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Norwegian Data on Prevalence, Sexual Risk Behaviors, Sexual Problems, and Sexual Satisfaction in Women Who Have Sex Exclusively with Women, Women Who Have Sex Exclusively with Men, and Women Who Have Sex with Men and Women

Bente Træen[a], Nantje Fischer[a], and Pål Grøndahl[b]

[a]Department of Psychology, University of Oslo, Oslo, Norway; [b]Gay and Lesbian Health Norway, Oslo, Norway

ABSTRACT

Objective: The study explores the difference between Women Who Have Sex Exclusively with Men (WSEM), Women Who Have Sex Exclusively with Women (WSEW), and Women Who Have Sex with Women and Men (WSWM).
Method: The data were obtained from a survey of a probability-based web sample of 1967 Norwegian women.
Results: Most WSWM identified themselves as heterosexuals (76.3%), and three out of 10 used a condom when having sex with a new partner. The highest number of sex partners during the last year was reported by WSWM. More WSEW than the other categories reported premature orgasm.
Conclusions: WSWM should be targeted in health campaigns.

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Sexual minority; sexual satisfaction; sexual function; sexual risk behavior

Introduction

The overall aim of this study is to shed light on the differences and similarities in areas important to sexual health among women who have sex exclusively with men (WSEM), women who have sex exclusively with women (WSEW), and women who have sex with women and men (WSWM) in Norway. Both WSEW and WSWM are at a particular risk of reporting general health risk behaviors compared to the sexual majority group (Mercer, 2014; Mercer et al., 2007). In addition, physical and psychological problems, such as anxiety and depression, seem to be more common among women who have sex with women and identify as lesbians than women who have sex with women and men and/or identify as bisexual (Andersen et al., 2021; Hottes et al., 2016; Marshal et al., 2011; Prell & Træen, 2018). To reduce physical and mental health and meet various needs in different subgroups of women, we need additional knowledge about the attitudes and sexual behavior of WSWM and WSEW, and how they compare to WSEM. For instance, how do women who display different types of sexual behavior define their sexual identity?

Sexual health is a broad concept. In this paper, we explore three different areas of sexual health in a large representative sample of Norwegian women belonging to different behavioral categories: sexual identity, sexual risk behavior, sexual satisfaction, and sexual function. This has also been explored in a recent paper among Norwegian men (Træen et al., 2022).

The review of the literature below presents studies that use sexual identity/orientation and not behavioral categories in their analyses. As there is a strong association between sexual identity, sexual attraction, and sex partners (Chandra et al., 2011; Vrangalova & Savin-Williams, 2012), findings from studies of heterosexual/bisexual/lesbian women may have relevance for WSEW/WSEM/WSWM, even though it is not the same groups that are compared.

CONTACT Bente Træen bente.traen@psykologi.uio.no Department of Psychology, University of Oslo, Box 1094, Blindern, Oslo, 0317, Norway.

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Sexual identity

Sexual orientation is claimed to encompass sexual identity, attraction, and behavior, and there is increasing demand for data on sexual orientation to address public health needs (Geary et al., 2018). Analyses of data from Britain's third National Survey of Sexual Attitudes and Lifestyles (2010–2012), among a probability sample of 15,162 people aged 16–74 years, showed that a lesbian, gay or bisexual identity was reported by 2.5% of men and 2.4% of women, and 5.5% of men and 6.1% of women reported lifetime experience of same-sex sex (Geary et al., 2018). Furthermore, of those reporting same-sex sex in the past 5 years, 28% of men and 45% of women identified as heterosexual. Many WSWM identifies themselves as bisexual, WSEM as heterosexual, and WSEW as a lesbian; however, the sexual behavior and sexual identities do not always overlap (Cerwenka & Brunner, 2018; Chandra et al., 2011; Geary et al., 2018; Vrangalova & Savin-Williams, 2012). Sexual identity is more or less fixed or fluid (Diamond, 2021). There may also be important subtypes of women who do not identify as heterosexual that have different needs. Furthermore, this group seems to be a growing demographic group (Mishel et al., 2020). The variation in the size of sexual minority populations depending on whether it is identity or behavior which is applied, has implications for the design of epidemiological studies, estimating the spread of sexually transmitted inflection (STIs), targeting and monitoring of sexual health interventions (Geary et al., 2018). There is also substantial diversity on an individual level between sexual identity and sexual behavior, adding to the complexity of delivering appropriate services and interventions. Sexual health promotion targeting bisexual women may be missed by women who recently have same-and opposite-sex sex but who identify as heterosexual. The strength of assessing risk behaviors, sexual function and satisfaction among sexual behavior groups is therefore that it may help to develop sexual health services that targets people based on sexual risk behaviors, and not on how they identity themselves.

