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Journal

International Journal of Gynecology & Obstetrics, 120(1)

ISSN

0020-7292

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Publication Date

2013

DOI

10.1016/j.ijgo.2012.08.011

Peer reviewed



www.figo.org

Contents lists available at SciVerse ScienceDirect

International Journal of Gynecology and Obstetrics

journal homepage: www.elsevier.com/locate/ijgo



CLINICAL ARTICLE

Use of barrier protection for sexual activity among women who have sex with women

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ARTICLE INFO

Article history:

Received 29 May 2012

Received in revised form 8 August 2012

Accepted 1 October 2012

Keywords:

Barriers

Homosexuality

Lesbian health

Prevention

Sexual health

Women who have sex with women

ABSTRACT

Objective: To assess the frequency and associations of barrier protection use during sexual activity in a population of women who have sex with women (WSW). **Methods:** WSW were invited to participate in an international internet-based survey. Information regarding ethnodemographics, sexual health, and barrier use during sexual activities was collected. **Results:** The study cohort comprised 1557 participants. Barrier use was least prevalent during digital genital stimulation (11.3% ever used barriers) and most prevalent during stimulation with a sex toy (34.4% ever used barriers). Univariate analysis revealed that women in non-monogamous relationships were more likely than monogamous women to always use barrier protection for sexual activity (14.3% vs 3.5%). On multivariate analysis, there was no association between barrier use and frequency of casual sexual activity or history of sexually transmitted infection. Small associations were noted between barrier use and certain sexual activities, age, race, and number of partners. **Conclusion:** Many WSW do not use barrier protection during sexual activity, even in the context of potentially risky sexual behaviors. Safer-sex practices among WSW merit increased attention from healthcare providers and public health researchers.

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1. Introduction

The behavioral term “women who have sex with women” (WSW) refers to women who engage in same-sex sexual activity activity not necessarily defined by self-reported sexual orientation. It has been reported that 2% and 1% of women in the USA report lesbian and bisexual identity, respectively [1,2]. More women report engaging in same-sex sexual activity without identifying themselves as lesbian or bisexual; a 2010 study found that, although a majority of women aged 18–59 years in the USA identified themselves as heterosexual, 7% reported having had sex with another woman [3]. Nearly 80% of women who identified themselves as lesbian reported engaging in heterosexual sexual activity [3]. There is a very limited amount of data regarding sexual activity and self-identification in an international setting.

Many studies have documented that WSW have reduced access to reproductive health services and have poorer health outcomes [4–6].

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Few studies have addressed sexual health in this population specifically related to risk-reducing behavior [7,8].

Despite the perception that WSW are at lower risk of sexually transmitted infections (STIs), risky sexual behaviors are reported by women of every sexual orientation [8–10]. One of the largest studies of WSW showed that 93% had a history of sexual contact with men [8]; the study also found that WSW were more likely to engage in sexual activity with homosexual and bisexual men, and that they had similar rates of STIs to women who had sex exclusively with men [8]. A recent study documented that WSW accessing family-planning clinics in Washington, USA, had higher rates of chlamydia than did women reporting sex exclusively with men [11]. Sexually risky behavior and more sexual partners—commonly cited as the explanation for the prevalence of STIs among WSW [3,9,10]—were hypothesized as the likely causes [11].

Additionally, it has been repeatedly reported that WSW have higher rates of bacterial vaginosis (BV) [12]—which is caused by a shift in vaginal flora that can predispose women to STIs, including HIV [13]. It has been hypothesized that the transfer of vaginal secretions may, in fact, be the source of the higher rates of BV in this population, although there is still little academic consensus about the underlying cause [12].

There have been many studies assessing the risk of STIs among WSW, including assessment of barrier protection methods [14–19]. However, most of these studies involved focus groups [14,15] and/or surveys assessing the use of a specific barrier method, or STIs with no consideration of barrier use [16–19]. We are unaware of any large-scale surveys involving a large number of WSW and including details of different barrier protection for specific sexual activities. Given that WSW are more likely to engage in sexual contact that does not involve penile penetration, it is important to distinguish the role of barrier protection for specific sexual activities such as digital (hand) stimulation of the genitals, oral sex, and genital stimulation with a sex toy.

The aim of the present study was to assess the use of barrier protection during sexual activity in a population of WSW. It was hypothesized that relationship, sexuality, health, and ethnodemographic factors would be associated with prevalence/frequency of barrier use; more specifically, that increases in sexually risky behavior would be associated with higher rates of barrier use.

