

Sexual Orientation Identity Disparities in Mammography Among White, Black, and Latina U.S. Women

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Abstract

Purpose: Our goal was to examine sexual orientation identity disparities in mammography in relationship to race/ethnicity among U.S. women.

Methods: Using nationally representative 2013–2017 National Health Interview Survey data, we used multivariable logistic regression to estimate the odds of receiving a mammogram in the past year in relationship to sexual orientation identity among White, Black, and Latina U.S. women 40–75 years of age ($N=45,031$) separately, adjusting for demographic factors. We also assessed whether socioeconomic and health care factors attenuated sexual orientation identity disparities in mammography across racial/ethnic groups.

Results: Among White women, bisexual women had significantly lower adjusted odds of mammography compared to heterosexual women (odds ratio = 0.70, 95% confidence interval: 0.50–0.99). Among Black women, the adjusted odds of mammography were significantly higher among bisexual women relative to heterosexual women (2.53, 1.08–5.92). Black lesbian women appeared to have lower adjusted odds of mammography compared to their heterosexual counterparts; however, this difference was not statistically significant (0.80, 0.46–1.38). Similarly, among Latina women, lesbian women also seemed to have lower adjusted odds of mammography relative to heterosexual women, but this disparity was also not statistically significant (0.64, 0.37–1.13). Adding socioeconomic factors completely attenuated the disparity between White bisexual and heterosexual women (0.76, 0.52–1.10).

Conclusions: Sexual orientation identity disparities in receiving a mammogram in the past year differed in relationship to race/ethnicity among White, Black, and Latina U.S. women. Additional research with larger samples of Black and Latina lesbian and bisexual women is needed to more accurately estimate and explain observed differences.

Keywords: breast cancer, cancer screening, health disparities, mammography, race/ethnicity, sexual orientation

Introduction

BREAST CANCER IS the most frequently diagnosed cancer other than skin cancer and the second leading cause of cancer-related death among U.S. women.^{1,2} The Institute of Medicine has identified sexual orientation as an important

social determinant of health, including cancer risk and prevention.³ However, the lack of inclusion of sexual orientation in cancer registries has hindered research on sexual orientation disparities in breast and other cancers.^{4–6} Nonetheless, limited research has identified higher breast cancer incidence and mortality rates among sexual minority women (SMW; e.g.,

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lesbian and bisexual women and women with female sexual partners) relative to their non sexual minority counterparts.^{4,7}

Regular screening can help prevent cancer morbidity and mortality by identifying and removing premalignant abnormalities and detecting cancers at an early stage when treatment is most effective. Breast cancer screening guidelines for U.S. women vary widely.⁸ For example, at the time of the study, the American College of Obstetricians and Gynecologists (ACOG) recommended that women be offered mammography starting at age 40 years, initiate screening no later than age 50 years, and continue until at least age 75 years.⁹ ACOG further specified that women 40–75 years of age should be screened for breast cancer annually or biennially, based on shared decision-making with their health care provider.⁹ In contrast, the U.S. Preventive Services Task Force (USPSTF) recommended biennial mammography for women 50–74 years of age.¹⁰ USPSTF also noted that women 40–49 years of age could engage in biennial screening if they chose to do so.¹⁰ Moreover, the American Cancer Society (ACS) recommended annual mammograms for women 45–54 years of age and biennial screening for women 55 years of age and older, so long as they are in good health and “expected to live at least 10 more years,” with the possibility of continuing annual screening if preferred. ACS further specified that women 40–44 years of age should be given the choice to begin annual mammography.¹¹

Few U.S. studies have examined sexual orientation disparities in breast cancer screening, and many have yielded different results. Most studies examining the association between sexual orientation and breast cancer screening have found no statistically significant difference in past-year,¹² past 2-year,^{13,14} or lifetime^{5,15} mammography among lesbian, bisexual, and heterosexual women. In contrast, some researchers found that bisexual women were less likely to have obtained a mammogram in the last 2 years^{13,16} or adhere to breast cancer screening guidelines¹⁷ compared to heterosexual women. Furthermore, while some investigators found that lesbian women were less likely to have ever been screened for breast cancer relative to women in general,¹⁸ others observed that lesbian women were more likely than women in general to have been screened for breast cancer both in their lifetime and in the last 2 years.¹⁹