Sexual risk behavior

Sexual health research frequently focuses on sexual behavior related to STIs and unwanted pregnancies. WSEW constitutes a group of the population with a low risk of STIs and no risk of induced abortion. In contrast, WSWM are shown to be a risk group for STIs, in addition to having experienced induced abortion (Moseng, 2017). Notably, WSEM are also at risk of abortions and STIs, but not to the same extent as WSWM (Moseng, 2017). Common sexual risk behaviors are a high number of sex partners and the non-use of STI protection and contraception. However, there are also indications that pornography use is associated with sexual experimentation (Rogala & Tyden, 2003; Tyden & Rogala, 2004), which in turn can constitute a sexual health risk.

The consumption of pornography tends to vary with gender and sexual orientation (Carrollet al., 2008; Haavio-Mannila & Kontula, 2003; Lewin, 2000; Štulhofer et al., 2010; Træen et al., 2002, 2006; Træen & Daneback, 2013). For instance, men are observed to use more pornography than women. In addition, men most often use pornography during solo sex, whereas women most often view pornography in the company of a partner (Daneback et al., 2009; Haavio-Mannila & Kontula, 2003; Lewin, 2000; Træen et al., 2006). Træen and Daneback (2013) investigated the consumption of pornography and sexual behavior in a probability sample of 2381 Norwegians of age, ranging from 18–59 years. Ninety-two percent of lesbians/bisexuals and 67% of heterosexual women reported lifetime use of pornography. The estimated mean percentage of the time spent using pornography when masturbating was 24% among lesbians and bisexuals, compared to 12% among heterosexual women. Heterosexual, lesbian, and bisexual women, who were satisfied with their sex life, more often used pornography during solo-sex than their dissatisfied counterparts, indicating that for sexually satisfied women, the use of pornography comes in addition to an already well-functioning sex life (Træen & Daneback, 2013). Furthermore, the frequent use of pornography correlated positively with the number of same-sex partners in lesbian/

bisexual women, suggesting that pornography use is more common among those who are more sexually experienced.

A query arises as to what pornography users learn from watching pornography and how they perceive it (Koletić et al., 2021). Pornography can influence the sexual behavior of men and women, and perhaps the perception of what is "normal" and "natural" sexual behavior, as well as their sexual scripts. For instance, Rosser et al. (2013) and Træen et al. (2015) found an association between the consumption of pornography depicting condom use and less STI-related sexual risk behavior in men who have sex with men (MSM). Likewise, MSM with an increased consumption of bareback pornography reported higher odds of unprotected anal intercourse. In women, these relationships are largely unexplored.

On the background of the previous studies, we assume that the consumption of pornography is more common among WSWM and WSEW than among WSEM. Furthermore, viewing pornography may be more important to influence the sexual scripts of WSEW and WSWM than of WSEM sexual scripts.

Sexual satisfaction

Sexual health is related not only to the absence of disease and sexual risk behavior. It is also about having pleasurable and safe sexual experiences that may add to the quality of life of individuals (WHO, 2002). This implies that monitoring sexual function and sexual satisfaction in women of different preferences for same-sex sex partners and opposite-sex sex partners is of interest.

In long-term relationships, sexual satisfaction in women is positively related to the likelihood of orgasm and intimacy, and negatively related to conflict within the relationship (Haning et al., 2007). Sexual satisfaction in women is consistently associated with relationship satisfaction, overall happiness, and the overall quality of life (Rosen & Bachmann, 2008). Women who rate their sexual relationships as active and satisfying also report higher ratings of emotional and relationship satisfaction. These beneficial relationships for women are lifelong and do not diminish with increasing age (Woloski-Wruble et al., 2010). These associations are likely to be important for women of all sexual orientations. However, the research on sexual satisfaction in women of different sexual orientations is limited. Additionally, to the best of our knowledge, no studies have explored the differences in sexual satisfaction among women of different behavioral categories, such as WSEM, WSEW, and WSWM irrespective of sexual identity. In reviewing the literature, we must therefore rely on studies that compare women with different sexual orientations.

Some studies have revealed little or no differences in sexual satisfaction when comparing lesbian and heterosexual women (Kuyper & Vanwesenbeeck, 2011; Matthews et al., 2003). On the other hand, according to Holt et al. (2021), several of the factors that contributed to the sexual satisfaction of bisexual women were different from those that contributed to the satisfaction of heterosexual and lesbian women. The authors concluded that the findings from their study demonstrate the importance of considering sexual identity in relation to sexual satisfaction and when providing interventions to improve sexual satisfaction. Additionally, in a large Swedish population-based survey, Björkenstam et al. (2020) found that bisexual women were more dissatisfied with their sex life, as compared to heterosexual women. One explanation for the greater sexual dissatisfaction in bisexual women may be related to the experiences of minority stress (Meyer, 1995, 2003; Prell & Træen, 2018). For instance, studies have found that for lesbian/bisexual women, internalized homophobia is a significant predictor of sexual dissatisfaction (Henderson et al., 2009; Prell & Træen, 2018). In this context, it is of interest that identity pride is associated with sexual satisfaction in lesbian and bisexual women (Shepler et al., 2018).

