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Sexually transmitted disease (STD) diagnoses and mental health disparities among women who have sex with women screened at an urban community health center, Boston, Massachusetts, 2007

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Abstract

Background—A growing body of research documents mental health disparities among women who have sex with women (WSW) compared to women who have sex with men only (WSM). However, there remains a dearth of research exploring these indicators alongside sexually transmitted diseases (STDs) and WSW sexual health.

Methods—A retrospective chart review was conducted of all female patients (n=368) screened for STDs between July 2007 and December 2007 at an urban community health center in Boston, MA. De-identified electronic medical record data (e.g., demographics, psychosocial, sexual health) were analyzed and linked to STD positivity. Women who did not have sexual behavior documented in their medical chart (n=58) were excluded from this analysis. Bivariate and multivariable logistic regression procedures examined sexual and psychosocial health indicators, including sexual preference.

Results—Twenty-seven percent of participants were WSW (17% WSW only and 10% WSW/M). Overall, 5% of WSW were diagnosed with a new STD (HPV, anogenital warts, genital herpes, PID) and 17% had a history of a prior STD. In multivariable models adjusting for demographics, WSW were disproportionately more likely to have mental health and psychosocial issues noted in their medical records, including: a clinical diagnosis of depression, anxiety, and PTSD, history of suicide attempts, and inpatient psychiatric/mental health treatment. However, WSW were significantly less likely than WSM to engage in "high risk" HIV/STD sexual behavior. In a final multivariable model, same sex behavior was not associated with a different likelihood of being diagnosed with an STD, compared to opposite sex behavior. However, WSW diagnosed with STDs were at increased odds of having bipolar disorder and utilizing outpatient mental health counseling services compared to WSW without STDs. WSW with a history of STDs were at increased odds of having attempted suicide in the past, utilizing both outpatient and inpatient mental health treatment services, and having a history of injection drug use compared to WSW without a history of STDs.

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Conclusions—WSW with STDs may have serious psychosocial problems. Further research is warranted to better understand the relationship between sexual behavior and health, as well as to guide the development of interventions to ameliorate health disparities among WSW, particularly in the psychosocial domain.

Keywords

women; WSW; STDs; health disparities; sexual health

Introduction

Relative to women who have sex with men only (WSM), women who have sex with women (WSW) have been shown to be disproportionately affected by a variety of psychosocial and physical health factors.[1-6] For example, WSW have been shown to be disproportionately affected by mood disorders and increased psychological distress, most commonly depression and anxiety.[7-14] WSW have also been shown to use alcohol and illicit substances to a greater degree than WSM, and are at increased risk of having alcohol and drug dependency disorders.[9,13,15-24] Moreover, elevated rates of tobacco use have been observed in WSW compared to WSM.[15, 23-26]

Despite these documented health disparities, however, a dearth of research to date has examined these psychosocial factors in relation to sexually transmitted diseases (STDs) among WSW. Prior research about WSW sexual health indicates that up to 44% of WSW have a lifetime history of one or more STDs, depending on the sample characteristics and the STDs studied.[27-37] Among cross-sectional studies examining current STD diagnosis, genital human papillomavirus (HPV) and bacterial vaginosis have been shown to be relatively common among WSW, with prevalence ranging from 3% and 19%,[29-32] while the prevalence of gonorrhea, Chlamydia, syphilis, and HIV have been shown to be relatively low among WSW, ranging from 1% and 3%.[27,28,30,37] Although some prior research has documented significantly lower rates of STDs among WSW compared to WSM,[32,35] other studies have found increased rates of STDs among WSW.[34,36] Further research is warranted to investigate WSW sexual health in conjunction with health disparities in order to understand who is most at risk for STDs.

The purpose of this study was threefold: (1) to explore STD prevalence among Massachusetts area women who underwent STD screening at an urban community health center, by sexual behavior; (2) to describe differences the demographics, behavioral risk factors, substance use, mental health diagnoses, and chronic disease between WSW and WSM in the sample; and (3) to understand the relationship between health disparities and STDs among WSW.

