation-related discrimination, such as those in South Africa, have not necessarily improved the social or healthcare environment for WSW (Currier & Migraine-George, 2017; Gunkel, 2010; Mkhize, Bennett, Reddy, & Moletsane, 2010; Sandfort, Baumann, Matebeni, Reddy, & Southey-Swartz, 2013; Sandfort, Frazer, Matebeni, Reddy, & Southey-Swartz, 2015; Smith, 2015). Persistent homophobia, particularly on the part of medical providers, continues to impede WSW's access to relevant sexual health information (Müller & Hughes, 2016; Tat et al., 2015). For example, a qualitative study based in South Africa found that WSW encountered stigmatizing attitudes from healthcare providers, who sometimes questioned WSW patients about why they were seeking out STI testing (Smith, 2015). Moreover,

most sexual health campaigns (Muranda, Mugo, & Antonites, 2014) and HIV policies (Daly et al., 2016; Morison & Lynch, 2016) in South Africa continue to focus on either heterosexual or male-to-male HIV transmission risks, thus overlooking the sexual health needs of WSW despite their risk of HIV (Matebeni, Reddy, Sandfort, & Southey-Swartz, 2013; Sandfort et al., 2013).

Access to WSW-specific sexual health information and services is also limited in Southern Africa. For example, in a study of African WSW from countries such as Namibia, South Africa, and Zimbabwe, close to half (46%) of the sample reported being unsure of where to learn about safer sex methods for WSW (Muranda et al., 2014). Available WSW-specific safer sex resources are inaccessible to many WSW in Southern Africa who live far from existing lesbian, gay, bisexual, transgender, and queer (LGBTQ) community organizations (Matebeni et al., 2013).

Theoretical Framework

The minority stress framework posits that sexual minorities like WSW encounter both proximal (e.g., internalized homophobia; anticipated stigma) and distal (e.g., homophobia in healthcare settings; discriminatory policies) stressors that negatively impact health behaviors and outcomes (Meyer, 2003). For example, sexual minority-related stigma has been shown to predict lower engagement in safer sex among WSW (Logie, Lacombe-Duncan, MacKenzie, & Poteat, 2016). Multiple stigmatized identities, such as one's gender, race, and ethnicity, can amplify the adverse impact of sexual minority stigma (Meyer, 2003). Minority stress also impedes sexual minorities' access to and utilization of health services (Jackson, Agénor, Johnson, Austin, & Kawachi, 2016; Whitehead, Shaver, & Stephenson, 2016), such as STI testing. For example, a study among lesbian, gay, bisexual, and transgender (LGBT) individuals in rural U.S. found that increased stigma was related to less engagement in health care (Whitehead et al., 2016). Studies in Southern Africa have found that WSW may avoid health care, such as STI testing, given perceived and enacted homophobia in healthcare settings (Müller & Hughes, 2016; Smith, 2015; Tallis, 2009).

This study was grounded in the minority stress framework to explore how WSW would hypothetically respond to symptoms of STI, examining three possible responses. These included waiting and seeing whether symptoms passed, seeking medical care, and informing sexual partners to prevent onward transmission. We considered potential drivers of proximal and distal minority stress, including demographic characteristics (e.g., age, race, education level), sexual orientation concealment, internalized homophobia, sense of belonging to the LGBT community, access to medical aid, and country of residence.

Method

Participants

The data used in this study were collected as part of a collaboration between academic researchers and community-based LGBTQ organizations in Botswana, Namibia, South Africa, and Zimbabwe. Eligibility criteria included: (1) 18 years or older; (2) assigned female sex at birth; (3) engagement in sex with a woman in the preceding year; and (4) resident of Botswana, Namibia, South Africa, or Zimbabwe. WSW were recruited through seven organizations (four in South Africa and one each in Botswana, Namibia, and Zimbabwe) via announcements at meetings, LGBTQ-affirming religious gatherings, and other LGBTQ events. Potential participants were also identified through the organizations' databases and contacted by text message, cell phone call, direct email, and/or Facebook message. Word-of-mouth referrals served as a third recruitment source.

Procedure

Data were collected between September and December 2010 by staff of community-based organizations, trained on recruitment of participants, data collection, and research ethics. A few of the individual organizations involved in participant recruitment compensated participants for their time. A waiver of written consent for participation in this study was obtained in order to (1) protect the confidentiality of participants; (2) increase the likelihood of participation; and (3) ensure diversity. Questionnaire completion occurred in the presence of a field worker who first explained the purpose of the study and obtained oral consent. All participants completed a written, structured English language questionnaire. Most participants completed questionnaires individually in places that were experienced by the participants as "safe"; these included private homes of the participants themselves or their friends, offices of community-based organizations, cars, or public spaces such as parks. In 15.1% of the cases, participants received assistance completing the questionnaire. Some women completed the questionnaire in the presence of other participants, while confidentiality was ensured. The research protocol was approved by the Institutional Review Boards at the New York State Psychiatric Institute (New York) and the Human Sciences Research Council (Pretoria, South Africa).

Measures

Questionnaires collected information about participants' demographic characteristics such as age, race, education, marital status, country of residence, income, and access to medical aid. We also assessed participants' sexual health through a series of

questions that began by explaining that anyone who engages in sex is at risk of STI. All measures were either selected or developed in collaboration with our community partners through two week-long meetings and ongoing conference calls.

Primary Outcomes: Hypothetical Responses to STI Symptoms

Women were first asked if they had had any of nine symptoms in the preceding year. These symptoms included: "Strong vaginal smell (e.g., fishy odor)," "Vaginal itching or irritation," "Frequent urination," "Pain or burning sensation when urinating," "Lower abdominal pain," "Thick, cloudy or bloody discharge from the vagina," "Greenish yellow, possibly frothy vaginal discharge," "Pain during sexual intercourse," or "light vaginal bleeding, not during menstruation." All symptoms indicate possible signs of STI according to the Centers for Disease Control and Prevention (2016; see also Workowski & Bolan, 2015). Endorsed symptoms were summed in a total score. The primary outcomes were women's hypothetical responses to experiencing any of the aforementioned STI symptoms: (1) waiting until symptoms passed (yes vs. no); (2) seeing a medical doctor (yes vs. no); and (3) informing a sexual partner of symptoms (yes vs. no).

HIV Testing and HIV Risk Perception

As part of the sexual health assessment, women were also asked whether they thought they had HIV, had "ever been tested for HIV," and to self-report "the chances that they might have become infected with HIV." Responses for perceived risk were categorized as "No risk" (No chance at all; I have not had sex in the past three months) and "Some risk" (A minor chance; A reasonable chance; A major chance).

Knowledge on STI and HIV Transmission

Knowledge on STI transmission was assessed by having participants indicate through which of the following routes women who have sex with women can get STI: "Skin-to-skin contact" (yes vs. no), "Contact with vaginal fluids" (yes vs. no), and "Contact with menstrual blood" (yes vs. now). Knowledge on HIV transmission was assessed by offering nine statements about HIV transmission and asking whether they were true or false (e.g., "Women who have sex with each other are not at risk of HIV transmission," "People can get HIV by sharing a meal with someone who is infected," and "People can avoid transmission of HIV by having anal sex"). Response categories were "True," "False," and "Don't know." For both knowledge variables, the number of correct answers was calculated.

STI Diagnosis

Participants were asked if a medical doctor or nurse had informed them in the past year that they had “a sexually transmitted disease, or infection such as Hepatitis B and C, herpes, gonorrhea, HPV, chlamydia, syphilis?” Women were also asked if they had “ever received STI/HIV information specifically for women who have sex with women?”

Sexual Identity

To assess sexual identity, participants were asked: “In terms of your sexual orientation, what do you consider yourself...” Women could choose from the following options: lesbian, bisexual, gay, heterosexual, and other. We combined “lesbian” (76.2% of the sample) with “gay” (0.7%) and categorized the remaining women as “other” given the small sample of women identifying as something other than bisexual (18.9%; 2.2% heterosexual; 2.0% “other”).