Mark et al. (2015) found that lesbian women reported significantly lower levels of sexual satisfaction in one-night stands, casual hookups, and first dates than other women, and significantly lesser sexual satisfaction in friends-with-benefits relationships than bisexual women. This may be related to how safe and secure the woman feels in the sexual context, as Shepler et al.'s (2018) study demonstrated that low sexual anxiety,

relationship commitment, as well as a positive body image, contributed significantly to sexual satisfaction in lesbian and bisexual women. Sexual satisfaction in same-sex couples seems to be more strongly associated with, for instance, the frequency of orgasm, sexual frequency, and emotional intimacy with the partner than in mixed-sex couples (Birnie-Porter & Lydon, 2013; Cohen & Byers, 2014; Scott et al., 2018; Tracy & Junginger, 2007). Another study concluded that women in same-gender relationships gain more sexual satisfaction from the quality or intensity of sex than women in heterosexual relationships (Blair & Pukall, 2014). A review of American articles between 2005 and 2015 focusing on partnered lesbians found that the perceived emotional and physical intimacy with the partner, feeling accepted and supported, interpersonal communication, and positive self-esteem were significant predictors of sexual satisfaction (Kimberly & Williams, 2017). Frederick et al. (2018) suggested that lesbians are in a better position to understand their partner's need for clitoris stimulation to achieve orgasm. Furthermore, lesbians' sexual scripts (Gagnon & Simon, 2005) are more likely to be characterized by equality norms than heterosexual women's sexual scripts, and women may be more likely to take turns in giving and receiving pleasure until orgasm. On the background of the reviewed literature, it may be assumed that with regard to sexual satisfaction, WSEW and WSEM will be more sexually satisfied than WSWM, although the mechanisms underlying satisfaction may differ between WSEW and WSEM.

Sexual function

Another factor of importance in sexual health and well-being is sexual function. Although sexual dysfunction increases with increasing age, individuals of all ages can experience sexual difficulties. In a large population-based study conducted in 2012 in the United Kingdom (the third National Survey of Sexual Attitudes and Lifestyles—NATSAL-3), the most common sexual problem among all women was a lack of interest in sex (34%), difficulties reaching orgasm (16%), and vaginal dryness (13%) (Mitchell et al., 2013).

Other studies have found that lesbians have fewer orgasm and lubrication problems than heterosexual women (Beaber & Werner, 2009; Flynn et al., 2017; Henderson et al., 2009). Furthermore, Björkenstam et al. (2020) found that premature orgasm was more common in bisexual and lesbian women than in heterosexual women. According to the authors, this may be related to the lesbian equality script, where the women take turns to stimulate their partner to orgasm. This high expectancy of the partner reaching orgasm may make them more inclined to report reaching climax too quickly. Bisexual Swedish women also were observed to be at a greater risk of anxiety during sex (Björkenstam et al., 2020). A study from the Netherlands showed that bisexual women experienced sexual coercion more often and reported a higher need for sexual health care than their heterosexual counterparts (Kuyper & Vanwesenbeeck, 2011). It has also been shown that bisexual women in general experience more anxiety and depression than heterosexual women (Björkenstam et al., 2017), which is also associated with less sexual satisfaction (del Mar Sánchez-Fuentes et al., 2014).

On the background of previous findings from other studies, it may be assumed that with regard to sexual interest there will be no difference between WSEW, WSWM, and WSEM. However, it may be anticipated that WSEW will have less orgasm and lubrication problems than WSEM and WSWM. Furthermore, it may be assumed that premature orgasm is more common in WSEW than in WSWM than in WSEM. Lastly, we assume that WSWM will have a higher risk of anxiety during sex than WSEW and WSEM.

Aims

The aim of this study was to explore the differences and similarities between WSEW, WSWM, and WSEM.

RQ1: How do women in the different behavioral categories define their sexual identity?

RQ2: Do WSWM and WSEM have more sexual risk behavior than WSEW? The risk behaviors at focus in this study are condom use, consumption of

pornography, perceived effects of own pornography use, and number of sex partners.

RQ3: Are WSEW and WSEM more sexually satisfied than WSWM?

RQ4: Do WSEW, WSWM, and WSEM have the same or different kinds of sexual problems?

Methods

Participants and recruitment

In March 2020, 11,685 members of Kantar's web panel were randomly invited to participate in an online survey on sexuality. Of those who were asked to participate, 4160 individuals (age range: 18–89 years) completed the questionnaire, yielding a response rate of 35.6%. Fifty-one percent of individuals completed the online survey on their mobile phones. Kantar's web panel contains ~40,000 active members (https://www.galluppanelet.no/). All the members were randomly recruited through national phone registries. Thus, self-recruitment was not possible. Kantar's web panel represents Norway's population of Internet users, which in turn reflects 98% of the population with access to the Internet (see http://www.medienorge.uib.no/english/). The members of the Gallup Panel are regularly contacted to fill out online questionnaires. To motivate participation, Kantar operates with small incentives (e.g., lotteries and occasional surprises of varied quality). The incentives are not sufficiently large to attract study participation. All study participation was voluntary, and the members were guaranteed anonymity.

