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An Internet Survey of Demographic and Health Factors Associated with Risk of Sexual Dysfunction in Women Who Have Sex with Women

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Abstract

Introduction—There has been scant attention to predictors of sexual dysfunction in women who have sex with women (WSW).

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Statement of Authorship

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Aim—To investigate the associations of high risk for sexual dysfunction in an Internet cohort of WSW.

Main Outcome Measure—A modified version of the Female Sexual Function Index (FSFI) was used to quantify each subject's sexual function.

Methods—Women who have sex with women were invited to participate in an Internet-based survey by invitations posted on e-mail listservs and on social media sites catering to WSW. Ethnodemographic, health status, and sexual/relationship data were collected.

Results—The study was completed by 2,433 adult women. Of these, 1,566 participants had complete data on the FSFI and comprised the study cohort; 388 (24.8%) met the FSFI criteria for high risk of female sexual dysfunction (HRFSD). On multivariable analysis, the following variables were found to be independently associated with the HRFSD; moderate or severe subjective bother regarding sexual function (OR 4.8, 95% CI 3.0–7.9 and 13.7, 95% CI 7.5–25.1, respectively), overactive bladder (OAB) (OR 2.1, 95% CI 1.0–4.5), having a nonfemale or no partner (OR 2.3, 95% CI 1.1–4.7 and 3.2, 95% CI 2.0–5.2, respectively). A history of pregnancy was associated with lower odds of HRFSD (OR 0.567, 95% CI 0.37–0.87). Mean FSFI domain scores for all domains except desire were negatively impacted by partner factors and OAB.

Conclusions—A single-item question on sexual bother is strongly predictive of potentially distressing sexual problems in the WSW. A number of health and social factors are associated with risk of sexual problems in the WSW. Assessment of sexual well-being in the WSW is a priority for practicing healthcare providers.

Keywords

Lesbian; Women Who Have Sex with Women; Bisexual; Female Sexual Dysfunction; Homosexual; Gay Women

Introduction

Recent studies suggest lesbian or bisexual identity in approximately 1–2% and 1–4% of American women, respectively [1–3]. Significantly, many women who have engaged in sexual activity with another woman do not report lesbian or bisexual identity; in a 2010 study, 7% of American women 18 to 59 reported having had sex with another woman with over half of these women reporting heterosexual identity [4]. In the recent National Survey of Sexual Health and Behavior, same—gender sexual behavior among American women was most prevalent (3–4%) in women aged 18–24 [3].

Lesbian and bisexual women are more likely than their heterosexual counterparts to have poorer health and reduced access to health care, including routine gynecological services [2,5]. The most commonly cited causes of this disparity include hesitancy to reveal sexual orientation to providers, greater chance of being uninsured, lower use of routine health screenings, and greater prevalence of substance abuse [2,5]. Regardless of cause, the recent Institute of Medicine report titled "The Health of Lesbian, Gay, Bisexual, and Transgender People" makes clear the need for improved attention to the health needs of women who have sex with women (WSW) [6].

Sexual wellness is an essential component of overall health and a human right [7]. Female sexual function has been a topic of increasing interest over the past decade. Jiann et al. reported (in a non-WSW female population) that increased age and urinary incontinence are associated with greater odds of sexual pain and lubrication problems, whereas psychosocial and relationship factors are predictive of desire, arousal, orgasmic function, and sexual satisfaction [8]. Hayes et al. reported that sexual desire was most closely linked to

relationship factors, whereas increased age was associated with decreased arousal response [9]. It is suggested from these data that physiological measures of sexual function (lubrication, genital arousal) in women are related to health, but more subjective measures (desire, satisfaction, arousal) are dependent on psychorelational factors.

Little has been published on provision of sexual health services for WSW [10,11]. Indeed, the recent American College of Obstetrics and Gynecology Practice bulletin on female sexual dysfunction did not contain the words “lesbian,” “bisexual,” or “women who have sex with women” [12]. WSW differ from non-WSW females with regards to sexual practices but may also differ with respect to social and family networks, interpretation of sexual health, and interaction with health-care services [5,10,13–15]. Despite the perception that WSW are at lower risk of sexually transmitted infection (STI), risky sexual behaviors are reported by women of every sexual orientation [16,17]. An improved understanding of how to facilitate sexual wellness in WSW is thus a research and a clinical priority [13,18,19].