Gender Role Identity

Given that the expression of same-sex sexuality in the Southern African context often intersects with gender expression (Morgan & Wieringa, 2005), we also assessed women’s perception of themselves as masculine and feminine. Women were asked to rate themselves on a 5-point scale (Not at all to Extremely) regarding how feminine they perceived themselves, how feminine they acted, appeared, and came across to others, and how feminine their personality was. A parallel scale was used for the assessment of masculinity. Participants were offered definitions for both masculine and feminine. Cronbach’s alpha for both scales was 0.94 and 0.91, respectively.

Sexual Orientation Concealment

Women were asked how hard they tried to keep their sexual orientation secret from family, friends, and at work or school. Response options included “I try very hard to keep it secret” to “I openly talk about it with my family,” “I try somewhat hard to keep it secret,” “I don’t try to keep it secret,” and “I openly talk about it with my friends.” Cronbach’s alpha was 0.83. Scores were reversed, and a mean score was calculated.

Internalized Homophobia

We assessed internalized homophobia by asking women whether they agreed or disagreed (1–4) with six statements including “Whenever I think about having sex with someone of the same sex, I feel bad about myself,” “I wish I were only

sexually attracted to the opposite sex,” and “If someone offered me the chance to be completely heterosexual, I would accept the offer.” Cronbach’s alpha was 0.88; a mean score was calculated.

Sense of Belonging

To assess sense of belonging to the community in general and to the community of LGBT persons, we adapted scales from Hagerty and Patusky (1995) and McLaren (2009). Participants were asked to indicate on a four-point scale (disagree strongly to agree strongly) their agreement with the following statements, “Other LGBT people accept me,” “I feel like an outsider in the LGBT community,” “I feel part of the LGBT community,” “I feel misunderstood in the LGBT community.” Cronbach’s alpha was 0.77.

Sexual Behavior History

In terms of women’s sexual behavior, we assessed the number of female partners over the past three months (based on the women’s responses, answers were categorized as: 0, 1, 2 or more). In addition, women were asked if they had “freely participated in any vaginal sex, oral sex, or anal sex with a man” over the past three months. Having had forced sexual experiences were assessed with the question “Has a woman or girl ever made you have sex when you did not want to by using force or threatening to harm you or someone close to you? Again, this woman or girl could have been a stranger, someone you knew but also your intimate partner.” A parallel question was asked for forced sex by men. Experiences with transactional sex were assessed with the question “Sometimes, people get something in return for having sex with other people. This can be a variety of things, including food, a place to sleep, money, and a lot of other things. Have you ever had sex with a woman for any of the following reasons?” A parallel question was asked for transactional sex with men.

Substance Use and Mental Health

We also assessed lifetime recreational drug use and frequency of alcohol consumption. Mental distress was assessed with a 10-item short screening scale developed by Kessler et al. (2002) (Cronbach’s alpha, 0.92). Women were asked to indicate on a 5-point scale (None of the time to all of the time) how often they had experienced feelings of distress (e.g., Feeling tired for no reason, nervousness, feeling hopeless, etc.) in the preceding 4 weeks.

Sexual Orientation Concealment from Healthcare Provider

To assess participants’ experiences with the healthcare system, the questionnaire assessed how hard women attempted to

keep their sexual orientation secret from medical professionals (1 = “I openly talk about it with medical doctors and nurses” to 4 = “I try very hard to keep it secret”) as well as the expected impact of disclosing sexual orientation to medical professionals (1 = very positive to 5 = very negative).

Data Analyses

First, we used descriptive statistics to characterize the sample in terms of demographics, psychosocial characteristics, sexual health history, mental distress, and healthcare experiences (Table 1). Next, we used chi-squared tests and three separate stepwise backward multivariable logistic regression models to explore associations between the sample characteristics and the outcome of three hypothetical responses to experiencing STI symptoms: (1) waiting and seeing if STI symptoms passed (yes vs. no; Table 2); (2) seeing a medical doctor (yes vs. no; Table 3); and (3) informing a sexual partner of symptoms (yes vs. no; Table 4). All variables were entered into each of the three stepwise backward regression models, given the exploratory nature of the study. Compared to other model building techniques, stepwise backward regression has been shown to be an effective method for building parsimonious regression models and for accurately retaining the most relevant variables (Bursac, Gauss, Williams, & Hosmer, 2008; Wang, Koval, Mills, & Lee, 2007). Before entering the variables into each of the three models, we checked for multicollinearity and found a variance inflation factor (VIF) of 1.14–3.04 across all variables, which is below the standard multicollinearity VIF cutoff of 10 (Allison, 2012). Level of significance was set at an alpha of .05. All analyses were conducted using IBM SPSS version 23.

Results

Sample Characteristics

The 591 women who participated in this study were between 18 and 65 years old ($M = 26.0$ years, $SD = 6.68$). Most women identified as Black (78.5%; see Table 1 for the sample description). The largest proportion of participants were from South Africa (60.9%). In terms of sexuality, most women identified as lesbian or gay (76.5%); a significantly greater proportion of women from South Africa identified as lesbian or gay (83.2%) compared to other countries (57.1% Botswana; 69.4% Namibia; 68.8% Zimbabwe; $p < .001$ [data not shown in the table]). Women’s mean scores on both the feminine ($M = 2.93$, $SD = 1.28$) and masculine ($M = 2.57$, $SD = 1.23$) gender role identity scales suggested that they did not firmly identify as masculine or feminine. Women from Botswana had a significantly higher mean feminine identity score ($M = 3.47$, $SD = 0.97$ vs. South Africa: $M = 2.95$, $SD = 1.30$; Namibia: $M = 2.76$, $SD = 1.32$; Zimbabwe: $M = 2.68$, $SD = 1.23$; $p = .004$) and significantly lower

Table 1 Characteristics of Southern African women who have sex with women (M [SD]/ n [%]) ($N = 591$)^a

<i>Sociodemographic characteristics</i>	
Age (years)	26.0 (6.68)
Race	
Black	464 (78.5)
Colored	73 (12.4)
Other	52 (8.8)
Education	
Low	269 (45.5)
High	319 (54.0)
Ever married	
No	543 (91.9)
Yes	48 (8.1)
Country	
Botswana	51 (8.6)
Namibia	112 (19.0)
South Africa	360 (60.9)
Zimbabwe	68 (11.5)
Regular income	
No	302 (51.1)
Yes	280 (47.4)
Medical aid	
No	374 (63.3)
Yes	211 (35.7)
<i>Psychosocial characteristics</i>	
Sexual identity	
Lesbian or gay	452 (76.5)
Other	136 (23.0)
Gender role identity	
Masculinity ^b	2.57 (1.23)
Femininity ^c	2.93 (1.28)
Concealment of sexual orientation ^d	2.06 (0.87)
Internalized homophobia ^e	1.59 (0.66)
<i>Sense of belonging</i>	
Sense of belonging to community ^f	2.86 (0.66)
Sense of belonging to LGBT community ^g	3.25 (0.60)
<i>Sexual experience</i>	
No. of female partners in past three months	
0 partners	63 (10.7)
1 partner	311 (52.6)
2 or more partners	182 (30.8)
Consensual sex with man in past three months	
No	488 (82.6)
Yes	103 (17.4)
Forced sex with woman	
No	495 (83.8)
Yes	96 (16.2)
Forced sex with man	
No	446 (75.5)
Yes	145 (24.5)

Table 1 (continued)

Transactional sex with woman	
No	501 (84.8)
Yes	90 (15.2)
Transactional sex with man	
No	529 (89.5)
Yes	62 (10.5)
<i>Sexual health</i>	
Ever received STI/HIV information specifically for WSM	
No	363 (61.4)
Yes	228 (38.6)
STI knowledge ^h	1.38 (0.70)
Knowledge about HIV transmission ⁱ	7.50 (1.49)
Perceived risk of HIV	
No risk	353 (59.7)
Some risk	221 (37.4)
Number of STI symptoms in past year ^j	1.85 (2.18)
Diagnosed STI in past year	
No	545 (92.2)
Yes	46 (7.8)
Ever tested for HIV	
No	128 (21.7)
Yes	463 (78.3)
Self-reported HIV status	
Positive	41 (6.9)
Negative or don't know	550 (93.1)
<i>Mental distress</i>	
Frequency of alcohol consumption ^k	1.71 (1.49)
Ever used drugs	
No drug	295 (49.9)
Some drug use	296 (50.1)
Mental distress ^l	2.12 (0.87)
<i>Health care</i>	
Being open about orientation to medical providers ^m	2.79 (1.08)
Expected positive impact of disclosing orientation to medical provider ⁿ	2.83 (1.06)