2. Materials and methods

An anonymous, cross-sectional, internet-based survey was carried out to determine the use of barrier protection among WSW. The cohort included an international sample of WSW who were older than 17 years of age and literate in English. Participants were required to identify themselves as WSW; a minimum number of contacts was not set and participants were not required to report whether they were currently involved in a same-sex relationship. An international sample was achieved by advertising the survey at local, national, and international lesbian, gay, bisexual, and transgender community centers; at organizations catering for WSW; and on Facebook (Facebook, Menlo Park, CA, USA). This methodology has been used in prior studies of lesbian sexuality [8], and details regarding the survey process have been published previously [20]. Participants were enrolled from January 19 to May 19, 2010. Institutional Review Board approval was obtained from the University of California, San Francisco, USA, before study initiation.

The main outcome variable was the use of barrier protection during various forms of sexual activity. A question was asked regarding frequency (never, less than 25%, 25%–50%, 50%–75%, or 75%–100%) of barrier protection use for various sexual activities. There were specific questions about the use of gloves during digital stimulation of the genitals (giving and receiving), dental dams for oral sex (giving and receiving), and covers/condoms for genital stimulation with sex toys (giving and receiving).

Details of sexual history and ethnodemographic characteristics were obtained, in addition to the sexual health history of participants. Respondents provided their age, geographic location, and race/ethnicity (African, Asian, Caucasian/white, Latina, Native American, or other). Details were also obtained regarding sexual orientation (homosexual, bisexual, heterosexual, “queer,” or other); number of male and female sexual partners in the past 6 months (grouped as 0, 1, or > 1 for analysis); sexual relationships with men or women who the participants did not know well (2 separate questions); whether participants had a current regular partner; and type of relationship (single partner/monogamous, primary partner, open relationship, multiple partners, or no current partner). Those in sexual relationships with more than 1 person were specifically asked whether barrier protection was used in the primary relationship and/or with other partners. Information was also obtained regarding history of STIs, including HIV, chlamydia, gonorrhea, herpes, and syphilis.

Descriptive statistics were used to characterize the study population. Simple tabulations were used to study the rates of barrier use for different categories of sexual activity. For simplicity, the frequency of barrier use was grouped into “never,” “less than 75% of the time,” and “75%–100% of the time” for each particular sexual activity

assessed. Multivariate analysis was performed using logistic regression including the main exposure variables above $P < 0.2$ from the Wald analysis. Odds ratio (OR) estimates with 95% Wald confidence intervals (CIs) for both the univariate and the multivariate models are reported.

$P < 0.05$ was considered to be statistically significant. Analyses were performed using SAS version 9.2 (SAS Institute, Cary, NC, USA).

3. Results

The survey was accessed by 2403 people; 1557 women comprised the study cohort completing the majority of questions related to sexual history and activity (Table 1). Overall, 67.4% of participants were from the USA, 11.5% were from Europe, 10.2% were from Canada, 9.7% were from Australia, 0.6% were from Central America, and the remaining 0.5% were from Asia, Africa, or South America. Within the USA, there was broad distribution across all regions, with the largest representation from the west and the smallest from the southwest (Table 1).

In terms of sexual activity, women reported a large range of lifetime sexual partners: from 1 to more than 1000 (with a median of 11 and a mean of 33). Most women in relationships were monogamous (82.4%), although a substantial minority reported non-monogamous relationships (17.6%) (Table 2). In total, 19.5% of women reported having sexual relationships with women they did not know well; 8.8% of participants reported sexual relationships with men they did not know well (Table 2).

The percentage of women who reported never using barrier protection was significantly higher among those in monogamous relationships than among those in non-monogamous relationships (78.6% and 27.4%, respectively; $P < 0.01$) (Table 3). Women who reported always using barriers were significantly more likely to be in non-monogamous than monogamous relationships (14.3% and 3.5%, respectively; $P < 0.01$). Of note, 27.7% of non-monogamous women reported using barriers with their secondary partners only. Overall, 88.6% and 88.1% of the study population reported never using barrier protection when performing and receiving digital sex,

Table 1
Demographic characteristics.