In this exploratory study, we assessed sexual function and health in a population of WSW. Our intention was to estimate the relationship between demographic, health, and sexuality variables and risk of sexual dysfunction in WSW. We hypothesized that demographic and health factors associated with high risk of female sexual dysfunction (HRFSD) in this cohort would show similarities to prior studies of women in heterosexual relationships.

Methods

Study Design and Cohort Description

Institutional Review Board approval was obtained prior to initiating the study. The WSW uRinary and sExuAL function (WSW REAL) study was a cross-sectional, Internet-based survey of the WSW. The cohort was restricted to English-literate, Internet-using the WSW who were 18 years of age or older. Participants were required to report having had sex with another woman/women; we did not set a minimum number of same-sex contacts for participation nor did we require participants to be currently in a same-gender sexual relationship. However, participants were required to identify as a woman who has sex with women. International sampling was achieved by distribution of an invitation to local, national, and international lesbian, gay, bisexual and transgender (LGBT) community centers, organizations catering to WSW, and advertisements on Facebook (http://www.facebook.com, Palo Alto, CA, USA) directed toward lesbians and other WSW. This methodology has been utilized in prior studies of lesbian sexuality [10]. Potential participants were informed that they were being invited to participate in a study of urinary and sexual wellness in WSW and given the opportunity to link to the survey which was posted on an Internet-based survey site (http://www.surveymonkey.com, Palo Alto, CA, USA). Respondents were informed that they would be asked to provide personal ethnodemographic, health, and sexuality information as part of a study to enhance awareness of sexual and urologic health in the WSW. Participants were given the option to decline or stop the survey at any time. Contact information for the study coordinators and our office for human research were provided. Implied consent was assumed based on subject completion of the instrument. No personally identifying information was collected, and no incentive was provided for participation. We enrolled participants from January 19, 2010 to May 19, 2010.

Description of Variables

Outcome Variables

The main outcome variable was a version of the Female Sexual Function Index (FSFI) modified for use in lesbians; modification of the FSFI for use in lesbians has been validated

in prior studies [10]. Our modifications consisted of adjusting references to the gender of the partner and use of the more general term “sexual activity” as opposed to sexual intercourse. We defined sexual activity as “caressing, foreplay, masturbation with a partner, oral sex, and vaginal or anal penetration.” Respondents with incomplete data for the FSFI were excluded from all subsequent analyses.

The FSFI consists of 19 questions divided into six domains relevant to female sexuality; Desire, Arousal, Lubrication, Orgasm, Satisfaction, and Pain. Higher scores for a given domain indicate higher/better overall levels of function. Women are asked to answer the questions as they relate to sexual activity over the past 4 weeks. The maximum possible score for any given domain is 6. The minimum score for the desire domain is 1.2, and the minimum score for the satisfaction domain is 0.8; 0 is the minimum score for all other domains and corresponds to no sexual activity. The minimum score for the desire and satisfaction domains of the FSFI are greater than 0 as it is assumed that sexual desire and satisfaction do not necessarily require the presence of sexual activity; hence there is no response option for “no sexual activity” on several questions from these domains. Total FSFI is calculated by summing all six domains; the minimum FSFI-total score is 2, and the maximum is 36 [20]. Women whose total FSFI scores were less than 7.2 by definition are not sexually active and were excluded from subsequent analyses.

We are not aware of validated cutoff scores for the HRFSD in the WSW using the modified FSFI; therefore, we utilized the commonly accepted cutoff of the FSFI-total ≤26.55 as evidence of the HRFSD [21]. In the validation study of the original FSFI, women with a diagnosed sexual dysfunction were compared to women without sexual dysfunction. The cutoff of 26.55 correctly classified 88% of the sexually functional women and 70% of the sexually dysfunctional women and was the optimal cut-point per their analyses [21]. As a check for the internal validity of this cutoff score in this study, in a secondary analysis we stratified the FSFI-total score as a factor of response to the Likert-style FSFI question “Over the past 4 weeks, how satisfied have you been with your overall sexual life?” Similar analytic methods have been used for creation of cutoff scores for erectile dysfunction severity in men using the International Index of Erectile Function [22].

