ORIGINAL CONTRIBUTION

Health Behaviors, Health Status, and Access to and Use of Health Care

A Population-Based Study of Lesbian, Bisexual, and Heterosexual Women

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Background: There is a dearth of validated information about lesbian and bisexual women's health. To better understand some of these issues, we used population-based data to assess variations in health behaviors, health status, and access to and use of health care based on sexual orientation.

Methods: Our study population was drawn from a population-based sample of women, the 1997 Los Angeles County Health Survey. Participants reported their sexual orientation and these analyses included 4697 women: 4610 heterosexual women, 51 lesbians, and 36 bisexual women. We calculated adjusted relative risks to assess the effect of sexual orientation on important health issues.

Results: Lesbians and bisexual women were more likely than heterosexual women to use tobacco products and to report any alcohol consumption, but only lesbians were significantly more likely than heterosexual women to drink heavily. Lesbians and bisexual women were less likely than heterosexual women to have health insurance, more likely to have been uninsured for health care during the preceding year, and more likely to have had difficulty obtaining needed medical care. During the preceding 2 years, lesbians, but not bisexual women, were less likely than heterosexual women to have had a Papanicolaou test and a clinical breast examination.

Conclusions: In this first population-based study of lesbian and bisexual women's health, we found that lesbians and bisexual women were more likely than heterosexual women to have poor health behaviors and worse access to health care. These findings support our hypothesis that sexual orientation has an independent effect on health behaviors and receipt of care, and indicate the need for the increased systematic study of the relationship between sexual orientation and various aspects of health and health care.

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LESBIANS' AND bisexual women's health and health care have been an understudied aspect of women's health. The question of whether lesbians and bisexual women are at increased risk for poor health outcomes has not been adequately examined. This is an important issue as previous studies estimate that lesbians (ie, homosexual women) make up as much as 3.6% of the female population,[1] while the estimate for bisexual women is even less certain. A recent report released by the Institute of Medicine (IOM) at the National Academy of Sciences identified the dearth of information regarding lesbians' health and health-seeking behaviors as an important focus for research.[2] 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 draw a sample. The IOM report cited the importance of determining whether lesbians are at increased risk for specific medical conditions (eg, breast and ovarian cancer, depression, substance dependence), and of assessing lesbians' access to and receipt of necessary health care. From the limited information available in the existent literature, it has been surmised that lesbians' and bisexual women's health status and their access to and use of health care services may be lower than that of heterosexual women.[2-9] This supposition is based on prior studies of lesbians and bisexual women who reported having encountered negative attitudes within the health care system, and had forgone needed medical care

METHODS

SURVEY SAMPLE

To obtain a population-based sample that included lesbians, bisexual women, and heterosexual women, we used a public access data file compiled from the Los Angeles County Health Survey.[24] The main objective of the 1997 Los Angeles County (Los Angeles, Calif) Health Survey was to examine key indicators of access to health care services and health status for adults and children living in Los Angeles County. The original sample for the survey was obtained using random-digit dialing (RDD) techniques. Participants were selected through RDD that allowed for any household with a telephone at the time of the survey to have an equal chance of being selected into the sample. The RDD sampling approach is the most inclusive and assures a sample that is highly representative of the Los Angeles County population.

DATA COLLECTION

All interviews were conducted by the Field Research Corporation, San Francisco, Calif, during the period between April 22, 1997, and July 7, 1997. The survey instrument was developed by the Los Angeles County Department of Health Services with assistance from faculty at the University of Southern California School of Public Administration, Los Angeles, the University of California at Los Angeles (UCLA) School of Public Health, and other institutions. After contacting the household, an adult who was aged 18 years or older and had the most recent birthday was selected to be interviewed. If the selected respondent was not home, up to 6 attempts were made on different days and times of day during the course of the interview period to contact the person to complete the interview. Professionally trained interviewers working in 7 languages (English, Spanish, Cantonese, Mandarin, Korean, Vietnamese, and Tagalog) conducted the interviews. The response rate was 52% among those people who were contacted, for a total of 8004 completed interviews.

