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Sexual Orientation and Variation in Physical and Mental Health Status among Women

ALLISON L. DIAMANT, M.D., M.S.H.S.,[1] and CHERYL WOLD, M.P.H.[2]

ABSTRACT

Objective: **To assess and compare the physical and mental health status of women of differing sexual orientation within a population-based sample.**

Methods: **We used a population-based telephone survey performed using random digit dialing techniques. Our study population was drawn from the 1999 Los Angeles County Health Survey and included women age 18–64 years who reported their sexual orientation (98%, *n* = 4135). These analyses include 4023 heterosexuals, 69 bisexuals, and 43 lesbians.**

Results: **We assessed the unique association of sexual orientation with physical and mental health status using bivariate and multivariate analyses. Both lesbians and bisexuals were more likely than heterosexual women to report a diagnosis of heart disease. Among women with a depressive disorder, lesbians were more likely than heterosexuals to be using an antidepressant medication. Compared with heterosexuals within the preceding 30 days, lesbians reported significantly more days of poor mental health, and bisexuals reported significantly more days of poor physical health. However, there were no significant differences by sexual orientation in impaired ability to perform daily activities due to physical or mental health.**

Conclusions: **In this rare opportunity to use population-based data to study lesbian and bisexual health, we found that sexual orientation as a nonheterosexual woman was associated with increased rates of poor physical and mental health. We believe these findings support the need for the increased systematic study of the relationship between sexual orientation and health.**

INTRODUCTION

A RECENT REPORT RELEASED BY the National Academy of Sciences' Institute of Medicine (IOM) identified the dearth of information about lesbians' health and health-seeking behaviors as an important focus for research.[1] The report called for the development of a research agenda to overcome the challenges involved in the study of lesbian health, including the difficulty of identifying the population from which to sample. The IOM report cited the importance of determining if lesbians are at increased risk for specific medical conditions.

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[1]UCLA Division of General Internal Medicine and Health Services Research and UCLA National Center of Excellence in Women's Health, Los Angeles, California. [2]Los Angeles County Department of Health Services, Public Health–Office of Health Assessment and Epidemiology, Los Angeles, California.

The study of lesbian and bisexual women's health within the domain of women's health is important, as lesbians make up an estimated 3.6% of the female population, with an unknown proportion of bisexuals in the population.[2,3] As a result, conducting research that includes a representative sample of lesbians and bisexuals is difficult. Because of ubiquitous societal nonacceptance, nonheterosexual women may choose not to divulge their sexual orientation. Thus, the impact on physical and mental health of being a nonheterosexual woman has not been sufficiently studied, and the question of whether lesbians and bisexuals are at increased risk for poor health has not been adequately answered.

From the multiple convenience samples reported in the literature, it is surmised that lesbians' and bisexuals' health status may be worse than that of heterosexuals.[1,4–7] This supposition is based on a number of factors: higher rates of smoking and alcohol use among lesbians and bisexuals, greater prevalence of overweight, and higher use of mental health services.[8–11] In addition, negative experiences and interactions that lesbians and bisexuals have had within the healthcare system appear to discourage many from seeking needed medical care.[12–14] Furthermore, the existing data on lesbian and bisexual women's health indicate that nonheterosexual women have greater unmet needs for healthcare, even when they have similar levels of health insurance and access to a regular healthcare provider.[4,8,9,15]

The objective of this study is to assess and compare women of differing sexual orientation within a population-based sample on their (1) physical health, including prevalence of chronic medical conditions, (2) mental health, including prevalence of depression, and (3) days of daily activity lost due to poor physical or mental functioning.

MATERIALS AND METHODS

Survey sample

To obtain a population-based sample that included lesbian, bisexual, and heterosexual women, we used the 1999 Los Angeles County Health Survey (LACHS). The main objective of the LACHS was to examine key indicators of access to healthcare services, health status, and health behaviors for adults and children living in Los Angeles County. The LACHS is a biennial random digit-dialed telephone survey of the noninstitutionalized adult and child populations in Los Angeles County.[16] The 1999 survey included questions on sexual orientation. The adult (those aged ≥18 years old) component of the survey was conducted from September through December 1999. The survey was developed by the Los Angeles County Department of Health Services with assistance from academic and community institutions. The survey was reviewed and approved by the Institutional Review Boards of the Los Angeles County Department of Health Services and the University of California, Los Angeles.