Exposure Variables

Respondents provided their age, geographic location, and race/ethnicity (African, Asian, Caucasian, Latino, Native American, other). Participants were asked to provide information on sexual orientation (homosexual, bisexual, heterosexual, queer, and other), number of lifetime sexual partners (grouped in quartiles for analysis), number of sex partners in the past 6 months (grouped as 0, 1, or >1 for analysis), average monthly sex frequency (grouped in quartiles for analysis), whether they had a current regular partner (yes/no) and whether they had been a victim of sexual abuse or assault (yes/no). Participants who replied in the affirmative to the question on sexual assault were asked their age at the time of assault and the gender(s) of the perpetrator(s). Participants with a regular partner were asked the gender of their partner (female, male, other). Participants were asked (yes/no for all) if they routinely saw a healthcare provider, whether Papanicolaou tests are part of their routine healthcare visits, and whether they had ever consulted a healthcare professional for sexual problems. Participants were asked about their use of barriers/contraceptives for safer sex in a separate set of questions; these data will be presented elsewhere.

Respondents were asked if they had or have ever been treated for the following medical conditions (yes/no for all): diabetes, coronary artery disease, hyperlipidemia, high blood pressure, neurologic dysfunction, depression, vaginal yeast infection, and gynecological cancer. Participants were asked (yes/no for all) if they had ever undergone gynecological/pelvic surgery including bladder surgery, cervical biopsy, oophorectomy, partial or complete

hysterectomy, tubal ligation, drainage of tubo-ovarian abscess, and tubal ligation, been pregnant, delivered a child vaginally, delivered a child by Caesarean section, or had a urinary tract infection in the past year. Participants reported their menopausal status (premenopausal defined as any menses, postmenopausal defined as no menses for >12 months); postmenopausal participants were asked if they currently used hormone replacement therapy (yes/no).

We assessed bother related to urinary symptoms using the Overactive Bladder Questionnaire (OAB-q), a validated survey for the assessment of bother from urinary frequency, urgency, incontinence, and nocturia [23]. These symptoms are collectively known as overactive bladder (OAB). A total OAB-q score of 20 or higher was taken as evidence of OAB [23]. As the OAB-q does not assess stress urinary incontinence (SUI), participants were asked "During the past four weeks, how often have you had leakage of urine with coughing, sneezing, lifting, laughing, exercising, etc.?" (none, a little, some, a good bit, most, or all of the time). Participants who reported that they lost urine "none" or "a little bit of the time" were considered to have minimal SUI symptoms, participants who reported "some" or "a good bit of the time" were considered to have moderate SUI, and participants who reported "most" or "all of the time" were considered to have severe SUI.

Participants were asked to answer a single-item Likert-scale question on their feelings about their sexual function. Respondents could select that they were (not, only slightly, moderately, very, or extremely) bothered by issues pertaining to sexual function. The options of stating "sexuality is not an important issue in my life" or answering "other" and providing a qualitative response were also available. For purposes of analysis, participants were grouped as "not bothered" (not or slightly bothered), "moderately bothered," or "severely bothered" (very or extremely bothered). This additional analysis was deemed important as the FSFI does not include assessment of subjective distress, and women may have substantial perturbations of sexual function in the absence of sexual distress, and vice versa [24,25]. With inclusion of this question, we endeavored to estimate whether or not the HRFSD was associated with sexual distress in this population. Participants who selected "sexuality is not an important issue in my life" or "other" were excluded from this analysis due to uncertainty whether FSFI scores are clinically meaningful in this subpopulation. In this quantitative analysis, "other" responses were not further evaluated.

Statistical Analysis

Descriptive statistics were used to characterize the study population. The exact chi-squared test was used to study the association between the HRFSD and the categorical explanatory variables. Age was divided into 10-year age cohorts; sexual frequency was divided into quartiles. The Wald Chi-square test was used to estimate univariable odds ratios. Multivariable analysis was performed using logistic regression including all explanatory variables with P value < 0.2 from the Wald analysis. Odds ratio estimates with 95% Wald confidence limits for both the univariable and multivariable models are reported. The Wilcoxon rank-sum test and Kruskal–Wallis tests were applied to compare median difference in FSFI domain scores for variables significantly associated with the HRFSD on logistic regression. This analysis estimated which domains of the FSFI were most affected by a coexisting condition or factor. A P value < 0.05 was considered statistically significant; all data are presented with 95% confidence intervals (CIs). Analyses were performed with SAS Version 9.2 (SAS Institute Inc., Cary, NC, USA).