All research complied with the Personal Data Act and the guidelines of the Norwegian Data Protection Authority and followed the ethical guidelines developed for market and poll organization surveys (Norway's Market Research Association and the European Society for Opinion and Market Research [ESOMAR]).

Socio-demographic characteristics of the female subsample

Of the 4160 participants, 1967 individuals were registered as women. The mean age of the women was 44.4 years (*SD*: 16.8 years), and the median was 41.0 years (range, 18–89 years). The mean age of women with no sexual interaction last year was higher (52.2 years, *SD*: 18.5 years) than WSWM (45.7 years, *SD*: 19.3 years), WSEM (40.9 years, *SD*: 14.6 years), and WSEW (39.7 years, *SD*: 14.3 years). Regarding the place of residence, most women participants lived in urban areas (59.9%), and only 14.7% lived in rural areas. The proportion of women participants with 12–13 years of schooling was 28.7%; 43.8% had a short university education (Bachelor's degree), and 23.2% reported a long university education (Master's degree or higher). Most women participants reported living with a partner (61.0%), 25.6% reported being unmarried, 10.0% reported being separated/divorced, and 3.5% reported being widowed. The majority of the women participants reported that they had no religious affiliation (59.8%), 16.8% were Protestants, and 18.4% were Christians with no particular denomination. The proportion who reported that they were heterosexual, lesbian, bisexual, and asexual were 94.3, 1.2, 3.8, and 0.7%, respectively. The sociodemographic characteristics of the entire sample are presented elsewhere (Træen et al., 2021a, 2021b).

Measures

Most indicators in the current study were retrieved from the German Health and Sexuality Survey (GeSiD), the British National Survey of Sexual Attitudes and Lifestyles (Natsal-3; Mitchell et al., 2013), and previous Nordic and Norwegian surveys (see Kvalem et al., 2014; Lewin et al., 2000; Træen et al., 2015, 2019).

The variables *Sexual behavior groups* were constructed based on the reporting of the number of sex partners in life and during the past 12 months. The number of men/women sex partners was assessed by four separate questions (adapted and modified from the German Sex Survey 2019; www.gesid.eu): "In your lifetime, how many men/women have you had vaginal, oral, or anal intercourse with—even if it was only once?" and "During the past 12 months, how many men/women have you had vaginal, oral or anal intercourse with—even if it was only once?" Based on the reporting of male/female sex

Table 1. The Proportion of Female Respondents Grouped by the Gender of Sex Partners during the Past 12 Months and in One's Lifetime in 18–89-Year-Olds in Norway 2020.

	Sexual behavior during the past 12 months		Sexual behavior during life	
	n	%	*n*	%
No sexual interaction	450	25.4	91	5.8
WSEM	1258	71.0	1244	79.7
WSEW	26	1.5	5	0.3
WSWM	39	2.2	221	14.2

WSEM: women who report having sex exclusively with men; WSEW: women who report having sex exclusively with women; WSWM: women who report having sex with women and men.
Note. Sexual behavior includes vaginal, oral, or anal intercourse.

partners during the past 12 months and in life, two new variables were constructed; "Experience of sex with opposite or same gender the past 12 months/lifetime." The categories in the new variable were *women who exclusively have had sex with men* (WSEM) (1), *women who exclusively have had sex with women* (WSEW) (2), and *women who have had sex with women and men* (WSWM) (3). Respondents who never had had sexual intercourse, or who reported zero partners during the last 12 months, were coded as no sexual interaction (0).

The number of sex partners was computed as the sum of the number of male and female partners during the past 12 months.

Sexual identity was measured by the following question: "Do you currently regard yourself as:" where the given responses were homosexual/lesbian (1), heterosexual (2), bisexual/pansexual (3), asexual (4), and other (5). The question was retrieved and slightly modified from the Healthy Sexual Aging project (Træen et al., 2020).

The effects of pornography use were adapted from Rosser et al. (2013) and measured by the question "How has pornography affected the following issues to a good or bad extent?" The participants were presented with eleven different outcomes, and four of these outcomes of particular interest to the topic of this study were used in this study: "How frequently are you looking for sex partners?"; "Your interest in having protected intercourse (with a condom)?"; "Your interest in having unprotected intercourse (without a condom)?"; and "Your understanding of your sexual orientation?". The items were evaluated on a scale from 1 (very bad) to 5 (very good).

Sexual satisfaction was assessed using a one-item indicator: "All things considered, how satisfied are you with your sexual life?" The question was evaluated on a 5-point scale ranging from 1 (very dissatisfied) to 5 (very satisfied).

Sexual difficulties were adapted from the British Natsal-3 survey (https://www.natsal.ac.uk/sites/default/files/2020-11/final-questionnaire_technical-report-appendix-b.pdf) by asking "In the last year, have you experienced any of the following for a period of three months or longer?" This was followed by seven options for different sexual difficulties: "lacked interest in having sex," "lacked enjoyment in sex," "felt anxious during sex," "felt no excitement or arousal during sex," "did not reach climax (experienced an orgasm) or took a long time to reach climax despite feeling excited/aroused," "reached climax more quickly than I would have liked," and "had an uncomfortably dry vagina." For each problem, the response options were "yes" or "no."

