Health Inequalities Among Sexual Minority Adults:

Evidence from Ten U.S. States, 2010

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Abstract

Background—Improving the health of lesbian, gay, and bisexual (LGB) individuals is a Healthy People 2020 goal; however, the IOM highlighted the paucity of information currently available about LGB populations.

Purpose—To compare health indicators by gender and sexual orientation statuses.

Methods—Data are from Behavioral Risk Factor Surveillance System surveys conducted January–December of 2010 with population-based samples of non-institutionalized U.S. adults aged over 18 years (*N*=93,414) in ten states that asked about respondents' sexual orientation (response rates=41.1%–65.6%). Analyses were stratified by gender and sexual orientation to compare indicators of mental health, physical health, risk behaviors, preventive health behaviors, screening tests, health care utilization, and medical diagnoses. Analyses were conducted in March 2013.

Results—Overall, 2.4% (95% CI=2.2, 2.7) of the sample identified as LGB. All sexual minority groups were more likely to be current smokers than their heterosexual peers. Compared with heterosexual women, lesbian women had over 30% decreased odds of having an annual routine physical exam, and bisexual women had over 2.5 times the odds of not seeking medical care owing to cost. Compared with heterosexual men, gay men were less likely to be overweight or obese, and bisexual men were twice as likely to report a lifetime asthma diagnosis.

Conclusions—This study represents one of the largest samples of LGB adults and finds important health inequalities, including that bisexual women bear particularly high burdens of

health disparities. Further work is needed to identify causes of and intervention for these disparities.

Introduction

Over 9 million U.S. adults self-identify as lesbian, gay, bisexual, or transgender (LGBT).[1] While health surveillance for transgender people remains scarce,[2] accumulating evidence shows that LGB individuals experience several health disparities relative to their heterosexual peers, including a higher prevalence of smoking,[3] asthma,[4] poor mental health,[5,6] and self-directed violence.[6] However, population-based information about LGB individuals is limited for several reasons, including the omission of sexual orientation in most state/federal U.S. health surveillance programs. While a few state surveillance reports include LGB populations, these have limited generalizability beyond the individual state, and small sample sizes often require data aggregation across multiple years.

Conron and colleagues[4] pooled Massachusetts Behavioral Risk Factor Surveillance System (BRFSS) data from 2001 to 2008. Their findings corroborated several LGB health disparities (e.g., smoking, asthma, and weight) and highlighted underexplored areas of potential inequalities (e.g., cardiovascular disease [CVD] risk). By comparing lesbian/gay and bisexual groups separately with their heterosexual peers, several divergent patterns of disparities were noted. For instance, some indicators (e.g., smoking) were consistently elevated across both lesbian/gay and bisexual individuals while other indicators were not, such as reduced health care access among bisexual persons but not among lesbian/gay persons. In 4 years of pooled BRFSS data from Washington State, Dilley and colleagues[7] noted a higher prevalence of smoking among LGB respondents and found that lesbian women and bisexual individuals had less health care coverage.

There are compelling needs for larger and more diverse probability-based studies of LGB populations. For example, both previous BRFSS studies used data aggregated over several years from single states, Massachusetts and Washington, which may be more accepting toward LGB individuals.[8] Thus, it is unclear whether these results would generalize to the U.S. adult population. A multi-state approach for examining LGB disparities would greatly improve estimates of LGB disparities and indicate progress toward the Healthy People 2020 goal to improve health among LGBT populations.[9] The CDC's BRFSS is currently the largest federally funded population-based survey.[10] Although the national BRFSS has never assessed sexual orientation, 12 U.S. states elected to include sexual identity in their 2010 individual BRFSS surveys. This report compares key health indicators for LGB and heterosexual respondents using 2010 BRFSS data pooled from states that assessed sexual identity.

Methods

Survey Data

Individual health departments in all U.S. states, territories, and the District of Columbia administer the BRFSS through computer-assisted telephone interviews with probability-based samples of non-institutionalized adults aged 18 years. The CDC creates an annual

core survey for all BRFSS samples, and aggregates individual BRFSS datasets to create a national dataset with survey weights to adjust for the complex sampling design. Further information about the 2010 BRFSS (N=451,075) is available from the CDC.[11]

In 2010, 12 states added sexual orientation to their BRFSS surveys. Two states' data (Colorado and Oregon) were unavailable at the time of analysis. This analysis uses data from the remaining ten states (Alaska, Arizona, California, Maine, Massachusetts, Montana, New Mexico, North Dakota, Washington, and Wisconsin), yielding a sample of 93,414 adults who were asked about their sexual orientation. Since the analyses focused on self-identified sexual orientation, persons indicating *other* sexual orientation (n=859), *don't know* (n=873), and *refusal* (n=2005) were excluded. Although core survey items were worded and administered identically across all samples, there was slight variation among the ten states in their assessment of sexual identity. Table 1 details the measures used, sample sizes, and response rates for the ten states.

Since sexual orientation is not in the CDC's core survey, such data are not included in the publically available national BRFSS dataset. Several steps were taken to merge state-level sexual orientation data with the national BRFSS dataset. First, individual state BRFSS datasets were obtained from the ten states. Second, each unique, de-identified observation from each state dataset was matched to its unique, de-identified observation in the national dataset using two variables (state and sequence number). Once the observations were matched, sexual orientation data from each state were added into the national BRFSS dataset for all respondents in the ten states. Adding sexual orientation data into the national BRFSS dataset facilitated use of the survey weights created by CDC.