^aDue to missing values, not all numbers add up to 591, ^bmasculinity: 3 items, 1–5, ^cfemininity: 3 items, 1–5, ^dconcealment of sexual orientation: 3 items, 1–4, ^einternalized homophobia: 6 items, 1–4, ^fsense of belonging to community: 4 items, 1–4, ^gsense of belonging to LGBT community: 4 items, 1–4, ^hSTI knowledge: 3 items, 0–3, ⁱknowledge about HIV transmission: 9 items, 0–9, ^jSTI symptoms: 9 items, 0–9, ^kalcohol consumption: 4 items, 0–4, ^lmental distress: 10 items, 1–5, ^mbeing open about orientation to medical providers: 1 item, 1–4, ⁿexpected positive impact of disclosing to providers: 1 item, 1–5

mean masculine identity score ($M = 1.95$, $SD = 0.99$ vs. South Africa: $M = 2.65$, $SD = 1.23$; Namibia: $M = 2.50$, $SD = 1.20$; Zimbabwe: $M = 2.74$, $SD = 1.30$; $p = .001$) than women from other countries (data not shown in the table).

About half of the women reported having only one female partner in the past three months (52.6%). Few reported consensual sex with a man in the past three months (17.4%). Most

women perceived no personal risk of HIV (59.7%) and had not been diagnosed with an STI in the past year (92.2%). Less than half of the women reported to have received STI/HIV information tailored to WSW (38.6%). See Table 1 for further details.

Waiting and Seeing If Symptoms Go Away

Approximately a quarter of participants (27.6%) said that they would wait and see if STI symptoms would go away if they were to observe any of the nine STI symptoms. “Waiting” was bivariately associated with the following twelve factors (Table 2): Women were more likely to wait and see the younger they were. Compared to women in South Africa, women currently living in Zimbabwe were less likely to wait and see. Compared to women who had no female sexual partners in the past three months, women who reported a single female partner were less likely to wait and see, while, in contrast, women who had had two or more female partners were more likely to do so. Women were more likely to wait and see the more the knowledge of STIs they had, the more STI symptoms they reported to have experienced in the past year, and when they had received a STI diagnosis in the past year. With regard to HIV, participants who perceived some risk of HIV (vs. no risk) were more likely to wait compared to women who perceived no risk, while those who had ever been tested for HIV were less likely to wait for symptoms to pass (compared to women who had never tested). The more open women were to disclosing their sexual orientation to medical professionals or expected a positive impact of disclosing their status to a provider, the less likely they were to wait. Women who had used drugs were more likely to wait for symptoms to pass than women who never used drugs. Finally, the more mental distress women experienced, the more likely they would be to wait for symptoms to pass.

The thirteen variables retained in the final backward multivariable logistic regression model were race, country of residence, medical aid, internalized homophobia, number of female sexual partners in the past three months, forced sex with women and with men, number of STI symptoms in the past year, ever testing for HIV, having ever used drugs, mental distress, openness about sexual orientation to medical providers, and expected impact of disclosing sexual orientation to medical providers. Six of the retained variables were significantly associated with waiting to see if symptoms go away (Table 2). The odds of reporting this response were lower among women who were currently living in Zimbabwe (compared to women living in South Africa; AOR = 0.21; 95% CI = 0.08, 0.58). Women who had had two or more female partners in the past three months had higher odds of waiting (compared to women with no sexual partners; AOR = 3.26; 95% CI = 1.21, 8.81). If women had ever experienced forced sex with men, they had lower odds of waiting compared to women without such experience (AOR = 0.44; 95% CI = 0.23, 0.83). Women who had ever tested for HIV also had lower odds of waiting compared

Table 2 Factors associated with waiting and seeing if potential STI symptoms passed^a

	No <i>M</i> (SD)/ <i>n</i> (%)	Yes <i>M</i> (SD)/ <i>n</i> (%)	Bivariate			Multivariate		
			OR	95% CI	<i>p</i> value	AOR	95% CI	<i>p</i> value
<i>Sociodemographic characteristics</i>								
Age (in years)	26.4 (6.76)	25.0 (6.44)	0.97	0.94, 1.00	.034			
Race								
Black	329 (71.4)	132 (28.6)	REF			REF		
Colored	53 (73.6)	19 (26.4)	0.92	0.53, 1.61	.766	1.08	0.54, 2.16	.819
Other	40 (76.9)	12 (23.1)	0.76	0.39, 1.49	.421	2.01	0.83, 4.89	.122
Education								
Low	187 (70.3)	79 (29.7)	REF					
High	234 (73.6)	84 (26.4)	0.85	0.59, 1.22	.378			
Ever married								
No	385 (71.4)	154 (28.6)	REF					
Yes	39 (81.3)	9 (18.8)	0.58	0.27, 1.22	.150			
Country								
South Africa	251 (70.5)	105 (29.5)	REF			REF		
Botswana	41 (80.4)	10 (19.6)	0.61	0.30, 1.25	.177	0.65	0.24, 1.80	.411
Namibia	74 (66.1)	38 (33.9)	1.44	0.93, 2.24	.107	1.31	0.69, 2.50	.410
Zimbabwe	58 (85.3)	10 (14.7)	0.41	0.21, 0.83	.013	0.21	0.08, 0.58	.003
Regular income								
No	211 (70.8)	87 (29.2)	REF					
Yes	205 (73.2)	75 (26.8)	0.89	0.62, 1.28	.519			
Medical aid								
No	258 (69.7)	112 (30.3)	REF			REF		
Yes	161 (76.3)	50 (23.7)	0.72	0.49, 1.05	.090	0.63	0.37, 1.07	.087
<i>Psychosocial characteristics</i>								
Sexual identity								
Lesbian or gay	321 (71.7)	127 (28.3)	REF					
Other	102 (75.0)	34 (25.0)	0.84	0.54, 1.31	.444			
Gender role identity								
Masculinity	2.53 (1.23)	2.66 (1.20)	1.09	0.94, 1.26	.272			
Femininity	2.99 (1.30)	2.77 (1.23)	0.88	0.76, 1.01	.073			
Concealment of sexual orientation	2.05 (0.87)	2.08 (0.88)	1.04	0.84, 1.27	.741			
Internalized homophobia	1.59 (0.68)	1.56 (0.61)	0.93	0.70, 1.23	.601	0.69	0.46, 1.04	.075
<i>Sense of belonging</i>								
Sense of belonging to community	2.89 (0.67)	2.77 (0.62)	0.77	0.58, 1.01	.061			
Sense of belonging to LGBT community	3.26 (0.61)	3.24 (0.59)	0.94	0.69, 1.27	.676			
<i>Sexual experience</i>								
No. of female partners in past 3 months								
0 Partners	55 (87.3)	8 (12.7)	REF			REF		
1 Partner	234(75.2)	77 (24.8)	0.68	0.47, 0.99	.041	1.99	0.76, 5.22	.161
2 or more partners	108 (60.3)	71 (39.7)	2.24	1.52, 3.29	<.001	3.26	1.21, 8.81	.020
Consensual sex with man in past 3 months								
No	347 (71.5)	138 (28.5)	REF					
Yes	77 (75.5)	25 (24.5)	0.82	0.50, 1.34	.419			
Forced sex with women								
No	361 (73.2)	132 (26.8)	REF			REF		
Yes	63 (67.0)	31 (33.0)	1.35	0.84, 2.16	.219	1.61	0.81, 3.21	.177
Forced sex with men								
No	311 (70.4)	131 (29.6)	REF			REF		

Table 2 (continued)

