Contraceptive Use by Women Across Multiple Components of Sexual Orientation: Findings from the 2011–2017 National Survey of Family Growth

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Abstract

Purpose: We estimated sexual orientation-related disparities in contraceptive outcomes among women across multiple components of sexual orientation.

Methods: Using pooled National Survey of Family Growth data, 2011–2017, we performed multivariable logistic and multinomial regression analyses (adjusted for race/ethnicity, age, education, and income) to estimate the independent associations between multiple components of sexual orientation (sexual identity, behavior, and attraction) and two contraceptive outcomes—any contraceptive use and type of method used at last intercourse with a male partner.

Results: Women who reported any attraction to females had increased odds of having used any contraceptive method compared with those only attracted to males (adjusted odds ratio [AOR] 1.22, 95% confidence interval [CI] 1.03–1.44). For the type of contraception outcome, we present age-stratified results due to effect modification. Among 15- to 25-year-olds, bisexual-identified females had higher odds of having used a low efficacy method compared with heterosexual females (AOR 1.49, 95% CI 1.01–2.19). Among 26- to 35-year-olds, women with male and female partners had increased odds of having used a low efficacy method compared with women with male partners only (AOR 3.31, 95% CI 1.46–7.51).

Conclusion: Sexual minority women, defined by sexual identity and sexual behavior, may be at increased risk for unintended pregnancy due to increased use of low efficacy contraceptive methods compared with their non sexual minority peers. These outcomes vary by age group.

Keywords: bisexual, contraception, lesbian, sexual minority

Introduction

SEXUAL MINORITY WOMEN (SMW), defined as women whose sexual identity, behavior, or attraction falls into nonmajority categories (e.g., lesbian or bisexual or those who do not have sex exclusively with men), have documented disparities in unintended pregnancy, and the risk factors that precede unintended pregnancy, compared with non-SMW.^{1–6} A body of prior research has highlighted the disproportionate risk factors for unintended pregnancy specifically among sexual minority young people.^{1,3–6} More recently, researchers have documented contraceptive and pregnancy outcomes among adult SMW.^{7–9}

Among the foundational literature on risk for unintended pregnancy among sexual minority youth, a pair of 1998 and 1999 studies (sampling American Indian adolescents and adolescents from the state of Minnesota, respectively) found that lesbian and bisexual adolescent females were more likely than their heterosexual-identified peers to begin having sex with (cisgender) boys at an earlier age, have more frequent sex, have used less effective contraceptive methods, and have engaged in sex work.^{3,4} Using a longitudinal sample from the state of Michigan, other researchers have found that among older adolescent females, the sexual minority subgroups in their sample had more sexual partners, more sex with men, and less use of contraception than their

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exclusively heterosexual counterparts.⁵ Another study, using two cohorts of adolescents from across the United States, found that lesbian-identified respondents were less likely to use hormonal contraception and that all sexual minority groups in one of their cohorts were at increased risk for pregnancy.¹

Additional studies with nationally representative samples have yielded similar results. A study that used data from the 2006–2010 National Survey of Family Growth (NSFG) found that bisexual and lesbian-identified young women were younger at first intercourse with a male partner compared with heterosexual women.⁶ This same study found that bisexual and lesbian-identified young women had more male and female partners than did heterosexual-identified participants.⁶ In addition, bisexual-identified respondents reported greater use of emergency contraception (EC) and a higher incidence of induced abortion than any other group of respondents.⁶ In another nationally representative sample using data from the Youth Risk Behavior Surveillance System (YRBSS), researchers found that girls who were unsure of their sexual identity were less likely to use condoms or a highly or moderately effective contraceptive method at last sex compared with heterosexual girls.¹⁰ Furthermore, girls who identified as lesbian or who had both male and female partners were less likely to use condoms at last sex than their non sexual minority peers.¹⁰

Consistent and correct contraceptive use helps individuals avoid unintended pregnancy and plan their family size and spacing. Experts estimate that individuals at risk of pregnancy who do not use a contraceptive method have an 85% chance of becoming pregnant over 1 year.¹¹ Health care providers often group contraceptive methods into tiers of efficacy as one system of classifying methods.^{11,12} Tier 1 methods include intrauterine devices (IUDs), hormonal implants, and sterilization procedures; Tier 2 methods include oral contraceptive pills, transdermal patches, vaginal rings, and injectable methods; Tier 3 methods include condoms, diaphragms, spermicide, withdrawal, and fertility awareness methods.^{11,12}