Characteristic	No. (%)
Age, y (n = 1533)	
>60	19 (1.2)
51–60	101 (6.6)
41–50	278 (18.1)
31–40	514 (33.5)
21–30	422 (27.5)
<20	199 (13.0)
Ethnicity (n = 1561) ^a	
Native American	33 (2.1)
Latina	94 (6.0)
Caucasian/white	1149 (73.6)
Asian/Pacific Islander	31 (2.0)
African	126 (8.1)
Prefer not to answer/other	128 (8.2)
Location (n = 1554)	
Australia	151 (9.7)
Central America	9 (0.6)
South America	4 (0.3)
Africa	1 (0.1)
Asia	3 (0.2)
Europe	179 (11.5)
Canada	159 (10.2)
Northwest USA	96 (6.2)
Southwest USA	67 (4.3)
Southern USA	205 (13.2)
Northeast USA	218 (14.0)
Midwest USA	189 (12.2)
Western USA	273 (17.6)

^a Participants could choose more than 1 ethnicity.

Table 2
Sexual history.^a

Sexual history	Monogamous	Not monogamous	Total
In relationship	1016 (82.4)	217 (17.6)	1233 (79.2)
No regular partner	242 (74.7) ^b	82 (25.3)	324 (20.8)
Total	1258 (80.8)	299 (19.2)	1557 (100.0)
	Yes	No	
Sex with women you do not know well	304 (19.5)	1253 (80.5)	1557 (100.0)
Sex with men you do not know well	137 (8.8)	1420 (91.2)	1557 (100.0)

^a Values are given as number (percentage).

^b Women who identified themselves as monogamous in their relationships but did not currently have a regular partner.

respectively (Table 4). There were similar rates for never using barrier protection when performing and receiving oral sex (83.8% and 87.3%, respectively). Barrier use was slightly more prevalent in the context of genital stimulation with a sex toy, with 62.1% and 63.4% of respondents reporting that they never used barrier protection when performing and receiving this type of stimulation, respectively.

Multivariate analysis showed that, compared with Caucasian/white women, women of African descent had a significantly higher use of barrier protection when performing oral sex (OR 9.7; 95% CI, 2.2–43.6) and that women who reported only 1 partner were less likely than those with more than 1 partner to use barrier protection for oral sex (OR 0.3; 95% CI, 0.1–0.98). Women aged 41–50 years were more likely than women in other age groups to use barrier protection when performing stimulation with a sex toy (OR 2.3; 95% CI, 1.6–4.6). There were no other significant associations for barrier use for any of the sexual activities when looking at all exposure variables.

4. Discussion

The number of participants with complete data in the present study was much larger than in most previous studies of WSW [9,10,14]. Given the definition of WSW used, the present study is more generalizable to women who report sexual activity with other women and who are not traditionally captured in studies that focus on lesbian identity. The results show that a small but clinically important minority of women is in non-monogamous relationships and that the vast majority does not use any barrier protection for most sexual activities.

Women in non-monogamous relationships were significantly more likely to use barrier protection than were those in monogamous relationships. This finding is reassuring given the STI risk of having multiple sexual partners. It is notable that many women reported using barrier protection with their secondary partners only, but this alone does not explain the significant difference between the percentages of monogamous and non-monogamous women who

Table 3
Barrier use by relationship status.^a

Relationship status	Barrier use				
	Never ^b	Sometimes ^b	Always ^b	Secondary partner only	No response
Monogamous (n = 1236)	972 (78.6)	133 (10.8)	43 (3.5)	N/A	88 (7.1)
Not monogamous (n = 321)	88 (27.4)	93 (29.0)	46 (14.3)	89 (27.7)	5 (1.6)

^a Values are given as number (percentage).

^b $P < 0.01$.

Table 4
Barrier use for sexual activities.^a

Activity	No. (%)
Barrier use when performing oral sex (n = 1557)	
I don't do that activity	66 (4.2)
75%–100% of the time	55 (3.5)
<75% of the time	131 (8.4)
Never	1305 (83.8)
Barrier use when receiving oral sex (n = 1546)	
I don't do that activity	51 (3.3)
75%–100% of the time	43 (2.8)
<75% of the time	103 (6.7)
Never	1349 (87.3)
Barrier use with sex toy stimulation (n = 1550)	
I don't do that activity	165 (10.6)
75%–100% of the time	234 (15.1)
<75% of the time	189 (12.2)
Never	962 (62.1)
Barrier use when receiving sex toy stimulation (n = 1542)	
I don't do that activity	154 (10.0)
75%–100% of the time	224 (14.5)
<75% of the time	187 (12.1)
Never	977 (63.4)
Barrier use when performing digital sex (n = 1550)	
I don't do that activity	17 (1.1)
75%–100% of the time	45 (2.9)
<75% of the time	114 (7.4)
Never	1374 (88.6)
Barrier use when receiving digital sex (n = 1544)	
I don't do that activity	18 (1.2)
75%–100% of the time	51 (3.3)
<75% of the time	115 (7.4)
Never	1360 (88.1)

^a Values are given as number (percentage).

reported always using barrier protection in their relationships. Thus, many women in non-monogamous relationships choose to use barrier protection with all of their sexual partners.