The few studies that have investigated sexual orientation disparities in mammography among U.S. women have some important limitations that this study sought to address. First, most prior research has relied on subnational probability samples^{5,14,15} and national^{16,18} and subnational^{12,13,19} non-probability samples of predominantly White women. As a result, estimates may not be generalizable to U.S. women in general and women of color in particular. Moreover, some previous studies collapsed lesbian and bisexual individuals into a single sexual orientation category,¹⁸ despite their distinct social, economic, and health profiles.³ In turn, these results may not be generalizable to smaller sexual minority subgroups such as lesbian women. Finally, some studies combined multiple overlapping yet distinct dimensions of sexual orientation (e.g., sexual attraction and sexual orientation identity) into a single sexual orientation measure, which may confound and mask differing disparities.^{12,13}

To address these gaps in the scientific literature, we designed a quantitative study examining sexual orientation identity disparities in breast cancer screening, with lesbian

and bisexual individuals grouped separately, across racial/ethnic groups in a large national probability sample of White, Black, and Latina U.S. women. In addition, we assessed whether socioeconomic and health care factors helped explain observed disparities. Therefore, our nationally representative findings will help inform future research and the development of tailored interventions that facilitate mammography and ultimately help promote equity in breast cancer outcomes among U.S. women at the intersection of both sexual orientation and heterosexism and race/ethnicity and racism.

Methods

Study participants

We analyzed data from adult U.S. women who participated in the 2013–2017 annual waves of the National Health Interview Survey (NHIS). Briefly, NHIS is an annual survey that uses a stratified, multistage sampling design to capture a probability sample that is representative of the civilian, non-institutionalized U.S. population.²⁰ Of the included survey waves, the annual household response rate ranged from 66.5% (2017)²¹ to 75.7% (2013).²² This study was exempt from Institutional Review Board review by Tufts University because it used completely deidentified, publicly available data.

As per the ACOG breast cancer screening guidelines at the time of the study,⁹ which allowed us to include the largest number of women and thus maximize statistical power, we restricted our analytic sample to U.S. women 40–75 years of age. In addition, we limited our analyses to U.S. women who identified as heterosexual, bisexual, or lesbian. We excluded those who did not respond ($n=1558$; 3.3%) or responded “something else” ($n=133$; 0.3%) or “I don’t know” ($n=313$; 0.6%) to the sexual orientation identity question because of their small numbers and heterogeneity, which prevented us from combining these groups into a single category.

We further limited our analytic sample to White, Black, and Latina women and excluded Asian ($n=2395$; 4.4%), Native American ($n=390$; 0.6%), and multiracial ($n=742$; 1.3%) respondents and individuals from another racial/ethnic background ($n=94$; 0.1%) because of their small sample sizes, which precluded the generation of reliable sexual orientation identity-specific estimates for these groups, and heterogeneity, which prevented us from combining them into a single category. In addition, U.S. women who did not provide data on mammography ($n=1091$; 2.3%) were excluded from our analyses. Thus, our final analytic sample included a total of 45,031 White, Black, and Latina U.S. women 40–75 years of age who self-identified as heterosexual, bisexual, or lesbian.

Measures

Participants self-reported their race (i.e., White, Black, Asian, Native American, and multiracial) and Hispanic ethnicity and were then categorized based on both their race and ethnicity as non-Hispanic White (henceforth, White), non-Hispanic Black (henceforth, Black), non-Hispanic Asian (not included), non-Hispanic Native American (not included), non-Hispanic multiracial (not included), and

Hispanic (henceforth, Latina; any race). Using hot-deck imputation, NHIS staff imputed values for those missing data on race/ethnicity. When data from other household members were available, imputation was based on these data. When these data were not available, race/ethnicity was imputed based on that of members of other households in the secondary sampling unit.²³

Sexual orientation identity was assessed using the following question: “Which of the following best represents how you think of yourself?” Response options included “gay/lesbian” (henceforth, lesbian), “straight, that is, not gay” (henceforth, heterosexual), “bisexual,” “something else” (not included), and “I don’t know” (not included). Mammography was assessed by asking women 30 years of age and above, “Have you had a mammogram during the past 12 months?” Covariates, which were selected a priori based on the scientific literature, included demographic factors (i.e., age, geographic region, and nativity), which we conceptualized as potential confounders, as well as socioeconomic (i.e., marital status, educational attainment, and employment status) and health care (i.e., uninsured and usual source of care) factors, which we conceptualized as potential mediators. The proportion of missing data was small (<1%) for all covariates.