Results

The survey was accessed by 2,433 women 18 years of age or older; 1,799 (73.9% of initial population) had complete data for the FSFI. Of these participants, 233 had not been sexually

active and were excluded, leaving a final study cohort of 1,566 (63.9% of initial population). The mean age of the study cohort was 34.6 years (median 33, range 18–86, standard deviation 10.4 years). Demographic and health data for this cohort are presented in Table 1a, gynecological data in Table 1b, and sexuality data in Table 1c. From this initial cohort, 388 women (24.8%) met criteria for the HRFSD.

Median FSFI scores with intraquartile range, stratified by response to the single item question on sexual satisfaction, are presented in Figure 1. Median FSFI-total scores tended to be lower in women with sexual life dissatisfaction; women who were “mostly” or “very” dissatisfied had median FSFI-total scores at or below our predetermined cut-point for HRFSD. The lower bound intra-quartile range for women who were moderately or very satisfied was 26.2, very near our preselected cutoff point.

Wald Test odds ratios for association between the HRFSD and demographic, health, and sexuality variables with $P < 0.2$ are presented in Table 2. A number of factors related to medical, gynecological, and urological history were associated with significantly greater odds of the HRFSD. Geographic location was not associated with odds of the HRFSD ($P = 0.534$).

Multivariable analysis using logistic regression was used to determine variables independently predictive of the HRFSD. All variables with $P < 0.2$ on univariable crude odds ratio were included; variables with $P < 0.2$ on multivariable analysis are presented in Table 3. Only OAB symptoms, nulligravidity, low sexual frequency, having a nonfemale or no partner, having no female partners in the past 6 months, and subjective bother about sexual function were independently associated with significantly greater odds of the HRFSD.

The Wilcoxon rank-sum test was used to assess the FSFI domain score differences for OAB symptoms and a history of pregnancy; the Kruskal–Wallis test was used to assess the FSFI domain score differences for partner status and subjective sexual bother. Partner status and OAB symptoms were not associated with a significant difference in mean FSFI-desire but were associated with differences in all other domains ($P < 0.05$). Nulligravidity was not associated with significant differences in mean FSFI-orgasm or FSFI-pain but was associated with lower mean scores for all the other FSFI domains ($P < 0.05$). Subjective bother related to sexual function was associated with lower mean scores for all the FSFI domains ($P < 0.05$).

Discussion

In this study, we investigated demographic and health factors and their associations with risk of sexual dysfunction in a population of WSW. The number of participants with complete data was much larger than most previous studies in WSW [10,26]. Several factors previously associated with greater odds of sexual dysfunction in the non-WSW females (depressive symptoms, gynecological surgery, hypercholesterolemia, bladder symptoms) [8,9,11,27–30] were identified as univariable associations with HRFSD. However, few of these relationships were maintained after multivariable adjustment; this suggests that there may be important differences in risk of sexual dysfunction between the WSW and the non-WSW females in this study.

Lesbian and bisexual women may be more likely to experience psychological stress (a known risk factor for sexual problems in the non-WSW females) than heterosexual women [31]. Interestingly, psychological stress may have a different impact on sexuality in WSW compared to non-WSW female populations. Beaber and Werner reported that anxiety in heterosexual women was associated with lower FSFI domain scores for lubrication, orgasm,

and pain [11]. In contrast, anxiety was not associated with lower FSFI scores in the lesbian population [11]. This is congruent with our data; depression was a univariable predictor of HRFSD, but this significant association was lost after logistic regression. A recent study by Tracy and Junginger did report an association between a composite measure of psychological stress and worse overall sexual function after multivariable adjustment in a population of lesbian women [10]. In this same study, women without regular partners had higher mean FSFI-desire scores but lower mean FSFI-satisfaction scores [10]. Our study did not collect data on depression using a validated instrument, and the inquiry was on history of depression rather than acute depressive symptoms; this may explain some of the differences in our findings. However, our findings do support Tracy's in that partner factors had a very pronounced impact on many aspects of sexual function but seemed to spare sexual desire. Additional research on psychological stress and relationship status and their influence on sexuality in WSW are warranted.