Prior research into sexual orientation-related differences in contraceptive usage has yielded inconsistent findings, and only a few studies have included adult women in their samples.^{7–9} To the best of our knowledge, there are no existing studies that examine effect modification by age in their analyses of contraceptive use. One 2019 study, using data from two Nurses' Health Study cohorts that included adult women, found that lesbian-identified women were the least likely to use any contraceptive method, but that bisexual-identified women were more than twice as likely as heterosexual-identified women to use long-acting reversible contraceptives (LARCs), a category made up of implants and IUDs.⁷ Similarly, a 2018 study found that among women visiting reproductive health clinics in Salt Lake City, Utah, bisexual-identified women chose a LARC method more frequently than heterosexual-identified women.⁸ Another 2018 study examining college women's use of contraception found that lesbian women were significantly less likely to use a highly effective method and that bisexual women were significantly less likely to use a moderately effectively method, both compared with heterosexual women.⁹

The present study furthers this area of inquiry by using a nationally representative data set, the NSFG, to examine two contraception-related outcomes—use of a contraceptive

method at last intercourse with a male partner, and type of contraceptive method used at last intercourse with a male partner—by multiple components of sexual orientation. We examine our outcomes across the full 15- to 49-year-old age range surveyed. In addition, this study is the first to our knowledge to examine these outcomes for effect modification by age. Age is a social position that is one possible pathway to health-promoting or adverse behaviors, in accordance with the Health Equity Promotion Model.¹³ We hypothesized that age would interact with sexual minority status such that there would be unique outcomes for different age groups of SMW.

Methods

Participants and eligibility

The study population was composed of female respondents of the combined 2011–2017 cycles of the NSFG. The eligibility criteria for the survey required that respondents be noninstitutionalized women or men between the ages of 15 and 44 years (ages 15–49 years for the 2015–2017 cycle), residing in 1 of the 50 U.S. states or District of Columbia.^{14–16} The total sample size for the combined 2011–2017 cycles was 16,854 women.

Procedure

The NSFG uses multistage, probability-based nationally representative sampling.^{14–16} The 2011–2013, 2013–2015, and 2015–2017 surveys and procedures were reviewed and approved by the National Center for Health Statistics Research Ethics Review Board. Before beginning data analysis of the de-identified data set, an institutional review board determination of exempt from review was received from The City University of New York.

Measures

Study measures were defined as follows: The main independent variables were the three-component elements of sexual orientation—identity, attraction, and behavior. Sexual orientation identity was assessed by the NSFG differently between the 2011–2013/2013–2015 cycles and the most recent 2015–2017 cycles. In the 2011–2013 and 2013–2015 cycles of the NSFG, the survey asked respondents about their sexual orientation identity with the question: *Do you think of yourself as ...?* (1) heterosexual or straight; (2) homosexual, gay, or lesbian; (3) bisexual; (4) not ascertained; (5) refused; (6) don't know. In the 2015–2017 cycle, the NSFG changed the response options to test a new response option to this question. A random half of the sample was asked the same question as the prior two cycles, and the other random half of the sample was asked the question with the following response options: (1) lesbian or gay; (2) straight, that is, not lesbian or gay; (3) bisexual; (4) something else; (5) not ascertained; (6) refused; (7) don't know. Therefore, before combining these variables, the response options were recoded such that all of the “heterosexual or straight” and “straight, that is, not lesbian or gay” responses were combined. “Lesbian and gay” responses were combined with “homosexual, lesbian, and gay” responses. “Something else” was combined with all of the “not ascertained,” “refused,” and “don't know” responses from all survey cycles, as it is not possible

to determine with which sexual orientation identity category any of these individuals identify.