Materials and Methods

Design and Procedures

A retrospective chart review was conducted of all female patients (n=368) who were screened for STDs for a six month period between July and December 2007 at Fenway Health (FH), the largest freestanding community healthcare and research facility serving the needs of the lesbian, gay, bisexual, and transgender community in the greater Boston area.[38] FH provides comprehensive medical and mental health services—including but not limited to primary care, gynecology, outpatient mental health therapy, and addiction services such as outpatient substance abuse treatment and acupuncture detoxification—to approximately 12,000 female patients annually.[38] All women who came into the clinic and were screened for the following STDs were included in this sample: HIV, Chlamydia, gonorrhea, syphilis, human

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papillomavirus (HPV), genital herpes, pelvic inflammatory disease (PID), anogenital warts, and trichomoniasis. The study was approved by the FH Institutional Review Board.

Measures

Demographic, behavioral and psychosocial characteristics—FH uses Centricity® EMR (GE Healthcare), an electronic medical record (EMR) system that enables physicians and clinical staff to document patient encounters, streamline clinical workflow, and securely exchange clinical data with other providers, patients, and information systems. Data were extracted from patients' EMRs, including: demographic characteristics (age, race/ethnicity, education, employment status, health insurance type, children under age 18); current substance use [alcohol (5+ drinks per week), tobacco, marijuana, crack/cocaine, club drugs (crystal methamphetamine, GHB, ecstasy, ketamine), injection drug use (IDU)]; mental health clinical diagnoses [DSM-IV-TR Axis I: depression, anxiety, PTSD, SUD, bipolar disorder, adjustment disorder, other (not specified); DSM-IV-TR Axis II: personality disorders][39]; psychosocial factors (history of sexual, physical, emotional abuse; history of inpatient psychiatric hospitalization; outpatient mental health utilization); history of any STD diagnosis (through key word searches of the patients' electronic medical records as well as laboratory reports).

STD screening and diagnosis—Depending on presenting symptoms, risk of exposure, and clinician assessment, test types used for each STD were the following: HIV: Serum EIA HIV-1/2 antibody test reported as reactive or non reactive. Chlamydia: Endocervical swab - Gen-Probe® reported as detected or not detected. Gonorrhea: Endocervical swab - Gen-Probe® reported as detected or not detected. Syphilis: Rapid Plasma Reagin test (RPR), with positive tests confirmed by the Microhemagglutination assay (MHA-TP). HPV: Clinical diagnosis and HPV DNA testing on PAP smear - reported as high risk or low risk detected or not detected. Genital herpes: cultures using Remel Micro Test M4 RJ transport media, and clinical diagnosis for HSV 1/2. PID: clinical diagnosis and Gen-Probe® reported as detected or not detected. Anogenital warts: clinical diagnosis by examination. Trichomoniasis: wet mount. In addition to STDs, the prevalence of other gynecologic infections, specifically bacterial vaginosis and yeast, were captured through vaginal swab - BBL™. All tests were processed by Quest Diagnostics (Cambridge, MA).

Women who tested positive (or reactive) or who were found to have an STD by clinical examination (HIV, Chlamydia, gonorrhea, syphilis, HPV, genital herpes, PID, anogenital warts, or trichomoniasis) were classified as diagnosed with an STD on the date of their visit; those whose tests or clinical exams were classified as negative were not. The number of positive (or reactive) test results divided by the total number of positive and negative test results among women were used to calculate STD positivity in this population. Indeterminate (n=1) and contaminated (n=1) test results were excluded from these analyses.

Reason for STD screening—To address patterns of screening for STDs among women, reason for STD testing was documented by the clinician at time of testing as follows: (1) STD symptoms (patient having symptoms suggestive of STDs); (2) STD exposure (sexual partner diagnosed with STD in the previous 3 months); (3) sexual risk behavior in the prior 3 months (perceived “high risk” sex i.e., sex with a man without a condom, condom breakage, anonymous sex partners); or (4) routine STD screening (e.g., complete physical exam, HIV follow-up appointment, entering a new relationship, or patient preference for regular screening).