In our study, the WSW aged 51–60, those who were postmenopausal, had hypercholesterolemia, or experienced bothersome voiding symptoms were at higher risk of sexual dysfunction on univariable analysis. Although age, vascular, and menopausal factors were significant on unadjusted analysis, none of these variables was an independent predictor of HRFSD in a multiple variable logistic regression. We hypothesize that this may be due to adaptation by older women to the sexual side effects of menopause and vascular disease states. Of note, while vascular disease is clearly linked to sexual problems in men, there are data that vascular disease may be a lesser impairment to sexual function in women [32]. Interestingly, a history of sexual assault was not an association of sexual bother in either univariable or multivariable analysis.

Another possible explanation for the lack of clear association between physiological factors and sexual function in our study may relate to the nature of sexual activity among WSW. Several studies have suggested that for many WSW satisfactory sexual activity is less focused on vaginal penetration than sexual activity in non-WSW females [33,34]. Indeed, use of an external vibrator has been associated with better FSFI scores in a recent study of WSW [35]. Ergo, issues of inadequate lubrication and/or painful penetration may be less bothersome to WSW. Further research will be required to ascertain the veracity of this hypothesis and to understand how the medical professional may best meet the sexual health needs of their WSW patients.

Bladder symptomatology was an independent predictor of HRFSD. Although numerous studies have reported an association between bladder symptoms and sexual function in women [8,29,30,32], to our knowledge this has not been previously reported in a WSW population. It is also noteworthy that only 11% of this cohort had consulted with a physician about sexual function although nearly one quarter were at risk for sexual problems as defined by the FSFI, and 16% reported at least moderate subjective sexual bother. Our cohort is thus reflective of the general population with regards to help seeking behaviors for sexual problems [36].

It is noteworthy that the single item question on sexual satisfaction was strongly associated with scores on all domains of the FSFI; it is implied from this that providers may screen for biopsycho-social perturbations of sexual function in their WSW patients with one or two simple, open-ended questions on satisfaction with sexual life. Broaching the topic of sexuality with patients can be difficult for many providers, particularly when the patient is part of a sexual minority group such as the WSW. It is recommended that sexual health screening start with a statement of the relevance of sexual history in the provision of quality care followed by inquiry on whether or not the patient is involved with a sexual partner or partners, taking care not to assume partner gender. Asking the partner's name is one possible

way to broach partner gender in a nonconfrontational fashion. An open-ended follow-up question on satisfaction with sexual life preferably include normalizing statements such as "many women have concerns about sexual issues," may follow [37]. Our study also supports the use of a form of the FSFI for screening and classifying sexual problems in WSW, although modifications are necessary to make the questions applicable to nonheterosexual activities [10].

The prevalence of depression was high in our population. Potential reasons for the high prevalence include selection bias and failure to clarify if "depression" met criteria for the clinical diagnosis of major depressive disorder. Although prevalence was high in our population, it has been reported that depression is more common in WSW compared to their heterosexual peers [2,38]. In a study of over 67,000 individuals from Massachusetts, Conron et al. reported that between 26% of bisexual women had depressive symptoms over the past month compared to 17% of heterosexual women. In a meta-analysis, King et al. reported depression over the past 12 months in 22% of lesbian/bisexual women compared to 10% of heterosexual women. Data were not available for estimation of lifetime prevalence of depression calculation in lesbian/bisexual women; however, the lifetime prevalence of depression in a combined population of both male and female homosexual or bisexual people was 35% compared to 19% in heterosexuals [38].

The prevalence of sexual assault was also high in our study population. Conron et al. reported lifetime prevalence of sexual assault at 35% and 57% for lesbian and bisexual women, respectively, compared to 18% in heterosexual women [2]. While we cannot exclude the possibility of selection bias, this high prevalence of sexual victimization in WSW is in-line with our findings.

Our data were gathered from a self-selected group of English-speaking, Internet-using WSW (primarily located in North America) who were willing to take an Internet sexuality survey; thus, results cannot necessarily be generalized to all WSW. Causality cannot be inferred from a cross-sectional data collection such as this. The veracity of subject responses in an anonymous survey such as this is always unclear, although in the absence of any form of compensation for participation there is no clear reason for misrepresentation. Some researchers have raised concerns that Internet survey sampling may overestimate disease prevalence in younger cohorts [39]. Occult comorbid conditions may also be present in this population, although the volume of demographic and health-related data collected on our survey was fairly extensive. The extensive nature of our questionnaire made inclusion of quantitative instruments for assessment of depressive symptoms prohibitive, and this may limit our ability to accurately assess the burden of depressive symptoms in these women. The proportion of participants older than 50 was relatively small (7.6% of total), so our conclusions regarding age and sexual function are tentative. Furthermore, since a minority of our participants endorsed bisexual orientation and/or a nonfemale sexual partner, it is possible that some of the FSFI response were based on sexual experiences with nonfemale partners.