Sexual attraction was measured by the NSFG question: *People are different in their sexual attraction to other people. Which best describes your feelings?* (1) Only attracted to males; (2) mostly attracted to males; (3) equally attracted to males and females; (4) mostly attracted to females; (5) only attracted to females; (6) not sure; (7) not ascertained; (8) refused; or (9) don't know. Due to small sample sizes in the mostly and only attracted to females groups, this variable was recoded to the binary category "only attracted to males" and "any attraction to females." Responses with an answer of "not sure," "not ascertained," "refused," or "don't know" were excluded, given that it is not possible to know whether these individuals have any attraction toward men or women.

The sexual behavior variable was created by combining multiple NSFG items measuring past year sexual behavior with males and females, including oral, anal, and vaginal sex. The sexual behavior variable was limited to behavior over the past 12 months to obtain the most accurate representation of respondents' current behaviors. Respondents who were not sexually active in the past 12 months were excluded from the analysis. The NSFG first asked respondents if they had ever had any type of sex with a male or female partner (only binary gender options were offered). Follow-up questions asked how many male/female partners they had had in the past 12 months. The final behavior variable created from these responses had three categories: male partners only in the past 12 months; female partners only in the past 12 months; and both male and female partners in the past 12 months.

Several demographic characteristics were included as covariates. Age was examined as a categorical variable (15–25; 26–35; 36–49 years). Race/ethnicity is broken down by the NSFG into four categories: "non-Hispanic White," "non-Hispanic Black," "Hispanic," and "other." Education was recoded into four categories: "some high school," "high school degree," "some college," or "Bachelor's degree or higher." Total household income was recoded into five categories: "<\$15,000," "\$15,000–\$29,999," "\$30,000–\$49,999," "\$50,000–\$74,999," and "\$75,000 or higher."

Two outcome variables were examined—use of any contraceptive method at last vaginal intercourse with a (cisgender) male partner, and type of contraceptive method used at last vaginal intercourse with a (cisgender) male partner. Both variables came from the section of the survey that addressed sex with male partners. The "use of any method" variable came from the NSFG survey item: *the last time you had intercourse with [last partner], did you or he use any method?* This item was only asked of respondents who were sexually active in the past 12 months. Responses were recoded to a binary outcome variable of yes/no. "Not ascertained," "refused," and "don't know" responses were excluded.

The "type of contraceptive method used" variable was created from the NSFG survey item: *Which method or methods did you or he use?* referring to the exact contraceptive method used at last intercourse with the respondent's last partner, for respondents who answered "yes" to the previous question. The list of specific contraceptive methods yielded by the NSFG was recoded into four new response categories: high efficacy, moderate efficacy, and low efficacy, using the

World Health Organization's (WHO) classification system¹²; EC remained a separate category, given that it is a unique method that is used after sex, is generally considered the lowest efficacy method among those listed, and does not appear within the WHO classification system.¹¹ The methods categorized as high efficacy were as follows: respondent sterile, respondent's partner sterile, female sterilizing operations, partner's vasectomy, IUDs, and implants. The methods categorized as moderate efficacy were as follows: oral contraceptive pills, injectables, patches, and vaginal rings. The methods categorized as low efficacy were as follows: male and female condoms, withdrawal, fertility awareness methods, diaphragms, and spermicides. "Moderate efficacy" was set as the reference category in data analysis, and "other," "refused," and "don't know" responses were excluded.

Data analysis

Data analysis was conducted in SAS version 9.4 (SAS Institute Inc., Cary, NC). Descriptive analyses using chi-square tests were conducted to characterize the sample across demographic variables for the complex survey. A series of bivariate and multivariable logistic regression models for the use of any method outcome and multinomial regression models for the type of method used outcome were run taking into account complex survey sampling. First, separate bivariate models were fitted to examine the crude association between each of the three measures of sexual orientation (identity, behavior, and attraction) and each of the dependent variables. Then, multivariable models were run for each of the three sexual orientation-related independent variables with each of the contraception-related outcome variables, adjusting for race/ethnicity, highest level of education, total household income, and age. For our primary analyses, we set a significance level of $\alpha = 0.05$. Finally, effect modification by age was assessed by adding an interaction term between age and the sexual orientation-related variable to the final multivariable models. In cases where the interaction term was significant at $p < 0.10$, stratified analysis was conducted for the study association.¹⁷ Three age groups were created—15–25, 26–35, and 36–49 years—so that the sample was approximately evenly split across the groups, allowing sufficient power for comparison.