Data collection

One adult from each randomly selected household was eligible for inclusion in the survey. Among households with multiple eligible adults, one adult was selected randomly using the most recent birthday method. All interviews were conducted by trained staff at the Field Research Corporation using a standardized questionnaire and a computer-assisted telephone interviewing (CATI) system. Interviews were offered in six languages (English, Spanish, Cantonese, Mandarin, Korean, and Vietnamese). Up to six callbacks were attempted to complete each interview. The overall response rate was 55%.

Study sample

Adult women (age 18–64) were asked to describe their sexual orientation "Are you gay, lesbian or bisexual?" Participants who responded no were considered to be heterosexual. Participants who responded yes were asked, "Is that lesbian or bisexual?" Our analysis sample included the 4135 female adult respondents who identified as heterosexual (n = 4,023), bisexual (n = 69), or lesbian (n = 43). Thus, nonheterosexuals comprised just under 3% of the female population. Eighty-eight women did not respond to this question and, therefore, were excluded from the analysis because their sexual orientation was unknown. Of these, 28 refused to respond to the item, and 59 reported that they did not know their sexual orientation. We examined the characteristics of the women in these two groups and found them to differ. Women who refused to respond to the item describing sexual orientation were older, more likely to be white, more likely to have at least a college education, more likely to have

health insurance, less likely to have difficulty obtaining medical services, and more likely to have received preventive healthcare. Women who did not know their sexual orientation were younger, more likely to be Latina, had lower incomes and less education, and more likely to have encountered difficulty accessing medical care and less likely to have received preventive screening tests.

Analysis sample

The analysis sample comprised 4135 female adult respondents and included those women who were categorized, based on their responses, as heterosexual (4023), bisexual (69), or lesbian (43).

Independent variables

Sexual orientation—heterosexual, bisexual, or lesbian—was the main independent variable. Sociodemographic characteristics included age, race/ethnicity, education, income, and employment status. In addition, we assessed the association of sexual orientation with health insurance status, current tobacco use, and body mass index (BMI). Respondents' BMI was calculated from their self-reported weight and height and categorized based on guidelines from the National Heart, Lung and Blood Institute Clinical Guidelines.[17]

Dependent variables

Physical health was assessed with several items. Subjects were asked whether they had ever been told by a doctor or other health professional that they had any of the following medical conditions: arthritis, diabetes, heart disease, chronic respiratory condition, asthma, hypertension, high cholesterol, and for women ≥ 50 years of age, osteoporosis. In addition, women were asked the following about their physical health: "Thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?" as well as whether they had any health problem that required them to use special equipment, such as a cane, a wheelchair, a special bed, or a special telephone.

Mental health was assessed by the following items: "Thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?" "During the past 4 weeks, how often have you felt sad, blue or depressed—all of the time, most of the time, some of the time, a little of the time, or none of the time?" and "Have you ever been told by a doctor or other health professional that you have depression or some other depressive disorder, such as bipolar disorder or manic depression?" Those women who reported they had a history of depression or a depressive disorder were asked whether they were being treated for the disorder—taking medication and under a doctor's care.

Overall health status and functioning were assessed by two items. Subjects' self-rated health status was measured using the 5-point global assessment scale: excellent, very good, good, fair, or poor. In addition, patients' reported their general functioning: "During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care or recreation?"

Statistical analyses

We used the chi-square and Fisher's exact tests, where appropriate, to test the statistical significance of the association of sexual orientation (i.e., lesbian, bisexual, or heterosexual) with the categorical measures of physical and mental health status and general functioning and Student's *t* test to test differences in means. We also performed multivariate logistic regression analyses to assess the independent effect of sexual orientation on health status and functioning. We used linear regression to test the unique effect of sexual orientation on the mean number of days that women had experienced poor physical health, poor mental health, or decreased ability to perform daily activities during the preceding 30 days. In the multivariate regression models, heterosexual women comprised the reference group, and we adjusted for age, race/ethnicity, income, education, health insurance coverage, smoking, and obesity All analyses were performed using SAS 8.0 (SAS Institute, Inc, Cary, NC, 1999).