ANALYSIS SAMPLE

In this study, the analysis sample was composed of those women who self-identified as either heterosexual (4610 women), lesbian (51 women), or bisexual (36 women) in response to the question, "Which of the following best describes your sexual orientation—are you (a) heterosexual or straight, (b) gay or lesbian, or (c) bisexual?" We excluded women who did not know their sexual orientation (26 women), as well as those women who refrained from responding to the item on sexual orientation (160 women), for an analysis sample of 4661 women. Of note, although 186 female respondents reported that they did not know their sexual orientation or had not responded to that item, the majority of these women did not report any sexual activity during the preceding 12 months. The UCLA Human Subjects Protection Committee granted us institutional review board approval to perform this study.

MEASURES

Sociodemographic characteristics included age, race/ethnicity, level of education, annual income, and employment status. Health risk behaviors were assessed based on tobacco use (ie, prior and current cigarette smoking) and current use of alcohol (ie, frequency and quantity). Women

as a result of these experiences.[4,9-13] Studies have documented lower rates of lesbians receiving preventive services such as Papanicolaou (Pap) tests and mammograms,[2,4,6,14-15] and there is concern that these findings may indicate decreased overall access to and use of health care. However, the information collected to date about lesbian and bisexual women's health has been limited and has relied on data collected primarily from nonprobability samples. In addition, in most situations, the data used for comparison are taken from separate samples. While the findings from these studies have provided important contributions to the literature, research based on information that is representative of and generalizable to lesbian and bisexual women is needed.[2]

Tobacco use and excessive alcohol consumption have long been established as 2 of the major risks for poor health in the United States.[16-20] Information from prior studies indicates that lesbians and bisexual women use alcohol and tobacco at higher rates than women in the general population; however, these findings are based on nonprobability (eg, convenience) samples at various events and locations, including music festivals, concerts, bars, and lesbian support groups.[4,8,12,21-23] Therefore, although these studies have provided important preliminary information, the generalizability of these findings to the lesbian and bisexual women's population as a whole is limited. Because of the short-term and long-term ramifications that alcohol and tobacco use have on health, and the potentially increased risk to their health if lesbians are not receiving regular health care, it seems important to clarify whether lesbians and bisexual women are more or less likely than heterosexual women to use these substances.

Data from this study provide the first opportunity to assess whether lesbians, bisexual women, and heterosexual women within the same population-based sample differ with regard to important aspects of health, health behaviors, and access to health care. The objectives of this study were to assess and compare women of differing sexual orientation within a population-based sample regarding their (1) health risk behaviors (tobacco and alcohol use), (2) health status, (3) access and barriers to health care, and (4) receipt of health care services.

who reported consuming 3 or more alcoholic drinks daily were characterized as heavy drinkers.

Health was assessed using several items. Subjects were asked whether they had one or more of 8 medical conditions (ie, arthritis, diabetes, heart disease, cancer, kidney disease, lung disease, human immunodeficiency virus/acquired immunodeficiency syndrome [HIV/AIDS], and hypertension) and whether they had given birth to a child during the preceding 12 months. Subjects' self-rated health status was measured using the 5-point global assessment scale (excellent, very good, good, fair, or poor).

Subjects' access and barriers to medical care were assessed using the following measures: whether they had health insurance at the time of the interview, whether they had been uninsured for health care at some time during the preceding 12 months, whether they had a regular source of health care, the type of facility or provider that served as their regular source of health care, and whether they saw the same provider for their regular and routine health care. Respondents were also asked if there had been a time during the preceding 12 months when they had needed prescription medication, mental health care or counseling, dental care (including check-ups), eyeglasses, or seen a physician for a health problem but had not received these services because of financial reasons.

Use of health care was assessed based on whether respondents had made a visit to a health care provider within the previous year and whether they had received a Pap test, a clinical breast examination, an HIV test, and for women aged 50 years and older, a mammogram within the previous 2 years. In addition, patient satisfaction with their regular source of health care was assessed using a 7-point Likert-type scale, which ranged from "very satisfied" to "very dissatisfied."