The present study also showed that WSW engage in a variety of sexual activity involving transfer of vaginal fluid—putting them at risk of both BV and STIs, especially if they have multiple partners and/or also engage in heterosexual activity. There are various levels of risk for specific sexual activities with regard to bodily fluid transmission. Studies have indicated that the use of sexual enhancement devices may be the most common form of vaginal fluid exchange among WSW [13]. Although the present participants were more likely to use barrier protection with this particular form of sexual activity, a large majority still did not. This may be an area for clinicians and public health researchers to focus efforts investigating the role of barrier protection in reducing the risk of BV and STIs.

Similarly, the vast majority of WSW did not use barrier protection for oral sex. Although limited data exist for orogenital transmission of STIs among WSW, there still exists a risk—which is higher if WSW also engage in receptive orogenital sex with men [21]. The role of heterosexual activity is very important in this population and is one that clinicians should take into account. Of note, there are no data assessing the role of dental dams and other barriers in preventing orogenital transmission of STIs. Although these devices are marketed mainly toward WSW, there is little—if any—research that focuses solely on WSW-specific barriers.

Although it was hypothesized that certain definable characteristics would be associated with the use of barrier protection for specific sexual activities, significant associations were not found with most exposure variables. This finding is most concerning for those women who reported having sex with people they did not know well, and those with a history of STIs. Although there was no specific definition of what was meant by “not knowing someone well,” it was deemed the best terminology to capture sexual experiences that are often considered casual. The present study demonstrates that these women do not have higher rates of barrier use than women with only 1 partner.

There is a common perception that WSW are at lower risk of STIs relative to women who do not have sex with women [14]. Although there are data to support this theory, it is well documented that female-to-female transmission of some STIs still occurs [16]. As noted above, the risk of STIs is significantly affected by prior or current heterosexual sexual activity. The present findings support previous research in this area; many WSW may underestimate their risk of STIs, especially if they also have male partners, and hence put themselves at risk for adverse health outcomes by failing to use barrier protection. Interestingly, there were no definable characteristics associated with avoidance of barrier use in the present study. Sexual risk taking among WSW has been reported [17]; the present data both confirm this finding and provide an important addition by assessing differential use of barriers with certain sexual activities and in certain sexual contexts.

The present data are important for targeted sexual health education. Sexual history taking is often limited in a clinical setting, with numerous challenges influencing the appraisal of sexual risk [22]. Eliciting information about sexual orientation is not necessarily sufficient because women may participate in sexual activity with people of both genders [2]. Similarly, the type of sexual activity in which an individual participates can determine their sexual health risks.

There were several limitations to the current study. The cohort was a self-selected group of English-speaking and internet-using WSW who were willing to take an internet sexuality survey. Although an international distribution was achieved, the majority of women were located in the USA. The proportion of participants older than 50 years of age was relatively small (7.8% of total), so the present conclusions regarding age and barrier protection may be limited. One bias of internet survey data is the overrepresentation of younger participants [23]. Thus, the present study is more representative of a younger population of WSW—one with access to electronic media. Although the inclusion criteria allowed for a diverse sample and contributed to the external validity of the study, the findings may not be generalizable to all WSW. The cross-sectional design also limited the ability to measure causality. Furthermore, the veracity of participant responses in an anonymous survey is unclear, although the lack of compensation provides some assurance against misrepresentation; thus, it may be assumed that the cohort represented a large number of WSW who provided details of sexual health behaviors not previously assessed or published.

In the present study, a marked majority of WSW did not use barrier protection when engaging in various sexual activities, even in the context of potentially high-risk sexual behaviors. Clinicians and public health leaders should focus on appropriate risk assessment, and research should focus on the efficacy of barrier methods and practical steps for risk reduction among WSW.

Acknowledgments

The study was funded by the Sexual Medicine Society of North America.

Conflict of interest

The authors have no conflicts of interest.

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