Finally, the diagnosis of female sexual dysfunction cannot be made solely from quantitative scoring on a survey instrument. The cutoff of the FSFI-total <26.55 for the HRFSD was established in heterosexual women and may not be applicable to this population. The single item subjective question on sexual bother does imply that the FSFI-total <26.55 is associated with greater odds of subjective bother in WSW, but determination of an optimal quantitative cut-point for risk of sexual problems in WSW will require more intensive study. Further credence to this value as a valid cutoff is supplied by our analysis of the FSFI-total scores stratified by response to the overall sexual satisfaction question. We must however concede that (i) there was great variability in the FSFI-total scores in women with sexual

dissatisfaction on this single-item question; and (ii) the FSFI-overall sexual satisfaction has a direct influence on the FSFI-total as it is a component variable of the FSFI-total score. Further refinement of cutoff scores for the FSFI in WSW is a research priority.

Conclusions

This study is an exploratory analysis of variables that may exert significant influence on sexual expression in WSW. In this analysis, a distinct minority of women at risk for sexual dysfunction had spoken to a healthcare professional about their sexual concerns. A single open-ended question on sexual satisfaction may identify the WSW (and potentially the non-WSW females) who are at risk of sexual dysfunction. Further studies of sexual wellness in WSW are warranted so as to improve medical care and quality of life for this population.

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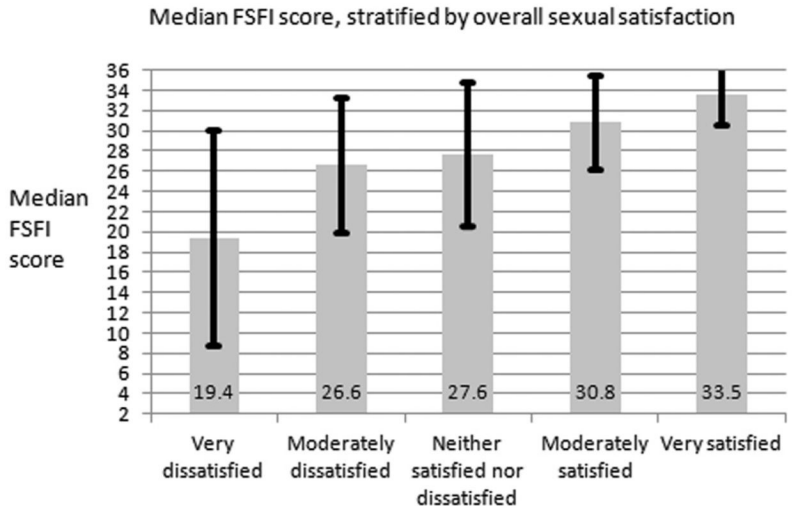

Figure 1.

Median and Intraquartile Range (error bars) for Female Sexual Function Index (FSFI)-total as a factor of overall sexual life satisfaction (FSFI question 16). Median values are reported at the base of each column. Women who reported sexual dissatisfaction had a greater intraquartile range compared to women with greater satisfaction, but median FSFI scores were around the predetermined cutoff value of 26.55.

Table 1

(a) Ethnodemographics and health variables, (b) Urogynecological variables, (c) Sexuality variables

	LRFSD (N = 1,178)	%	HRFSD (N = 388)	%	Wald Chi square *P* =
(a)					
Age					
18–30	416	35.3	124	32.0	0.02
31–40	393	33.4	121	31.2	
41–50	221	18.8	57	14.7	
51–60	63	5.3	38	9.8	
61+	13	1.1	6	1.5	
No answer	72	6.1	42	10.8	
Geographic location					
Western United States	202	17.1	71	18.3	0.76
Midwest United States	141	12.0	48	12.4	
Northeast United States	169	14.3	49	12.6	
Southern United States	155	13.2	50	12.9	
Southwest United States	56	4.8	11	2.8	
Northwest United States	73	6.2	23	5.9	
Canada	111	9.4	48	12.4	
Europe	141	12.0	38	9.8	
Australia	109	9.3	42	10.8	
Other*	21	1.8	9	2.3	
Ethnicity					
Caucasian	866	73.5	283	72.9	0.09
African	102	8.7	24	6.2	
Asian/Pac Island	27	2.3	4	1.0	
Latina	70	5.9	24	6.2	
Native American	21	1.8	12	3.1	
Other/No Answer	88	7.5	40	10.3	
Hypercholesterolemia?	125	10.6	56	14.4	0.04
Diabetes?	86	7.3	39	10.1	0.08