Results

Among the 12,340 participants who had been sexually active with a male partner in the past 12 months, 79.4% (weighted frequencies) had used a contraceptive method at last intercourse. For those who had used a contraceptive method, 36.7% had used a high efficacy method, 27.1% had used a moderate efficacy method, 36.0% had used a low efficacy method, and 0.2% had used EC. Table 1 describes, for both the "sexually active" sample and the "contraceptive method used" sample, the respective demographic characteristics in terms of age category, highest level of education completed, race/ethnicity, and total household income, as well as sexual orientation identity, behavior in the past 12 months, and attraction.

Examining use of any contraceptive method at last intercourse with a male partner, we found no significant differences by sexual identity or sexual behavior (Table 2). However, we found that respondents who expressed any

TABLE 1. DEMOGRAPHIC CHARACTERISTICS FOR FEMALES WITH CONTRACEPTIVE OUTCOMES, NATIONAL SURVEY OF FAMILY GROWTH 2011–2017

	<i>Females with a male partner in the past 12 months, N = 12,340^a</i>		<i>Females who used a contraceptive method at last sex with a male partner, N = 9695^a</i>	
	<i>Unweighted n</i>	<i>Weighted %</i>	<i>Unweighted n</i>	<i>Weighted %</i>
Demographic characteristics				
Age category, years				
15–25	3857	29.02	3075	29.60
26–35	5163	39.77	3937	38.38
36–49	3320	31.20	2683	32.01
Education				
Some high school	1951	12.61	1492	12.36
High school graduate	3360	24.87	2571	24.28
Some college	3884	31.97	3104	32.86
Bachelor's degree or higher	3145	30.53	2528	30.50
Race/ethnicity				
Non-Hispanic White	5665	56.37	4550	56.95
Non-Hispanic Black	2593	13.62	1966	12.92
Other	1119	9.71	878	9.59
Hispanic	2963	20.30	2301	20.54
Total household income				
Less than \$15,000	2964	17.83	2232	17.35
\$15,000 to \$29,999	2450	17.40	1928	16.85
\$30,000 to \$49,999	2320	18.16	1826	18.25
\$50,000 to \$74,999	2001	18.22	1625	18.73
\$75,000 or higher	2605	28.38	2084	28.81
Sexual orientation				
Identity				
Heterosexual	11,215	92.21	8820	92.20
Lesbian/gay	52	0.30	43	0.30
Bisexual	878	5.85	688	5.98
Something else/refused/not ascertained/don't know	195	1.64	144	1.52
Behavior in the past 12 months ^a				
Male partners only	11,890	97.07	9341	96.94
Female partners only	N/A ^b	N/A ^b	N/A ^b	N/A ^b
Both male and female partners	430	2.93	345	3.06
Attraction				
Only attracted to males	9671	79.85	7574	79.28
Any attraction to females	2669	20.15	2121	20.72

^aNot all survey participants were sexually active in the past 12 months.

^bOnly participants who reported a male partner were included in these analyses.

attraction to females had increased odds of having used any contraceptive method (adjusted odds ratio [AOR] 1.22, 95% confidence interval [CI] 1.03–1.44). Examining the type of contraceptive method used, we found that women with both male and female partners had significantly higher odds of having used a low efficacy contraceptive method compared with women with male partners only (AOR 1.96, 95% CI 1.26–3.06) (Table 3). In addition, women with any attraction to females had increased odds of having used a low efficacy method (AOR 1.28, 95% CI 1.05–1.57).

We found that age significantly modified the relationship between the sexual orientation component and type of contraceptive used—sexual identity ($p < 0.001$), sexual behavior ($p < 0.001$), and sexual attraction ($p = 0.001$). Unadjusted and adjusted multinomial regression of method type on the aforementioned sexual orientation components, stratified by age group, is presented in Tables 4, 5, and 6. In the 15–25 years age group, bisexual-identified individuals had

higher odds of having used a low efficacy method compared with heterosexual individuals (AOR 1.49, 95% CI 1.01–2.19) (Table 4). In the 26–35 years age group, we found increased odds of having used EC among bisexual women (AOR 9.82, 95% CI 1.75–55.16) (Table 5). Furthermore, women with both male and female partners had increased odds of having used a low efficacy method compared with women with only male partners (AOR 3.31, 95% CI 1.46–7.51). In addition, women with any attraction to females had increased odds of having used a low efficacy method compared with women only attracted to males (AOR 1.37, 95% CI 1.01–1.88). In the 36–49 years age group, additional findings include increased odds of having used both a high efficacy method (AOR 4.82, 95% CI 1.02–22.79) and a low efficacy method (AOR 7.75, 95% CI 1.78–33.80) among women with both male and female partners compared with women with male partners only (Table 6).