Statistical analyses

All data analyses were performed using IBM SPSS Statistics for Windows, version 26.0. We used a contingency table analysis and ANOVA to compare the means, as well as logistic regression analysis. To test group differences, the chi-square test and t-test were applied. Weighting on age, gender, and geographical region is possible in the sample, and this was initially tested. There were no large differences between the estimates when using unweighted and weighted data, and for this reason, it was decided to conduct data analyses based on the unweighted data.

Results

As shown in Table 1, the majority of the female respondents were WSEM (79.7% lifetime, 71.0% in the last 12 months). Resting on the merits of the past 12 months, 25.4% of the women had not

Table 2. Current Sexual Identity among Female Participants Belonging to Different Sexual Behavior Groups Based on Experience the Last 12 Months (%).

	No sexual interaction	WSEM	WSEW	WSWM	All	χ^2	*p*-Value
Heterosexual	92.2	96.8	26.9	76.3	94.2	696.624	.000
Lesbian	1.1	0.2	53.8	0.0	1.2		
Bisexual or pansexual	4.8	2.7	19.2	23.7	3.9		
Asexual	1.8	0.3	0.0	0.0	0.7		
Other	0.0	0.0	0.0	0.0	0.0		
N =	435	1250	26	38	1749		

WSEM: women who report having sex exclusively with men; WSEW: women who report having sex exclusively with women; WSWM: women who report having sex with women and men.
Note. Sexual behavior includes vaginal, oral, or anal intercourse.

Table 3. Prevalence of Female Participants Who Used Condoms in Different Sexual Contexts, by Belonging to Different Sexual Behavior Groups Based on Experience the Past 12 Months (%).

Percent that did use condoms during …	WSEM	WSEW	WSWM	χ^2	*p*-Value
… the first intercourse with the most recent sex partner	32.0	15.4	30.8	3.279	.194
N	1258	26	39		

WSEM: women who report having sex exclusively with men; WSEW: women who report having sex exclusively with women; WSWM: women who report having sex with women and men.

experienced any sexual interaction, 2.2% of the women had sex with both same-sex and opposite-sex partners (14.2% in a lifetime), and 1.5% of the women were WSEW. In the subsequent analyses, the reporting is based on the sexual behavior groups during the last 12 months.

The majority of the female respondents (94.2%) currently identified themselves as heterosexuals (Table 2); additionally, 96.8% of the WSEM identified themselves as heterosexuals. More than half (53.8%) of WSEW reported being lesbian, 26.9% of the women identified themselves as heterosexual, and only 19.2% reported being bisexual/pansexual. Among those who had both same-sex and opposite-sex partners, the vast majority identified themselves as heterosexuals (76.3%), while one in four women (23.7%) reported being bisexual/pansexual.

Table 3 shows the percentage of the women who used condoms during their first sexual intercourse with their most recent sexual partners. Of all the examined groups, WSEM (32.0%) and WSWM (30.8%) were the most frequent condom users in a potentially risky situation having sex with a new partner.

Table 4 shows the perceived effects of own pornography use, number of sex partners during the past 12 months, and sexual satisfaction in individuals belonging to different constructed sexual behavioral groups. Initially, some data on the use of pornography are presented (not shown in the table). Among women who had had no sexual activity during the last 12 months, 68.5% ($n = 444$) of the participants had been exposed to pornography, compared to 79.8% ($n = 1248$) among WSEM, 80.8% ($n = 26$) among WSEW, and 87.2% ($n = 39$) among WSWM ($\chi^2 = 26.376$; $p = 0.000$). The age of the first exposure to pornography also varied among the groups, from 15.7 years ($SD = 5.6$) among WSEW, 16.5 years ($SD = 6.2$) among WSEM, 16.5 years ($SD = 8.8$) among WSWM, and 18.7 years ($SD = 8.1$) among those who had not been sexually active last year ($\chi^2 = 8.089$; $p = 0.000$).

The self-perceived effects of pornography use regarding the frequency of looking for sex partners and having protected sexual intercourse were most positive among WSWM, and least positive among WSEM and WSEW. There were no other statistically significant differences between the groups with respect to the self-perceived effects of pornography use.

The highest number of sex partners during the last year was reported by WSWM (mean = 62.4 partners, median = 15), followed by a mean value of 4.8 (median = 1) partners among WSEW, and a mean value of 1.4 partners among WSEM (median = 1). WSWM reported being most satisfied with their sex life; additionally, women with no sexual activity in the previous year were the least satisfied.

Table 5 shows the prevalence of women participants with sexual problems in the different

Table 4. Perceived, Effects of Own Pornography Use, Sexual Satisfaction, and Number of Sex Partners during the Past 12 Months in Women Belonging to Different Sexual Behavioral Groups (Means and Standard Deviation *SD*).

