Sexual and Behavioral Health Disparities Among Sexual Minority Hispanics/Latinos: Findings From the National Health and Nutrition Examination Survey, 2001–2014

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Abstract

Introduction—Hispanics/Latinos (henceforth, Latinos) are the largest minority group in the U.S. With growing health disparities among this group, the highest burden remains among sexual and gender minority Latinos. Differences regarding sexual orientation have not been fully explored within this group using national representative samples. This study analyzed sexual and behavioral health disparities associated with sexual minority status among Latinos in the U.S.

Methods—The study included data from 5,598 Latino adults who participated in the 2001–2014 waves of the National Health and Nutrition Examination Survey. Data analysis was conducted in 2016. Bivariate and multivariable logistic regression analyses examined the prevalence of HIV, sexually transmitted infections, mental health problems, cigarette smoking, and alcohol/illicit drug use among sexual minorities and heterosexual Latino adults. Sexual minorities were defined as "gay, lesbian, and bisexual" (GLB) and "other" non-heterosexual groups.

Results—GLB Latinos reported higher prevalence of mental health problems and cigarette smoking compared with heterosexuals. After adjusting for covariates, GLB Latinos had greater odds of testing positive for HIV, lifetime diagnosis of sexually transmitted infections, poor mental health outcomes, cigarette smoking (including lifetime and current smoking status), and illicit drug use than heterosexuals.

Conclusions—The disproportionate impact of health disparities among Latinos varies significantly by sexual orientation, with GLB individuals facing elevated prevalence. In particular, elevated odds for HIV/sexually transmitted infections, mental health problems, smoking, and illicit substance use were found. Further research, including longitudinal studies to understand the trajectories of risks, is needed to identify intervention opportunities in this population.

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INTRODUCTION

Hispanics/Latinos (henceforth, Latinos) are among the largest and fastest growing minority groups in the U.S., comprising 17% of the population in 2014.[1] Though significant health disparities in sexual and behavioral health persist among Latinos,[2–4] emerging studies suggest that sexual minorities bear the brunt of these disparities.[5,6] Studies have identified factors, such as poverty, that contribute to health disparities for Latinos as a whole,[7,8] but few investigations have explored risk factors and outcomes specifically for sexual minorities within this population. In response to numerous calls for efforts to better understand health disparities among sexual minorities within racial/ethnic minority groups,[9–11] this paper sought to examine various sexual and behavioral health outcomes by sexual orientation among Latinos using nationally representative data.

METHODS

Study Population

This study used data from the 2001–2014 waves of the National Health and Nutrition Examination Survey, a nationally representative sample of non-institutionalized, civilian populations in the U.S.[12] Analyses were restricted to participants with data on all covariates and to those who completed the clinical examination phase providing biospecimen data.

Measures

Sociodemographic variables included age, gender, education, employment, marital status, place of birth, citizenship, income, health insurance status, and access to a regular healthcare provider.

Sexual orientation was assessed using the following question: Do you think of yourself as heterosexual or straight (attracted to the opposite sex); homosexual or gay/lesbian (attracted to the same sex); bisexual (attracted to men and women); something else; or you're not sure? Participants were characterized as "heterosexual" if they self-identified as such. The remaining participants were divided into two categories: "gay, lesbian, and bisexual" (GLB) for individuals who selected these options, and "other" for those who self-identified as something else or not sure.

Participants provided blood and urine specimens to test for the presence of the HIV antibody, chlamydia, herpes simplex virus type 2, and the hepatitis C antibody. Participants further reported lifetime gonorrhea, chlamydia, herpes, and genital warts diagnoses, as well as lifetime HIV testing.

Participants reported the number of days of poor mental health during the past 30 days (stress, depression, and emotional problems).

Participants reported whether they had consumed more than five alcoholic drinks in 1 day during the past year, whether they had smoked more than 100 cigarettes during their lifetime, current smoking status, and any prior drug use.