Statistical analysis

We first ascertained the percent distribution of demographic, socioeconomic, and health care factors and receiving a mammogram in the past year in relationship to sexual orientation identity among White, Black, and Latina U.S. women 40–75 years of age overall and stratified by race/ethnicity. Adjusted Wald tests were used to assess differences in the prevalence of mammography between lesbian and bisexual women (separately) relative to heterosexual women. We then tested for a statistical interaction between sexual orientation identity and race/ethnicity in relationship to mammography, adjusting for survey year, using logistic regression.

We also used logistic regression to estimate the odds of receiving a mammogram in the past year in relationship to sexual orientation identity among women overall and stratified by race/ethnicity, adjusting for survey year only. We then adjusted the overall and race-/ethnicity-stratified models for demographic factors—namely, age, geographic region, nativity, and race/ethnicity (overall model only)—which we conceptualized as potential confounders. Finally, we added socioeconomic (i.e., marital status, educational attainment, and employment status) and health care (i.e., uninsured and usual source of care) factors, which we conceptualized as potential mediators, to each model and considered attenuation of sexual orientation disparities in breast cancer screening upon their inclusion as evidence of potential mediation.²⁴

Analyses were conducted using Stata 15 (StataCorp LLC, College Station, TX) and adjusted for the complex survey design (including stratification, clustering, and oversampling) using the NHIS public use variance estimation variables, which account for stratum and primary sampling unit, sampling weights, and Stata’s *svy* option. Given that we pooled data from the 2013 to 2017 survey waves and that a new sampling design was implemented in 2016, we treated the 2013–2015 and 2016–2017 waves as statistically independent and used the appropriate sampling weights for each period in ac-

cordance with NHIS user guidelines.²¹ Furthermore, given our analytic sample’s inclusion criteria, we used Stata’s *subpop* option to conduct analyses using the complete data file to maintain accurate variance estimation.

Results

Table 1 presents the percent distribution of demographic, socioeconomic, and health care factors in relationship to sexual orientation identity among U.S. women 40–75 years of age overall and stratified by race/ethnicity. Across all racial/ethnic groups, lesbian and bisexual women were less frequently married and, except for Latina lesbian women, less frequently had a usual source of care compared to their heterosexual counterparts. In addition, bisexual women were more frequently uninsured relative to heterosexual women among White, Black, and Latina women. Among White and Latina women, bisexual and lesbian women were more frequently working for pay than heterosexual women.

Table 2 shows that 58.0% of U.S. women 40–75 years of age reported receiving a mammogram in the past year, with the highest prevalence occurring among Black bisexual women (77.2%) and the lowest among Latina lesbian women (43.0%). Among women overall, although bisexual women appeared to have a lower prevalence of receiving a mammogram in the past year compared to heterosexual women, this difference was not statistically significant (51.2% vs. 58.0%; $p=0.07$). We observed no difference in the prevalence of mammography between lesbian and heterosexual women (58.2% vs. 58.0%; $p=0.94$).

Among White women, bisexual women were significantly less likely to have obtained a mammogram in the past year compared to heterosexual women (47.2% vs. 58.3%; $p=0.01$). In contrast, among Black women, bisexual women were significantly more likely than heterosexual women to have received breast cancer screening in the past year (77.2% vs. 60.4%; $p=0.03$). Although Black lesbian women appeared to have a lower prevalence of mammography relative to Black heterosexual women, this difference was not statistically significant (52.9% vs. 60.4%; $p=0.26$), possibly as a result of small sample sizes. Similarly, among Latina women, the prevalence of breast cancer screening seemed lower among lesbian women compared to heterosexual women; however, this difference was not statistically significant (43.0% vs. 53.8%; $p=0.11$; Table 2), which may be due to small sample sizes.