	No <i>M</i> (SD)/ <i>n</i> (%)	Yes <i>M</i> (SD)/ <i>n</i> (%)	Bivariate			Multivariate		
			OR	95% CI	<i>p</i> value	AOR	95% CI	<i>p</i> value
Yes	113 (77.9)	32 (22.1)	0.67	0.43, 1.05	.079	0.44	0.23, 0.83	.001
Transactional sex with woman								
No	363 (72.9)	135 (27.1)	REF					
Yes	61 (68.5)	28 (31.5)	1.23	0.76, 2.01	.399			
Transactional sex with man								
No	379 (72.2)	146 (27.8)	REF					
Yes	45 (72.6)	17 (27.4)	0.98	0.54, 1.77	.948			
<i>Sexual health</i>								
Ever received STI/HIV information specifically for WSM								
No	265 (73.8)	94 (26.2)	REF					
Yes	159 (69.7)	69 (30.3)	1.22	0.85, 1.77	.282			
STI knowledge	1.34 (0.69)	1.47 (0.75)	1.29	1.01, 1.66	.046			
Knowledge about HIV transmission	7.53 (1.48)	7.41 (1.51)	0.95	0.83, 1.07	.373			
Perceived risk of HIV								
No risk	268 (76.1)	84 (23.9)	REF					
Some risk	145 (66.2)	74 (33.8)	1.63	1.12, 2.36	.010			
No. of STI symptoms in past year	1.57 (2.04)	2.57 (2.38)	1.22	1.12, 1.33	<.001	1.20	1.07, 1.34	.002
Diagnosed STI in past year								
No	398 (73.6)	143 (26.4)	REF					
Yes	26 (56.5)	20 (43.5)	2.14	1.16, 3.95	.015			
Ever tested for HIV								
No	76 (61.3)	48 (38.7)	REF			REF		
Yes	348 (75.2)	115 (24.8)	0.52	0.34, 0.80	.002	0.47	0.27, 0.82	.007
Self-Reported HIV status								
Positive	27 (65.9)	14 (34.1)	REF					
Negative or don't know	397 (72.7)	149 (27.3)	0.72	0.37, 1.42	.346			
<i>Mental distress</i>								
Frequency of alcohol consumption	1.63 (1.48)	1.86 (1.49)	1.11	0.98, 1.26	.113			
Ever used drugs								
No drug	231 (78.8)	62 (21.2)	REF			REF		
Some drug	193 (65.6)	101 (34.4)	1.95	1.35, 2.82	<.001	2.31	1.41, 3.76	.001
Mental distress	2.08 (0.87)	2.24 (0.85)	1.25	1.01, 1.53	.037	1.24	1.92, 1.66	.159
<i>Health care</i>								
Being open about orientation to medical providers	2.86 (1.07)	2.60 (1.09)	0.79	0.66, 0.94	.009	0.77	0.59, 1.00	.050
Expected positive impact of disclosing orientation to medical provider	2.90 (1.04)	2.65 (1.09)	0.80	0.68, 0.95	.011	0.83	0.64, 1.07	.142

^aDue to missing values, not all numbers add up to 591. For range of scale scores, see Table 1

to women who had never tested (AOR = 0.47; 95% CI = 0.27, 0.82). Women who had used drugs had higher odds of waiting and seeing compared to women who never used drugs (AOR = 2.31; 95% CI = 1.41, 3.76). The more the STI symptoms the women had experienced, the higher the odds that they would wait and see (AOR = 1.20; 95% CI = 1.07, 1.34).

Seeing a Medical Doctor

Two-thirds of all participants (66.8%) indicated that they would see a medical doctor if they were to experience any of the nine STI symptoms. Seeing a medical doctor was bivariately associated with sixteen factors (Table 3): Women were more likely to see a medical doctor the more educated they were, as were women with access to regular income or covered by any medical aid. Compared to women in South Africa, women currently residing in Botswana were more likely to see a medical doctor,

Table 3 Factors associated with seeing a medical doctor in response to potential STI symptoms^a

	No <i>M (SD)/n (%)</i>	Yes <i>M (SD)/n (%)</i>	Bivariate			Multivariate		
			OR	95% CI	<i>p</i> value	AOR	95% CI	<i>p</i> value
<i>Sociodemographic characteristics</i>								
Age	25.3 (6.38)	26.3 (6.82)	1.02	1.00, 1.05	.096			
Race								
Black	154 (33.4)	307 (66.6)	REF			REF		
Colored	27 (37.5)	45 (62.5)	0.81	0.49, 1.35	.424	0.72	0.40, 1.32	.292
Other	14 (26.9)	38 (73.1)	1.40	0.74, 2.64	.306	1.39	0.62, 3.12	.427
Education								
Low	107 (40.2)	159 (59.8)	REF					
High	87 (27.4)	231 (72.6)	1.79	1.26, 2.53	.001			
Ever married			1.99	0.97, 4.08	.061			
No	185 (34.3)	354 (65.7)						
Yes	10 (20.8)	38 (79.2)						
Country								
South Africa	115 (32.3)	241 (67.7)	REF			REF		
Botswana	7 (13.7)	44 (86.3)	3.40	1.50, 7.69	.003	2.82	1.10, 7.25	.031
Namibia	54 (48.2)	58 (51.8)	0.45	0.30, 0.69	<.001	0.59	0.34, 1.01	.054
Zimbabwe	19 (27.9)	49 (72.1)	1.32	0.76, 2.32	.327	1.08	0.52, 2.22	.843
Regular income								
No	112 (37.6)	186 (62.4)	REF					
Yes	79 (28.2)	201 (71.8)	1.53	1.08, 2.18	.017			
Medical aid								
No	142 (38.4)	228 (61.6)	REF					
Yes	51 (24.2)	160 (75.8)	1.95	1.34, 2.85	.001			
<i>Psychosocial characteristics</i>								
Sexual identity								
Lesbian or gay	151 (33.7)	297 (66.3)	REF					
Other	42 (30.9)	94 (69.1)	1.14	0.75, 1.72	.540			
Gender role identity								
Masculinity	2.61 (1.31)	2.55 (1.19)	0.96	0.84, 1.11	.611			
Femininity	2.77 (1.36)	3.01 (1.23)	1.16	1.01, 1.33	.038			
Concealment of sexual orientation	2.15 (0.90)	2.02 (0.85)	0.84	0.69, 1.02	.074			
Internalized homophobia	1.70 (0.70)	1.53 (0.64)	0.68	0.53, 0.88	.004			
<i>Sense of belonging</i>								
Sense of belonging to community	2.82 (0.65)	2.88 (0.66)	1.14	0.88, 1.49	.330			
Sense of belonging to LGBT community	3.13 (0.62)	3.32 (0.58)	1.67	1.24, 2.24	.001			
<i>Sexual experience</i>								
No. of female partners in past 3 months								
0 partners	17 (27.0)	46 (73.0)	REF			REF		
1 partner	89 (28.6)	222 (71.4)	1.38	0.96, 1.97	.083	0.91	0.45, 1.86	.800
2 or more partners	69 (38.5)	110 (61.5)	0.63	0.43, 0.92	.016	0.63	0.30, 1.35	.236
Consensual sex with man in past 3 months								
No	151 (31.1)	334 (68.9)	REF					
Yes	44 (43.1)	58 (56.9)	0.60	0.39, 0.92	.020			
Forced sex with women								
No	146 (29.6)	347 (70.4)	REF					
Yes	49 (52.1)	45 (47.9)	0.39	0.25, 0.61	<.001			
Forced sex with men								
No	139 (31.4)	303 (68.6)	REF					

Table 3 (continued)