RESULTS

The mean age of the sample was 38 years, although lesbians were more likely to be older and bisexuals were more likely to be younger than het-

erosexuals (Table 1). Overall, Latinas comprised 45% of the sample, followed by whites (35%), African Americans (10%), Asian/Pacific Islanders (8%), and others (2%). Bisexuals were less likely than heterosexuals to be nonwhite (53.6% vs. 65.4%, $p < 0.05$), but the difference was not significant between lesbians and heterosexuals (58.1% vs. 65.4%, $p = 0.32$). Three quarters of women had graduated from high school, almost 45% of women reported an annual household income < $20,000, and 73% had health insurance, with no significant difference by sexual orientation. Lesbians had the highest rates of being obese or overweight ($p < 0.05$). Bisexuals and lesbians had significantly higher rates than heterosexuals of current tobacco use (30.4% vs. 27.9 and 13.9, $p < 0.001$).

Physical health

Women were asked if they had been diagnosed with one or more of eight medical conditions (Table 2). Lesbians had the highest rate and heterosexuals had the lowest rate for heart disease (18.6% vs. 11.6% vs. 4.5%). In addition, in multivariate analyses controlling for age, race, education, income, health insurance, tobacco use, and obesity, lesbians were significantly more likely than heterosexuals to have a diagnosis of heart disease (OR 5.3, 95% CI 2.3, 12.0) (Table 2). Bisexuals were also more likely than heterosexuals to have a diagnosis of heart disease (OR 3.0, 95% CI 1.3, 6.6). There were no significant differences by sexual orientation for women who had a health problem that required them to use special equipment, such as a cane, a wheelchair, a special bed, or a special telephone.

Whether a woman had one or more sick days in the past month did not vary significantly by sexual orientation (Table 2). However, controlling for covariates, compared with heterosexuals, bisexuals had a significantly higher mean number of days of poor physical health during the preceding 30 days (Table 3) (mean 5.8 days [95% CI 4.0, 7.6] vs. 3.6 days [95% CI 3.3, 3.8], $p < 0.05$).

Mental health

Lesbians reported significantly more days of poor mental health within the preceding 30 days than did heterosexuals (mean 7.4 days [95% CI

TABLE 1. CHARACTERISTICS OF POPULATION-BASED SAMPLE OF WOMEN BY SEXUAL ORIENTATION (n = 4135)

	Heterosexual (n = *4023*) *% or mean (SE)*	*Lesbians* (n = *43*) *% or mean (SE)*	*Bisexual* (n = *69*) *% or mean (SE)*	p *value*
Age (years)	38.0 (0.2)	38.1 (1.8)	35.8 (1.6)	*
Race/ethnicity				
Latina/Hispanic	45.4	41.9	29.0	NS[a]
White	34.7	41.9	46.4	
African American	10.3	9.3	10.1	
Asian/Pacific Islander	7.8	2.3	11.6	
Other	1.9	4.7	2.9	
Income (median range $20,000–$29,999)				
<$20,000	44.6	46.7	42.3	NS
$20,000–$49,999	39.5	40.0	53.9	
≥$50,000	16.0	13.3	3.9	
Education				
<High school	25.1	23.3	18.8	0.4472
High school graduate	19.6	11.6	27.5	
Some college or trade school	29.3	32.6	30.4	
College graduate	26.1	32.6	23.2	
Currently has health insurance	72.5	73.8	68.7	NS
Body mass index (kg/m^2)				
Extremely/moderately obese (≥30)	18.4	24.4	17.2	<0.05
Overweight (25–29.9)	26.0	36.6	32.8	
Ideal (18.5–24.9)	52.1	39.0	43.8	
Underweight (<18.5)	3.6	0.0	6.3	
Current smoker	13.9	27.9	30.4	<0.001

*$p < 0.05$.
[a]NS, not significant.