We found a statistically significant interaction between sexual orientation identity and race/ethnicity in relationship to receiving a mammogram in the past year among U.S. women 40–75 years of age ($p=0.02$), adjusting for survey year. Table 3 shows that, among women overall, bisexual women may have significantly lower odds of mammography relative to heterosexual women, adjusting for survey year and demographic factors (odds ratio=0.83, 95% confidence interval: 0.62–1.12; Model 2); however, this difference was not statistically significant. We observed no difference in the adjusted odds of mammography between lesbian and heterosexual women (1.05, 0.87–1.26; Model 2).

Among White women, bisexual women had significantly lower adjusted odds of mammography relative to heterosexual women (0.70, 0.50–0.99; Model 2). There was no statistically significant difference in the adjusted odds of

TABLE 1. PERCENT DISTRIBUTION OF DEMOGRAPHIC, SOCIOECONOMIC, AND HEALTH CARE FACTORS IN RELATIONSHIP TO SEXUAL ORIENTATION IDENTITY AND RACE/ETHNICITY AMONG WHITE, BLACK, AND LATINA U.S. WOMEN 40–75 YEARS OF AGE (N=45,031)

Variable (%)	Total N=45,031	White			Black			Latina				
		Heterosexual		Lesbian	Heterosexual		Bisexual	Heterosexual		Bisexual	Lesbian	
		n = 31,442	n = 196	n = 497	n = 6,542	n = 34	n = 79	n = 6,143	n = 22	n = 76		
Age (years)												
40–49	26.3	23.6	40.1	29.1	29.4	44.3	37.8	75.6	40.8	40.8	40.8	40.8
50–59	30.5	30.3	33.4	40.8	32.0	30.1	29.0	19.4	39.8	24.4	29.0	39.8
60–69	30.0	31.6	20.5	23.6	28.3	22.8	23.0	5.0	16.7	26.9	23.0	16.7
70–75	13.2	14.5	6.1	6.5	10.2	2.8	10.1	0.0	2.7	7.9	10.1	2.7
Geographic region												
Northeast	18.3	19.1	17.5	20.7	15.3	8.2	16.4	9.7	19.7	10.6	16.4	9.7
Midwest	23.3	27.0	26.6	21.1	16.7	23.0	7.7	11.5	9.8	28.1	7.7	11.5
South	38.7	34.7	29.4	31.4	61.5	62.1	39.2	25.4	32.7	45.5	39.2	25.4
West	19.7	19.2	26.5	26.9	6.5	6.6	36.7	53.5	37.8	15.8	36.7	53.5
U.S. born: yes	87.3	94.8	95.1	97.2	90.0	95.9	35.6	46.3	58.9	91.4	35.6	46.3
Marital status												
Currently married	48.0	52.7	24.3	28.3	25.2	10.0	48.5	35.3	19.5	8.7	48.5	35.3
Not currently married	52.0	47.3	75.7	71.7	74.8	90.0	51.5	64.7	80.5	91.3	51.5	64.7
Educational attainment												
<High school diploma	11.4	6.9	3.5	4.6	16.7	17.1	35.3	28.0	21.0	18.1	35.3	28.0
High school diploma or GED	24.8	24.9	16.3	14.0	26.8	38.9	22.9	26.0	19.9	17.4	22.9	26.0
Some college or associate's degree	31.5	32.1	35.0	26.0	33.8	27.3	25.2	27.9	33.7	39.3	25.2	27.9
Bachelor's degree or higher	32.3	36.1	45.3	55.3	22.7	16.7	16.7	18.2	25.4	25.2	16.7	18.2
Working for pay: yes	52.9	53.2	69.2	64.0	51.1	45.6	50.9	56.7	61.7	49.6	50.9	56.7
Uninsured: yes	7.9	5.8	8.7	5.8	10.0	19.6	18.9	23.4	17.1	9.6	18.9	23.4
Has usual source of care: yes	93.8	94.5	91.1	92.5	94.6	89.5	88.7	82.4	88.7	92.0	88.7	82.4

All prevalence estimates account for the complex survey design and may not add to 100.0% due to rounding error.
GED, General Education Development.