STATISTICAL ANALYSES

We used the χ^2 and Fisher exact tests, where appropriate, to test the statistical significance of the association of sexual orientation (ie, lesbian, bisexual, or heterosexual) with the measures of health risk behaviors, health status, access to and use of care, and satisfaction with medical care. We also performed multivariate logistic regression analyses to assess the independent effect of sexual orientation on health risk behaviors, access and barriers to health care, and patient satisfaction. Since health status was not associated with sexual orientation in bivariate analyses, no multivariate analyses were performed. In the models assessing the independent effect of sexual orientation on risk behavior (ie, current use of tobacco and current heavy consumption of alcohol) we controlled for age, ethnicity, level of education, annual income, and employment status. For the models assessing access to and receipt of services (ie, difficulty seeing a physician within the previous year because of financial difficulties, type of regular source for health care, receipt of a Pap test within 2 years, receipt of a clinical breast examination within 2 years, and receipt of an HIV test within 2 years) and patient satisfaction, we adjusted for age, race/ethnicity, annual income, level of education, employment status, and health insurance coverage. For all multivariate logistic regression models, we calculated the relative risks from the odds ratios. We assessed our explanatory variables and covariates for the presence of significant multicollinearity and found none. All analyses were performed using SAS 6.12 statistical software (Statistical Analysis System version 6.12; SAS Institute Inc, Cary, NC).[25]

RESULTS

SOCIODEMOGRAPHIC CHARACTERISTICS

Table 1 presents the sociodemographic characteristics of this study sample. The mean ± SD age of participants was 42 years with a median age of 39 years. Thirty-eight percent of respondents were Latina, 42% were non-Hispanic white, 11% were non-Hispanic African American, 8% were Asian/Pacific Islander, and 1% were non-Hispanic other. There were no significant differences by age or educational attainment, but lesbians were most likely to be white, to have an annual income of more than $20 000, and to be employed full-time.

HEALTH RISK BEHAVIORS

Nearly one third of lesbians and 50% of bisexual women reported current tobacco use, and both lesbians and bisexual women were significantly more likely than heterosexual women to report both current and past use of tobacco products (**Table 2**). Almost three quarters of lesbians and bisexual women, as compared with half of heterosexual women, acknowledged any alcohol consumption. Lesbians and bisexual women were significantly more likely to report drinking alcohol frequently and in greater quantities, including consuming 3 or more drinks almost daily. After controlling for race/ethnicity, age, educational attainment, annual income, and employment status using multivariate logistic regression, lesbian and bisexual orientation remained positively associated with tobacco use and heavy alcohol consumption (Table 2).

HEALTH AND HEALTH STATUS

Table 3 presents the health and health status characteristics of the study sample. There were only small differences by sexual orientation in the prevalence of the 8 medical conditions specified earlier, with a trend toward lesbians reporting the highest rate of arthritis, bisexual women reporting the highest rate of diabetes, and heterosexual women reporting the highest rate of hypertension. Heterosexual wom-

en had the highest rate of childbirth during the preceding year (10%), although sexual orientation was not significantly associated with having had a child. On the 5-point global assessment scale for health status there were no differences between lesbians and heterosexual women.

ACCESS TO HEALTH CARE

Table 4 presents data on the study sample's access to health care. Lesbians and bisexual women were less likely than heterosexual women to be insured for health care at the time of the survey as well as at any time during the preceding 12 months (Table 4). There was a trend for bisexual women to be least likely to report having a regular source of care, and heterosexual women were significantly more likely than lesbians and bisexual women to report a physician's office or health maintenance organization as their regular source of health care. In addition, bisexual women were less likely than heterosexual women to see the same health care provider for most of their medical visits.

BARRIERS TO HEALTH CARE

Lesbians and bisexual women were significantly more likely than heterosexual women to have encountered some dif-

Table 1. Sociodemographic Characteristics of a Population-Based Sample of Women by Sexual Orientation*

Characteristics	Heterosexual Women (n = 4610)	Lesbians (n = 51)	Bisexual Women (n = 36)	P
Mean age, y (SD)	42.0 (17.1)	38.7 (12.0)	32.8 (15.1)	<.001
Race/ethnicity†				
Latina/Hispanic	38	26	36	
White	42	66	53	
African American	11	6	6	<.01
Asian/Pacific Islander	8	0	3	
Other	1	2	3	
Annual income, $ (median range, 20 000-29 999)‡				
<20 000	36	31	33	
20 000-49 999	31	47	39	<.1
≥50 000	23	22	19	
Educational attainment				
Did not graduate from high school	22	14	11	
High school graduate	49	55	61	. . .
College graduate	20	22	28	
Graduate degree	9	10	0	
Current employment status				
Employed full-time	41	63	44	.01

*All values are presented as percentages unless otherwise indicated. Ellipses indicate P is not significant. HIV indicates human immunodeficiency virus; AIDS, acquired immunodeficiency syndrome.
†Categories may total more than 100% due to rounding.
‡Ten percent (497 individuals) of heterosexual women and 8% (3 individuals) of bisexual women did not respond to this item.