Data Analysis

Data extracted from patient electronic medical records were entered into a study database and analyzed with SAS® version 9.1.3,[40] where statistical significance was determined at the

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$p<0.05$ level. De-identified electronic medical record data were analyzed and linked to STD positivity results. The univariate distributions for each of the variables relevant to the analysis were examined. Data was analyzed examining proportional differences using chi-square tests and, where cell sizes were small, Fisher's exact tests.

Associations Between Sexual behavior and Psychosocial and Behavioral Factors

Primary outcomes—Through key word searches of the patients' electronic medical records as well as laboratory reports where relevant, the following primary outcomes were dichotomously assessed: current substance use; mental health clinical diagnoses; psychosocial factors; and history of STD diagnosis.

Primary Predictor—The primary predictor of interest was sexual behavior. Women who reported sexual behavior with women at their study visit were categorized behaviorally as WSW, regardless of whether they also reported sex with men; those who reported only sex with men at their study visit were categorized as WSM. Women who did not have sexual behavior documented in their chart (n=58) around the time of STD screening were excluded from this analysis.

For all variables, bivariate logistic regression analyses were conducted to establish statistically significant parameter estimates with the outcomes of interest. A separate multivariable logistic regression model was constructed for each outcome, with WSW as the primary predictor of interest. Age, race/ethnicity, and health insurance were all adjusted for in all multivariable models, given their documented profound impact of health care utilization.[41-44]

Mental Health Disparities Among WSW only by STD Diagnosis and History of STDs

Bivariate logistic regression procedures were used to assess whether WSW diagnosed with an STD on their date of visit and WSW with a history of STDs were more likely to have psychosocial issues, as compared to WSW who were not diagnosed with an STD on the date of their visit and those with no STD history.

Results

Descriptive Statistics (Table 1) and Demographic Differences by Sexual Behavior

Table 1 provides an overview of the total sample (demographic, behavioral, and psychosocial, characteristics) by sexual behavior (WSW and WSM). Overall, 27% were WSW (17% WSW only and 10% WSW/M). WSW were significantly older in age compared to WSM (mean age WSW 32 vs. WSM 29; t-test statistic=3.34; p=0.001). WSW were also more likely to be employed (OR=9.24; p=0.002) and less likely to be students (OR=0.23; p=0.04) compared to WSM.

STDs Among Massachusetts Area Women Accessing STD Screening at an Urban Community Health Center, by Sexual Behavior (Tables 1 & 2)

Five percent of WSW were diagnosed with a new STD (HPV, anogenital warts, genital herpes, PID) on the day of their visit compared to 17% of WSM (Table 2). Notably, 17% of WSW had a history of one or more STDs, compared to 19% of WSM (Table 1).

Bivariate Associations of Psychosocial and Behavioral Factors by Sexual Behavior (Table 3)

Substance use—WSW were significantly more likely to have used alcohol (5+ drinks per week) (OR=2.41; p=0.002) relative to WSM.

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Clinical mental health diagnoses—WSW were significantly more likely to have a clinical mental health diagnosis (meet DSM-IV criteria for depression, anxiety, PTSD, SUD, bipolar disorder, adjustment disorder, other (not specified)39) than WSM (OR=2.58; p=0.0003). Moreover, being a WSW was independently associated with a greater odds of the following: depression (OR=2.86; p<0.001), anxiety (OR=2.57; p=0.002), PTSD (OR=4.74; p=0.008), and adjustment disorders (OR=3.46; p=0.05). WSW were also more likely to have a personality disorder that met DSM-IV criteria39 (OR=5.70; p=0.05) compared to WSM.

History of psychosocial issues—Relative to WSM in the sample, WSW were more likely to have a history of sexual abuse (OR=2.83; p=0.01), emotional abuse (OR=2.23; p=0.03), attempted suicide (OR=3.93; p=0.01), and inpatient mental health treatment (OR=4.50; p<0.001), as documented by a clinician in their medical record.

Sexual health—WSW were less likely to be diagnosed with a new STD (OR=0.32; p=0.04) compared to WSM women; however there was no observed difference between WSW and WSM women with respect to STD history. WSW were more likely to report routine screening as the reason for STD testing (OR=2.32; p=0.01) and less likely to report STD symptoms (OR=0.41; p=0.02) and “high risk” sexual behavior (OR=0.29; p=0.003) in comparison to WSM.