TABLE 2. PHYSICAL HEALTH AMONG POPULATION-BASED SAMPLE OF WOMEN BY SEXUAL ORIENTATION[a]

Medical problem	*Heterosexual Unadjusted %* n = *4023*	*Lesbians Unadjusted %* n = *43*	*Bisexual Unadjusted %* n = *69*	p *value*	*Lesbians Adjusted OR (95% CI)*	*Bisexual Adjusted OR (95% CI)*
Arthritis	14.7	23.3	10.1	NS[b]	1.7 (0.8, 3.7)	0.6 (0.3, 1.4)
Diabetes	5.2	11.6	4.4	NS	2.4 (0.9, 6.6)	3.2 (0.3, 3.2)
Heart disease	4.5	18.6	11.6	***	5.3 (2.3, 12.0)***	3.0 (1.3, 6.6)**
Chronic respiratory condition	4.6	4.7	8.7	NS	0.8 (0.2, 3.5)	1.6 (0.7, 3.9)
Asthma	10.0	16.3	14.5	NS	1.7 (0.7, 3.9)	1.4 (0.7, 2.8)
Hypertension	15.1	16.3	14.5	NS	3.2 (0.4, 2.4)	3.2 (0.5, 2.0)
High cholesterol	13.5	14.0	15.9	NS	0.9 (0.4, 2.3)	1.3 (0.6, 2.6)
Osteoporosis (≥50)	10.4	14.3	6.7	NS	2.4 (0.3, 20.9)	0.6 (0.1, 5.1)
Health problem that requires use of special equipment	3.3	2.3	4.4	0.8246	0.7 (0.1, 5.0)	1.5 (0.4, 5.2)

[a]Controlling for age, race/ethnicity, education, income, health insurance, cigarette smoking, and obesity. Referrent category is heterosexual women.
[b]NS, not significant.
**$p < 0.01$; ***$p < 0.001$.

4.9, 9.8] vs. mean 4.2 days [95% CI 3.9, 4.4], $p < 0.01$) (Table 3). There were no significant differences by sexual orientation among women reporting that they had felt depressed all or most of the time during the preceding 4 weeks. Although lesbians had the highest rate and heterosexuals had the lowest rate of ever having been diagnosed with depression or some other depressive disorder, the trend was not statistically significance. Among women ever diagnosed with depression, although the rates ranged from 22% to 67% for being under a physician's care for depression, the differences by sexual orientation were not statistically significant. However, among those women who had ever been diagnosed with depression or some other depressive disorder, lesbians had the highest rate and heterosexuals had the lowest rate for currently taking medication for depression (88.9% vs. 55.6% vs. 44.5%, $p < 0.05$). In multivariate analyses, lesbians remained more likely than heterosexuals to be taking an antidepressant medication (Table 4).

Overall functioning

Overall, self-reported health status did not vary significantly by sexual orientation in the bivariate analysis (Table 5). However, in multivariate analyses, lesbians were less likely than heterosexuals to rate their health as excellent (OR 0.3, 95% CI 0.1, 0.9). Lesbians had the highest rate and heterosexuals had the lowest rate of suffering impaired ability to perform daily activities due to poor physical or mental health during the preceding month (39.5% vs. 36.2% vs. 27.1%, $p < 0.05$), although there were no significant differ-

TABLE 3. DAYS LOST DURING PRECEDING MONTH DUE TO POOR PHYSICAL OR MENTAL HEALTH AMONG POPULATION-BASED SAMPLE OF WOMEN BY SEXUAL ORIENTATION

	Heterosexuals Adjusted mean (95% CI)	*Lesbians Adjusted mean (95% CI)*	p *value*[a]	*Bisexual Adjusted mean (95% CI)*	p *value*[b]
Mean number of days physical health was not good	3.6 (3.3, 3.8)	4.3 (2.1, 6.6)	NS[c]	5.8 (4.0, 7.6)	*
Mean number of days mental health was not good	4.2 (3.9, 4.4)	7.4 (4.9, 9.8)	**	5.7 (3.8, 7.7)	NS
Number of days daily activities impaired	2.4 (2.2, 2.6)	3.3 (1.4, 5.1)	NS	3.2 (1.8, 4.7)	NS

[a]Lesbian compared to heterosexual.
[b]Bisexual compared to heterosexual.
[c]NS, not significant.
*$p < 0.05$; **$p < 0.01$.