Table 3. Health and Health Status of Women by Sexual Orientation*

Health and Health Status	Heterosexual Women (n = 4610)	Lesbians (n = 51)	Bisexual Women (n = 36)	P
Medical problem				
Arthritis	21	31	17	<.1
Diabetes	6	2	14	<.05
Heart disease	5	4	0	. . .
Cancer	1	0	0	. . .
Kidney disease	1	2	3	. . .
Lung disease	1	2	0	. . .
HIV/AIDS	<1	2	3	<.05
Hypertension	17	8	6	<.01
Gave birth in the past year	10	2	3	. . .
Self-perceived health status				
Excellent	20	22	33	
Very good	31	31	28	
Good	26	25	28	<.1
Fair	19	18	8	
Poor	4	2	3	

*All values are presented as percentages unless otherwise indicated. Ellipses indicate P is not significant. HIV indicates human immunodeficiency virus; AIDS, acquired immunodeficiency syndrome.

Table 2. Health Risk Behaviors of Women by Sexual Orientation (Alcohol and Tobacco)*

Health Risk Behaviors	Heterosexual Women (n = 4610)	Lesbians (n = 51)	Bisexual Women (n = 36)	P	Lesbians		Bisexual Women	
					Adjusted RR (95% CI)	P	Adjusted RR (95% CI)	P
Current smoker†	14	37	50	<.001	1.73 (1.34-2.05)	<.001	1.73 (1.52-1.85)	<.01
Any alcohol consumption	51	73	72	<.001	1.14 (0.99-1.25)	<.1	1.19 (1.02-1.29)	<.05
Alcohol consumed almost daily	3	8	8	<.05	2.27 (0.89-4.90)	<.1	2.83 (1.01-6.13)	<.05
≥3 Drinks per sitting	7	25	33	<.001	2.23 (1.60-2.81)	<.001	2.19 (1.71-2.54)	<.001
>3 Drinks almost daily	1	4	3	<.05	5.35 (1.41-13.93)	<.05	4.79 (0.69-19.65)	

*All values are presented as percentages unless otherwise indicated. RR indicates relative risk. The RR of lesbians' and bisexual women's health risk behaviors is adjusted for age, race/ethnicity, educational attainment, annual income, and employment status and is relative to heterosexual women.
†Referent category in multivariate logistic regression model includes consolidation of never and prior smokers.

Table 4. Access and Barriers to Health Care Services Among Women by Sexual Orientation*

Access and Barriers to Health Care	Heterosexual Women (n = 4610)	Lesbians (n = 51)	Bisexual Women (n = 36)	P	Lesbians		Bisexual Women	
					Adjusted RR (95% CI)	P	Adjusted RR (95% CI)	P
Health insurance								
Currently has health insurance coverage	70	63	42	<.01	0.74 (0.51-0.98)	<.05	0.34 (0.18-0.61)	<.001
Uninsured for health care currently or during the past year	37	51	64	<.001	1.41 (1.15-1.61)	<.01	1.36 (1.19-1.46)	<.001
Regular source of care								
Has a regular source for health care	76	75	67	. . .	0.88 (0.67-1.06)	. . .	0.77 (0.51-1.03)	<.1
Regular source of care at physician's office	60	49	42	<.05	0.58 (0.37-0.85)	<.01	0.52 (0.29-0.86)	<.01
Continuity of care								
Usually sees the same health care provider at each visit	62	59	33	. . .	0.86 (0.62-1.10)	. . .	0.36 (0.19-0.66)	<.001
Barriers to care								
Difficult/very difficult to obtain needed medical care	34	47	53	<.01	1.42 (1.13-1.66)	<.01	1.41 (1.13-1.61)	<.01
Did not receive the following needed care during the past year for financial reasons:								
Prescription medications	18	25	31†	<.1	1.50 (0.95-2.13)	<.1	1.60 (1.03-2.19)	<.05
Mental health care	9	18	22	<.01	1.71 (0.97-2.69)	<.1	2.01 (1.19-2.90)	.05
Dental care	29	43	39	<.05	1.44 (1.09-2.32)	<.01	1.32 (0.89-1.74)	. . .
Eyeglasses	18	18	22	. . .	0.96 (0.50-1.69)	. . .	1.25 (0.66-2.08)	. . .
Seeing a doctor	20	35	31	<.05	1.67 (1.24-2.05)	<.01	1.50 (0.94-2.09)	<.1