Multivariable Logistic Regression Models Suggesting Mental Health Disparities Among WSW (Table 3)

In multivariable models adjusting for patients' age, race/ethnicity, and health insurance status, WSW were disproportionately affected by mental health and psychosocial issues: any clinical mental health diagnosis (AOR=3.45; p<0.001), depression (AOR=3.56; p=0.004), anxiety (AOR=3.34; p=0.008), and PTSD (AOR=12.34; p=0.01), history of suicide attempt (AOR=14.87; p<0.001), and inpatient psychiatric/mental health treatment (AOR=11.55; p=0.004). However, WSW were less likely than WSM to engage in high risk HIV/STD sexual behavior (AOR=0.24; p=0.03).

Mental Health Disparities Among WSW Only by STD Diagnosis and History of STDs (Table 4)

WSW diagnosed with a new STD on date of their visit were more likely to have a diagnosis of bipolar disorder (OR=12.73, p=0.04), to have a history of outpatient mental health treatment (OR=23.50; p=0.003), and to have a STD history (OR=15.38; p=0.02) compared to WSW who were not diagnosed with an STD during their clinical screening.

Compared to WSW with no STD history, WSW with a history of STDs were more likely to have a history of suicide attempt (OR=10.00; p=0.02), inpatient psychiatric/mental health treatment (OR=12.21; p=0.002), and outpatient mental health treatment (OR=6.86; p=0.01), and to have used injected drugs (IDU) during their lifetime (OR=15.09; p=0.009).

Discussion

While STD rates were lower among WSW compared to their WSM counterparts, consistent with prior research,[27-37] 5% of WSW in this sample were diagnosed with a new STD on the day of their visit and 17% had a history of one or more prior STDs. Although WSW were less likely than exclusively heterosexual women to engage in “high risk” HIV/STD sexual risk behavior (i.e., sex with men without a condom or latex barrier, condom breakage, anonymous sex partners in the past 3 months), no significant difference was observed in STD diagnosis by sexual orientation after adjusting for age, race/ethnicity, and health insurance. Coupled with the knowledge that many STD infections in women are asymptomatic[45-47] and untreated HPV

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infections can cause Pap smear abnormalities, genital warts, and cervical cancer,28،29 findings from this study suggest that culturally competent screening, diagnostic, and treatment services are indicated for WSW.

WSW were more than three times as likely to have a clinical mental health diagnosis relative to the WSM women in this sample. Consistent with prior research, WSW were especially disproportionately affected by depression, anxiety, and PTSD.7-14 Consistent with prior research on psychosocial health disparities, WSW were more likely to have a history of past suicide attempt(s)13،48 and increased mental health utilization (e.g., inpatient psychiatric/mental health treatment).17،49 Prior research suggests that stressors associated with being WSW, such as leading a marginalized life, hiding one's sexuality, facing verbal, emotional, or physical abuse, or stigma, may contribute to increased rates of mental health diagnoses among women.2-6،50

However, contrary to previous research on psychosocial health disparities, no significant differences on alcohol use, [9, 13, 16-20, 22, 23] tobacco use,[15, 23-26] and history of sexual abuse or emotional abuse[51]were found in this sample between WSW and WSM women after adjusting for age, race/ethnicity, and health insurance. Due to the documented co-occurrence of mental health diagnoses and alcohol use among lesbians,[8,26] and PTSD and history of sexual or emotional abuse, [52] it could be that mental health diagnoses are the domain of greatest concern among WSW. Additional research is warranted to examine the pathways to psychosocial disparities, in particular to understand the influence of factors salient to WSW status such as disclosure, stigma, and stress which may affect mental health.[5]

Prior research with women has documented significant associations between a variety of psychosocial factors and STDs;[53-58] however, to date this association has not been adequately documented among WSW specifically. In the current study, WSW diagnosed with a new STD on the date of their visit were at increased odds of having bipolar disorder, utilizing outpatient mental health services, and having an STD history. WSW with a history of STDs had an increased odds of having attempted suicide in the past, utilizing both outpatient and inpatient mental health treatment services, and having a history of injection drug use. Findings suggest that future research examining "intertwined syndemics"[59-61] with larger samples of women by sexual behavior may provide valuable data to guide the development of behavioral and sexual health interventions with WSW. In particular, future studies would benefit from examining whether greater numbers of psychosocial health problems are associated with high-risk sexual behavior and STD acquisition, similar to prior research studies among men who have sex with men.[59]