Statistical Analysis

All analyses were conducted using Stata, version 14.1. Weighted percentages and 95% CIs were calculated for sociodemographic characteristics, biologically assessed HIV/sexually transmitted infections (STIs), self-reported HIV/STI testing, and other psychological and behavioral health variables, separated by sexual orientation. Sample weights were assigned to achieve estimates that could approximate the entire sampling frame; weighting accounted for nonresponse, oversampling of specific subgroups, post-survey stratification, and sampling error.[12]

The GLB and other non-heterosexuals were initially compared with heterosexual participants on the weighted prevalence of each variable using chi-square test or one-way ANOVA, and then via multivariable logistic regression analyses to assess each health outcome, adjusting for sociodemographic variables. A 15-day cut off was applied for number of poor mental health days during the past month.[13] Poisson regressions were utilized for dependent variables with count data (number of drinking and heavy drinking days) because of skewed distributions. AORs and 95% CIs were reported for logistic regressions, and adjusted incidence rate ratios for Poisson regressions; heterosexuals served as the reference group for all models. All analyses were executed using the svy prefix command to incorporate the National Health and Nutrition Examination Survey sampling weights and account for the complex sampling design.

RESULTS

Table 1 presents weighted descriptive statistics and comparisons between heterosexuals, GLB participants, and other non-heterosexuals. Compared with heterosexuals, GLB participants were more likely to have completed college, less likely to be married, more likely to have been born in the U.S., more likely to be U.S. citizens, and more likely to earn < $20,000. Those who identified their sexuality as "something else" or "not sure" were less likely to have completed college, be employed, be married, have been U.S.-born, be U.S. citizens, and more likely to earn < $20,000 compared with heterosexuals.

Weighted prevalence estimates and group comparisons for HIV/STIs are presented in Table 2. Compared with heterosexuals, GLB participants were more likely to test HIV positive and to have ever been told they had STIs, chlamydia, and genital warts. Table 3 presents data from multivariable analyses with outcomes adjusted for age, education, employment, marital status, place of birth, citizenship status, and family income. GLB participants and other non-heterosexuals were both more likely to test HIV positive; GLB participants were also more likely to have previously tested positive for STIs, including gonorrhea.

In bivariate analyses, GLB participants reported the poorest mental health, followed by heterosexuals and other non-heterosexuals (Table 2). Similar patterns held for lifetime consumption of ≥100 cigarettes, current smoking, lifetime marijuana use, and cocaine/heroin/amphetamines (i.e., highest rates among GLB participants, lowest among other non-heterosexuals). In multi-variable analyses, GLB participants were more likely than heterosexuals to have experienced ≥15 days of poor mental health over the past 30 days. GLB participants were also more likely to have smoked ≥100 cigarettes in their lifetime; to

smoke currently; and to have used marijuana, cocaine, heroin, or methamphetamine; other non-heterosexuals were less likely than heterosexuals to report each of these outcomes.

DISCUSSION

This is one of the first studies using nationally representative survey data to analyze the health disparities associated with sexual minority status among Latinos. GLB Latinos report substantially worse sexual and behavioral health outcomes than their heterosexual counterparts. Disparities in mental health, smoking patterns, and illicit drug use are consistent with findings elsewhere in analysis of community or state-level data.[14–17] Smoking rates in this sample are higher than those documented in prior studies with sexual minorities and the general population.[18,19] Several factors potentially contribute to health disparities among GLB Latinos, including discrimination in care,[20,21] lack of access to appropriate care,[22] language barriers and documentation status,[23,24] and delayed general and HIV care due to stigma.[25,26]

Alarming health disparities found in this investigation indicate the need for targeted efforts. Screening GLB Latinos for HIV/STIs, mental health, tobacco use, and illicit drug use at each point of contact with health providers is highly recommended. These results also underscore the need for culturally appropriate interventions responsive to these and other relevant psychosocial conditions. Results highlight the importance of measuring outcomes by sexual orientation and support numerous calls to incorporate sexual orientation measures into both epidemiologic and intervention research.[27]

Limitations

There were several limitations to this study. This study only included adults aged 20–49 years for whom data on key variables were systematically collected (e.g., herpes simplex virus type 2). In regression analyses, wide CIs might suggest instability in effect sizes. Sample size concerns prohibited comparisons among subsets of GLB participants. In addition, this study relied solely on identity labels as a measure for sexual orientation.

CONCLUSIONS

The effects of sexual minority status among Latinos must be considered in addressing health disparities. These findings suggest that greater public health efforts are needed to enhance health, close research gaps, and eliminate disparities that disproportionately affect racial/ ethnic minorities, sexual minorities, and individuals who occupy both of these marginalized statuses.