Variables

Wording for all survey items are available from the CDC.[10] Demographic information included gender (female/male), age (in years), and race/ethnicity (non-Hispanic white, non-Hispanic African American/black, non-Hispanic multiple/other race, and Hispanic). Military service history was defined by current or previous active duty or service in the Reserves or the National Guard. Sexual orientation groups were categorized as gay/lesbian, bisexual, and heterosexual. Self-defined current marital status was married, unmarried couple, formerly married (i.e., divorced, separated, or widowed), or never married. Educational attainment was categorized into high school diploma or lower, some college, or college degree or higher. Annual household income was categorized as less than $25,000, between $25,000 and $50,000, and over $50,000. BRFSS questions were classified into seven categories of health indicators related to areas of attention in the Healthy People 2020 report.[9] *Mental health indicators* included availability of social/emotional support (always/usually versus sometimes/rarely/never), satisfaction with life (very satisfied/satisfied versus dissatisfied/very dissatisfied), mental distress defined using the Frequent Mental Distress (FMD)-6 scale (<6 days/last 30 days in which mental health was not good),[12] and poor sleep (14 days of inadequate rest or sleep in the past 30 days).[13] *Physical health indicators* included self-rated health status (excellent/very good/good versus fair/poor), reporting 14 days in the last 30 days in which physical health was not good, limitations of activities due to physical, mental,

or emotional problems (yes/no), and whether the respondent had a health problem requiring use of special equipment.

Health risk indicators included being overweight (BMI 25) or obese (BMI>30), current smoking (i.e., smoked at least 100 cigarettes in lifetime and currently smokes some days or every day), smokeless tobacco use (every day/some days versus not at all), binge drinking (>five drinks on one occasion for men and four drinks on one occasion for women), and drinking and driving at least once in the past 30 days (yes/no). Respondents aged <65 years indicated any one of four behaviors related to HIV risk in the past year (i.e., intravenous drug use, being treated for a sexually transmitted or venereal disease, given or received money or drugs in exchange for sex, or had anal sex without a condom). Respondents answered yes or no to engaging in any of these behaviors without identifying how many or specific behaviors.

Preventive health indicators included seatbelt use (always versus nearly always/ sometimes/seldom/never), exercise in the past 30 days (yes/no), and a flu shot in the past year. *Screening tests* included ever having an HIV test (respondents aged <65 years), colorectal cancer screening (respondents aged 50 years), ever having a mammogram, clinical breast exam, and Papanicolaou test (all women), and ever having a digital rectal exam or a prostate-specific antigen (PSA) test (men aged 40 years).

Health care utilization indicators included having any form of health care coverage and past 12 months, prevalence of not seeking medical care owing to the cost of care, having a routine physical exam, and having a dental visit. *Medical diagnosis indictors* included being told by a health care professional that the respondent had diabetes, asthma, symptoms of CVD (i.e., heart attack, angina/coronary heart disease, or stroke), or prostate cancer (men aged 40 years).

Analyses

Group differences by sexual identity were stratified by gender and assessed using chi-square tests for categorical variables and Wald tests for age. For statistically significant bivariate differences ($p<0.05$), multiple logistic regression models were used to assess the association of sexual identity while adjusting for age, race/ethnicity, education, and income. ORs are presented with 95% CIs. Missing data were handled using listwise deletion. All analyses were conducted using Stata/SE 12 and weighted to adjust for complex sampling design to create estimates representative of the states' populations. The institutional review board at the University of Rochester deemed this project exempt from review. Analyses were conducted in March 2013.

Results

The weighted prevalence of LGB identity across the ten-state sample was 2.4% (95% CI=2.2, 2.7). Compared with respondents who indicated either LGB or heterosexual identities, those who indicated *other*, *don't know*, or *refusal* were older. The *don't know* and *other* groups had lower educational attainment. Higher proportions of Hispanic respondents

indicated *don't know* and *refusal*.[14] No gender differences were observed among the groups. (data not shown).

Demographics

Lesbian women were younger (mean=43.1 years) than heterosexual women (mean=47.3 years) but older than bisexual women (mean=35.1 years). Larger proportions of lesbian women than bisexual or heterosexual women indicated military service, higher levels of education, and current employment (Table 2). Bisexual women were also younger than heterosexual women, but were less likely to be currently employed and had lower levels of educational attainment and annual household income. Bisexual women also had lower income than lesbian women. Significantly lower proportions of lesbian and bisexual women reported being currently married compared to heterosexual women.

Gay men were less racially and ethnically diverse and less likely to be married than bisexual and heterosexual men. Gay men were less likely to indicate military service than heterosexual men. More bisexual than heterosexual men reported lower educational attainment, and bisexual men were also less likely to be married, currently employed, and have higher annual household income than heterosexual men. Although gay and heterosexual men did not differ in education or employment, gay men had higher educational attainment and annual household income than bisexual men.