		N	Mean	*SD*	*F*-value	Sign
Effects of own porn use: how frequently you are looking for sex partners (1 = very bad to 5 = very good)	No sexual activity	118	1.74	0.95	4.593	.003
	WSEM	560	1.68	.94		
	WSEW	9	1.67	1.00		
	WSWM	25	2.40	1.19		
Effects of own porn use: your interest in having protected intercourse (with a condom) (1 = very bad to 5 = very good)	No sexual activity	113	2.27	1.21	3.809	.010
	WSEM	539	1.93	1.07		
	WSEW	8	2.25	1.04		
	WSWM	25	2.32	1.31		
Effects of own porn use: your interest in having unprotected intercourse (without a condom) (1 = very bad to 5 = very good)	No sexual activity	117	1.73	0.96	0.256	.857
	WSEM	551	1.75	1.00		
	WSEW	9	2.00	1.00		
	WSWM	23	1.83	1.03		
Effects of own porn use: your understanding of your sexual orientation (1 = very bad to 5 = very good)	No sexual activity	118	2.54	1.31	1.343	.259
	WSEM	554	2.39	1.26		
	WSEW	10	2.60	1.08		
	WSWM	24	2.83	1.24		
Number of sex partners last 12 months WSEM = range 1–35 WSEW = range 1–99 WSWM = range 2–198	No sexual activity	359	.00	.00	325.814	.000
	WSEM	1258	1.39	1.94		
	WSEW	26	4.81	19.21		
	WSWM	39	62.44	78.35		
All things considered—how satisfied are you with your sexual life (1 = very dissatisfied to 5 = very satisfied)	No sexual activity	384	2.74	1.08	64.021	.000
	WSEM	1242	3.60	1.11		
	WSEW	26	3.46	1.14		
	WSWM	39	4.00	1.00		
	WSWM	39	62.44	78.35		

WSEM: women who report having sex exclusively with men; WSEW: women who report having sex exclusively with women; WSWM: women who report having sex with women and men.
Note. Sexual behavior includes vaginal, oral, or anal intercourse.

Table 5. Prevalence of Sexual Problems among Female Participants Belonging to Different Sexual Behavior Groups Based on Experience the Last 12 Months (%).

		%	χ^2	*p*-Value	Adjusted Odds Ratio
Lacked interest in having sex	WSEM	36.7	1.459	0.482	1.00
	WSEW	26.9			0.62^{ns}
	WSWM	31.7			0.80^{ns}
	Age				0.99^{ns}
Lacked enjoyment in sex	WSEM	16.4	5.489	0.064	1.00
	WSEW	3.7			0.20^{ns}
	WSWM	7.3			0.45^{ns}
	Age				0.98^{ns}
Felt anxious during sex	WSEM	6.6	1.414	0.493	1.00
	WSEW	3.8			0.53^{ns}
	WSWM	2.4			0.39^{ns}
	Age				0.93^{ns}
Felt no excitement or arousal during sex	WSEM	16.2	5.195	0.074	1.00
	WSEW	3.8			0.19^{ns}
	WSWM	7.3			0.46^{ns}
	Age				0.97^{ns}
Did not reach a climax/took a long time to reach a climax despite feeling excited/aroused	WSEM	28.9	0.460	0.795	1.00
	WSEW	23.1			0.69^{ns}
	WSWM	27.5			1.06^{ns}
	Age				0.97^{***}
Reached a climax (experienced an orgasm) more quickly than you would like	WSEM	3.2	20.782	0.000	1.00
	WSEW	19.2			7.22^{***}
	WSWM	7.5			2.59^{ns}
	Age				0.97^{ns}
Had trouble getting lubrication	WSEM	18.8	3.978	0.137	1.00
	WSEW	7.7			0.37^{ns}
	WSWM	10.0			0.49^{ns}
	Age				1.01^{ns}

WSEM: women who report having sex exclusively with men ($n = 1258$); WSEW: women who report having sex exclusively with women ($n = 26$); WSWM: women who report having sex with women and men ($n = 39$).
Note. ^{ns}Not statistically significant; $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$.

sexual behavior categories. The participants with no sexual interactions in the previous year were excluded from the analyses.

A lack of sexual interest and anorgasmia were the two most frequently reported sexual problems in all categories of women. Except for premature climax, there were no statistically significant differences in the reporting of sexual problems. Achieving climax more quickly than desired was the highest among WSEW (19.2%), and lowest in WSEM (3.2%). To explore if there were any statistically significant differences between WSEM, WSEW, and WSWM with respect to the reported sexual problems, controlled for age, logistic regression analyses were carried out. Using WSEM as the reference category, only one significant difference emerged. Compared to those who had only male sex partners, WSEW was 7.2 times more likely to report reaching climax more quickly than desired.