TABLE 4. MENTAL HEALTH STATUS AMONG POPULATION-BASED SAMPLE OF WOMEN BY SEXUAL ORIENTATION

	Heterosexual Unadjusted % n = *4023*	*Lesbians Unadjusted %* n = *43*	*Bisexual Unadjusted %* n = *69*	p *value*	*Lesbians Adjusted OR (95% CI)*[a]	*Bisexual Adjusted OR (95% CI)*[a]
Mental health was not good during the preceding month (i.e., ≥1 days)	40.4	58.1	46.4	0.0403	1.8 (1.0, 3.3)	1.0 (0.6, 1.7)
During past 4 weeks, felt depressed all or most of the time	8.3	11.6	13.0	0.2258	1.3 (0.5, 3.3)	1.5 (0.7, 3.2)
Diagnosis of depression	10.6	20.9	13.0	0.0820	1.7 (0.8, 3.7)	1.1 (0.5, 2.2)
Taking medications for depression (*n* = 443)	44.5	88.9	55.6	0.0235	13.7 (1.5, 125.6)*	1.9 (0.5, 7.7)
Under a physician's care for depression (*n* = 441)	49.7	66.7	22.2	0.1829	2.4 (0.5, 11.3)	0.4 (0.1, 2.3)

[a]Controlling for age, race/ethnicity, education, income, health insurance, cigarette smoking, and obesity. Referrent category is heterosexual women.
*$p < 0.05$.

ences by sexual orientation in the mean number of days that women were impaired in their daily activities (Table 3).

DISCUSSION

The findings from this study demonstrate the unique association of being lesbian or bisexual with elevated rates of certain chronic medical conditions. In this study, we focused on the physical and mental health status of an ethnically diverse sample of women obtained from a population-based survey. We were interested in assessing whether sexual orientation as a lesbian or bisexual had a unique association with physical and mental health status. Although lesbians and bisexuals are first and foremost women and, therefore, at risk for the same medical conditions as other women, the real question is whether they are at elevated risk for particular health conditions. Although lesbians and bisexuals share many of the same health risks with heterosexuals, nonheterosexual women have been found to have higher rates of particular risk factors (e.g., smoking, obesity, low parity) that put them at elevated risk for specific medical conditions compared with heterosexuals.[7,8,10]

TABLE 5. OVERALL HEALTH STATUS AND FUNCTIONING AMONG POPULATION-BASED SAMPLE OF WOMEN BY SEXUAL ORIENTATION

	Heterosexual Unadjusted % n = *4023*	*Lesbians Unadjusted %* n = *43*	*Bisexual Unadjusted %* n = *69*	p *value*	*Lesbians Adjusted OR (95% CI)*[a]	*Bisexual Adjusted OR (95% CI)*[a]
Self-perceived health status						
Excellent	22.2	9.3	17.4	0.5887	0.3 (0.1, 0.9)*	0.8 (0.4, 1.5)
Very good	26.8	34.9	33.3		1.4 (0.7, 2.7)	1.2 (0.7, 2.0)
Good	30.9	34.9	31.9		1.3 (0.7, 2.5)	1.1 (0.6, 1.8)
Fair	16.1	16.3	14.5		1.1 (0.5, 2.6)	1.1 (0.5, 2.2)
Poor	4.0	4.7	2.9		1.2 (0.3, 5.0)	0.8 (0.2, 3.5)
Impaired ability to perform daily activities due to physical or mental health during past month (≥1 days)	27.1	39.5	36.2	0.0491	1.6 (0.8, 2.9)	1.4 (0.8, 2.3)

[a]Controlling for age, race/ethnicity, education, income, health insurance, cigarette smoking, and obesity. Referrent category is heterosexual.
*$p < 0.05$.