TABLE 2. DISTRIBUTION OF RECEIVING A MAMMOGRAM IN THE LAST 12 MONTHS IN RELATIONSHIP TO SEXUAL ORIENTATION IDENTITY AND RACE/ETHNICITY AMONG WHITE, BLACK, AND LATINA U.S. WOMEN 40–75 YEARS OF AGE (N=45,031)

Variable	Received a mammogram in the last 12 months	
	N	% (95% CI)
Total	25,807	58.0 (57.4–58.6)
Heterosexual (reference)	25,297	58.0 (57.4–58.7)
Bisexual	141	51.2 (43.8–58.4)
Lesbian	369	58.2 (53.8–62.5)
White		
Heterosexual (reference)	18,125	58.3 (57.6–59.0)
Bisexual	102	47.2 (38.9–55.6)
Lesbian	295	61.1 (56.0–65.9)
Black		
Heterosexual (reference)	3896	60.4 (59.0–61.8)
Bisexual	26	77.2 (58.7–89.0)
Lesbian	44	52.9 (39.8–65.5)
Latina		
Heterosexual (reference)	3276	53.8 (52.2–55.4)
Bisexual	13	51.1 (28.8–72.9)
Lesbian	30	43.0 (30.9–56.1)

Prevalence estimates (%) and 95% CI account for the complex survey design. Bolded values are statistically significant at the 0.05 level.

CI, confidence intervals.

mammography between White lesbian and heterosexual women (1.17, 0.95–1.45; Model 2). Although this result should be confirmed using samples with larger numbers of bisexual women, including socioeconomic factors in the models completely attenuated the disparity between White

bisexual and heterosexual women such that it was no longer statistically significant (0.76, 0.52–1.10; Model 3, Table 3). Of note, while White bisexual women more frequently reported some college education or more, they were less frequently married compared to their heterosexual counterparts.

Among Black women, bisexual women had significantly higher adjusted odds of mammography relative to heterosexual women (2.53, 1.08–5.92; Model 2, Table 3). Although the adjusted odds of mammography seemed lower among Black lesbian women compared to their heterosexual counterparts, this difference was not statistically significant (0.80, 0.46–1.38; Model 2). These findings should be replicated using samples that include larger numbers of Black bisexual and lesbian women to ensure that they were not due to a lack of statistical power (i.e., Type II error). Finally, among Latina women, we observed no statistically significant difference in the adjusted odds of mammography between bisexual and heterosexual women (1.12, 0.45–2.80; Model 2, Table 3). Latina lesbian women appeared to have lower adjusted odds of obtaining a mammogram in the past year compared to their heterosexual counterparts, but this difference was not statistically significant (0.64, 0.37–1.13; Model 2). To ensure that these null findings were not due to a lack of statistical power (i.e., Type II error), they should be confirmed using samples that include larger numbers of Latina bisexual and lesbian women.

Discussion

This study extends previous research conducted using subnational probability samples^{5,14,15} and national^{16,18} and subnational^{12,13,19} nonprobability samples of predominantly White women by assessing sexual orientation identity disparities in mammography across racial/ethnic groups using a large, national probability sample of White, Black, and

TABLE 3. ADJUSTED ODDS OF RECEIVING A MAMMOGRAM IN THE LAST 12 MONTHS IN RELATIONSHIP TO SEXUAL ORIENTATION IDENTITY AND RACE/ETHNICITY AMONG WHITE, BLACK, AND LATINA U.S. WOMEN 40–75 YEARS OF AGE (N=45,031)

Variable	Model 1	Model 2	Model 3	Model 4
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Total				
Heterosexual (reference)	1.00	1.00	1.00	1.00
Bisexual	0.76 (0.56–1.02)	0.83 (0.62–1.12)	0.90 (0.65–1.24)	0.94 (0.68–1.30)
Lesbian	1.01 (0.84–1.21)	1.05 (0.87–1.26)	1.07 (0.89–1.29)	1.08 (0.89–1.31)
White				
Heterosexual (reference)	1.00	1.00	1.00	1.00
Bisexual	0.64 (0.46–0.90)	0.70 (0.50–0.99)	0.76 (0.52–1.10)	0.77 (0.53–1.13)
Lesbian	1.12 (0.91–1.39)	1.17 (0.95–1.45)	1.20 (0.97–1.49)	1.22 (0.98–1.51)
Black				
Heterosexual (reference)	1.00	1.00	1.00	1.00
Bisexual	2.29 (0.96–5.47)	2.53 (1.08–5.92)	2.96 (1.26–6.98)	3.62 (1.58–8.29)
Lesbian	0.72 (0.42–1.23)	0.80 (0.46–1.38)	0.82 (0.46–1.45)	0.81 (0.45–1.47)
Latina				
Heterosexual (reference)	1.00	1.00	1.00	1.00
Bisexual	0.89 (0.35–2.29)	1.12 (0.45–2.80)	1.19 (0.50–2.86)	1.28 (0.53–3.10)
Lesbian	0.65 (0.39–1.11)	0.64 (0.37–1.13)	0.66 (0.37–1.18)	0.66 (0.37–1.18)