	No <i>M</i> (SD)/ <i>n</i> (%)	Yes <i>M</i> (SD)/ <i>n</i> (%)	Bivariate			Multivariate		
			OR	95% CI	<i>p</i> value	AOR	95% CI	<i>p</i> value
Yes	56 (38.6)	89 (61.4)	0.73	0.49, 1.08	.112			
Transactional sex with women								
No	154 (30.9)	344 (69.1)	REF					
Yes	41 (46.1)	48 (53.9)	0.52	0.33, 0.83	.006			
Transactional sex with man								
No	170 (32.4)	355 (67.6)	REF					
Yes	25 (40.3)	37 (59.7)	0.71	0.41, 1.20	.211			
<i>Sexual health</i>								
Ever received STI/HIV information specifically for WSM								
No	126 (35.1)	233 (64.9)	REF					
Yes	69 (30.3)	159 (69.7)	1.25	0.87, 1.78	.226			
STI knowledge	1.31 (0.69)	1.41 (0.71)	1.25	0.97, 1.60	.089			
Knowledge about HIV transmission	7.17 (1.68)	7.65 (1.37)	1.23	1.09, 1.39	.001			
Perceived risk of HIV								
No risk	119 (33.8)	233 (66.2)	REF			REF		
Some risk	70 (32.0)	149 (68.0)	1.09	0.76, 1.56	.649	1.52	0.96, 2.41	.074
No. of STI symptoms in past year	2.59 (2.60)	1.52 (1.88)	0.81	0.74, 0.88	<.001	0.78	0.70, 0.87	<.001
Diagnosed STI in past year								
No	179 (33.1)	362 (66.9)	REF			REF		
Yes	16 (34.8)	30 (65.2)	0.93	0.49, 1.75	.815	4.85	1.30, 9.82	.014
Ever tested for HIV								
No	60 (48.4)	64 (51.6)	REF			REF		
Yes	135 (29.2)	328 (70.8)	2.28	1.52, 3.42	<.001	2.36	1.45, 3.83	.001
Self-reported HIV status								
Positive	18 (43.9)	23 (56.1)	REF					
Negative or don't know	177 (32.4)	369 (67.6)	1.63	0.86, 3.10	.135			
<i>Mental distress</i>								
Frequency of alcohol consumption	1.77 (1.52)	1.66 (1.47)	0.95	0.84, 1.07	.413			
Ever used drugs								
No drug	99 (33.8)	194 (66.2)	REF					
Some drug use	96 (32.7)	198 (67.3)	1.05	0.75, 1.48	.770			
Mental distress	2.23 (0.92)	2.07 (0.84)	0.81	0.66, 0.98	.032			
<i>Health care</i>								
Being open about orientation to medical providers	2.72 (1.11)	2.82 (1.06)	1.10	0.93, 1.30	.281			
Expected positive impact of disclosing orientation to medical provider	2.65 (1.10)	2.92 (1.03)	1.27	1.08, 1.50	.005			

^aDue to missing values, not all numbers add up to 591. For range of scale scores, see Table 1

while those residing in Namibia were less likely to do so. The more the women identified as feminine, the more likely they were to see a doctor. Compared to women who had no female sexual partners in the past three months, women who reported two or more female partners were less likely to see a medical doctor if they were to experience any of the STI symptoms. This was also true for women who had engaged in consensual sex with a man in the past three months or had ever experienced forced or transactional sex with a woman. Women who had

relatively strong feelings of internalized homophobia or felt mentally distressed were less likely to see a doctor. In contrast, participants who felt a greater sense of belonging to the LGBT community were more likely to see a doctor if they experienced STI symptoms. Women who expected a more positive impact of disclosing their sexual orientation to medical professionals were also more likely to see a doctor. Finally, with regard to sexual health, women who reported a higher number of STI symptoms were less likely to see a medical doctor, while those

Table 4 Factors associated with informing one's sexual partner of potential STI symptoms^a

	No <i>M</i> (SD)/ <i>n</i> (%)	Yes <i>M</i> (SD)/ <i>n</i> (%)	Bivariate			Multivariate		
			OR	95% CI	<i>p</i> value	AOR	95% CI	<i>p</i> value
<i>Sociodemographic characteristics</i>								
Age	26.0 (6.08)	26.0 (6.56)	1.00	0.98, 1.03	.883			
Race								
Black	245 (53.1)	216 (46.9)	REF					
Colored	48 (66.7)	24 (33.3)	0.60	0.36, 1.01	.055			
Other	35 (67.3)	17 (32.7)	0.59	0.32, 1.09	.090			
Education								
Low	157 (59.0)	109 (41.0)	REF					
High	170 (53.5)	148 (46.5)	1.25	0.90, 1.74	.178			
Ever married								
No	292 (54.2)	247 (45.8)	REF					
Yes	37 (77.1)	11 (22.9)	0.35	0.18, 0.70	.003			
Country								
South Africa	206 (57.9)	150 (42.1)	REF					
Botswana	26 (51.0)	25 (49.0)	1.25	0.70, 2.22	.446			
Namibia	60 (53.6)	52 (46.4)	1.13	0.75, 1.71	.557			
Zimbabwe	37 (54.4)	31 (45.6)	1.08	0.65, 1.80	.773			
Regular income								
No	165 (55.4)	133 (44.6)	REF					
Yes	158 (56.4)	122 (43.6)	0.96	0.69, 1.33	.798			
Medical aid								
No	201 (54.3)	169 (45.7)	REF					
Yes	124 (58.8)	87 (41.2)	0.83	0.59, 1.18	.300			
<i>Psychosocial characteristics</i>								
Sexual identity								
Lesbian or gay	248 (55.4)	200 (44.6)	REF					
Other	81 (59.6)	55 (40.4)	0.84	0.57, 1.24	.387			
Gender role identity								
Masculinity	2.56 (1.26)	2.59 (1.19)	1.02	0.89, 1.17	.751			
Femininity	2.89 (1.32)	2.98 (1.24)	1.05	0.93, 1.20	.435			
Concealment of sexual orientation	2.09 (0.92)	2.03 (0.80)	0.92	0.76, 1.11	.397			
Internalized homophobia	1.63 (0.70)	1.53 (0.61)	0.79	0.61, 1.01	.063			
<i>Sense of belonging</i>								
Sense of belonging to community	2.87 (0.71)	2.83 (0.59)	0.91	0.71, 1.17	.466	0.60	0.41, 0.88	.009
Sense of belonging to LGBT community	3.20 (0.62)	3.32 (0.57)	1.41	1.07, 1.87	.016	1.50	1.01, 2.22	.046
<i>Sexual experience</i>								
No. of female partners in past 3 months								
0 partners	37 (58.7)	26 (41.3)	REF					
1 partner	173 (55.6)	138 (44.4)	0.97	0.69, 1.37	.875			
2 or more partners	96 (53.6)	83 (46.4)	1.11	0.77, 1.58	.577			
Consensual sex with man in past 3 months								
No	261 (53.8)	224 (46.2)	REF					
Yes	68 (66.7)	34 (33.3)	0.58	0.37, 0.91	.018			
Forced sex with women								
No	268 (54.4)	225 (45.6)	REF					
Yes	61 (64.9)	33 (35.1)	0.64	0.41, 1.02	.061			
Forced sex with men								
No	242 (54.8)	200 (45.2)	REF					

Table 4 (continued)

	No <i>M</i> (SD)/ <i>n</i> (%)	Yes <i>M</i> (SD)/ <i>n</i> (%)	Bivariate			Multivariate		
			OR	95% CI	<i>p</i> value	AOR	95% CI	<i>p</i> value
Yes	87 (60.0)	58 (40.0)	0.81	0.55, 1.18	.270			
Transactional sex with woman								
No	274 (55.0)	224 (45.0)	REF					
Yes	55 (61.8)	34 (38.2)	0.76	0.48, 1.20	.236			
Transactional sex with man								
No	285 (54.3)	240 (45.7)	REF					
Yes	44 (71.0)	18 (29.0)	0.49	0.27, 0.86	.014			
<i>Sexual health</i>								
Ever received STI/HIV information specifically for WSM								
No	215 (59.9)	144 (40.1)	REF					
Yes	114 (50.0)	114 (50.0)	1.49	1.07, 2.09	.019			
STI knowledge	1.36 (0.72)	1.40 (0.69)	1.08	0.86, 1.36	.523			
Knowledge about HIV transmission	7.34 (1.58)	7.69 (1.36)	1.18	1.05, 1.33	.007			
Perceived risk of HIV								
No risk	211 (59.9)	141 (40.1)	REF					
Some risk	110 (50.2)	109 (49.8)	1.48	1.06, 2.08	.023			
No. of STI symptoms in past year	1.86 (2.27)	1.85 (2.08)	1.00	0.92, 1.08	.955			
Diagnosed STI in past year								
No	297 (54.9)	244 (45.1)	REF			REF		
Yes	32 (69.6)	14 (30.4)	0.53	0.28, 1.02	.058	0.45	0.17, 1.19	.107
Ever tested for HIV								
No	87 (70.2)	37 (29.8)	REF			REF		
Yes	242 (52.3)	221 (47.7)	2.15	1.40, 3.29	.000	3.19	1.80, 5.65	.000
Self-Reported HIV status								
Positive	25 (61.0)	16 (39.0)	REF					
Negative or don't know	304 (55.7)	242 (44.3)	1.24	0.65, 2.38	.510			
<i>Mental distress</i>								
Frequency of alcohol consumption	1.72 (1.52)	1.67 (1.44)	1.00	0.87, 1.10	.694			
Ever used drugs								
No drug	184 (62.8)	109 (37.2)	REF			REF		
Some drug use	145 (49.3)	149 (50.7)	1.74	1.25, 2.41	.001	1.51	0.97, 2.37	.069
Mental distress	2.07 (0.93)	2.19 (0.78)	1.18	0.98, 1.43	.080			
<i>Health care</i>								
Being open about orientation to medical providers	2.81 (1.07)	2.77 (1.09)	0.96	0.82, 1.13	.635			
Expected positive impact of disclosing orientation to medical provider	2.76 (1.08)	2.93 (1.02)	1.17	1.00, 1.37	.053			

^aDue to missing values, not all numbers add up to 591. For range of scale scores, see Table 1

who had ever been tested for HIV or had more knowledge of HIV transmission and were more likely to do so.