Health Indicators Among Women

Lesbian women did not differ from heterosexual women in mental health or preventive health behaviors (Table 3). Although bisexual women differed from heterosexual women in mental health and preventive health in unadjusted comparisons, these differences were attenuated after adjusting for demographic characteristics. However, several differences persisted after covariate adjustment. For example, bisexual women were more likely than heterosexual women to report activity limitations due to physical, mental, or emotional problems (OR=2.15, 95% CI=1.46, 3.18). Lesbian women had nearly twice the odds of being a current smoker compared to heterosexual women (OR=1.91, 95% CI=1.26, 2.91), and bisexual women had greater than twice the odds of current smoking (OR=2.13, 95% CI=1.33, 3.42). Binge drinking and drinking and driving were also significantly more prevalent among lesbian and bisexual women, and bisexual women had higher odds of smokeless tobacco use and HIV-related risk behaviors than heterosexual women. Lesbian women had over 30% lower odds than heterosexual women of having a routine physical exam in the past 12 months, and bisexual women had over 2.5 times the odds of heterosexual women in not seeking medical care owing to cost. Both lesbian and bisexual women were more likely to report a lifetime asthma diagnosis than their heterosexual peers.

Compared to lesbian women, bisexual women were more likely to report smokeless tobacco use; however, because of the low frequency, this estimate was unstable and should be viewed with caution. Bisexual women were more than twice as likely as lesbian women to not seek healthcare owing to cost (Table 5).

Health Indicators Among Men

After controlling for demographic factors, both gay and bisexual men had higher odds of mental distress than heterosexual men (OR=1.78, 95% CI=1.18, 2.69 and OR=2.85, 95% CI=1.64, 4.95, respectively), and both groups had over twice the odds of reporting life dissatisfaction (Table 4). Activity limitations due to physical, mental, or emotional problems were also significantly more common among gay and bisexual men than heterosexual men. Both gay and bisexual men had nearly twice the odds of being current smokers than heterosexual men. Gay men did not differ from heterosexual men in healthcare utilization or medical diagnoses; however, bisexual men were twice as likely to report a lifetime asthma diagnosis than heterosexual men. Three positive health findings emerged among gay men: they were less likely to be overweight or obese, more likely to have had a flu vaccine, and more likely to undergo HIV testing than their heterosexual peers. HIV testing was also significantly more prevalent among bisexual men than heterosexual men.

Compared with gay men, bisexual men were nearly 60% less likely to have ever had an HIV test, and they were more than twice as likely to report activity limitations and frequent mental distress (Table 6).

Discussion

Overall, these findings show a pattern of disparities in general health, mental health, activity limitations owing to health, and substance abuse (i.e., tobacco and alcohol) that corroborate those reported by Conron et al.[4] and Dilley et al.[7] For instance, higher smoking prevalence is among the most consistently identified health risk disparities for sexual minority individuals,[3] and we replicated this finding after disaggregating gender and sexuality. The results also confirmed findings about lower prevalence of overweight/obesity among gay men[4,15,16] and higher prevalence of binge drinking among lesbian and bisexual women.[17,18]

Several findings, however, differed from previous research. Most notably, there were no significant differences in the odds of mental distress between lesbian and heterosexual women, whereas Dilley et al. [7] noted that lesbians in their BRFSS sample were more likely to report mental distress than heterosexual women. Post-hoc analyses were conducted to examine whether these dissimilar findings may be due to different operationalization of mental distress (i.e., 6 days versus 10 days in the last 30 days) or different covariate adjustment in multivariable models. Post-hoc results revealed that when using the measure of >6 days of mental distress and adjusting only for age and education as in the study of Dilley et al.,[7] the odds of distress was significantly higher among lesbian (OR=1.50, 95% CI=1.02, 2.19) and bisexual women (OR=1.79, 95% CI=1.17, 2.73) that that of heterosexual women. The post hoc results suggest that in the present sample, racial/ethnic identity and income contributed significantly to explain poor mental health above and beyond sexual identity. The post hoc results also reinforce that model specification is a key consideration in health disparity surveillance. Future study is needed to explore gender differences in mental health disparities and sociodemographic characteristics, as disparities among men in this sample persisted in fully adjusted models.

Additionally, findings were mixed regarding BMI among lesbian women. In this sample, lesbians were no more likely to be obese than heterosexual women, unlike previous findings from the Massachusetts BRFSS data.[4] However, Conron et al.[4] did not identify differences in overweight status between lesbian and heterosexual women, which the present findings corroborated. In contrast to both the present findings and those of Conron et al.,[4] Dilley and colleagues[7] found that lesbian women were more likely to be overweight than heterosexual women in the Washington state BRFSS, but their analysis did not separate obesity from overweight. Although many studies identified disparities in overweight and obesity, the evidence is equivocal.[19] As more population-based data about LGB people become available, replicable analyses are essential for direct comparison to assess convergence of findings.

Research with large samples that permits disentangling lesbian/gay and bisexual groups shows significantly different outcomes than aggregated analysis.[20–23] Our results further reinforce the importance of disaggregation not only of lesbian/gay and bisexual groups in analyses, but also of gender. In our sample, bisexual women had the greatest number of differences when compared with their heterosexual peers, and had they been combined with lesbian women, the findings for lesbian women would have been altered. For example, bisexual women had a higher prevalence of activity limitations than heterosexual women (32.9% versus 20.6%, respectively), but lesbian women (23.9%) did not differ from heterosexual women in this regard. Zinik[24] proposed that bisexual persons may experience enhanced stress from having to hide the lesbian/gay aspects of their lives from their heterosexual peers and their heterosexual aspects from their lesbian/gay peers—a phenomenon deemed a "double closet." Other studies note the possibility of specific disparities for bisexual individuals.[25,26] Further research is needed to confirm differences in and etiology of health disparities among lesbian/gay and bisexual groups.