This study has limitations to consider when interpreting findings. First, symptom status was only determined for patients who were screened for an STD. We could not determine if some symptomatic patients were empirically treated without testing. Ideally, all symptomatic patients would be screened for an STD, but this could not be ascertained by the retrospective chart review used in this study. Second, 15% of women in the FH population did not report gender of their sexual partners, and this "unknown" sexual behavior group had the highest STD rates but were excluded from the study (N=58). The categorization of sexual behavior by WSW and WSM is consistent with the literature suggesting that health disparities are less likely to be related to the gender of one's sexual partner, but may be more related to stigma and/or homophobia that WSW experience, irrespective of whether they have sex with both women and men.3،5 However, future studies with larger samples might benefit from examining differences by WSW, WSW/M, and WSM, differentiating exclusively lesbian and bisexually active women. Third, the primary reasons that women presented for care at FH were not captured (i.e., primary care, mental health, HIV testing specifically). Those patients who received outpatient mental health treatment at Fenway had more information in their medical

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chart, especially concerning psychosocial history (e.g., history of abuse, suicide attempt, etc.) due to the extensiveness of mental health intake form. Thus, since Fenway is known to provide culturally competent care to sexual and gender minority persons, it is possible that a disproportionate percent of female clients seeking mental health services were WSW. Fourth, data are constrained by the study design itself (i.e., retrospective chart review), which has several limitations including incomplete documentation, missing charts, information that is unrecorded, difficulty interpreting information found in the documents (e.g., jargon, acronyms), problematic verification of information and difficulty establishing cause and effect, and variance in the quality of information recorded by medical professionals.[62-66] Lastly, but importantly, lack of statistical power remains a major limitation given the small cell sizes present in bivariate logistic regression procedures used to assess whether WSW diagnosed with an STD on their date of visit and WSW with a history of STDs were more likely to have psychosocial issues, as compared to WSW who were not diagnosed with an STD on the date of their visit and those with no STD history. However, given the dearth of research on this topic, we felt that it was important to take a preliminary look at the psychosocial issues associated with STD diagnosis and history among WSW despite the small sample size and resulting statistical imprecision. Additional research is warranted with larger samples of women.

Limitations notwithstanding, results suggest that all sexually active women, regardless of sexual orientation and behavior, should be routinely screened for STDs. Assumptions that WSW are at low or negligible risk for STDs and other gynecological infections may be premised upon infrequent screening, ignorance of lesbian sexual practices, and/or the discomfort that WSW may feel concerning the disclosure of their sexual identity and behavior.[27,35,67] Although some patient charts did not document sexual behavior or sexual identity, the majority (85%) of the sample had known gender of sexual partners, suggesting that clinicians are both talking to women about their sexual behaviors and documenting these interactions in patient charts, though this may be biased since the sample came from Fenway Health, a clinic specializing in LGBT care. Continued provider training is warranted to ensure appropriate screening, diagnosis, and care screening for STDs and other gynecologic infections among WSW. Moreover, research with larger samples is warranted to look more carefully at sexual behavior and sexual health among women, including disease prevalence rates, reasons for screening, and treatment. Future studies would benefit from examining a broad range of health disparities among WSW, especially mental health and psychosocial issues.

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Table 1

Demographic, psychosocial, and behavioral characteristics of the sample (N = 310) by sexual behavior: women who have sex with women (N = 83) and women who have sex with men only (N = 227).