Seven variables were retained in the final backward multivariable logistic regression model including race, country of residence, number of female sexual partners, perceived risk of HIV, number of STI symptoms in the past year, whether participants were diagnosed with an STI in the past year, and whether participants had ever tested for HIV. Four of the retained variables were significantly associated with seeing a medical doctor in response to STI symptoms (Table 3). Women living in

Botswana had higher odds of seeing a medical doctor compared to women living in South Africa (AOR = 2.82; 95% CI = 1.10, 7.25). As the number of previously experienced STI symptoms decreased, the lower the odds that women would see a medical doctor (AOR = 0.78; 95% CI = 0.70, 0.87). In contrast, women who had received an STI diagnosis in the past year had higher odds of seeing a medical doctor (AOR = 4.85; 95% CI = 1.30, 9.82). Finally, women who had ever tested for HIV had higher odds of going to see a medical doctor (AOR = 2.36; 95% CI = 1.45, 3.83).

Informing One's Sexual Partner

More than half of all women (55.7%) would not inform their sexual partners if they were to experience any STI symptoms. Informing one's sexual partner was bivariate associated with ten factors (Table 4). Married women were less likely to inform their sexual partners if they were to experience STI symptoms. Women who had a stronger sense of belonging to the LGBT community were more likely to inform their sexual partners. Participants who had had consensual sex with a man in the past three months or had ever engaged in transactional sex with a man were less likely to inform their sexual partners. Participants who received STI/HIV information specifically for WSW, had more knowledge about HIV transmission, perceived some risk of HIV, or had ever been tested for HIV were more likely to inform their sexual partners of STI symptoms, as were women who expected a more positive impact of disclosing their sexual orientation to doctors and nurses. Finally, women who had ever used drugs were more likely to inform their sexual partners if they experienced STI symptoms.

The final backward multivariate stepwise logistic regression model retained five variables: sense of belonging to the community in general, sense of belonging to the LGBT community, diagnosis of STI in the past year, having been tested for HIV, and having ever used drugs. Of those variables, three were significantly associated with informing one's sexual partner of potential STI symptoms (Table 4). Women had greater odds of doing so if they had ever tested for HIV (AOR = 3.19; 95% CI = 1.80, 5.65). Women who felt a strong sense of belonging to the community in general had lower odds of informing their sexual partners of STI symptoms (AOR = 0.60; 95% CI = 0.41, 0.88), while those who felt a strong sense of belonging to the LGBT community had higher odds of doing so (AOR = 1.50; 95% CI = 1.01, 2.22).

Discussion

To our knowledge, this is one of the few studies to examine sub-Saharan African WSW's hypothetical response to STI symptoms. It provides some critical insights into several intrapersonal, interpersonal, and structural factors that impact WSW's response to STI symptoms. These findings should be considered when designing health programs for WSW.

Results from this study indicate that approximately a quarter of the women would wait for STI symptoms to pass. Two in three participants would seek medical care in response to potential symptoms of STI. However, more than half of all women would not inform a sexual partner of potential STI symptoms. Several variables remained significantly associated with the three hypothetical responses to STI symptoms in the final regression models. Of particular

interest are the predictors of having ever tested for HIV; number of female sexual partners; sense of belonging to one's community; and number of STI symptoms.

Ever Testing for HIV

Women who had ever (vs. never) tested for HIV had lower odds of waiting to see if STI symptoms went away, higher odds of indicating that they would see a medical doctor to address STI symptoms, and higher odds of reporting that they would inform a sexual partner about STI symptoms. The extant literature shows that women in Southern Africa report difficulty and unpleasantness with seeking HIV tests, as HIV test counselors are often ill informed about WSW health, discriminatory toward WSW, and reluctant to speak about a patients' sexual orientation or history (Matebeni et al., 2013). Still, women who have already gone through the process of seeking an HIV test may be less concerned about anticipated sexual orientation-related stigma. In other words, women who are aware of the challenges of seeking health care as a WSW may be better prepared to confront those challenges in order to seek care for STIs. Having ever tested for HIV may also indicate that women are engaged in their health care and have greater access to services like STI testing and treatment. A recent qualitative study in South Africa found that women who were already actively obtaining health care for other reasons were more likely to test for HIV (Lambert, Orrell, Bangsberg, & Haberer, 2018); the inverse may also be true in the case of the women in the current study: those who have ever tested for HIV may also be more likely to obtain other types of health care, including STI testing and treatment. WSW who have previously tested for HIV may also feel more of a commitment to addressing sexual health in general and in turn, a commitment to discussing STI symptoms with partners.

Number of Female Sexual Partners

We also found that having two or more female sexual partners (vs. those who had never had a female sexual partner) was associated with significantly higher odds of women, stating that they would wait to see if STI symptoms went away and lower odds of seeing a medical doctor for STI symptoms (but not with the other outcome of interest). WSW in Southern Africa experience anxiety about confidentiality and fear of social repercussions when accessing health services (Zaidi et al., 2016). The perception that sexual orientation stigma exists in healthcare settings prevents women from disclosing their sexual orientation to care providers (Austin, 2013; Pierre, 2012). Discomfort with accessing services also means that conversations about one's personal sexual history and sexual identity are often limited to LGBTQ organizations where most women receive information, care, and support (Matebeni et al., 2013). Women

who have more female sexual partners thus may be reluctant to seek care for fear of encountering stigma as sexual minority women. Research has also shown that women who have sex with women may discount their risk of STIs, believing that STIs cannot be transmitted between female partners (e.g., Matebeni et al., 2013); thus, women with more female partners may be more likely to discount symptoms of STIs as warranting care.

Sense of Belonging

Women who had a greater sense of belonging to the general community reported significantly lower odds of informing sexual partners of possible STI symptoms, while women who had a greater sense of belonging to the LGBT community had significantly higher odds of doing so. These findings could indicate that women more engaged in their local LGBT communities may feel a greater sense of obligation to protect other women within the community. Women who feel more connected to their LGBT community may also respond to social norms related to STI disclosure. LGBT community connectedness has been shown to foster improved health outcomes (Zimmerman, Darnell, Rhew, Lee, & Kaysen, 2015). Although WSW sexual health programs are limited, existing literature shows that WSW-specific interventions can promote social support, a sense of connection to others in the LGBTQ community, and improved sexual health outcomes (Logie, Lacombe-Duncan, Weaver, Navia, & Este, 2015).

Number of STI Symptoms

Having experienced more STI symptoms in the past was associated with significantly higher odds of potentially waiting to see if STI symptoms would go away. On the other hand, having previously experienced fewer STI symptoms was significantly associated with lower odds of seeing a doctor. These contradictory findings may be due to the way that questions were asked. Although the questions were collaboratively developed with local community members, women may have responded differently when presented with the option of waiting to see if STI symptoms went away versus the option of seeing a doctor. It is also possible that women who had previously experienced more STI symptoms had also experienced having them resolve on their own, whereas women who had had fewer STI symptoms in the past would be more nervous about experiencing symptoms in the future and therefore more likely to seek the advice of a doctor. Because these results are somewhat contradictory, future research would be necessary to understand sexual minority women's motivations for seeking out STI care. A qualitative study on Southern African sexual minority women's sexual health practices could be particularly valuable.