**All values are presented as percentages unless otherwise indicated. RR indicates relative risk. The RR of lesbian and bisexual women's access and barriers to health care is adjusted for age, race/ethnicity, annual income, educational attainment, and employment status. Ellipses indicate* P *is not significant.*

ficulty receiving health care services during the preceding year (Table 4). Additionally, lesbians and bisexual women were more likely than heterosexual women to report that due to financial barriers they had not received needed prescription medications, mental health care, and medical care from a physician.

USE OF AND SATISFACTION WITH HEALTH CARE

As presented in **Table 5**, there was no significant difference by sexual orientation for women having made a visit to a health care provider within the previous year. However, within the previous 2 years, lesbians were significantly less likely than heterosexual women to have had a Pap test or a clinical breast examination, although lesbians were more likely to have had an HIV test. Sexual orientation did not have an independent effect on receipt of a mammogram for women aged 50 years and older. In addition, being bisexual did not have an independent effect on receipt of any of the 4 services measured. Heterosexual women were more likely than lesbians and bisexual women to be very satisfied with the care they received from their regular provider.

COMMENT

This is the first population-based study that measures lesbians' and bisexual women's health risk behaviors, access to and use of health care services, and health status. Our findings suggest that there are significant differences in health risk behaviors and significant disparities in access to and receipt of health care for women based on their sexual orientation. The increased prevalence of risky health behaviors apparently exhibited by lesbians and bisexual women in this sample and their decreased receipt of health care may indicate a negative effect on their overall health. These findings and other trends support the need for further research on lesbian and bisexual women's health. This study also provides an important example of how lesbian and bisexual women's health issues can be assessed in the context of large, and in this case, population-based studies.

Prior studies relying on nonprobability samples examined lesbian and bisexual women's consumption of alcohol and tobacco products.[4,7,21-23,26] These studies reported that alcohol and tobacco use were more prevalent among lesbians and bisexual women than among heterosexual women; however, the data in these studies relied on nonprobability samples such as lesbians and bisexual women at bars, concerts, or in other social settings, and included women who were predominantly white. Due to the fact that these findings were based on nonrandom samples, the results of these studies have been questioned. This study includes a greater proportion of nonwhite women because of the use of population-based sampling. The need for information from a popu-

Table 5. Use and Receipt of Health Care Services and Patient Satisfaction Among Women by Sexual Orientation*

	Heterosexual Women (n = 4610)	Lesbians (n = 51)	*P*	Bisexual Women (n = 36)	*P*	Lesbians Adjusted RR	*P*	Bisexual Women Adjusted RR	*P*
Tests received in the past 2 y									
HIV	35	49	. . .	42	<.1	1.39 (1.12-1.61)	<.01	1.17 (0.78-1.57)	. . .
Papanicolaou test	74	61	<.05	72	. . .	0.68 (0.46-0.91)	<.01	0.95 (0.71-1.14)	. . .
Clinical breast examination	71	61	<.05	75	. . .	0.72 (0.50-0.96)	<.05	1.04 (0.82-1.18)	. . .
Mammography (women aged ≥50 y)						1.04 (0.63-1.25)	. . .	. . .	. . .
Patient satisfaction†									
Very satisfied with regular source	57	45	. . .	39	<.05	0.66 (0.43-0.94)	<.05	0.56 (0.32-0.92)	<.05

*All values are percentages unless otherwise indicated. RR indicates relative risk. The RR for lesbians' and bisexual women's use of health care services is adjusted for age, race/ethnicity, annual income, educational attainment, and employment status. HIV indicates human immunodeficiency virus.