Although sexual minority status was associated with poorer outcomes, there is no theoretical reason that sexual minority status, itself, *causes* disparity. Rather, it is likely a combination of social factors known to impact health, such as discrimination, childhood adversity, and stigma—all of which disproportionately affect sexual minority populations.[27–31] The minority stress model posits that negative experiences (e.g., stigma) projected onto minority groups negatively influences their health by causing elevated distress.[5] Several innovative studies have found evidence supporting a link between social environmental factors and sexual minority health.[31–33] Unfortunately, the BRFSS does not include measures that gauge these constructs or experiences. Further research is needed to explicate the mechanisms of these disparities[34] and develop measures operationalizing constructs of social stress, social context, and discrimination specific to sexual minority individuals.

Limitations

These results must be viewed in light of several limitations. First, as summarized in Table 1, there were slight variations in the sexual orientation items, and it is unclear if these nuances may have resulted in differential disclosure of sexual identity. Second, the sample included only ten states and was missing states from the U.S. South, thus results should not be interpreted as nationally representative. Third, although the LGB sample in this analysis is

large when compared with previous LGB studies, it is still relatively small in the midst of the pooled sample, which may have hampered statistical power. Fourth, some survey measures (e.g., mental distress) are crude and cannot identify specific mental health problems (e.g., depression), and the age limits on questions (e.g., only persons aged <65 years answered HIV risk items) may result in underestimates for certain groups. Fifth, the survey gathered one dimension of sexual orientation (identity), and results may differ with other dimensions of sexual orientation (i.e., attraction or behavior).

Conclusions

By aggregating state/federal health surveillance across a wide geographic area, this study significantly improves upon previous smaller, single-state estimates of LGB health indicators. To fulfill the IOM's call for information about the health and wellbeing of LGBT populations, state/federal health surveillance should add and maintain standard items both on sexual orientation and gender identity/expression.[35] The latter is particularly important, as information about transgender populations is extremely limited.[36] Most studies on LGBT populations have focused on risk behaviors (e.g., smoking) and conditions (e.g., chronic stress), but very little is known about relative burdens of morbidity and mortality.

Acknowledgments

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Table 1

State Behavioral Risk Factor Surveillance System survey characteristics, 2010

	n	Response rate (%)	Sexual identity Question	Response options
Alaska	1,936	65.6	Now I'm going to ask you a question about sexual orientation. Do you consider yourself to be:	Heterosexual or straight; Homosexual, gay, or lesbian; Bisexual; Something else
Arizona	5,756	41.1	Now I'm going to ask you a question about sexual orientation. Do you consider yourself to be:	Heterosexual, that is, straight; Homosexual, that is, gay or lesbian; Bisexual; Other
California	17,778	42.7	Now I'm going to ask you a question about sexual orientation. Remember, your answers are confidential and you don't have to answer any question you don't want to. Do you consider yourself to be:	Heterosexual, that is, straight; Homosexual, that is, gay or lesbian; Bisexual; Other (specify)
Maine	8,132	58.3	Now I'll read a list of terms people sometimes use to describe themselves—heterosexual or straight; homosexual, gay, or lesbian; and bisexual. As I read the list again, please stop me when I get to the term that best describes how you think of yourself:	Heterosexual or straight; Homosexual, gay, or lesbian; Bisexual; Other
Massachusetts	16,311	47.5	Do you consider yourself to be:	Heterosexual or straight; Homosexual, gay, or lesbian; Bisexual; Other
Montana	7,304	65.4	Now I'm going to ask you a question about sexual orientation. Do you consider yourself to be:	Heterosexual or straight; Homosexual, gay, or lesbian; Bisexual; Something else/ other
New Mexico	6,997	61.1	Do you consider yourself to be one or more of the following: (Say the letter so that they can respond by letter)	Straight; Gay or lesbian; Bisexual; Transgender; Other (specify)
North Dakota	4,763	58.7	Now I'll read a list of terms people sometimes use to describe themselves—heterosexual or straight; homosexual, gay, lesbian; and bisexual. As I read the list again, please stop me when I get to the term that best describes how you think of yourself:	Heterosexual or straight; Homosexual, gay, or lesbian; Bisexual
Washington	19,628	47.5	Now I'm going to ask you a question about sexual orientation. Do you consider yourself to be:	Heterosexual or straight; Homosexual, gay, or lesbian; Bisexual; Other
Wisconsin	4,781	57.8	Do you consider yourself to be heterosexual, attracted to people of the opposite sex; gay [lesbian], attracted to people of the same sex; or bisexual, attracted to people of both sexes?	Heterosexual; Gay or lesbian; Bisexual; Other

Table 2

Demographics by gender and sexual identity, ten states' BRFSS surveys, 2010[a]