TABLE 2. UNADJUSTED AND ADJUSTED LOGISTIC REGRESSION MODELS OF ANY CONTRACEPTIVE METHOD USE AT LAST SEX WITH A MALE PARTNER ON SEXUAL ORIENTATION COMPONENTS, ALL FEMALE RESPONDENTS (AGES 15–49 YEARS), *N* = 12,340

	<i>OR</i>	<i>95% CI</i>	<i>p</i>	<i>AOR</i>	<i>95% CI</i>	<i>p</i>
Sexual identity						
Heterosexual ^a						
Lesbian	0.93	0.32–2.69	0.899	1.05	0.38–2.93	0.923
Bisexual	1.11	0.87–1.41	0.413	1.13	0.89–1.44	0.321
Refused, don't know, something else, or not ascertained	0.72	0.41–1.27	0.258	0.78	0.44–1.36	0.374
Sexual behavior (past 12 months)						
Male partners only ^a						
Both male and female partners	1.26	0.87–1.83	0.221	1.31	0.90–1.92	0.157
Female partners only	N/A	N/A	N/A	N/A	N/A	N/A
Sexual attraction						
Only attracted to males ^a						
Any attraction to females	1.20	1.02–1.41	0.031	1.22	1.03–1.44	0.021

^aReference category.

Bold values are statistically significant at the 0.05 level.

Multivariable models are adjusted for race/ethnicity, highest level of education, total household income, and age.

AOR, adjusted odds ratio; CI, confidence interval; N/A, not applicable; OR, odds ratio.

Discussion

In this study, we found significant disparities in contraceptive outcomes between SMW and non-SMW, specific to sexual minority subgroups and age groups, in several cases. For example, we found a number of differences when examining the type of contraceptive method used at last intercourse. The fact that SMW in our sample were more likely to use less effective contraceptive methods, and that these findings partially differed by age group and sexual orientation component, indicates that SMW may be at a higher risk of unintended pregnancy.

Our findings regarding disparities in low efficacy contraceptive method use between bisexual-identified women and women with both male and female partners, compared with heterosexual-identified women and women with exclusively male partners, contrast with prior research in specific populations indicating that bisexual-identified women were more likely to have used a LARC method (all of which are highly effective methods) compared with heterosexual-identified women.^{7,8} In one study, participants were clients of family planning centers in Salt Lake City, Utah.⁸ Thus, these study participants may have been more likely to have been seeking out a highly effectively, clinician-provided birth control method (as opposed to an over-the-counter method) due to the nature of the location of study recruitment, and in contrast to our nationally representative study sample. The other study used data from two cohorts of the Nurses' Health Study.⁷ In addition to the finding that bisexual participants were more likely to have ever used LARCs, this study found that sexual minority respondents were also more likely to report having used low efficacy methods. These findings mirror the results of the oldest age group in our study, wherein women with both male and female partners were more likely to have used a low efficacy method and a high efficacy method.

Our study findings, especially those from the 15–25 years age group, are also in line with several prior studies using adolescent samples. The first, a 2013 study using two adolescent cohorts, found that lesbian-identified respondents were less

likely to have used hormonal contraception.¹ The second, a 2017 study using an adolescent sample from the state of Michigan, found that the sexual minority groups in their sex were less likely to use any type of contraception.⁵ Finally, a 2019 study using data from the YRBSS found that adolescent girls who were unsure of their sexual identity were less likely to use a highly or moderately effective contraceptive method at last sex.¹⁰ Thus, our findings, in the context of the extant literature, suggest that age group is an important factor in evaluating contraceptive use patterns among SMW.