Acknowledgments

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Table 1

Comparison of Heterosexual and Sexual Minority Latino Adults on Socioeconomic Variables: NHANES, 2001–2014

Participant characteristics	Raw % (not weighted)[a]				Weighted %[b]			
	Heterosexual (n=5,291)	GLB (n=153)	Other[c] (n=154)	p-value	Heterosexual (n=5,291)	GLB (n=153)	Other[c] (n=154)	p-value
Age,d years, M±SE	37.6±0.15	34.7±0.93	39.7±0.98	<0.001	36.4±0.19	33.6±0.91	39.8±1.33	<0.01
Gender				0.11				0.05
Male	2,599 (49.1)	79 (51.6)	63 (40.9)		53.0 (51.7, 54.2)	50.4 (42.0, 58.9)	41.6 (33.2, 50.6)	
Female	2,692 (50.9)	74 (48.4)	91 (59.1)		47.0 (45.8, 48.3)	49.6 (41.2, 58.0)	58.4 (49.4, 66.9)	
Highest education level				<0.001				<0.001
Less than high school	1,132 (27.5)	11 (8.6)	66 (58.9)		22.9 (20.7, 25.2)	6.5 (3.2, 12.6)	51.1 (41.2, 61.0)	
High school or GED	1,146 (27.8)	29 (22.7)	27 (24.1)		28.6 (26.8, 30.4)	23.4 (16.4, 32.0)	25.5 (17.8, 35.0)	
Some college	1,288 (31.3)	59 (46.1)	12 (10.7)		33.7 (31.3, 36.1)	49.5 (39.8, 59.2)	13.6 (7.0, 24.8)	
College or more	555 (13.5)	29 (22.7)	7 (6.3)		14.9 (13.4, 16.5)	20.7 (13.8, 30.0)	9.8 (4.2, 21.5)	
Employment				<0.01				<0.01
Employed	3,304 (72.8)	95 (71.4)	85 (60.3)		74.4 (72.6, 76.1)	72.5 (63.9, 79.7)	59.9 (49.4, 69.6)	
Unemployed	1,234 (27.2)	38 (28.6)	56 (39.7)		25.6 (23.9, 27.4)	27.5 (20.3, 36.1)	40.1 (30.4, 50.6)	
Marital status				<0.001				<0.001
Married	3,027 (57.2)	21 (13.7)	76 (49.4)		54.6 (52.5, 56.6)	11.5 (6.9, 18.6)	48.0 (39.2, 56.9)	
Widowed/divorced/ separated	648 (12.3)	20 (13.1)	27 (17.5)		11.8 (10.9, 12.7)	12.0 (7.2, 19.2)	18.5 (11.8, 27.7)	
Never married	987 (18.7)	90 (58.8)	37 (24.0)		21.4 (20.0, 22.9)	60.4 (49.9, 70.0)	25.8 (18.7, 34.6)	
Living with partner	627 (11.9)	22 (14.4)	14 (9.1)		12.3 (11.0, 13.8)	16.1 (10.1, 24.8)	7.7 (4.4, 13.4)	
Place of birth				<0.001				<0.001
Born in the U.S.	1,937 (36.6)	95 (62.1)	38 (24.7)		39.2 (35.1, 43.6)	59.8 (49.8, 69.0)	25.5 (16.7, 36.9)	
Born outside the U.S.	3,349 (63.4)	58 (37.9)	116 (75.3)		60.8 (56.4, 64.9)	40.2 (31.0, 50.2)	74.5 (63.1, 83.3)	
Citizenship status				<0.001				<0.001
Citizen	2,906 (55.2)	112 (73.7)	53 (34.6)		57.2 (53.7, 60.7)	74.1 (65.0, 81.6)	39.6 (29.2, 51.1)	
Not citizen	2,363 (44.9)	40 (26.3)	100 (65.4)		42.8 (39.3, 46.3)	25.9 (18.4, 35.0)	60.4 (48.9, 70.8)	
Family income				<0.001				<0.001