	Women						Men					
	Lesbian n=615		Bisexual n=451		Heterosexual n=51,639		Gay n=654		Bisexual n=232		Heterosexual n=33,238	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Military service	47	(6.6)*†	8	(1.5)	896	(1.5)	111	(10.8)*	72	(14.3)	10,811	(18.4)
Race/ethnicity[b]												
White	512	(70.8)	339	(61.1)	40,978	(61.4)	541	(72.9)*†	162	(56.5)	26,544	(59.8)
African American/black	17	(4.3)	16	(5.5)	1,338	(3.6)	19	(3.7)	10	(3.8)	734	(3.4)
Multiple/other Race	31	(9.0)	43	(9.3)	3,247	(8.7)	40	(5.9)	29	(19.4)	2,326	(10.6)
Hispanic	53	(15.9)	47	(24.0)	5,746	(26.3)	46	(17.5)	24	(20.2)	3,280	(26.2)
Marital Status												
Married	126	(24.1)*†	129	(27.9)*	26,856	(58.5)	90	(14.0)*†	79	(27.7)*	21,199	(63.0)
Formerly married	125	(13.6)	139	(17.5)	18,167	(20.6)	74	(6.9)	62	(20.8)	6,749	(10.1)
Never married	166	(28.4)	135	(42.5)	5,223	(16.0)	364	(52.1)	78	(39.2)	4,366	(22.2)
Unmarried couple	196	(33.8)	47	(12.0)	1,233	(4.9)	124	(26.9)	13	(12.2)	837	(4.7)
Educational attainment												
High diploma or lower	97	(18.7)*†	153	(40.3)*	17,823	(36.3)	101	(23.5)*†	101	(48.6)*	11,259	(38.3)
Some college	160	(30.4)	144	(38.6)	15,231	(27.1)	148	(22.3)	52	(28.2)	8,502	(24.3)
College degree or higher	358	(50.9)	154	(21.1)	18,481	(36.6)	404	(54.1)	79	(23.3)	13,410	(37.4)
Employment status												
Employed	379	(64.0)*†	216	(45.5)*	23,840	(49.3)	374	(60.8)†	102	(40.7)*	18,495	(64.4)
Unemployed	47	(11.6)	47	(15.2)	2,940	(8.0)	61	(14.2)	24	(16.7)	2,492	(11.0)
Not in workforce	189	(24.3)	185	(39.4)	24,704	(42.7)	215	(24.9)	106	(42.6)	12,148	(24.6)
Annual household Income												
<$25,000	157	(27.8)†	172	(45.5)*	14,138	(30.9)	168	(23.7)†	76	(36.5)*	7,059	(25.4)
$25,000–$50,000	134	(18.9)	114	(22.4)	12,575	(23.6)	143	(19.8)	56	(31.2)	8,109	(22.4)
>$50,000	294	(53.3)	119	(32.1)	18,506	(45.5)	300	(56.5)	83	(32.2)	15,363	(52.2)
Age (M, SE)	43.1	(1.33)*†	35.1	(1.41)*	47.3	(0.16)	42.7	(1.22)	41.9	(2.08)	45.1	(0.19)

Note: Frequencies are unweighted; Ms, SEs, and percentages are weighted.

[a] Surveys from Alaska, Arizona, California, Maine, Massachusetts, Montana, New Mexico, North Dakota, Washington, and Wisconsin

[b] Racial groups are non-Hispanic.

* $p<0.05$ compared to heterosexual group (e.g., lesbian versus heterosexual women; bisexual women versus heterosexual women).

† $p<0.05$ when comparing lesbian/gay and bisexual groups (i.e., lesbian versus bisexual women; gay versus bisexual men).

BRFSS, Behavioral Risk Factor Surveillance System

Table 3

Health indicators among women by sexual identity, ten states' BRFSS surveys, 2010

	Lesbian women			Bisexual women			Heterosexual women	
	(%)	(SE)	AOR (95% CI)c	%	(SE)	AOR (95% CI)c	(%)	(SE)
Mental health								
Social/emotional support	84.4	(0.028)	–	78.8	(0.032)	–	81.7	(0.004)
Mental distress (FMD-6)a	24.1	(0.035)	–	32.3	(0.046)*	1.51 (0.93, 2.46)	18.5	(0.003)
14 days poor sleepa	32.1	(0.037)	–	43.3	(0.051)*	1.56 (0.99, 2.47)	26.5	(0.004)
Dissatisfied with life	7.1	(0.017)		9.6	(0.020)*	1.47 (0.87, 2.47)	4.9	(0.002)
Physical health								
Fair/poor health status	11.4	(0.020)*	0.97 (0.61, 1.53)	20.0	(0.032)	–	16.7	(0.003)
14 days poor physical healtha	8.3	(0.017)	–	11.1	(0.022)	–	8.7	(0.002)
Activity limitations	23.9	(0.028)	–	32.9	(0.041)*	2.15 (1.46, 3.18)*	20.6	(0.003)
Use equipment for disability	8.3	(0.018)	–	10.4	(0.022)	–	7.5	(0.002)
Health risk indicators								
Overweight	34.0	(0.036)	–	36.3	(0.054)	–	29.9	(0.004)
Obese	26.7	(0.031)	–	24.7	(0.035)	–	24.4	(0.004)
Current smoker	19.1	(0.031)*	1.91 (1.26, 2.91)*	29.7	(0.045)*	2.13 (1.33, 3.42)*	11.7	(0.003)
Smokeless tobacco user	0.6	(0.003)	–	4.1	(0.018)*	6.10 (2.23, 16.73)*	0.5	(0.001)
Drinking and drivinga	4.2	(0.014)*	2.45 (1.18, 5.08)*	10.4	(0.060)*	4.76 (1.46, 15.54)*	1.9	(0.002)
Binge drinkinga	20.2	(0.033)*	1.64 (1.04, 2.61)*	20.9	(0.045)*	1.71 (1.02, 2.87)*	10.5	(0.003)
HIV riskb	4.2	(0.022)	–	13.7	(0.029)*	2.81 (1.50, 5.26)*	2.9	(0.002)
Preventive health behaviors								
Always use seatbelt	91.9	(0.018)	–	89.0	(0.024)	–	92.7	(0.002)
Exercisea	81.6	(0.033)	–	81.8	(0.033)	–	78.3	(0.004)
Flu vaccineb	36.2	(0.035)	–	28.5	(0.039)*	0.82 (0.53, 1.27)	41.2	(0.004)
Screening tests								
Colorectal cancer screening	59.3	(0.044)	–	63.8	(0.057)	–	65.9	(0.005)

