Physical Health Complaints Among Lesbians, Gay Men, and Bisexual and Homosexually Experienced Heterosexual Individuals: Results From the California Quality of Life Survey

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Objectives. We examined evidence that minority sexual orientation is associated with more-frequent reports of physical health complaints. We also investigated the possible role of HIV infection among gay men and higher rates of psychological distress among lesbians, gay men, and bisexually and homosexually experienced heterosexual individuals in generating these health disparities.

Methods. We used data from the California Quality of Life Survey (N=2272 adults) to examine associations between sexual orientation and self-reports about physical health status, common health conditions, disabilities, and psychological distress.

Results. Prevalent HIV infection was reported by nearly 18% of gay, bisexual, and homosexually experienced heterosexual men. Gay men and bisexual and homosexually experienced heterosexual individuals had higher levels of psychological distress compared with exclusively heterosexual individuals. Self-reported physical health status varied by gender and by sexual orientation.

Conclusions. Lesbians and bisexual and homosexually experienced heterosexual women reported a greater variety of health conditions and limitations compared with exclusively heterosexual women; however, these differences mostly disappeared when distress levels were taken into account. Among men, differences in health complaints appeared to reflect the ongoing burden of HIV and other sexually transmitted diseases in the gay male community. (*Am J Public Health.* 2007;97:2048–2055. doi:10.2105/AJPH.2006.087254)

Although it is well-known that men who have sex with men are at a higher risk for contracting HIV[1] and other sexual transmitted infections (STIs),[2] accumulating evidence shows that minority sexual orientation may also be an underrecognized risk factor for psychiatric morbidity,[3–13] alcohol[14–18] and illicit drug use,[19–21] cigarette smoking,[15,22] and problems with health care use.[22–24] This has led to speculation that, compared with exclusively heterosexual individuals, lesbians, gay men, and bisexual and homosexually experienced heterosexual men and women may also experience unrecognized disparities in general physical health that go beyond the conditions specifically associated with STIs among homosexually active men.[25] These disparities may include a higher risk for cardiovascular disease,[22,23,26] lung cancer as a possible consequence of higher rates of smoking,[15,27–30] and a higher risk for diabetes among lesbians and bisexual women.[31,32] Indeed, a recent survey of Dutch adults found that those adults who reported predominant or exclusive same-sex preferences were more likely to report a number of health conditions compared with other respondents.[33]

One difficulty with estimating physical health disparities that are associated with sexual orientation lies in the dearth of population-based surveys that have measured both sexual orientation and markers of physical health, including HIV infection status. The Dutch study,[33] for example, did not measure HIV status, which is a critical factor for understanding health complaints by gay men. A second concern is that lesbians, gay men, and bisexual and homosexually experienced heterosexuals have higher levels of psychological distress,[6,10,34] which has been associated with more frequent reporting of some chronic conditions, health limitations, and poorer physical health status.[35–37] Generally, psychological distress is both a consequence of physical illness and a direct predictor of self-perceived physical health status[38]; however, the patterns of causal relationships among distress, chronic conditions, and self-perceived physical health are complex and may at times be recursive. For example, there is good evidence that psychiatric morbidity, including subthreshold mental disorders,[39] inflates reports of somatic complaints and physical disability among individuals with similar levels of physical illness.[38,40]

Furthermore, prospective studies have identified psychological distress as a precursor for incident pain conditions[41,42] and preexisting depression as a risk factor for disability incidence.[43] Thus, associations between sexual orientation and reports of chronic health conditions—particularly pain, disability, and poor overall physical health—may in fact reflect both direct effects of factors associated with sexual orientation and confounding from preexisting levels of psychological distress. This is relevant because previous studies have shown both higher levels of perceived social discrimination among lesbians, gay men, and bisexual individuals compared with heterosexual individuals[44] and a strong positive association between perceptions of discrimination and psychological morbidity.[44,45]