Participant characteristics	Raw % (not weighted)[a]				Weighted %[b]			
	Heterosexual (n=5,291)	GLB (n=153)	Other[c] (n=154)	p-value	Heterosexual (n=5,291)	GLB (n=153)	Other[c] (n=154)	p-value
< \$20,000	1,282 (25.7)	58 (39.7)	50 (34.5)		26.0 (23.7, 28.3)	41.5 (32.6, 51.1)	35.3 (25.8, 46.3)	
\$20,000	3,709 (74.3)	88 (60.3)	95 (65.5)		74.1 (71.7, 76.3)	58.5 (48.9, 67.4)	64.7 (53.7, 74.3)	
Survey year								0.45
2001–2002	776 (14.7)	20 (13.1)	28 (18.2)		13.7 (9.7, 19.1)	9.4 (5.2, 16.4)	17.1 (9.5, 28.9)	
2003–2004	553 (10.5)	16 (10.5)	21 (13.6)		11.7 (8.9, 15.2)	14.4 (8.3, 24.0)	16.4 (8.3, 30.0)	
2005–2006	696 (13.2)	13 (8.5)	21 (13.6)		12.1 (9.7, 15.0)	8.8 (4.8, 15.8)	11.8 (6.3, 21.1)	
2007–2008	964 (18.2)	35 (22.9)	24 (15.6)		14.7 (11.6, 18.5)	18.5 (13.9, 24.2)	13.6 (8.1, 22.0)	
2009–2010	981 (18.5)	30 (19.6)	30 (19.5)		14.8 (10.8, 20.0)	16.7 (9.7, 27.2)	15.7 (9.2, 25.6)	
2011–2012	569 (10.8)	19 (12.4)	17 (11.0)		15.2 (11.3, 20.1)	17.2 (10.2, 27.5)	15.2 (9.1, 24.2)	
2013–2014	752 (14.2)	20 (13.1)	13 (8.4)		17.8 (13.7, 22.8)	15.0 (9.8, 22.2)	10.2 (4.7, 20.7)	
Healthcare insurance				0.03				0.37
Yes	2,854 (54.2)	88 (57.5)	66 (43.7)		53.8 (51.3, 56.2)	56.1 (46.4, 65.4)	46.8 (35.7, 58.2)	
No	2,414 (45.8)	65 (42.5)	85 (56.3)		46.2 (43.8, 48.7)	43.9 (34.6, 53.6)	53.2 (41.8, 64.3)	
Regular provider				<0.01				0.24
Yes	3,654 (69.1)	110 (71.9)	89 (57.8)		67.7 (65.7, 69.7)	69.9 (60.9, 77.6)	60.9 (52.0, 69.2)	
No	1,637 (30.9)	73 (28.1)	65 (42.2)		32.3 (30.3, 34.4)	30.1 (22.4, 39.1)	39.1 (30.8, 48.1)	

Note: Boldface indicates statistical significance ($p<0.05$).

[a] Values in columns are n (%) unless otherwise indicated.

[b] Values in columns are % (95% CI) unless otherwise indicated.

[c] Self-identified as "something else" or "not sure."

[d] Age, adult aged 20–59 years.

GED, educational development test; GLB, gay, lesbian, or bisexual; NHANES, National Health and Nutrition Examination Survey.

Table 2

Comparison of Heterosexual and Sexual Minority Latino Adults on HIV and STIs, Mental Health, and Alcohol, Smoking, and Drug Use: NHANES, 2001–2004