	Lesbian women			Bisexual women			Heterosexual women	
	(%)	(SE)	AOR (95% CI)c	%	(SE)	AOR (95% CI)c	(%)	(SE)
Breast cancer screening (MMG)	58.6	(0.043)	–	41.5	(0.045)*	1.46 (0.88, 2.40)	65.1	(0.005)
Breast cancer screening (CBE)	89.8	(0.028)	–	78.9	(0.041)*	0.69 (0.37, 1.29)	88.9	(0.003)
Cervical cancer screening	91.5	(0.026)	–	80.0	(0.056)*	0.53 (0.25, 1.13)	93.1	(0.003)
HIV test	50.9	(0.042)	–	62.7	(0.056)*	1.59 (0.90, 2.81)	43.7	(0.005)
Health care utilization								
Health care plan	84.9	(0.034)	–	74.3	(0.051)*	0.70 (0.41, 1.21)	86.7	(0.003)
Did not seek care owing to cost b	18.3	(0.033)	–	39.7	(0.053)*	2.65 (1.62, 4.32)*	15.2	(0.003)
Routine checkup b	60.7	(0.041)*	0.69 (0.48, 0.98)*	62.1	(0.047)*	0.88 (0.55, 1.39)	71.4	(0.004)
Dental visit b	72.9	(0.036)	–	64.2	(0.052)	–	72.3	(0.004)
Medical diagnoses								
Diabetes	6.8	(0.016)	–	6.1	(0.016)*	0.75 (0.44, 1.29)	10.2	(0.002)
CVD symptoms	5.0	(0.012)	–	7.0	(0.024)	–	5.8	(0.002)
Asthma	22.2	(0.031)*	1.50 (1.04, 2.16)*	26.4	(0.042)*	1.68 (1.07, 2.63)*	15.3	(0.003)

Note: Percentages and SEs are weighted.

[a] Past month/30 days.

[b] Past year/12 months.

[c] Multiple logistic regression models adjusted for age, race/ethnicity, education, and income; heterosexual is reference group.

*
p<0.05 compared to heterosexual group.

BRFSS, Behavioral Risk Factor Surveillance System; FMD, frequent mental distress; MMG, mammogram; CBE, clinical breast exam; CVD, cardiovascular disease

Table 4

Health indicators among men by sexual identity, ten states' BRFSS surveys, 2010

	Gay men			Bisexual men			Heterosexual men	
	%	(SE)	AOR (95% CI)[c]	%	(SE)	AOR (95% CI)[c]	%	(SE)
Mental health								
Social/emotional support	75.8	(0.035)	–	72.1	(0.047)	–	79.7	(0.005)
Mental distress (FMD-6)[a]	20.7	(0.030)*	1.78 (1.18, 2.69)*	35.0	(0.061)*	2.85 (1.64, 4.95)*	13.7	(0.004)
14 days poor sleep[a]	23.9	(0.034)	–	30.7	(0.059)	–	23.3	(0.005)
Dissatisfied with life	12.5	(0.031)*	2.84 (1.51, 5.34)*	14.4	(0.039)*	2.09 (1.00, 4.35)	5.2	(0.003)
Physical health								
Fair/poor health status	12.6	(0.024)	–	15.8	(0.035)	–	15.0	(0.004)
14 days poor physical health[a]	7.6	(0.018)	–	6.8	(0.018)	–	7.1	(0.002)
Activity limitations	24.2	(0.030)*	1.45 (1.04, 2.04)*	41.3	(0.059)*	3.10 (1.66, 5.77)*	18.3	(0.004)
Use equipment for disability	6.4	(0.012)	–	6.2	(0.021)	–	6.4	(0.002)
Health risk indicators								
Overweight	34.3	(0.036)*	0.65 (0.47, 0.92)*	34.8	(0.052)	–	44.2	(0.006)
Obese	18.3	(0.027)*	0.64 (0.44, 0.93)*	22.5	(0.045)	–	25.8	(0.005)
Current smoker	22.9	(0.034)*	1.93 (1.27, 2.93)*	33.3	(0.058)*	1.92 (1.04, 3.53)*	15.8	(0.004)
Smokeless tobacco user	3.0	(0.030)	–	7.2	(0.031)	–	4.1	(0.002)
Drinking and driving[a]	7.8	(0.031)	–	10.6	(0.064)	–	5.0	(0.003)
Binge drinking[a]	26.9	(0.040)	–	30.7	(0.061)	–	22.1	(0.005)
HIV risk[b]	28.5	(0.041)*	18.37 (10.85, 31.09)*	17.6	(0.045)*	6.98 (3.24, 15.01)*	2.7	(0.002)
Preventive health behaviors								
Always use seatbelt	91.0	(0.024)	–	78.9	(0.050)	–	86.2	(0.004)
Exercise[a]	81.8	(0.028)	–	87.9	(0.031)	–	81.4	(0.004)
Flu vaccine[b]	44.6	(0.037)*	1.75 (1.30, 2.37)*	37.3	(0.052)	–	33.5	(0.005)
Screening tests								
Colorectal cancer screening	72.8	(0.036)*	1.72 (1.17, 2.51)*	74.4	(0.062)	–	64.2	(0.007)