	Women who have sex with women		Women who have sex with men only		Total Sample+	
Mean Age (SD)	**32 (7)**		**29 (7)**		**31 (8)**	
	N	**%**	**N**	**%**	**N**	**%**
Race/Ethnicity						
White	56	67	155	68	211	68
African American/ Black	9	11	17	7	26	8
Latino/ Hispanic	5	6	17	7	22	7
Asian/ API	5	6	19	8	24	8
Other	1	1	3	1	4	1
Not Reported	7	8	16	7	23	7
Education						
High school/ GED or Less	4	5	3	1	7	2
Some College	10	12	50	22	60	19
College	15	18	35	15	50	16
Graduate School	12	14	19	8	31	10
Not Reported	42	51	120	53	162	52
Employment						
Employed	49	59	90	40	139	45
Unemployed/ Disabled	5	6	10	4	15	5
Student	12	14	58	26	70	23
Not Reported	17	20	69	30	86	28
Health Insurance						
Private/ HMO	36	43	84	37	120	39
Medicaid	11	13	20	9	31	10
Self-Pay	34	41	117	52	151	49
Not Reported	2	2	6	3	8	3

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	Women who have sex with women		Women who have sex with men only		Total Sample+	
Mean Age (SD)	**32 (7)**		**29 (7)**		**31 (8)**	
	N	**%**	**N**	**%**	**N**	**%**
Children						
Children < 18	6	7	17	7	23	7
Reported Sex With						
Women only (WSW)	54	65	0	0	54	17
Women and men (WSW)	29	35	0	0	29	9
Men only (WSM)	0	0	227	100	227	73
Substance Use						
Alcohol (5+ drinks per week)	62	75	125	55	187	60
Tobacco	19	23	38	17	57	18
Marijuana	7	8	14	6	21	7
Crack/Cocaine	3	4	3	1	6	2
Club Drugs (crystal meth, GHB, ecstasy, ketamine)	0	0	5	2	5	2
IDU Ever	4	5	3	1	7	2
Current Mental Health Clinical Diagnoses (DSM-IV-TR)						
Any Axis 1	44	53	69	30	113	36
Depression	36	43	48	21	84	27
Anxiety	24	29	31	14	55	18
Substance Use Disorder (SUD)	6	7	11	5	17	5
Bipolar Disorder	4	5	5	2	9	3
Posttraumatic Stress Disorder (PTSD)	8	10	5	2	13	4
Adjustment Disorder	6	7	5	2	11	4
Other Axis 1	3	4	4	2	7	2
Any Axis 2 (Personality Disorders)	4	5	2	1	6	2
Psychosocial History						
Sexual Abuse	13	16	14	6	27	9
Physical Abuse	11	13	17	7	28	9
Suicide Attempt	8	10	6	3	14	5

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	Women who have sex with women		Women who have sex with men only		Total Sample+	
Mean Age (SD)	**32 (7)**		**29 (7)**		**31 (8)**	
	N	**%**	**N**	**%**	**N**	**%**
Emotional Abuse	16	19	22	10	38	12
Inpatient Psychiatric/ Mental Health Treatment	13	16	9	4	22	7
Outpatient Mental Health Treatment	8	10	10	4	18	6
Sexual Health						
STD Diagnosis	4	5	39	17	43	14
Other Gynecologic Infections	10	12	56	25	66	21
Reason For STD Screening						
Routine Screen	68	81	153	67	221	71
STD Symptoms	14	17	76	33	90	29
Sexual Risk Behavior	7	8	55	24	62	20
STD Exposure	1	1	16	7	17	5
STD History						
History of STD	14	17	44	19	58	19

+Excluded are women with unknown sexual behavior (N = 58).

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Table 2

STD testing and positivity by women who have sex with women (N = 83) and women who have sex with men only (N = 227), Fenway Health, Boston, Massachusetts, July-December 2007.[+]