Model 1 adjusts for survey year only. Model 2 also adjusts for age, geographic region, and nativity. Model 2 for the total population also adjusts for race/ethnicity. Model 3 also adjusts for marital status, educational attainment, and employment status. Model 4 also adjusts for uninsured and usual source of care. All models account for the complex survey design. Bolded values refer to ORs with 95% CI that exclude 1.

OR, odds ratio.

Latina U.S. women 40–75 years of age. Specifically, we found that, among White women, bisexual women had significantly lower adjusted odds of mammography in the past year compared to heterosexual women, which is concerning, given bisexual women's elevated risk for breast cancer.^{25–27} This finding was similar to that of Austin et al., which showed that, in a national nonprobability sample of mostly White women 40–60 years of age, bisexual women were significantly less likely to be screened for breast cancer in the past 2 years relative to heterosexual women,¹⁶ and Charkhchi et al., which indicated that, in a subnational probability sample of women 40–74 years of age, bisexual women had significantly lower adjusted odds of mammography in the past 2 years compared to heterosexual women.¹⁷

In addition, we found no statistically significant difference in mammography in the past year between White lesbian and heterosexual women. This finding contrasted with that of Austin et al.,¹⁶ which indicated that lesbian women were slightly less likely to have received a mammogram in the past 2 years relative to heterosexual women. However, our finding was similar to that of all other studies, which indicated that there was no statistically significant difference in the prevalence of past-year,¹² past 2-year,^{13,14,17} or lifetime^{5,15} mammography between lesbian and heterosexual women overall.

In contrast to all other studies among U.S. women in general, which found that bisexual women were less^{16,17} or just as^{5,12–15} likely as heterosexual women to be screened for breast cancer, we observed that, among Black women, bisexual women had significantly higher adjusted odds of being screened for breast cancer in the past year relative to heterosexual women. Our finding that the adjusted odds of mammography did not differ between bisexual and heterosexual Latina women was similar to those of most prior studies conducted among U.S. women in general.^{14,15,17,28} Moreover, our results suggest that Black and Latina lesbian women may have lower adjusted odds of mammography compared to their heterosexual counterparts. However, these differences were not statistically significant and should be further examined using samples with larger numbers of Black and Latina lesbian women.

Furthermore, we found that the disparity in receiving a mammogram in the past year between White bisexual and heterosexual women was completely attenuated upon the addition of socioeconomic factors (i.e., potential mediators) and that differences in marital status (which confers access to economic and health care resources^{29,30} that may facilitate breast cancer screening) between the two groups may underlie this observed disparity. However, this finding should be confirmed using samples with larger numbers of bisexual women to ensure that it was not due to a lack of statistical power (i.e., Type II error). Moreover, given that bisexual women^{15,18,25–27} and Black women^{31,32} both have higher risk factors for breast cancer morbidity and mortality relative to heterosexual women and White women, respectively, Black bisexual women^{33–35} in particular may be at especially elevated risk of the disease. Thus, it is possible that the adjusted odds of annual mammography were significantly higher among Black bisexual women relative to their heterosexual counterparts because health care providers were more likely to recommend screening to this population at especially elevated risk of breast cancer.