	Gay men			Bisexual men			Heterosexual men	
	%	(SE)	AOR (95% CI)[c]	%	(SE)	AOR (95% CI)[c]	%	(SE)
Prostate cancer screening (PSA)	55.3	(0.038)	–	50.6	(0.060)	–	59.8	(0.006)
Prostate cancer screening (DRE)	76.8	(0.033)	–	70.8	(0.057)	–	73.7	(0.006)
HIV test	81.7	(0.037)*	8.19 (4.79, 13.98)*	59.9	(0.067)*	2.94 (1.63, 5.29)*	35.3	(0.006)
Health care utilization								
Health care plan	83.1	(0.033)	–	70.6	(0.058)*	0.60 (0.30, 1.17)	83.5	(0.005)
Did not seek care owing to cost[b]	11.2	(0.023)	–	21.2	(0.046)*	1.28 (0.65, 2.50)	12.8	(0.004)
Routine checkup[b]	62.6	(0.039)	–	55.5	(0.058)	–	59.2	(0.006)
Dental visit[b]	74.2	(0.034)	–	56.2	(0.059)	–	(67.4)	(0.005)
Medical diagnoses								
Diabetes	6.4	(0.011)	–	5.1	(0.017)	–	8.2	(0.003)
CVD symptoms	6.8	(0.011)	–	14.5	(0.045)*	2.47 (0.89, 6.87)	7.5	(0.002)
Asthma	16.1	(0.028)	–	21.3	(0.054)*	2.07 (1.11, 3.86)*	11.8	(0.003)
Prostate cancer	3.4	(0.009)	–	7.8	(0.034)	–	4.3	(0.002)

Note: Percentages and SEs are weighted.

[a] Past month/30 days.

[b] Past year/12 months.

[c] Multiple logistic regression models adjusted for age, race/ethnicity, education, and income; heterosexual is reference group.

*
 p<0.05 compared to heterosexual group.

BRFSS, Behavioral Risk Factor Surveillance System; FMD, frequent mental distress; PSA, prostate-specific antigen test; DRE, digital rectal exam; CVD, cardiovascular disease

Table 5

Health indicators among lesbian and bisexual women, ten states' BRFSS surveys, 2010

	Lesbian women		Bisexual women			
	(%)	(SE)	%	(SE)	p	AOR (95% CI)[c]
Mental health						
Social/emotional support	84.4	(0.028)	78.8	(0.032)	–	–
Mental distress (FMD-6)[a]	24.1	(0.035)	32.3	(0.046)	–	–
14 days poor sleep[a]	32.1	(0.037)	43.3	(0.051)	–	–
Dissatisfied with life	7.1	(0.017)	9.6	(0.020)	–	–
Physical health						
Fair/poor health status	11.4	(0.020)	20.0	(0.032)	0.016	1.82 (0.97, 3.41)
14 days poor physical health[a]	8.3	(0.017)	11.1	(0.022)	–	–
Activity limitations	23.9	(0.028)	32.9	(0.041)	–	–
Use equipment for disability	8.3	(0.018)	10.4	(0.022)	–	–
Health risk indicators						
Overweight	34.0	(0.036)	36.3	(0.054)	–	–
Obese	26.7	(0.031)	24.7	(0.035)	–	–
Current smoker	19.1	(0.031)	29.7	(0.045)*	0.051	1.02 (0.52, 2.00)
Smokeless tobacco user	0.6	(0.003)	4.1	(0.018)*	0.001	7.68 (1.61, 36.72)*
Drinking and driving[a]	4.2	(0.014)	10.4	(0.060)	–	–
Binge drinking[a]	20.2	(0.033)	20.9	(0.045)	–	–
HIV risk[b]	4.2	(0.022)	13.7	(0.029)*	0.024	2.42 (0.61, 9.57)
Preventive health behaviors						
Always use seatbelt	91.9	(0.018)	89.0	(0.024)	–	–
Exercise[a]	81.6	(0.033)	81.8	(0.033)	–	–
Flu vaccine[b]	36.2	(0.035)	28.5	(0.039	–	–
Screening tests						
Colorectal cancer screening	59.3	(0.044)	63.8	(0.057)	–	–
Breast cancer screening (MMG)	58.6	(0.043)	41.5	(0.045)*	0.006	1.35 (0.53, 3.40)

