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Skin cancer risk factors and screening among sexual minority and heterosexual women

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To the editor:

Sexual minority persons – including lesbian, gay, bisexual persons – face unequal cancer risks and are a National Institutes of Health-designated health disparity population.¹ While multiple studies demonstrated higher prevalence of skin cancer and associated risk factors in gay and bisexual men,^{2–4} two studies showed that sexual minority women (SMW) had lower prevalence of indoor tanning and skin cancers as compared with heterosexual women.^{4,5} Scant data exist on additional skin cancer risk behaviors among sexual minority women.

To address this critical knowledge gap, our study examines the prevalence of multiple skin cancer risk factors and screening in SMW using the 2015 National Health Interview Survey, a cross-sectional survey representative of the US civilian population. Emory University institutional review exemption was obtained. We restricted analysis to adult women age 18 self-identifying as “lesbian or gay” or “bisexual” (SMW) and as “straight, that is, not lesbian or gay” (heterosexual women). Prevalence of 1 sunburns, indoor tanning device use, and skin cancer screening examination within the past 12 months were compared between SMW and heterosexual women using Rao-Scott χ^2 tests and benchmarked against Healthy People 2020 targets. Survey sample weights were applied and all estimates met *a priori* reliability standards. Multivariable logistic regression adjusted for significant sociodemographic

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confounders. Two-sided tests with Bonferroni-corrected $P < .005$ were considered significant for 9 outcomes (STATA software, version 12.1; StataCorp).

Among 18,601 women respondents, 464 SMW (2.5%; 263 [1.4%] gay or lesbian and 201 [1.1%] bisexual) and 17,340 (93.2%) heterosexual women were identified. SMW were more likely to report younger age, non-Hispanic ethnicity, obesity, current or former smoker, heavy alcohol use, and lower income level than heterosexual women (Table 1). No significant difference in geographic region, educational attainment, health insurance status, and personal or family history of skin cancers were found. Although SMW reported more sunburns on univariate analysis, there was no statistically significant difference in reported sunburns after adjustment for sociodemographic differences (Table 2). No differences in indoor tanning, skin cancer screening examinations, and frequent sun-protective behaviors were noted by sexual minority status. Healthy People 2020 prevalence targets were met for sunburns (33.8%) in heterosexual women but not in SMW; targets for indoor tanning (3.6%) and sun-protective behaviors (73.7%) remain unmet for both groups.

In contrast with prior indoor tanning data,⁴ the prevalence of skin cancer risk behaviors among sexual minority women are not significantly different from that of heterosexual women in 2015. This may be due to additional adjustments for income, smoking, and alcohol use as potential confounders. Decreasing trends of indoor tanning use seen in heterosexual women may also differ in SMW. Despite the large study sample size, it did not allow further sub-analyses comparing lesbian and bisexual women. Self-reported survey outcomes were subject to information bias. Our results highlighted current unmet targets for skin cancer prevention among SMW and heterosexual women. Future studies are needed to evaluate ongoing public health interventions to reduce indoor tanning and promote sun-protective behaviors in SMW to achieve national skin cancer prevention goals in all women.

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Abbreviations and Acronyms:

SMW sexual minority women

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Table 1.

Sociodemographic characteristics of sexual minority and heterosexual women.

N (weight prevalence %)	Sexual minority women (N = 464)	Heterosexual women (N = 17,340)	P
Age			
18–39	263 (59.8%)	5,618 (36.6%)	< 0.001
40–64	158 (32.4%)	7,054 (42.5%)	
65+	43 (7.8%)	4,668 (20.9%)	
Race/ethnicity			
Non-Hispanic White	307 (67.6%)	10,645 (65.2%)	0.048
Non-Hispanic Black	77 (16.0%)	2,576 (12.6%)	
Hispanic	56 (10.5%)	2,944 (15.2%)	
Other	24 (5.9%)	1,175 (7.0%)	
Educational attainment			
Below high school	48 (9.5%)	2,365 (12.1%)	0.15
High school or equivalent	83 (19.4%)	4,199 (23.9%)	
Some college	161 (36.1%)	5,606 (32.3%)	
College graduate or above	172 (35.1%)	5,096 (31.7%)	
Family income level			
200% federal poverty level	247 (57.9%)	9,661 (61.8%)	< 0.001
200% federal poverty level	205 (39.9%)	6,541 (31.1%)	
Missing	12 (2.2%)	1,138 (7.1%)	
Geographic region			
Northeast	78 (14.1%)	2,925 (17.9%)	0.47
Midwest	87 (22.4%)	3,568 (21.8%)	
South	167 (38.5%)	6,179 (38.1%)	
West	132 (25.0%)	4,668 (22.2%)	
Smoking status			
Never smoker ^a	238 (55.8%)	11,429 (67.7%)	0.001
Former smoker	111 (19.8%)	2,436 (13.4%)	
Current smoker	114 (24.4%)	3,450 (18.9%)	
Heavy alcohol use ^b	176 (35.3%)	2,887 (17.1%)	< 0.001
Body mass index			
Underweight / Normal	159 (36.4%)	6,631 (42.2%)	0.003
Overweight	118 (23.4%)	4,826 (28.5%)	
Obese	179 (40.2%)	5,173 (29.3%)	
Has health insurance	411 (89.9%)	15,692 (90.5%)	0.70
Personal history of skin cancer	11 (2.2%)	496 (2.7%)	0.54
Family history of skin cancer	41 (9.4%)	1,346 (7.6%)	0.36