Our findings should be considered within the context of the Health Equity Promotion Model, which posits that social positions (including age), individual and structural and environmental context (including social exclusion and discrimination based on identity), and health-promoting and adverse pathways influence health outcomes for sexual minority individuals.¹³ This model provides an explanatory framework for significant findings among the youngest age group and among bisexual women and women with both male and female partners. It is important to note that bisexual women may find themselves in a unique position in relation to social stigma, as prior research has demonstrated that they face discrimination both from heterosexual populations and from lesbian communities who reject them.^{18,19} Bisexual women may face stereotyping related to the idea that they are promiscuous or that their identity is not valid, and this stereotyping may compound their experiences of stigma.^{20–22}

Prior research has demonstrated that diverse groups of SMW face fear of stigmatization from health care providers²³ and that bisexual women may face unique burdens in health care settings, such as invisibility and misunderstanding from health care providers.²⁴ It should be highlighted that most low efficacy methods of birth control are available over the counter or do not require any interaction with a health care provider. However, moderate and high efficacy methods of birth control require a visit with a health care provider, which may elicit a discussion about one's sexual history. Finally, our youngest age group included a sample of adolescents from 15 to 17 years of age. These young

TABLE 3. UNADJUSTED AND ADJUSTED MULTINOMIAL REGRESSION OF TYPE OF CONTRACEPTION USED AT LAST SEX WITH A MALE PARTNER ON SEXUAL ORIENTATION COMPONENTS, ALL FEMALE RESPONDENTS (AGES 15–49 YEARS), $N=9695$

	High efficacy						Low efficacy						EC					
	OR	95% CI	p	AOR	95% CI	p	OR	95% CI	p	AOR	95% CI	p	OR	95% CI	p	AOR	95% CI	p
Sexual identity																		
Heterosexual ^a	1.08	0.34–3.34	0.899	1.77	0.67–4.67	0.248	1.15	0.47–2.81	0.757	1.24	0.54–2.87	0.607	N/A	N/A	N/A	N/A	N/A	N/A
Lesbian	0.81	0.59–1.10	0.175	1.16	0.80–1.67	0.437	1.35	0.99–1.85	0.056	1.38	0.99–1.91	0.056	3.60	1.10–12.77	0.048	2.06	0.43–9.89	0.364
Bisexual	1.18	0.53–2.62	0.677	0.89	0.41–1.95	0.764	1.00	0.52–1.92	0.991	0.77	0.38–1.57	0.475	N/A	N/A	N/A	N/A	N/A	N/A
Refused, don't know, something else, or not ascertained																		
Sexual behavior (past 12 months)																		
Male partners only ^a	0.72	0.46–1.14	0.156	1.40	0.91–2.16	0.125	1.81	1.16–2.84	0.010	1.96	1.26–3.06	0.003	0.60	0.07–5.17	0.693	0.48	0.05–4.45	0.517
Both male and female partners	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Female partners only	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sexual attraction																		
Only attracted to males ^a																		
Any attraction to females	0.78	0.63–0.96	0.017	1.05	0.84–1.31	0.667	1.20	0.98–1.46	0.077	1.28	1.05–1.57	0.017	3.30	0.96–11.42	0.059	2.51	0.89–7.10	0.082

^aReference category.

Bold values are statistically significant at the 0.05 level.

Multivariable models are adjusted for race/ethnicity, highest level of education, total household income, and age.
EC, emergency contraception.

TABLE 4. UNADJUSTED AND ADJUSTED MULTINOMIAL REGRESSION OF TYPE OF CONTRACEPTION USED AT LAST SEX WITH A MALE PARTNER ON SEXUAL ORIENTATION COMPONENTS, STRATIFIED BY AGE GROUP, AGES 15–25 YEARS, $N=3075$