Discussion

The purpose of this study was to shed light on the differences and similarities in areas of importance to sexual health among WSEM, WSEW, and WSWM in Norway. The majority of women reported having had sexual interaction exclusively with men (71.0%) during the past 12 months, followed by 2.2% who reported having had sex with men and women, and 1.5% of women reported having had sexual interaction with women exclusively. The vast majority (96.8% of WSEM and 76.3% of WSWM) identified themselves as heterosexual. Of the WSWM, 23.7% were identified as bisexual/pansexual. More than two of three women who had sex with men stated that they (WSEM and WSWM) did not use condoms when having sex with a new partner, and WSWM reported the highest number of sex partners during the last year. We assumed that the consumption of pornography would be more common among WSWM and WSEW than among WSEM, and that viewing pornography could be more important to influence the sexual scripts of WSEW and WSWM than of WSEM sexual scripts. We found that more WSWM than WSEW and WSEM had indulged in pornography. Additionally, more WSWM believed that their use of pornography positively affected the frequency of looking for sex partners, indicating an influence on their sexual scripts. We assumed that WSEW and WSEM would be more sexually satisfied than WSWM. However, we found that WSWM reported being most satisfied. In general, WSEM more frequently reported sexual problems than WSEW and WSWM. However, we found that no difference between WSEW, WSWM, and WSEM with regard to sexual interest, enjoyment, anorgasm, anxiety, arousal, and lubrication problems. On the other hand, premature orgasm was more common in WSEW than in WSWM and WSEM.

Sexual identity

We found that the majority of the women were classified as WSEM (79.7% lifetime, 71.0% in the last 12 months). During the past 12 months, one of four women had had no sexual interaction, 2.2% of the women had had sex with both same-sex and opposite-sex partners (14.2% in their lifetime), and 1.5% of the women belonged to WSEW (0.3% in a lifetime). The difference between lifetime same-sex partners and same-sex partners in the last 12 months is notable. When comparing the lifetime experiences and experiences in the previous year, the estimates suggest that for several WSWM, this is an experience that occurs in a certain period of life, perhaps as part of sexual experimentation. Given the small number of WSEW and WSWM, it is difficult to estimate the exact percentages of the population belonging to these categories. In the British NATSAL-2 study (Mercer et al., 2007), ∼5% of 16–44-year-old women reported same-sex genital contact. However, it was also found that the acceptance of same-sex partnerships increased in both men and women from Natsal-2 to Natsal-3 (Mercer et al., 2013). However, it seems that this is not always reflected in an individual's sexual identity. This confirms Diamond's (2021) suggestion, that sexual identity is fluid, may vary across the lifespan and may change with changing environmental factors.

In the Nordic region, same-sex sexual practice is socially more accepted than in the majority of other Western countries (Anderssen & Malterud,

2013; Haavio-Mannila & Kontula, 2003; Kontula & Haavio-Mannila, 1995; Lewin et al., 2000). The homosexual practice was decriminalized in 1972, discrimination on the grounds of sexual orientation banned in 1981, and from 2009 marriage laws have been gender neutral. It is therefore noteworthy that in spite of generally positive attitudes toward homosexuality in Norway (Anderssen & Malterud, 2013), a substantial proportion of WSEWs perceived themselves as heterosexual (26.9%), or bisexual/pansexual (19.2%), and among WSWM, approximately three of four individuals perceived themselves as heterosexual. This could be an indication of that minority stress, internalized homonegativity, and concealment of sexual identity continues to be an issue for sexual minority groups (Prell & Træen, 2018).

The WSWM group is most likely highly heterogenic. It could be that some heterosexual women engage in a threesome with another woman within a heterosexual context (Rupp et al., 2014). For others, it could be a denial of bisexual interest. This is of interest to health promotion and shows that it is problematic to address messages about sexual risk behavior to lesbians or bisexuals when they want to reach sexual risk behavior; however, they identify themselves as heterosexuals. Therefore, it is better to address the message to women who have sex with women.

Sexual risk behavior

A clear majority of women in all the groups used pornography. However, contrary to men (Træen et al., 2022), the results of this study indicate that for female sexual minorities, pornography does not seem to play a positive role in understanding one's sexual orientation. Only WSWM claimed that pornography played a positive role in the frequency of looking for sex partners, which is also reflected in the number of sex partners. The highest number of sex partners during the last year was reported by the WSWM and the lowest number of partners by WSEM. This corresponds well with previous studies (Mercer et al., 2007; Moseng, 2017; Træen et al., 2002). Apart from using pornography as inspiration for looking for new partners and using STI protection, there were no statistically significant differences between women in the four groups in other perceived effects of watching pornography. Thus, unlike Norwegian men (Træen et al., 2022), pornography did not seem to inspire women to unprotected sexual intercourse. Furthermore, the low use of condoms in potentially risky sexual situations may reflect the fact that most women do not think this is necessary within the (often) romanticized sexual context (Træen & Hovland, 1998). It could also be that these women tend to put the responsibility for condom use on the male partner, perhaps as she cannot use it herself, or she dares not protest and thereby risk being perceived negatively by the partner (Træen & Gravningen, 2011).