	LRFSD (N = 1,178)	%	HRFSD (N = 388)	%	Wald Chi square *P* =
Hypertension?	180	15.3	68	17.5	0.29
Coronary artery disease?	24	2.0	16	4.1	0.03
Neurologic dysfunction?	14	1.2	8	2.1	0.21
Depression?	484	41.1	213	54.9	<0.01
Yeast infection?	690	58.6	257	66.2	0.01
UTI in past year?	172	14.6	71	18.3	0.08
(b)					
Gynecological cancer?	48	4.1	23	5.9	0.13
Gynecological surgery?	264	22.4	109	28.1	0.02
Menopausal status					
Premenopausal	976	82.9	290	74.7	0.00
Postmenopausal	146	12.4	74	19.1	
No answer	64	5.4	16	4.1	
Postmenopausal on HRT?	32	2.7	14	3.6	0.73
Overactive bladder (OABq > 20)?	46	3.9	43	11.1	<0.01
Stress urinary incontinence?					
Minimal	957	81.2	286	73.7	0.00
Moderate	158	13.4	64	16.5	
Severe	48	4.1	31	8.0	
History of pregnancy?	502	42.6	141	36.3	0.04
History of vaginal delivery?	324	27.5	94	24.2	0.63
History of ceasarean delivery?	107	9.1	31	8.0	0.90
Regular check-ups?	868	73.7	285	73.5	0.86
Regular Pap Smear?	744	63.2	244	62.9	0.83
(c)					
Consulted a provider about sexual function?	94	8.0	78	20.1	<0.01
Sexual orientation					
Homosexual (lesbian)	878	74.5	263	67.8	
Bisexual	206	17.5	92	23.7	
Heterosexual	6	0.5	2	0.5	
Queer/other/no answer	86	7.3	29	7.5	0.05

	LRFSD (N = 1,178)	%	HRFSD (N = 388)	%	Wald Chi square *P* =
Number of partners past 6 months					
0	66	5.6	96	24.7	
1	848	72.0	226	58.2	
1+	263	22.3	64	16.5	<0.01
Lifetime sexual partners					
≤6	307	26.1	108	27.8	
6–11	272	23.1	89	22.9	
12–25	329	27.9	93	24.0	
>25	250	21.2	91	23.5	0.44
Monthly sexual frequency					
≤2 times per month	150	12.7	181	46.6	
3–5 times per month	259	22.0	101	26.0	
6–12 times per month	403	34.2	63	16.2	
>12 times per month	341	28.9	35	9.0	<0.01
Relationship status					
Female partner	882	74.9	181	46.6	
Non-female partner	115	9.8	55	14.2	
No partner	172	14.6	152	39.2	<0.01
History of sexual assault?	579	49.2	208	53.6	0.13
Age at assault[≠]					
Childhood (0–17 years)	437	37.1	148	38.1	
Adulthood (18+ years)	62	5.3	27	7.0	
Childhood and adulthood	78	6.6	33	8.5	0.24
Gender of assailant(s)[≠]					
Male	523	44.4	184	47.4	
Female	17	1.4	3	0.8	
Male and Female	36	3.1	20	5.2	0.10
Self reported bother about sexual function					
Not bothered	1,019	86.5	176	45.4	
Moderately bothered	66	5.6	77	19.8	
Severely bothered	28	2.4	89	22.9	

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	LRFSD (N = 1,178)	%	HRFSD (N = 388)	%	Wald Chi square *P* =
No answer/sex not an issue[§]	65	5.5	46	11.9	<0.01

[*] Asia, Central and South America, Africa, Missing

[≠] Percentages are based on fraction of those respondents with history of sexual assault