Outcome measures	Raw % (not weighted)[a]				Weighted %[b]			
	Heterosexual (n=5,291)	GLB (n=153)	Other[c] (n=154)	p-value	Heterosexual (n=5,291)	GLB (n=153)	Other[c] (n=154)	p-value
HIV and STIs (biomarkers)								
HIV antibody (age 20–49 years)[d]	5 (0.1)	13 (9.4)	2 (1.6)	**< 0.001**	0.1 (<0.01, 0.5)	7.4 (4.1, 13.2)	2.0 (0.5, 8.0)	**< 0.001**
Urine chlamydia (2001–2008)[e,f]	57 (2.0)	3 (3.1)	1 (1.4)	0.70	2.1 (1.5, 2.7)	2.5 (0.8, 7.7)	1.2 (0.2, 8.2)	0.80
HSV-2 (age 20–49 years)[d]	698 (16.8)	34 (26.8)	18 (18.2)	**0.01**	16.1 (14.6, 17.8)	24.3 (16.7, 33.9)	21.3 (12.5, 33.8)	0.07
Hepatitis C antibody	46 (1.5)	2 (2.2)	0 (0.0)	0.44	1.5 (1.0, 2.1)	1.8 (0.4, 7.1)	0.0	0.56
STIs and HIV testing behavior (self-reported)								
Ever told you had STI	254 (5.3)	25 (17.1)	10 (8.9)	**< 0.001**	5.7 (5.1, 6.5)	15.4 (9.8, 23.2)	9.8 (4.5, 20.1)	**< 0.001**
Ever told you had gonorrhea	9 (0.2)	3 (2.1)	1 (0.9)	**< 0.001**	0.2 (< 0.01, 0.3)	1.9 (0.4, 8.2)	1.3 (0.2, 8.9)	**< 0.001**
Ever told you had chlamydia	39 (0.8)	4 (2.7)	4 (3.5)	**< 0.01**	0.9 (0.7, 1.2)	2.4 (0.8, 7.1)	4.1 (1.3, 12.1)	**< 0.01**
Ever told you genital herpes	114 (2.4)	9 (6.2)	3 (2.7)	**0.01**	2.7 (2.1, 3.3)	5.8 (2.7, 11.8)	3.6 (0.7, 15.6)	0.21
Ever told you had genital warts	122 (2.5)	13 (8.9)	3 (2.7)	**< 0.001**	2.6 (2.1, 3.1)	7.4 (4.4, 12.2)	2.1 (0.6, 7.0)	**< 0.001**
Ever tested for HIV	2,082 (39.8)	100 (65.8)	38 (24.8)	**< 0.001**	38.4 (36.4, 40.4)	61.5 (51.4, 70.7)	24.7 (16.9, 34.8)	**< 0.0001**
Mental health (self-reported)								
>15 days of poor mental health past 30 days (2001–2012)[e]	435 (9.6)	26 (19.6)	13 (9.2)	**< 0.01**	10.1 (8.8, 11.6)	17.6 (11.7, 25.7)	7.4 (3.7, 14.2)	**0.03**
Alcohol, smoking, and drug use (self-reported)								
No. of drinks per day in the past year, M±SD	4.0±0.06	4.23±0.35	3.97±0.38	0.80	4.08±0.10	4.07±0.31	3.84±0.35	0.79
Ever heavy alcohol user (5+/day, everyday)	678 (14.8)	27 (18.9)	17 (14.5)	0.40	14.7 (13.5, 15.9)	16.7 (11.1, 24.3)	12.5 (7.5, 20.2)	0.65
Smoked 100 cigarettes in life	1,963 (37.1)	86 (56.2)	49 (32.0)	**< 0.001**	37.5 (35.5, 39.5)	51.7 (41.7, 61.6)	28.6 (21.1, 37.4)	**< 0.01**
Current smoking status				**< 0.001**				**< 0.001**
Current smoker	988 (18.7)	55 (36.0)	30 (19.6)		19.6 (18.1, 21.3)	33.4 (25.6, 42.3)	17.3 (12.4, 23.5)	
Former smoker	975 (18.7)	31 (20.3)	19 (12.4)		17.8 (16.6, 19.1)	18.3 (12.6, 25.8)	11.3 (6.8, 18.2)	
Never smoker	3,325 (62.9)	67 (43.8)	104 (68.0)		62.5 (60.5, 64.5)	48.3 (38.4, 58.3)	71.4 (62.6, 78.9)	
Ever used marijuana or hashish (2005–2014)[b]	1,417 (35.9)	79 (67.5)	14 (13.6)	**< 0.001**	39.1 (36.7, 41.5)	68.7 (59.5, 76.6)	15.0 (8.5, 24.9)	**< 0.0001**

Outcome measures	Raw % (not weighted)[a]				Weighted %[b]			
	Heterosexual (*n*=5,291)	GLB (*n*=153)	Other[c] (*n*=154)	*p*-value	Heterosexual (*n*=5,291)	GLB (*n*=153)	Other[c] (*n*=154)	*p*-value
Ever used cocaine/heroin/methamphetamine (2005–2014)[e]	661 (16.8)	38 (32.8)	12 (11.5)	**< 0.001**	17.9 (16.5, 19.5)	31.3 (22.5, 41.7)	12.5 (7.2, 20.9)	**< 0.01**
Ever injected drugs (2005-2014)[e]	52 (1.3)	2 (1.7)	1 (1.0)	0.88	1.3 (1.0, 1.7)	1.6 (0.4, 6.8)	0.8 (0.1, 6.2)	0.86

Note: Boldface indicates statistical significance (*p*<0.05).

[a]Values in columns are *n* (%) unless otherwise indicated.