Sexual satisfaction

The least sexually satisfied individuals in this study were women with no sexual activity in the previous year. This is not surprising, as there are consistent and robust findings on the positive association between sexual activity and sexual satisfaction in women of mixed ages (Bancroft et al., 2011; Brody & Costa, 2009; Byers & Rehman, 2014; Heiman et al., 2011; Heywood et al., 2018; McNulty et al., 2016; Schoenfeld et al., 2017). WSWM reported as being most satisfied with their sex life, followed by WSEM and WSEW; however, there were small differences between these groups. Our results seem to contradict Björkenstam et al.'s (2020) finding that bisexual women were most dissatisfied with the groups. However, it should be noted that Björkenstam et al. used sexual identity to differentiate between the groups of different sexual orientations; therefore, the results from this study and the study on the Swedish population are not directly comparable.

Sexual function

As with other research (Mitchell et al., 2013), the lack of sexual interest and anorgasmia were the two most frequently reported sexual problems in all women. Furthermore, we found that one sexual problem was significantly higher among WSEW. Reaching climax more quickly than

desired was reported by one of five WSEW, which is significantly higher than that among women in the other groups. This is in line with the findings of Björkenstam et al. (2020), which showed that premature orgasms were more common in bisexual/lesbian women than in heterosexual women. One explanation could be that women who have sex with women actually have a better understanding of their partner's need for clitoris stimulation to achieve orgasm, and take turns in giving and receiving pleasure until orgasm (Frederick et al., 2018). This may be a highly arousing practice that may facilitate orgasm and sexual pleasure (Reis et al., 2021). This also supports previous studies that have found that lesbians have fewer orgasm and lubrication problems than heterosexual women (Beaber & Werner, 2009; Flynn et al., 2017; Henderson et al., 2009).

Strengths and limitations

The strength of this study is its large sample size. However, some limitations of this study need to be addressed. First, we cannot know if there was a response bias between our web sample and a random sample drawn from the Norwegian population register. Furthermore, we cannot determine whether or not participants from the web sample are different from the general population with regard to the studied variables. It has previously been claimed that Internet populations tend to be more sensation-seeking and willing to take risks than the general population (Træen & Stigum, 2010), and one implication would be that more WSWM are represented in this sample than in a general population sample. However, when 98% of the general population has access to the Internet, it is likely that this difference is not of significance. On the other hand, two of three women in this sample had higher education (Bachelor's degree or higher). The official statistics in 2020 (Statistics Norway) show that about 39.8% of women in the Norwegian population aged 16 years or older have a high level of education (Befolkningens utdanningsnivå (ssb.no)). This means that the current sample might be slightly biased in the direction of highly educated individuals.

Second, a response rate of 35% represents another possible limitation. It should be noted that the response rate to previous sexual behavior studies in Norway dropped from 63% in 1987 to 23% in 2008. In addition, since the 1990s, there has been a general drop in the response rates to all questionnaire surveys (Hellevik, 1999). According to Søgaard et al. (2004), a low response rate does not necessarily imply a selection bias. Furthermore, other Nordic surveys also suggest that non-response is fairly random with respect to sexual behavior (Haavio-Mannila & Kontula, 2003; Kontula & Haavio-Mannila, 1995; Lewin et al., 2000; Stigum, 1997). The drop in the response rate to previous sexual behavior surveys suggests that self-administered postal questionnaires may be outdated as the mode of data collection. In recent years, data collection via the internet has become increasingly common, and random samples drawn from web panels have come to represent an alternative (Danielsson, 2002). When 98% of the population includes Internet users, the use of web panels to study sexuality seems to be a good way of collecting data. Even so, given the relatively small number of WSEW ($n = 26$) and WSWM ($n = 39$), the results should be interpreted with caution. In some instances, WSEW individuals may be compared to WSEM and WSWM individuals combined to increase the statistical power. However, the increase in statistical power comes with the loss of important and granular information about the WSEW and WSWM groups. In addition, we asked the participants about their "sexual satisfaction" without providing any definition of that term. Given the personal and subjective nature of sexual satisfaction, it is important to define the construct using input from the target population. Lastly, it should be noted that the cross-sectional nature of this study makes it impossible to draw conclusions about cause and effect.

Conclusions

There is a small sexual minority group of women who have sex partners of both the same and the opposite sex. These sexual minorities do not necessarily identify themselves as lesbian or

bisexual. To improve the sexual health and well-being in those groups, interventions could benefit from adopting an approach that targets people based on their sexual behavior (Mercer et al., 2016). In particular, sexual health clinics should offer more holistic care by considering not only a person's sexual identity but also the person's sexual relations (Mercer, 2014). As WSWM might not consider themselves as belonging to a minority group but are just practicing sex with other women, it is important that healthcare professionals routinely ask about the sexual orientation and the gender of their sex partners and consider that both WSEW and WSWM might be influenced by minority stress. Lastly, as recommended for the whole population, health professionals should also address the sexual functioning and sexual satisfaction of patients.

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ORCID

Bente Træen http://orcid.org/0000-0002-7335-9917
Nantje Fischer http://orcid.org/0000-0001-5928-3699

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