[§] Subsequently excluded from multivariable analysis

Table 2

Univariable odds ratios for HRFSD (FSFI < 26.55)*

	OR	95% CI		*P* =
Age				
18–30	Ref	Ref		Ref
31–40	1.033	0.776	1.375	0.01
41–50	0.865	0.608	1.232	
51–60	2.024	1.291	3.173	
61+	1.548	0.577	4.158	
Ethnicity				
Caucasian	Ref	Ref		Ref
African	0.72	0.453	1.146	0.09
Asian/Pac Island	0.453	0.157	1.307	
Latina	1.049	0.647	1.7	
Native American	1.749	0.85	3.599	
Other/no answer	1.391	0.935	2.069	
Hypercholesterolemia	1.421	1.013	1.993	0.04
Diabetes	1.419	0.954	2.111	0.08
Coronary artery disease	2.068	1.087	3.935	0.03
Depression	1.745	1.385	2.199	<0.01
Yeast infection	1.387	1.091	1.764	0.01
UTI in past year	1.31	0.967	1.775	0.08
Gynecological cancer	1.484	0.89	2.473	0.13
Gynecological surgery	1.353	1.043	1.755	0.02
Menopausal status				
Premenopausal	Ref	Ref		Ref
Postmenopausal	1.706	1.253	2.324	0.00
Overactive bladder (OABq > 20)	3.067	1.99	4.729	<0.01
Stress urinary incontinence?				
Minimal	Ref	Ref		Ref
Moderate	1.355	0.985	1.865	<0.01
Severe	2.161	1.35	3.459	
History of pregnancy	0.775	0.611	0.982	0.04
Consulted a provider about sexual function	2.891	2.087	4.004	<0.01
Sexual orientation				
Homosexual (lesbian)	Ref	Ref		Ref
Bisexual	1.491	1.125	1.976	0.05
Heterosexual	1.113	0.223	5.546	
Other/no answer	1.126	0.723	1.753	
Number of female partners, past 6 months				
1	Ref	Ref		Ref
0	5.458	3.861	7.714	<0.01

	OR	95% CI		*P* =
More than 1	0.913	0.67	1.245	
Monthly sexual frequency				
≤2	Ref	Ref		Ref
3–5	0.323	0.236	0.443	<0.01
6–12	0.13	0.092	0.182	
>12	0.085	0.056	0.128	
Relationship status				
Female partner	Ref	Ref		Ref
Non-female partner	2.331	1.628	3.337	<0.01
No partner	4.306	3.286	5.644	
History of sexual assault	1.195	0.95	1.504	0.13
Gender of assailant(s)				
No assault history	Ref	Ref		Ref
Male	1.171	0.924	1.483	0.10
Female	0.587	0.170	2.027	
Male and female	1.849	1.044	3.274	
Self reported bother about sexual function				
Not bothered	Ref	Ref		Ref
Moderately bothered	6.755	4.686	9.736	<0.01
Severely bothered	18.403	11.69	28.972	

* Only variables with $P < 0.2$ are presented in this table

Table 3

Adjusted odds ratios for HRFSD (FSFI ≤ 26.55)*

	OR	95% CI		*P* value
African	1.933	1.016	3.68	0.06
Asian/Pac Island	0.393	0.091	1.692	
Latina	1.172	0.532	2.58	
Native American	2.676	0.861	8.323	
Other/no answer	1.796	0.955	3.379	
Overactive bladder (OABq > 20)	2.123	1.005	4.481	0.05
History of pregnancy	0.567	0.371	0.868	0.01
Consulted a provider about sexual function	1.408	0.827	2.394	0.21
Number of female partners, past 6 months				
1	Ref	Ref		Ref
0	2.021	1.098	3.719	0.01
More than 1	0.695	0.424	1.139	
Monthly sexual frequency				
≤2	Ref	Ref		Ref
3–5	0.34	0.216	0.535	<0.01
6–12	0.184	0.115	0.296	
>12	0.089	0.048	0.164	
Relationship status				
Female partner	Ref	Ref		Ref
Non-female partner	2.265	1.093	4.692	<0.01
No partner	3.238	2.018	5.195	
History of sexual assault	1.966	0.724	5.34	0.19
Self reported bother about sexual function				
Not bothered	Ref	Ref		Ref
Moderately bothered	4.846	2.959	7.937	<0.01
Severely bothered	13.68	7.459	25.1	

*Only variables with $P < 0.2$ are presented in this table