In addition, the seemingly (although not significantly) lower adjusted odds of mammography among Black and Latina lesbian women compared to their heterosexual counterparts may be due to health care providers' lack of training and competence in providing health services to lesbian women^{36,37} and Black and Latina women³⁸ in general—which may be compounded among Black and Latina lesbian women in particular.³⁹ Furthermore, the seemingly lower adjusted odds of mammography among lesbian compared to heterosexual women among Black and Latina women may be due to their preference for receiving care from providers who share their multiple marginalized social identities and the lack of such providers in the health care system, thus leading to avoidance or delay of care in these populations.⁴⁰ Finally, prior experiences and fear of both racial/ethnic and sexual orientation discrimination in the health care system may deter Black and Latina lesbian women from obtaining preventive health services,^{41,42} including regular mammograms.^{43,44}

Limitations

This study's findings should be interpreted in the context of several limitations. First, we restricted our analytic sample to women 40–75 years of age according to ACOG breast cancer screening guidelines⁹ to maximize sample size and statistical power and could only ascertain disparities in annual mammography (i.e., the only measure of breast cancer screening available in NHIS) in relationship to sexual orientation identity (i.e., the only measure of sexual orientation included in NHIS). However, future research should also examine sexual orientation disparities in breast cancer screening across racial/ethnic groups in other age groups, for other breast cancer screening measures according to other guidelines (e.g., biennial screening among women 50–74 years of age as per USPSTF guidelines¹⁰), and in relationship to other dimensions of sexual orientation (e.g., sexual attraction and sexual behavior).

Second, although we combined multiple NHIS waves and were able to identify some trends in the data, small numbers of Black and Latina bisexual and lesbian women in our study resulted in wide confidence intervals for these groups, which may have increased Type II error and thus prevented us from detecting some breast cancer screening disparities. Thus, studies that use larger samples with greater numbers of SMW, especially Black and Latina bisexual and lesbian women, are needed to more accurately identify and estimate sexual orientation identity disparities in mammography in relationship to race/ethnicity. Third, all data were self-reported and not validated using medical records, which may have undermined the validity of breast cancer screening prevalence estimates.⁴⁵ Thus, future research that uses breast cancer screening measures validated using medical records is needed to generate unbiased estimates of sexual orientation disparities in mammography across and within racial/ethnic groups.

Fourth, analyses used cross-sectional data; therefore, neither temporality nor causality can be established from our analyses. Fifth, multiple potential mediators, such as health care provider recommendation, cancer risk perceptions, and discrimination, were not available in the NHIS. Future research should include these variables in their data

collection efforts and investigate their role in influencing sexual orientation disparities in breast cancer screening across and within racial/ethnic groups using longitudinal study designs. Sixth, we only assessed sexual orientation identity disparities in breast cancer screening across racial/ethnic groups on the relative scale (i.e., odds ratios); future research should estimate results on the absolute scale (i.e., risk differences) to more fully describe these disparities.⁴⁶ Finally, the small number of Asian, Native American, and multiracial populations included in NHIS prevented their inclusion in these analyses; future research examining sexual orientation disparities in mammography in relationship to race/ethnicity should prioritize the inclusion of these understudied racially minoritized populations.

Conclusion

This study has several important implications for both public health and clinical practice. First, our results suggest that tailored policies, programs, and practices that facilitate awareness of, access to, and utilization of mammography among White bisexual women and possibly also Black and Latina lesbian women may be needed to mitigate sexual orientation identity disparities in mammography across racial/ethnic groups. Of note, our findings indicate that, among White women, increasing bisexual women's access to the economic and health care resources traditionally available through marriage may help mitigate the breast cancer screening disparity between this marginalized group and their heterosexual counterparts. Public health and health care interventions that seek to facilitate breast cancer screening among White bisexual women and Black and Latina lesbian women should be patient centered⁴⁷ and structurally competent,⁴⁸ and address the unique needs, concerns, and lived experiences of these marginalized groups in social context.^{47–50}

In addition, other research suggests that health care interventions that promote shared decision making between patients and providers, address provider bias, discrimination, and stigma related to both sexual orientation and race/ethnicity, and train clinicians and other staff to provide patient centered⁴⁷ and structurally competent⁴⁸ care to women who experience heterosexism, racism, and other forms of discrimination are needed to address mammography disparities.^{48,51} Furthermore, other studies indicate that health care facilities should implement structures, operations, and practices that are welcoming to and affirming of women from diverse sexual orientation and racial/ethnic backgrounds,⁵² as doing so may help facilitate breast cancer screening among marginalized groups. Together, these efforts may help mitigate sexual orientation identity disparities in mammography among women from diverse racial/ethnic backgrounds, which may in turn help promote equity in breast cancer outcomes at the intersection of both sexual orientation and heterosexism and race/ethnicity and racism.

Disclaimer

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