	High efficacy						Low efficacy						EC					
	OR	95% CI	p	AOR	95% CI	p	OR	95% CI	p	AOR	95% CI	p	OR	95% CI	p	AOR	95% CI	p
Sexual identity ^a																		
Heterosexual ^a	0.38	0.10–1.44	0.153	0.37	0.01–1.46	0.155	1.03	0.39–2.71	0.954	1.10	0.45–2.70	0.841	N/A	N/A	N/A	N/A	N/A	N/A
Lesbian	1.53	0.95–2.47	0.078	1.28	0.80–2.06	0.309	1.62	1.12–2.34	0.011	1.49	1.01–2.19	0.045	2.33	0.50–10.82	0.277	1.73	0.27–11.33	0.563
Bisexual	0.98	0.20–4.84	0.981	0.79	0.16–3.85	0.772	1.35	0.41–4.47	0.619	1.24	0.37–4.19	0.725	N/A	N/A	N/A	N/A	N/A	N/A
Refused, don't know, something else, or not ascertained																		
Sexual behavior (past 12 months)																		
Male partners only ^a	1.31	0.67–2.58	0.429	1.18	0.62–2.24	0.606	1.64	0.97–2.78	0.065	1.55	0.93–2.58	0.096	0.38	0.04–3.42	0.388	0.52	0.05–5.61	0.586
Both male and female partners	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Female partners only	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sexual attraction																		
Only attracted to males ^a	1.20	0.84–1.72	0.316	1.16	0.80–1.68	0.436	1.33	1.02–1.72	0.035	1.28	0.98–1.68	0.070	3.02	0.72–12.63	0.129	2.51	0.75–8.46	0.136
Any attraction to females																		

^aReference category.

Bold values are statistically significant at the 0.05 level.

Multivariable models are adjusted for race/ethnicity, highest level of education, and total household income.

TABLE 5. UNADJUSTED AND ADJUSTED MULTINOMIAL REGRESSION OF TYPE OF CONTRACEPTION USED AT LAST SEX WITH A MALE PARTNER ON SEXUAL ORIENTATION COMPONENTS, STRATIFIED BY AGE GROUP, AGES 26–35 YEARS, $N=3937$

	High efficacy						Low efficacy						EC					
	OR	95% CI	p	AOR	95% CI	p	OR	95% CI	p	AOR	95% CI	p	OR	95% CI	p	AOR	95% CI	p
Sexual identity																		
Heterosexual ^a	8.70	0.95–80.09	0.056	7.18	0.77–66.93	0.083	2.59	0.29–23.40	0.394	2.35	0.25–22.43	0.456	N/A	N/A	N/A	N/A	N/A	N/A
Lesbian	1.18	0.69–2.02	0.549	1.09	0.63–1.91	0.757	1.51	0.87–2.63	0.142	1.45	0.81–2.59	0.205	10.06	1.77–57.23	0.010	9.82	1.75–55.16	0.010
Bisexual	1.01	0.35–2.93	0.979	0.87	0.31–2.49	0.798	0.91	0.37–2.21	0.828	0.72	0.30–1.74	0.467	N/A	N/A	N/A	N/A	N/A	N/A
Refused, don't know, something else, or not ascertained																		
Sexual behavior (past 12 months)																		
Male partners only ^a	2.14	0.94–4.85	0.069	2.17	0.92–5.13	0.077	3.46	1.55–7.69	0.003	3.31	1.46–7.51	0.004	N/A	N/A	N/A	N/A	N/A	N/A
Both male and female partners	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Female partners only	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sexual attraction																		
Only attracted to males ^a	1.03	0.77–1.36	0.852	1.03	0.77–1.39	0.844	1.34	0.99–1.83	0.061	1.37	1.01–1.88	0.047	1.94	0.36–10.45	0.438	1.96	0.25–15.22	0.520
Any attraction to females																		

^aReference category.

Bold values are statistically significant at the 0.05 level.

Multivariable models are adjusted for race/ethnicity, highest level of education, and total household income.

