

Serological Evidence of Infection with Chlamydia trachomatis, Herpes Simplex Virus Type 2, Syphilis, and

HIV among Women Who Have Sex with Women

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BACKGROUND

- >12.5% of American women ages 15-44 report a history of sexual activity with women (1).
- >The risk for STI acquisition among women who have sex with women (WSW) is controversial as little is known about the efficiency of STI transmission between women (2-8).
- >Exchange of infected secretions during vaginal and anal sex with fingers, hands, and sex toys is a plausible mechanism for STI transmission among WSW (9-13).
- >Complicating this picture is that many WSW also have a history of sex with men (women who have sex with women and men; WSWM) and continue to do so (8, 14), making it difficult to determine the source of their STI(s).
- >Our study evaluated differences in serological evidence of *Chlamydia trachomatis* (CT), herpes simplex virus (HSV) type 2, syphilis, and HIV infection in African American WSW who reported no lifetime history of sex with men (exclusive WSW) vs. age-matched WSWM (i.e. WSW reporting a lifetime history of sex with men).

METHODS

- >African American women ≥16 years presenting to the Jefferson County Health Department STD Clinic in Birmingham, AL and reporting sexual contact with another woman during the past year were eligible. The terms “WSW” and “WSWM” in this study apply only to sexual behavior.
- >Participants completed a questionnaire on socio-demographics, sexual orientation, history of sexual assault, history of STIs, and sexual partnership numbers and types.
- >CT, HSV-2, syphilis, and HIV seropositivity were measured on serum samples using a CT elementary body-based enzyme-linked immunosorbent assay (ELISA), the HerpeSelect® HSV-2 ELISA, the ZeusIFA fluorescent treponemal antibody-adsorption (FTA-ABS) test, and an HIV ELISA.
- >Vaginal fluid was collected for *Trichomonas vaginalis* InPouch culture. A cervical swab was collected for CT and *Neisseria gonorrhoeae* (GC) nucleic acid amplification testing (NAAT) using the Gen-Probe Aptima Combo 2 assay.
- >Analyses were performed with Stata 12.1 (College Station, TX). Descriptive statistics were examined separately for WSW and WSWM, with significant differences between study groups assessed by parametric tests (Pearson Chi-square, Fisher’s exact, independent sample t-test) as appropriate.

RESULTS

- >Between August 2011-October 2013, 163 African American WSW were enrolled.
- >20 (12%) were exclusive WSW and they were age-matched to 20 African American WSWM.

	Never had male sexual partner (n = 20) n (%)	Ever had male sexual partner (n = 20) n (%)	p value
Age (mean, SD)	23.2 (3.9)	23.5 (4.5)	.79
Self-identifies as lesbian*	19 (95%)	9 (45%)	<.01
Has high school degree	19 (95%)	12 (60%)	<.01
Employed full- or part-time	11 (55%)	8 (40%)	.34
Current annual income >\$20,000	2 (10%)	2 (10%)	1.00
Has a primary care provider	6 (30%)	9 (45%)	.32
Currently has health insurance	8 (40%)	14 (70%)	.05

*One woman who had never had sex with a male partner identified as “questioning.”

Table 2. Association between Sex with Men (Ever) and Select Individual-Level STI Risk Factors

	Never had male sexual partner (n = 20) n (%)	Ever had male sexual partner (n = 20) n (%)	p value
Tobacco use, past 30 days	11 (55%)	13 (65%)	.52
Alcohol use, past 30 days	15 (75%)	15 (75%)	1.00
Drug use, past 30 days	5 (25%)	9 (45%)	.18
Ever been in jail >24 hours	3 (15%)	5 (25%)	.43
Ever been sexually assaulted	4 (20%)	7 (35%)	.48
Ever been tested for HIV	0 (0%)	0 (0%)	--
Reported history of STIs			
Chlamydia	0 (0%)	8 (40%)	<.01
Gonorrhea	0 (0%)	5 (25%)	.04
Trichomonas	1 (5%)	9 (45%)	<.01
Genital herpes	0 (0%)	1 (5%)	1.00
Syphilis	0 (0%)	0 (0%)	--
HIV	0 (0%)	0 (0%)	--

STI = sexually transmitted infection

Table 3. Association between Sex with Men (Ever) and Partner Numbers/Types

	Never had male sexual partner (n = 20) n (%)	Ever had male sexual partner (n = 20) n (%)	p value
Ever had sex with an IV drug user	0 (0%)	0 (0%)	--
Ever had female partner with a known STI	7 (35%)	5 (25%)	.49
Age at sexual debut (Md, IQR)	17.5 (16-19)	15.0 (14-16)	<.001
Lifetime # female sexual partners (Md, IQR)	4.5 (2-6)	4 (2-10)	.33
Lifetime # male sexual partners (Md, IQR)	0	4 (2-21)	--
Past year # female sexual partners (Md, IQR)	1.5 (1-2)	2 (1-3)	.25
Past year # male sexual partners (Md, IQR)	0	1 (0-5)	--
Sex with a new or casual partner, past 30 days	5 (25%)	7 (35%)	.73
Sex with a regular partner, past 30 days	14 (70%)	14 (70%)	1.00

Md=median; IQR=interquartile range

Table 4. Association between Sex with Men (Ever) and STI Diagnoses

	Never had male sexual partner (n = 20) n (%)	Ever had male sexual partner (n = 20) n (%)	p value
Serological evidence of STI			
Chlamydia	6 (30%)	13 (65%)	.05
Herpes Simplex Virus type 2	0 (0%)	9 (45%)	<.01
Syphilis	0 (0%)	0 (0%)	--
HIV	0 (0%)	0 (0%)	--
Serological evidence of any STI	6 (30%)	15 (75%)	<.01
NAAT Evidence of STI			
Chlamydia	0 (0%)	2 (10%)	.48
Gonorrhea	0 (0%)	0 (0%)	--
Culture Evidence of STI			
Trichomonas	1 (5%)	3 (15%)	.60
Evidence of Any STI (including all listed above)	7 (35%)	15 (75%)	<.01

NAAT = Nucleic Acid Amplification Test

CT infection was the only STI with sufficient frequency to look at behavioral differences between exclusive WSW and WSWM in this study:

- > Among women who were seropositive for CT, exclusive WSW had an older mean age at sexual debut compared to WSWM (17.8 vs. 14.4; $p<0.01$).
- > Not having a high school degree was strongly associated with serological evidence of CT infection: 100% of those women with no high school degree had serological evidence of CT infection compared with only 32% of women with a high school degree ($p<.01$).
- > Not having a high school degree was associated with a current diagnosis of CT infection by NAAT: 22% of those women with no high school degree had a current diagnosis of CT infection by NAAT compared with no women with a high school degree ($p=.04$).
- > Among exclusive WSW there were no current diagnoses of CT infection by NAAT however 6 of these women had serological evidence of CT infection.

CONCLUSIONS

- > Among this cohort of African American WSW, evidence of past or current STIs was far less common among exclusive WSW compared to WSWM.
- > Nevertheless, this study provides evidence that CT is transmitted between women.
- > Additional data are needed to further evaluate behavioral differences between African American exclusive WSW and WSWM.

LIMITATIONS

- > Small sample size, which may not be generalizable to other populations of WSW.
- > Behavioral data and history of STIs based on self-report.
- > No comparison group of women who have sex with men only (WSM) to determine if serological evidence of STIs were significantly different based on sexual behavior.
- > TV diagnosed using culture and not the recently available, highly sensitive NAAT.

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