†Patient satisfaction was only asked of respondents with a regular source of care.

lation-based study was commented on in a recent IOM report in which the writers of the report concluded that a research agenda to comprehensively study lesbian health should be developed and implemented.[2]

Using a population-based sample of women in Los Angeles County, our findings confirmed the results of prior studies that used nonprobability samples to study lesbian and bisexual women's use of tobacco and alcohol. We found that a significantly greater proportion of lesbians and bisexual women, compared with heterosexual women, reported any current use of alcohol and tobacco.[4,22-23] Lesbians and bisexual women were more likely than heterosexual women to consume alcohol more frequently and in larger quantities, and they were 5 times as likely to be classified as heavy drinkers. Because of these findings and the known negative effects from long-term alcohol use, including a risk of increased morbidity and mortality that is higher for women than men, we suggest that it is particularly important for health care providers to obtain a history of alcohol use from their lesbian and bisexual patients.[16,27-30] Studies have shown that women are more likely to develop cirrhosis and other hepatic complications as a result of drinking 2 to 3 alcoholic drinks per day, and that they are more likely to develop these problems after a shorter duration of alcohol consumption and at a younger age.[16,27-30] Lesbians and bisexual women's apparent increased use of alcohol may reflect the effect of social stresses encountered in a society that is not yet supportive of homosexuality; however, this is an important issue that needs further study.

Alcohol consumption is also known to be associated with depressive symptoms, and highlights the need to screen for alcohol dependence as well as depression among lesbians and bisexual women who are found to have a history of alcohol use. Prior research on lesbian and bisexual patients receiving mental health treatment implied that lesbians and bisexual women, compared with heterosexual women, may be at increased risk for depression.[4,8,31-33] However, it is important to note that these studies were not population-based, and in some situations relied on sampling patients already receiving mental health services. The information currently available does not support a conclusion that lesbians and bisexual women have higher rates of depression.

Our findings also indicate that lesbians and bisexual women currently use tobacco at higher rates than heterosexual women. These findings have important implications with regard to focusing preventive interventions on lesbians and bisexual women. The risks of tobacco use and its adverse affects on health are well documented, and these include an increased risk for a variety of malignanct neoplasms (eg, lung and cervical cancer), coronary artery disease, hypertension, peripheral vascular disease, and chronic pulmonary conditions (eg, chronic obstructive pulmonary disease and asthma).[16-18,27,34-36]

Health is not only affected by tobacco and alcohol use, but also by decreased access to necessary and appropriate health care. Our findings indicate that lesbians and bisexual women experienced greater barriers than heterosexual women to accessing needed medical care. Therefore, it seems important to identify the specific difficulties lesbians and bisexual women encounter in their attempts to seek medical care, as well as to determine how these barriers can be eliminated. Although a majority of lesbian and bisexual respondents had some type of health insurance coverage, the results of this study indicate that lesbians and bisexual women were more likely than heterosexual women to perceive financial barriers that prevented them from receiving needed care. Lesbians and bisexual women were more likely than heterosexual women to have been uninsured for health care and to report not receiving medical care because of financial reasons during the previous 12 months. These findings suggest less stability for lesbians and bisexual women in their coverage for health care, perhaps due to restrictive insurance plans. Information about partner status and coverage for health care was not available in this study, but should be

addressed in future work, as these factors may contribute to lower rates of health insurance for lesbians.

Having an identifiable source of health care has been demonstrated to increase access to and receipt of appropriate health care services, especially for patients with ambulatory care–sensitive conditions.[27,37] In addition, having a regular source of care is strongly associated with receipt of age-specific and sex-specific preventive health care services.[27,37] Women in this sample displayed similar rates for having a regular source of health care; however, lesbians and bisexual women were significantly less likely to have a private physician as their regular provider. This last finding may reflect limitations on lesbians' and bisexual women's health insurance coverage (eg, high deductibles or copayments), their preference to seek care from community clinics that specialize in women's health, or their use of complementary health care providers (eg, chiropractors, herbalists).