TABLE 6. UNADJUSTED AND ADJUSTED MULTINOMIAL REGRESSION OF TYPE OF CONTRACEPTION USED AT LAST SEX WITH A MALE PARTNER ON SEXUAL ORIENTATION COMPONENTS, STRATIFIED BY AGE GROUP, AGES 36–49 YEARS, $N=2683$

	High efficacy						Low efficacy						EC					
	OR	95% CI	p	AOR	95% CI	p	OR	95% CI	p	AOR	95% CI	p	OR	95% CI	p	AOR	95% CI	p
Sexual identity																		
Heterosexual ^a	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.94	0.13–6.96	0.952	N/A	N/A	N/A
Lesbian	0.78	0.28–2.14	0.625	0.81	0.31–2.12	0.664	0.79	0.27–2.34	0.667	0.75	0.25–2.28	0.613	N/A	N/A	N/A	N/A	N/A	N/A
Bisexual	0.99	0.30–3.30	0.988	0.84	0.26–2.71	0.770	0.65	0.20–2.12	0.474	0.47	0.13–1.70	0.245	N/A	N/A	N/A	N/A	N/A	N/A
Refused, don't know, something else, or not ascertained																		
Sexual behavior (past 12 months)																		
Male partners only ^a																		
Both male and female partners	4.60	1.00–21.10	0.050	4.82	1.02–22.79	0.047	8.93	2.08–38.39	0.004	7.75	1.78–33.80	0.007	0.08	0.01–0.97	0.047	N/A	N/A	N/A
Female partners only	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sexual attraction																		
Only attracted to males ^a																		
Any attraction to females	0.85	0.53–1.37	0.499	0.87	0.54–1.41	0.566	0.93	0.55–1.57	0.789	0.93	0.55–1.57	0.776	N/A	N/A	N/A	N/A	N/A	N/A

^aReference category.

Bold values are statistically significant at the 0.05 level.

Multivariable models are adjusted for race/ethnicity, highest level of education, and total household income.

women may face unique barriers to accessing contraceptives, including confidentiality concerns and laws in some states (specifically, Texas and Utah) that require parental consent for contraceptives purchased with state funds.²⁵ In addition, sexuality education programs that are not inclusive of sexual minority identities or that fail to present information on the full range of contraceptives may pose a barrier for younger individuals.²⁶

Limitations

Some general limitations of our study are related to the format of the survey and the possibility of recall bias or social desirability bias. For this reason, in 2006, the NSFG implemented the use of audio computer-assisted self-interview for especially sensitive portions of the survey.^{27,28} Nonetheless, in our data set, there remained a substantial proportion of “refused,” “don’t know,” or “not ascertained” responses to the sexual orientation questions on the survey. Furthermore, we had small sample sizes for lesbian-identified individuals, those with exclusive attraction to women, and those with exclusively female partners in the past 12 months. Our sample sizes from the sexual orientation identity categories indicate that the orientation question used on the survey may still need refinement. To increase the sample size of sexual minority subgroups available to be analyzed in data sets, researchers should work toward reducing the proportion of missing responses to sexual orientation questions in health surveys.²⁹ An additional limitation was our inability to yield reliable estimates for the EC outcome across many categories, as well as for lesbian-identified individuals, again due to small cell sizes. Furthermore, the small size of our sexual minority samples prohibited us from undertaking further subgroup analyses, such as by race and ethnicity or socioeconomic status. Because these variables may be key factors in our outcomes, we controlled for these variables in our multivariable analyses.

Conclusion

Our study contributes to the growing literature on contraceptive use in sexual minority populations by offering effect modification analyses by age group. Our results indicate that specific subgroups of SMW, differentiated by age group, continue to be at risk for unintended pregnancy due to increased use of low efficacy contraceptive methods compared with their non sexual minority peers. Our findings suggest that public health practitioners and health care organizations should ensure adequate culturally competent education for providers and community health care workers to ensure that they are aware of disparities in the types of contraceptive methods utilized by bisexual women, women with both male and female partners, and women attracted to other women.^{30,31} Contraceptive provision and education should remain focused on individual patient choice and autonomy; however, providers must help to ensure a level playing field for SMW so that they have unimpeded access to the full range of contraceptive methods available.

An additional area for intervention is that health educators and service providers who work with sexual minority youth should ensure that contraceptive education is included within sexuality education curricula and that sexual minority orientations are validated within such curricula. Providers should further ensure that their practice environments are specifi-

cally welcoming to sexual minority populations, including youth. In accordance with previous research, providers may take steps to frame contraception as “sex- and queer-positive” and to emphasize the noncontraceptive benefits of birth control, as ways of making it more accessible to sexual minority communities.²³ Finally, additional research should be done to help elucidate the contextual and causal mechanisms behind our findings.

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