Lesbians in this study had a higher rate of heart disease than heterosexuals. This variation was not completely attributable to higher rates of tobacco use and obesity, and lesbians were not significantly more likely to have hypertension or high cholesterol levels. Of note, although bisexuals were the youngest subgroup in the sample, their risk for heart disease was elevated compared with heterosexuals. It is possible that lesbians' and bisexuals' increased risk for heart disease could be due to other unmeasured risk factors, such as a family history of heart disease or diabetes, or it may be due to unmeasured factors in their lives or environment.

Findings from this study indicate that lesbians reported more days of poor mental health during the preceding month and that among women with depression, lesbians were more likely than heterosexuals to be using a prescription medication for depression. In the National Lesbian Health Care Survey, a national nonprobability sample of lesbians and bisexuals, 37% of women reported experiencing a "long depression or sadness" during their lifetimes, and 11% reported that they were currently experiencing such feelings.[1,4] In general, the most common mental disorders experienced by women are anxiety disorders, followed by affective disorders, of which depression is the most commonly reported.

In the National Comorbidity Study, 23.9% of women surveyed reported experiencing an affective disorder at some time during their lives, and 21.3% of women had ever had a major depressive episode.[18] Little is known about the prevalence and incidence of affective disorders among lesbians and bisexual women, although, in general, significant differences by sexual orientation among nonclinical samples have not been reported.[19,20] In a recent study, the prevalence of six psychiatric syndromes among sexually active individuals was assessed. Women who reported same-gender sexual partners were no more likely than heterosexually active women to carry a diagnosis of a depressive disorder, although homosexually active women were more likely to have used mental healthcare services during the preceding year.[10]

Stress is well known to have a potentially negative impact on health, and it has been hypothesized that differences in levels of societal stress explain some of the disparities in health that exist.[21–24] Previous research has documented that nonheterosexual women are at elevated risk for suffering various kinds of stress, including discrimination and prejudice, even within the medical system.[14,25–27] However, the effect of stress and whether discrimination and prejudice affect the health of lesbians and bisexuals are not known. In addition, associations between harassment and increased alcohol consumption among lesbians have been noted,[28] and increased rates of depression, suicide, and substance use have been reported for lesbian, gay, bisexual, and transgender youth.[29–32] It is not clear, however, if stress or discrimination or both contribute to the discrepancies in physical and mental health status noted in this study.

We note some of the following limitations in our study. First, the small number of lesbians and bisexual women made it difficult to detect all significant differences between women of varying sexual orientation and to perform subgroup analyses to assess the existence of racial and ethnic differences among nonheterosexual women. Second, although we had a racially/ethnically diverse sample that is representative of Los Angeles County, these findings may not be generalizable to women in other parts of the country. Third, we relied on self-reported data that are susceptible to subject recall and bias. Fourth, our study did not include measures of perceived societal stress, persecution, or discrimination to assess their affect on women of differing sexual orientation. Fifth, we do not know how respondents and nonrespondents to the survey varied, although the demographic characteristics of the sample closely match the age, racial/ethnic, and geographic characteristics of Los Angeles County. There is no reason to suspect that nonrespondents were more or less likely than respondents to be lesbian or bisexual. The response rate was 55%, comparable to state-specific surveys, such as the Behavioral Risk Factor Surveillance System. Additionally, we did not have information about past sexual partners, including number and gender, and as in all surveys, our findings were susceptible to participant response and recall bias.

In conclusion, in this population-based study of women's health, we found that sexual orientation as a nonheterosexual woman was associated with increased risk for poor physical and mental health. We believe these findings support the need for increased systematic study of the relationship between women's sexual orientation

and health. Research in this field should include the performance of national population-based surveys that will allow for the study of racial / ethnic differences as well as the design and implementation of longitudinal studies to assess the health of lesbians and bisexual women throughout their lifetimes.

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Address reprint requests to:
Allison L. Diamant, M.D., M.S.H.S.
UCLA–Division of GIM & HSR
911 Broxton Avenue
Los Angeles, CA 90024

E-mail: adiamant@mednet.ucla.edu