^aDefined as smoking fewer than 100 cigarettes in lifetime

^bDefined as reporting any day with 5+ drinks in the past year

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Table 2.

Prevalence of sunburns, indoor tanning, skin cancer screening, and frequent sun-protective behaviors among sexual minority and heterosexual women.

Outcomes ^a	Sexual minority women (N = 464)	Heterosexual women (N = 17,340)	P Value	HP 2020 Target ^b
Sunburn in the past 12 months				
Prevalence, % (95% CI)	43.3 (37.2–49.7)	33.2 (32.1–34.4)	0.001	33.9
aOR (95% CI) ^c	1.08 (0.80–1.48)	1 [reference]	0.61	
Indoor tanning in the past 12 months				
Prevalence, % (95% CI)	6.6 (4.1–10.3)	5.2 (4.7–5.8)	0.34	3.6
aOR (95% CI)	0.88 (0.52–1.48)	1 [reference]	0.63	
Skin cancer screening exam in the past 12 months				
Prevalence, % (95% CI)	12.5 (9.0–16.9)	11.6 (11.0–12.3)	0.68	N/A
aOR (95% CI)	1.51 (1.03–2.20)	1 [reference]	0.03	
Frequent sun-protective behaviors ^d				
Prevalence, % (95% CI)	70.3 (64.5–75.4)	70.1 (69.1–71.1)	0.97	73.7
aOR (95% CI)	1.18 (0.89–1.56)	1 [reference]	0.26	
1. Seeking shade				
Prevalence, % (95% CI)	41.4 (35.6–47.5) <	43.2 (42.2–44.3)	0.57	N/A
aOR (95% CI)	1.03 (0.79–1.33)	1 [reference]	0.85	
2. Long sleeves				
Prevalence, % (95% CI)	8.6 (5.7–12.8)	11.5 (10.8–12.2)	0.16	N/A
aOR (95% CI)	1.06 (0.66–1.68)	1 [reference]	0.82	
3. Long pants				
Prevalence, % (95% CI)	25.1 (20.0–31.0)	22.7 (21.8–23.6)	0.38	N/A
aOR (95% CI)	1.41 (1.03–1.94)	1 [reference]	0.03	
4. Wide-brimmed hat				
Prevalence, % (95% CI)	12.6 (9.1–17.2)	14.1 (13.3–14.9)	0.50	N/A
aOR (95% CI)	1.19 (0.8–1.76)	1 [reference]	0.39	
5. SPF 15+ sunscreen use				
Prevalence, % (95% CI)	39.7 (33.3–46.5)	39.7 (38.6–40.9)	0.99	N/A
aOR (95% CI)	1.07 (0.80–1.42)	1 [reference]	0.66	

Abbreviations: HP 2020, Health People 2020; aOR, adjusted prevalence odds ratio; CI, confidence interval; N/A, not available; SPF, sun protection factor

^aComplete case analysis excluded up to 1,498 (8.4%) participants with missing outcomes (4.7%) or covariates (4.2%). Missing data were less common in sexual minority women (5.2% vs. 8.5%, $P = 0.01$).

^bHP 2020 targets are federal public health goals for year 2020, aimed to reduce the prevalence of sunburns and indoor tanning in the past 12 months and to increase frequent sun-protective behaviors. Skin cancer-related HP 2020 targets are measured by the questions in the National Health Interview Survey. HP 2020 targets have not been set for skin cancer screen or individual sun-protective behaviors.

^c Multivariable logistic regression models adjusted for age group, race/ethnicity, income level, smoking status, heavy alcohol use, and body mass index. First-order interaction terms between race/ethnicity and sexual minority status were not significant and not included in the final model.

^d Composite measure defined as “always” or “most of the time” use of staying in the shade, wearing a long-sleeved shirt, long pants, wide-brimmed hat, and/or SPF 15+ sunscreen when going outside on a warm sunny day for more than one hour. Respondents who report they “do not go out into the sun” were not considered to engage in frequent sun-protective behaviors as per the Healthy People 2020 target definitions.

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