	STD Testing						STD Positivity[*]					
	WSW		WSM		Total		WSW		WSM		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
STD Diagnosis	**83**	**100.0**	**227**	**100.0**	**310**	**100.0**	**4**	**4.8**	**39**	**17.2**	**43**	**13.9**
HIV	32	38.6	62	27.3	94	30.3	0	0.0	6	9.7	6	6.4
Chlamydia	78	94.0	206	90.8	284	91.6	0	0.0	3	1.5	3	1.1
Gonorrhea	78	94.0	213	94.8	291	93.9	0	0.0	0	0	0	0.0
Genital HPV	73	88.0	157	69.2	230	74.2	1	1.4	17	10.8	18	7.8
Syphilis	39	47.0	76	33.5	115	37.1	0	0.0	0	0.0	0	0.0
Genital Herpes	7	8.4	15	6.6	22	7.1	1	14.3	9	60.0	10	45.5
Pelvic Inflammatory Disease (PID)	1	1.2	0	0	1	0.3	1	100.0	0	0.0	1	100.0
Anogenital Warts	1	1.2	3	0.9	4	1.3	1	100.0	3	100.0	4	100.0
Trichomoniasis	0	0	1	0.4	1	0.3	0	0.0	1	100.0	1	100.0
Other infections	**13**	**15.7**	**97**	**42.7**	**110**	**35.5**	**10**	**76.9**	**56**	**57.7**	**66**	**60.0**
Bacterial Vaginosis	5	6.0	48	21.2	53	17.1	5	100.0	24	50.0	29	54.7
Yeast	9	10.8	47	20.7	56	18.1	5	55.6	32	68.1	37	66.1

[+] Excluded are women with unknown sexual behavior (N = 58).

[*] STD positivity was calculated as the number of positive (or reactive) test results divided by the total number of positive and negative test results.

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Table 3

Bivariate and multivariable logistic regression analyses showing health disparities among WSW (N = 310).

	Odds Ratio (Unadj)	95% CI	*P*-value	Odds Ratio (Adj) [+]	95% CI	*P*-value
Substance Use						
Alcohol (5^{+} drinks per week)	2.41	1.38-4.22	0.002	2.09	0.84-5.21	0.11
Mental Health Clinical Diagnoses						
Any Axis I	2.58	1.54-4.33	0.0003	**3.45**	**1.39-8.55**	**0.0002**
Depression	2.86	1.67-4.89	0.0001	**3.56**	**1.51-8.42**	**0.004**
Anxiety	2.57	1.40-4.72	0.002	**3.34**	**1.38-8.09**	**0.008**
PTSD	4.74	1.50-14.92	0.008	**12.34**	**1.70-89.42**	**0.01**
Adjustment Disorder	3.46	1.03-11.66	0.05	1.98	0.40-9.75	0.40
Axis II Personality Disorder	5.70	1.02-31.70	0.05	3.49	0.22-56.37	0.38
Psychosocial History						
Sexual Abuse	2.83	1.27 -6.30	0.01	1.34	0.35-5.07	0.67
Suicide Attempt	3.93	1.32-11.69	0.01	**14.87**	**2.04-108.26**	**0.008**
Emotional Abuse	2.23	1.10-4.48	0.03	1.64	0.56-4.82	0.37
Inpatient Psychiatric/Mental Health Treatment	4.50	1.84-10.97	0.0009	**11.55**	**2.21-60.38**	**0.004**
Sexual Health						
STD Diagnosis	0.32	0.11-0.94	0.04	0.85	0.22-3.32	0.81
Reason For STD Screening						
Routine Test	2.32	1.22-4.39	0.01	2.34	0.74-7.36	0.15
STD Symptoms	0.41	0.20-0.85	0.02	0.51	0.15-1.69	0.27
Sexual Risk Behavior	0.29	0.13-0.66	0.003	**0.24**	**0.07-0.88**	**0.03**

[+]Models were adjusted for age, race/ethnicity, and health insurance.

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Table 4

Bivariate logistic regression analyses showing health disparities among WSW with (1) STD diagnosis and (2) STD history.

	Odds Ratio (Unadj)	95% CI	*P*-value
STD DIAGNOSIS			
Mental Health Clinical Diagnoses			
Bipolar Disorder	12.73	1.12-144.80	0.04
Psychosocial History			
Outpatient Mental Health Treatment	23.50	2.93-188.81	0.003
Sexual Health			
STD History	15.38	1.55-152.54	0.02
STD HISTORY			
Psychosocial History			
Suicide Attempt	10.00	1.52-65.68	0.02
Inpatient Psychiatric/ Mental Health Treatment	12.21	2.43-61.43	0.002
Outpatient Mental Health Treatment	6.86	1.56-30.26	0.01
Substance use			
IDU ever	15.09	1.95-116.65	0.009