Limitations

A few study limitations should be considered in interpreting our findings. First, women's response to hypothetical symptoms might differ from what they actually would do in case they observe such symptoms. Also, because our self-report data might be affected by social desirability bias, the women's actual responses might be less positive. Furthermore, our recruitment strategy did not result in a representative sample of WSW in Southern Africa, limiting the generalizability of our findings. It is likely that the women we recruited were better connected to other WSW. An additional limitation may be the fact that the study data were collected in 2010, potentially rendering the findings less relevant to current times. Nevertheless, despite recent legal advances for LGBTQ people in Southern Africa (e.g., Lesbians, Gays, and Bisexuals of Botswana's [LeGaBiBo] recent win in a Court of Appeals case permitting them to register as a group advocating for decriminalization of same-sex partnerships [Columbia University Global Freedom of Expression, 2018]; South Africa's constitutional laws prohibiting LGBT-related discrimination [Beresford et al., 2010]), homophobia, especially among medical institutions, continues to limit affirming and welcoming services for WSW (Müller & Hughes, 2016; Tat et al., 2015). As such, the findings from this study still hold relevance today. Finally, the fact that the questionnaire was only available in English might have biased study participation to women with relatively higher levels of education.

Conclusion

This study contributes to the limited understanding of STI in WSW. Our findings indicate several ways in which the health and health care of WSW could be improved. Future research should evaluate how such improvements can be brought about. This includes the building of WSW communities in Southern Africa and promoting a sense of belonging to these communities.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

References

- Allison, P. D. (2012). *Logistic regression using the SAS: Theory and application*. Cary, NC: SAS Institute.
- Austin, E. L. (2013). Sexual orientation disclosure to health care providers among urban and non-urban Southern lesbians. *Women and Health, 53*, 41–55. <https://doi.org/10.1080/03630242.2012.743497>.
- Bailey, J. V., Farquhar, C., Owen, C., & Mangtani, P. (2004). Sexually transmitted infections in women who have sex with women. *Sexually Transmitted Infections, 80*, 244–246. <https://doi.org/10.1136/sti.2003.007641>.
- Bauer, G. R., & Welles, S. L. (2001). Beyond assumptions of negligible risk: Sexually transmitted diseases and women who have sex with women. *American Journal of Public Health, 91*, 1282–1286. <https://doi.org/10.2105/AJPH.91.8.1282>.
- Beresford, B., Schneider, H., & Sember, R. (2010). Constitutional authority and its limitations: The politics of sexuality in South Africa. In R. Parker, R. Petchesky, & R. Sember (Eds.), *Sex politics: Reports from the front lines* (pp. 197–246). New York: Sexuality Policy Watch.
- Bursac, Z., Gauss, C. H., Williams, D. K., & Hosmer, D. W. (2008). Purposeful selection of variables in logistic regression. *Source Code for Biology and Medicine, 3*, 17. <https://doi.org/10.1186/1751-0473-3-17>.
- Centers for Disease Control and Prevention. (2016). *Diseases & related conditions: What are STDs?* Retrieved from: <https://www.cdc.gov/std/general/default.htm>.
- Columbia University Global Freedom of Expression. (2018). *Attorney General of Botswana v. Rammoge*. Retrieved from: <https://globalfreedomofexpression.columbia.edu/cases/attorney-general-botswana-v-rammoge/>.
- Currier, A., & Migraine-George, T. (2017). “Lesbian”/female same-sex sexualities in Africa. *Journal of Lesbian Studies, 21*, 133–150. <https://doi.org/10.1080/10894160.2016.1146031>.
- Daly, F., Spicer, N., & Willan, S. (2016). Sexual rights but not the right to health? Lesbian and bisexual women in South Africa’s National Strategic Plans on HIV and STIs. *Reproductive Health Matters, 24*, 185–194. <https://doi.org/10.1016/j.rhm.2016.04.005>.
- Doull, M., Wolowic, J., Saewyc, E., Rosario, M., Prescott, T., & Ybarra, M. L. (2018). Why girls choose not to use barriers to prevent sexually transmitted infection during female-to-female sex. *Journal of Adolescent Health, 62*, 411–416. <https://doi.org/10.1016/j.jadohealth.2017.10.005>.
- Fethers, K., Marks, C., Mindel, A., & Estcourt, C. S. (2000). Sexually transmitted infections and risk behaviours in women who have sex with women. *Sexually Transmitted Infections, 76*, 345–349. <https://doi.org/10.1136/sti.76.5.345>.
- Gorgos, L. M., & Marrazzo, J. M. (2011). Sexually transmitted infections among women who have sex with women. *Clinical Infectious Diseases, 53*(Suppl. 3), S84–S91. <https://doi.org/10.1093/cid/cir697>.
- Gunkel, H. (2010). *The cultural politics of female sexuality in South Africa*. New York: Routledge.
- Hagerty, B. M. K., & Patuskay, K. (1995). Developing a measure of sense of belonging. *Nursing Research, 44*, 9–13. <https://doi.org/10.1097/00006199-199501000-00003>.
- Human Rights Watch. (2003). *More than a name: State sponsored homophobia and its consequences in Southern Africa*. New York City: Human Rights Watch.
- Human Rights Watch. (2011). *We’ll show you you’re a woman. Violence and discrimination against black lesbians and transgender men in South Africa*. Retrieved from <https://www.hrw.org/sites/default/files/reports/southafrica1211.pdf>.
- Jackson, C. L., Agénor, M., Johnson, D. A., Austin, S. B., & Kawachi, I. (2016). Sexual orientation identity disparities in health behaviors, outcomes, and services use among men and women in the United States: A cross-sectional study. *BMC Public Health, 16*, 807. <https://doi.org/10.1186/s12889-016-3467-1>.
- Kalichman, S. C., Simbayi, L. C., Kaufman, M., Cain, D., & Jooste, S. (2007). Alcohol use and sexual risks for HIV/AIDS in sub-Saharan Africa: Systematic review of empirical findings. *Prevention Science, 8*, 141–151. <https://doi.org/10.1007/s1121-006-0061-2>.
- Kerker, B. D., Mostashari, F., & Thorpe, L. (2006). Health care access and utilization among women who have sex with women: Sexual behavior and identity. *Journal of Urban Health, 83*, 970–979. <https://doi.org/10.1007/s11524-006-9096-8>.
- Kerr, D. L., Ding, K., & Thompson, A. J. (2013). A comparison of lesbian, bisexual, and heterosexual female college undergraduate students on selected reproductive health screenings and sexual behaviors. *Women’s Health Issues, 23*, e347–e355. <https://doi.org/10.1016/j.whi.2013.09.003>.
- Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., & Normand, S. L. T. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine, 32*, 959–976. <https://doi.org/10.1017/S0033291702006074>.
- Lambert, R. F., Orrell, C., Bangsberg, D. R., & Haberer, J. E. (2018). Factors that motivated otherwise healthy HIV-positive young adults to access HIV testing and treatment in South Africa. *AIDS and Behavior, 22*, 733–741. <https://doi.org/10.1007/s10461-017-1704-y>.
- Logie, C. H., Lacombe-Duncan, A., MacKenzie, R. K., & Poteat, T. (2016). Minority stress and safer sex practices among sexual minority women in Toronto, Canada: Results from a cross-sectional internet-based survey. *LGBT Health, 3*, 407–415. <https://doi.org/10.1089/lgbt.2016.0005>.
- Logie, C. H., Lacombe-Duncan, A., Weaver, J., Navia, D., & Este, D. (2015). A pilot study of a group-based HIV and STI prevention intervention for lesbian, bisexual, queer, and other women who have sex with women in Canada. *AIDS Patient Care and STDs, 29*, 321–328. <https://doi.org/10.1089/apc.2014.0355>.
- Marrazzo, J. M., Stine, K., & Koutsky, L. A. (2000). Genital human papillomavirus infection in women who have sex with women: A review. *American Journal of Obstetrics and Gynecology, 183*, 770–774. <https://doi.org/10.1067/mob.2000.106681>.
- Matebeni, Z. (2009). Sexing women: Young black lesbians’ reflections on sex and responses to safe(r) sex. In V. Reddy, T. Sandfort, & L. Rispel (Eds.), *From social silence to social science: Same-sex-sexuality, HIV and AIDS and gender in South Africa* (pp. 100–116). Cape Town, South Africa: HSRC Press.
- Matebeni, Z., Reddy, V., Sandfort, T., & Southey-Swartz, I. (2013). “I thought we are safe”: Southern African lesbians’ experiences of living with HIV. *Culture, Health & Sexuality, 15*(Suppl. 1), 34–47. <https://doi.org/10.1080/13691058.2013.764016>.
- McLaren, S. (2009). Sense of belonging to the general and lesbian communities as predictors of depression among lesbians. *Journal of Homosexuality, 56*, 1–13. <https://doi.org/10.1080/00918360802551365>.

- Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin*, *129*, 674–697. <https://doi.org/10.1037/0033-2909.129.5.674>.
- Mkhize, N., Bennett, J., Reddy, V., & Moletsane, R. (2010). *The country we want to live in: Hate crimes and homophobia in the lives of black lesbian South Africans*. Cape Town, South Africa: HSRC Press.
- Mora, C., & Monteiro, S. (2010). Vulnerability to STIs/HIV: Sociability and the life trajectories of young women who have sex with women in Rio de Janeiro. *Culture, Health & Sexuality*, *12*, 115–124. <https://doi.org/10.1080/13691050903180471>.
- Morgan, R., & Wieringa, S. (2005). Tommy boys, lesbian men and ancestral wives: Conclusions from the African women's life story project. *Culture, Health & Sexuality*, *7*, S56.
- Morison, T., & Lynch, I. (2016). 'We can't help you here': The discursive erasure of sexual minorities in South African public sexual and reproductive health services. *Psychology of Sexualities Review*, *7*, 7–25.
- Müller, A. (2013). Teaching lesbian, gay, bisexual and transgender health in a South African health sciences faculty: Addressing the gap. *BMC Medical Education*, *13*, 174. <https://doi.org/10.1186/1472-6920-13-174>.
- Müller, A., & Hughes, T. L. (2016). Making the invisible visible: A systematic review of sexual minority women's health in Southern Africa. *BMC Public Health*, *16*, 307. <https://doi.org/10.1186/s12889-016-2980-6>.
- Muranda, T., Mugo, K., & Antonites, C. (2014). HIV is not for me: A study of African women who have sex with women's perceptions of HIV/AIDS and sexual health. *African Human Rights Law Journal*, *14*, 757–786.
- Muzny, C. A., Sunesara, I. R., Martin, D. H., & Mena, L. A. (2011). Sexually transmitted infections and risk behaviors among African American women who have sex with women: Does sex with men make a difference? *Sexually Transmitted Diseases*, *38*, 1118–1125. <https://doi.org/10.1097/OLQ.0b013e31822e6179>.
- Pierre, M. (2012). Under what conditions do lesbians disclose their sexual orientation to primary health care providers? A review of the literature. *Journal of Lesbian Studies*, *16*, 199–219. <https://doi.org/10.1080/10894160.2011.604837>.
- Poteat, T., Logie, C., Adams, D., Lebona, J., Letsie, P., Beyrer, C., & Baral, S. (2014). Sexual practices, identities and health among women who have sex with women in Lesotho: A mixed-methods study. *Culture, Health & Sexuality*, *16*, 120–135. <https://doi.org/10.1080/13691058.2013.841291>.
- Power, J., McNair, R., & Carr, S. (2009). Absent sexual scripts: Lesbian and bisexual women's knowledge, attitudes and action regarding safer sex and sexual health information. *Culture, Health & Sexuality*, *11*, 67–81. <https://doi.org/10.1080/13691050802541674>.
- Rule, S., & Mncwango, B. (2006). Rights or wrongs? An exploration of moral values. In U. Pillay, B. Roberts, & S. Rule (Eds.), *South African social attitudes: Changing times, diverse voice* (pp. 252–276). Pretoria, South Africa: HSRC.
- Sandfort, T. G., Baumann, L. R., Matebeni, Z., Reddy, V., & Southey-Swartz, I. (2013). Forced sexual experiences as risk factor for self-reported HIV infection among southern African lesbian and bisexual women. *PLoS ONE*, *8*, e53552. <https://doi.org/10.1371/journal.pone.0053552>.
- Sandfort, T., Frazer, M. S., Matebeni, Z., Reddy, V., & Southey-Swartz, I. (2015). Histories of forced sex and health outcomes among Southern African lesbian and bisexual women: A cross-sectional study. *BMC Women's Health*, *15*, 22. <https://doi.org/10.1186/s12905-015-0181-6>.
- Saulnier, C. F. (2002). Deciding who to see: Lesbians discuss their preferences in health and mental health care providers. *Social Work*, *47*, 355–365. <https://doi.org/10.1093/sw/47.4.355>.
- Singh, D., Fine, D. N., & Marrazzo, J. M. (2011). *Chlamydia trachomatis* infection among women reporting sexual activity with women screened in family planning clinics in the Pacific Northwest, 1997 to 2005. *American Journal of Public Health*, *101*, 1284–1290. <https://doi.org/10.2105/AJPH.2009.169631>.
- Smith, R. (2015). Healthcare experiences of lesbian and bisexual women in Cape Town, South Africa. *Culture, Health & Sexuality*, *17*, 180–193. <https://doi.org/10.1080/13691058.2014.961033>.
- Stevens, P. (1995). Structural and interpersonal impact of heterosexual assumptions on lesbian health care clients. *Nursing Research*, *44*, 25–30. <https://doi.org/10.1097/00006199-199501000-00006>.
- Takemoto, M. L. S., Menezes, M. D. O., Polido, C. B. A., Santos, D. D. S., Leonello, V. M., Magalhães, C. G., ... Knobel, R. (2019). Prevalence of sexually transmitted infections and bacterial vaginosis among lesbian women: Systematic review and recommendations to improve care. *Cadernos de Saude Publica*, *35*, e00118118. <https://doi.org/10.1590/0102-311x00118118>.
- Tallis, V. (2009). Health for all? Health needs and issues for women who have sex with women. In V. Reddy, T. Sandfort, & L. Rispel (Eds.), *From social silence to social science: Same sex-sexuality, HIV and AIDS and gender in South Africa* (pp. 216–225). Cape Town, South Africa: HSRC Press.
- Tat, S. A., Marrazzo, J. M., & Graham, S. M. (2015). Women who have sex with women living in low-and middle-income countries: A systematic review of sexual health and risk behaviors. *LGBT Health*, *2*, 91–104. <https://doi.org/10.1089/lgbt.2014.0124>.
- U.S. Department of State. (2010). *Sexual orientation/gender identity references: Human rights reports for 2009*. Washington, DC: U.S. Department of State.
- Wang, Q., Koval, J. J., Mills, C. A., & Lee, K. I. D. (2007). Determination of the selection statistics and best significance level in backward stepwise logistic regression. *Communications in Statistics-Simulation and Computation*, *37*, 62–72. <https://doi.org/10.1080/03610910701723625>.
- Whitehead, J., Shaver, J., & Stephenson, R. (2016). Outness, stigma, and primary health care utilization among rural LGBT populations. *PLoS ONE*, *11*, e0146139. <https://doi.org/10.1371/journal.pone.0146139>.
- Workowski, K. A., & Bolan, G. A. (2015). Sexually transmitted diseases treatment guidelines, 2015. *Morbidity and Mortality Weekly Report*, *64*(RR-03), 1–137.
- Zaidi, S. S., Ocholla, A. M., Otieno, R. A., & Sandfort, T. G. (2016). Women who have sex with women in Kenya and their sexual and reproductive health. *LGBT Health*, *3*, 139–145. <https://doi.org/10.1089/lgbt.2014.0121>.
- Zimmerman, L., Darnell, D. A., Rhew, I. C., Lee, C. M., & Kaysen, D. (2015). Resilience in community: A social ecological development model for young adult sexual minority women. *American Journal of Community Psychology*, *55*, 179–190. <https://doi.org/10.1007/s10464-015-9702-6>.

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