In this population-based sample of women, we noted that despite having similar rates of a regular source of care, there were significant differences in the receipt of preventive health care services. Lesbians were one third less likely than heterosexual women to have received a Pap test or a clinical breast examination within the previous 2 years, though there was no significant effect for bisexual women. Receipt of regular screening for cervical cancer is important even for lesbians, as many studies have shown that a majority of lesbians have had vaginal intercourse with male partners in the past, including unprotected intercourse.[4-7,9,12,14,15,21,26,38-46] The rates for receipt of Pap tests by lesbians in this study are not dissimilar to the results obtained from the National Lesbian Health Survey performed more than a decade ago, and which relied on nonprobability sampling.[4] In addition, the unadjusted rate for lesbians who had received a Pap test within the previous 2 years in our study was lower than the unadjusted rate (71%) reported from a recent national survey with a nonprobability sample that included almost 8000 lesbians.[7]

Although one of the strengths of this study is the use of probability sampling methodology from a population-based survey, the number of lesbian and bisexual women is small. It has been reported that 1% to 3.6% of the female US population is homosexual.[1] If this is an accurate estimate, then this sample's finding of 51 lesbians and 36 bisexual women may be representative of Los Angeles County's population. Although the population of Los Angeles County may be more sociodemographically diverse than many areas of the country, the sample of lesbians and bisexual women in this study reflects this diversity. As a result, the sample of lesbians and bisexual women in this study is ethnically diverse compared with the overwhelmingly white and well-educated participants in the majority of prior studies on lesbian and bisexual women's health.[3-7,9,13,14,26,38-39,47-49]

The respondents in the 1997 Los Angeles County Health Survey represented a population-based sample of residents in Los Angeles County. It was performed to measure various aspects of health and access to and use of health care services in a large urban county,[24] and it allowed us to compare lesbians, bisexual women, and heterosexual women on several important health and health care domains. Although this study used a population-based sample of women for which sexual orientation was found to have a significant effect on health and health care, we note some limitations. First, the small number of lesbians and bisexual women in the sample made it more difficult to detect all significant differences between women of various sexual orientations. Trends in our data suggest differences in the health status of women of various sexual orientations that would be more accurately assessed with a larger sample of nonheterosexual women. In addition, although the findings from this study may be generalizable to lesbians and bisexual women in Los Angeles County, they may not apply to lesbians and bisexual women in other parts of the country.

Additionally, underreporting by respondents and nonparticipation of lesbians and bisexual women in the study population may have occurred. Women may have been hesitant to disclose their sexual orientation and behaviors even in the context of an anonymous telephone interview. Although this was an anonymous survey, questions that focus on sexual orientation and sexual behavior may have had the potential to generate nonresponse bias. Because this was a population-based study that relied on random digit dialing technique to contact subjects, households without telephones were not represented. Individuals without telephones are commonly poor and may be homeless, but there is no information indicating that the differences between lesbians, bisexual women, and heterosexual women were significantly affected by this limitation. Although the response rate of 52% is comparable with other telephone surveys, it is possible that undocumented residents and other subpopulations who fear contact with government agencies may have been overrepresented among those who did not respond to the telephone call. Unfortunately, we do not have information about the nonrespondents, particularly regarding their sexual orientation.

In addition, because of the small number of lesbians and bisexual women, we were unable to assess the existence of racial and ethnic differences among nonheterosexual women. Prior research has demonstrated significant racial and ethnic differences in health behaviors, health status, and access to and use of health care services.[27,50] Therefore, lesbian and bisexual women of color may be at increased risk for lack of needed health care because of their further marginalized status. We were unable to detect these differences. In the future, the use of oversampling to increase lesbians and bisexual women in a popu-

lation-based study would be a valid method for ensuring that there are enough nonheterosexual women to allow for subgroup analyses.

CONCLUSION

In considering the topic of lesbian and bisexual women's health, one should examine not only the increased or decreased risks for specific medical conditions that women of various sexual orientations may face, but also the processes they encounter in accessing and receiving appropriate health care. This study reveals that lesbians and bisexual women are more likely to participate in health-endangering behaviors such as excessive alcohol consumption and tobacco use; are more likely to encounter greater financial barriers to health care; and that lesbians are less likely to receive needed health care, including preventive services. To reduce the incidence of negative experiences by some lesbian and bisexual women, and to improve access to and receipt of higher-quality service within the health care system, it is important to train health care professionals to provide sensitive and nonjudgmental medical care. Attainment of these goals should begin with the inclusion of lesbian and bisexual health issues into medical school curricula. In addition, greater outreach to educate lesbians about the benefits of preventive care should be emphasized by the health care community. To gain a better understanding of lesbian and bisexual women's health issues, items related to sexual orientation and sexual behavior should be included in large population-based studies.

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