[b]Values in columns are % (95% CI) unless otherwise indicated.

[c]Self-identified as "something else" or "not sure."

[d]HIV antibody and HSV-2 were only assessed for individuals younger than 49 years.

[e]Data collected during the specified timeframe.

[f]Urine chlamydia were only assessed for individuals aged 20–39 years.

GLB, gay, lesbian, or bisexual; HSV-2, herpes simplex virus type 2; NHANES, National Health and Nutrition Examination Survey; STI, sexually transmitted infection.

Table 3

Adjusted Multiple Regressions to Examine Health Disparities Between Heterosexual and Sexual Minority Latino Adults: NHANES, 2001–2014

Outcome measures	GLB versus heterosexual (ref)		Other[a] versus heterosexual (ref)	
	AOR (95% CI)	p-value	AOR (95% CI)	p-value
HIV and STIs (biomarker)				
HIV antibody (age 20–49 years only)	46.75 (13.43, 162.76)	**<0.001**	14.86 (1.84, 120.02)	**0.01**
Urine chlamydia (age 20–39 years only)	0.68 (0.08, 5.70)	0.72	1.02 (0.14, 7.18)	0.99
HSV-2 (age 20–49 years only)	1.78 (0.99, 3.19)	**0.05**	1.57 (0.71, 3.44)	0.26
Hepatitis C antibody	0.77 (0.13, 4.68)	0.77	(omitted)	
STIs and HIV testing behaviors (self-reported)				
Ever told you had STI	3.53 (1.85, 6.74)	**<0.001**	1.92 (0.60, 6.14)	0.27
Ever told you had gonorrhea	15.70 (3.67, 67.05)	**<0.001**	(omitted)	
Ever told you had chlamydia	3.58 (0.72, 17.75)	0.12	2.73 (0.44, 16.77)	0.28
Ever told you had genital herpes	2.72 (1.08, 6.81)	**0.03**	1.93 (0.33, 11.15)	0.46
Ever told you had genital warts	2.91 (1.39, 6.10)	**<0.01**	1.19 (0.25, 5.53)	0.83
Ever tested for HIV	2.45 (1.39, 4.35)	**<0.01**	0.52 (0.26, 1.03)	0.06
Mental health (self-reported)				
>15 days of poor mental health past 30 days (2001–2012 only)	1.83 (1.05, 3.17)	**0.03**	0.69 (0.29, 1.63)	0.39
Alcohol, smoking, and drug use (self-reported)				
No. of drinks per day in the past year, mean-coefficient (AIRR)[b]	0.14 (−0.05, 0.33)	0.15	−0.12 (−0.33, 0.10)	0.28
Ever heavy alcohol user (5+/day, every day)	1.22 (0.63, 2.33)	0.55	0.66 (0.30, 1.43)	0.29
Smoked 100 cigarettes in life	1.69 (1.00, 2.88)	**0.05**	0.35 (0.20, 0.61)	**<0.001**
Current smoking status				
Current smoker	1.93 (1.10, 3.40)	**0.02**	0.42 (0.21, 0.85)	**0.02**
Former smoker	1.45 (0.74, 2.86)	0.28	0.29 (0.13, 0.62)	**<0.01**
Never smoker	(base)		(base)	
Ever used marijuana or hashish (2005–2014 only)	2.18 (1.17, 4.07)	**0.02**	0.26 (0.10, 0.64)	**<0.01**
Ever used cocaine/heroin/methamphetamine (2005–2014 only)	1.93 (1.00, 3.72)	**0.049**	0.37 (0.14, 0.95)	**0.04**
Ever injected drugs (2005–2014 only)	1.19 (0.18, 7.79)	0.85	1.44 (0.13, 15.35)	0.76

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Note: Boldface indicates statistical significance (*p*<0.05). Adjusted for age, gender, survey year, education, employment, marital status, place of birth, citizenship status, and family income. Data represented weighted results. A multinomial model was used for current smoking status, with "never smoker" as the base.

[a]Self-identified as "something else" or "not sure."

[b]AIRR based on Poisson regression.

AIRR, adjusted incidence rate ratio; GLB, gay, lesbian, or bisexual; HSV-2, herpes simplex virus type 2; NHANES, National Health and Nutrition Examination Survey; STI, sexually transmitted infection.

No financial disclosures were reported by the authors of this paper.