	Lesbian women		Bisexual women			
	(%)	(SE)	%	(SE)	*p*	AOR (95% CI)[c]
Breast cancer screening (CBE)	89.8	(0.028)	78.9	(0.041)*	0.026	0.78 (0.31, 1.95)
Cervical cancer screening	91.5	(0.026)	80.0	(0.056)*	0.037	0.51 (0.20, 1.35)
HIV test	50.9	(0.042)	62.7	(0.056)	–	–
Health care utilization						
Health care plan	84.9	(0.034)	74.3	(0.051)	–	–
Did not seek care owing to cost[b]	18.3	(0.033)	39.7	(0.053)*	0.003	2.04 (1.03, 4.03)*
Routine checkup[b]	60.7	(0.041)	62.1	(0.047)	–	–
Dental visit[b]	72.9	(0.036)	64.2	(0.052)	–	–
Medical diagnoses						
Diabetes	6.8	(0.016)	6.1	(0.016)	–	–
CVD symptoms	5.0	(0.012)	7.0	(0.024)	–	–
Asthma	22.2	(0.031)	26.4	(0.042)	–	–

Note: Percentages and standard errors are weighted.

[a]Past month/30 days.

[b]Past year/12 months.

[c]Multiple logistic regression models adjusted for age, race/ethnicity, education, and income; lesbian women is reference group.

*
p<0.05 when compared with lesbian women group.

BRFSS, Behavioral Risk Factor Surveillance System; FMD, frequent mental distress; MMG, mammogram; CBE, clinical breast exam; CVD, cardiovascular disease

Table 6

Health indicators among gay and bisexual men, 10 states' BRFSS surveys, 2010

	Gay men		Bisexual men			
	%	(SE)	%	(SE)	p	AOR (95% CI)[c]
Mental health						
Social/emotional support	75.8	(0.035)	72.1	(0.047)	–	–
Mental distress (FMD-6)[a]	20.7	(0.030)	35.0	(0.061)*	0.024	2.07 (1.07, 4.02)*
14 days poor sleep[a]	23.9	(0.034)	30.7	(0.059)	–	–
Dissatisfied with life	12.5	(0.031)*	14.4	(0.039)	–	–
Physical health						
Fair/poor health status	12.6	(0.024)	15.8	(0.035)	–	–
14 days poor physical health[a]	7.6	(0.018)	6.8	(0.018)	–	–
Activity limitations	24.2	(0.030)*	41.3	(0.059)*	0.007	2.31 (1.25, 4.25)*
Use equipment for disability	6.4	(0.012)	6.2	(0.021)	–	–
Health risk indicators						
Overweight	34.3	(0.036)*	34.8	(0.052)	–	–
Obese	18.3	(0.027)*	22.5	(0.045)	–	–
Current smoker	22.9	(0.034)*	33.3	(0.058)	–	–
Smokeless tobacco user	3.0	(0.030)	7.2	(0.031)	–	–
Drinking and driving[a]	7.8	(0.031)	10.6	(0.064)	–	–
Binge drinking[a]	26.9	(0.040)	30.7	(0.061)	–	–
HIV risk[b]	28.5	(0.041)*	17.6	(0.045)	–	–
Preventive health behaviors						
Always use seatbelt	91.0	(0.024)	78.9	(0.050)*	0.015	0.42 (0.18, 1.00)
Exercise[a]	81.8	(0.028)	87.9	(0.031)	–	–
Flu vaccine[b]	44.6	(0.037)*	37.3	(0.052)	–	–
Screening tests						
Colorectal cancer screening	72.8	(0.036)*	74.4	(0.062)	–	–

	Gay men		Bisexual men			
	%	(SE)	%	(SE)	p	AOR (95% CI)[c]
Prostate cancer screening (PSA)	55.3	(0.038)	50.6	(0.060)	–	–
Prostate cancer screening (DRE)	76.8	(0.033)	70.8	(0.057)	–	–
HIV test	81.7	(0.037)*	59.9	(0.067)*	0.003	0.41 (0.18, 0.91)*
Health care utilization						
Health care plan	83.1	(0.033)	70.6	(0.058)*	0.052	0.92 (0.40, 2.11)
Did not seek care owing to cost[b]	11.2	(0.023)	21.2	(0.046)*	0.031	1.58 (0.61, 4.07)
Routine checkup[b]	62.6	(0.039)	55.5	(0.058)	–	–
Dental visit[b]	74.2	(0.034)	56.2	(0.059)*	0.007	0.60 (0.31, 1.17)
Medical diagnoses						
Diabetes	6.4	(0.011)	5.1	(0.017)	–	–
CVD symptoms	6.8	(0.011)	14.5	(0.045)*	0.036	1.71 (0.70, 4.20)
Asthma	16.1	(0.028)	21.3	(0.054)	–	–
Prostate cancer	3.4	(0.009)	7.8	(0.034)	–	–

Note: Percentages and SEs are weighted.

[a]Past month/30 days.

[b]Past year/12 months.

[c]Multiple logistic regression models adjusted for age, race/ethnicity, education, and income; gay men is reference group.

*
p<0.05 when compared with gay men group.

BRFSS, Behavioral Risk Factor Surveillance System; FMD, frequent mental distress; PSA, prostate-specific antigen test; DRE, digital rectal exam; CVD, cardiovascular disease