To bring clarity to these issues, we examined the associations between sexual orientation, reports of common physical health complaints, and perceptions of physical health status with data from the California Quality of Life Survey, a population-based health survey of adult Californians that was conducted in late 2004 and early 2005. This survey oversampled individuals who were likely to be lesbian, gay, or bisexual, and it measured both sexual orientation identity and genders of sexual partners since age 18 years. We hypothesized that individuals with minority sexual orientation (defined both in terms of identity and sexual behavior) would have higher levels of psychological distress compared with exclusively heterosexual men and

women. We also hypothesized that prevalent HIV infection would be more common among men who were likely to have had sex with men compared with exclusively heterosexual men. Furthermore, we anticipated that individuals with minority sexual orientation would show a greater burden of physical health complaints and a greater impairment in physical health, much like the Dutch study.[33] However, we hypothesized that 2 factors—higher rates of psychological distress and, among gay and bisexual men, possible concurrent HIV infection—would account for any differences in the patterns of health problems we observed.

METHODS

Data Source

The California Quality of Life Survey is a follow-back to the 2003 California Health Interview Survey (CHIS), a stratified multistage random-digit telephone health surveillance interview of more than 42 000 adults aged 18 years and older. Follow-back surveys use the original survey sample (in this instance the CHIS) as a sampling frame from which to draw a subsample of interest to obtain more detailed information about a specific topic. The overall CHIS response rate was 38% (using the American Association for Public Opinion Research Response Rate 4 method[46]), which was consistent with other recent random-digit telephone interviews.[15,47,48] In the CHIS, all adult respondents aged 18 to 70 years were asked about the genders of their sexual partners during the past year, and those aged 18 years and older (with no age limit) were asked about their sexual orientation identity. Seventy-six percent of respondents were willing to participate in additional health surveys; from the CHIS sample, 4165 individuals were selected by probability methods. Eligibility was determined by having completed either an English or Spanish CHIS interview, a willingness to be recontacted, and an overselection for sexual orientation minority status. Of these, 2322 individuals were successfully interviewed between October 2004 and February 2005 (56% response rate using the American Association for Public Opinion Research Response Response Rate 1 method[46]).

For our study, we used data from 2272 individuals who were aged 18 to 70 years at the time of the CHIS interview and who had been questioned about sexual orientation identity and recent sexual partners during that interview.

Quality of Life Survey Measures

Indicators of general physical health and disability. The interview assessed several indicators of overall physical health and disability, including the physical health component from the Short Form–12 Health Survey (SF–12).[49] From this we coded 2 variables: overall ratings of physical health (poor or fair vs good, very good, or excellent) and whether the individual scored below the normed median (summary score <50) on the SF–12 Physical Component Scale. Three additional questions asked whether the respondent currently (1) had a major physical disability, such as the loss of a limb; (2) had a functionally limiting health problem or disability; or (3) received disability income.

Reports of chronic physical conditions. All respondents were asked if they had ever tested positive for an HIV infection. Additional questions asked about the presence of 14 health conditions, including symptomatic HIV-related illness. With the exception of HIV-related illness, the reported conditions were summed to provide a total count of current conditions.

Psychological distress. The interview included the Kessler Psychological Distress Scale, a 10-item instrument that measures nonspecific psychological distress.[50] It was developed as a screening tool for detecting the presence of serious mental illness in general population surveys and is scored on a 0- to 40-point scale.

Sexual orientation. Both identity and behavioral dimensions of sexual orientation were assessed. Behavioral questions asked about the genders of sexual partners since age 18 years and during the past year. Individuals were asked about their sexual orientation identity; we classified respondents into 1 of 4 categories: lesbian or gay identity, bisexual identity, a positive adult lifetime history of same-gender sexual partners with a current heterosexual identity (homosexually experienced heterosexual), and heterosexual identity with no history of same-gender sexual partners (exclusively heterosexual).

Individual characteristics. Several demographic characteristics were measured, including gender, age, race/ethnicity, educational attainment, work status (in the labor force or not), nativity, family income, and current marital or cohabitation status. Cohabitation was defined in the interview as "living with a partner in a marriage-like relationship." For analytic purposes, we combined married and cohabiting responses. Current health insurance status was assessed with several questions that asked whether respondents had private or government-sponsored health coverage from various sources. Those who reported health insurance from any source were coded as insured.

Statistical Analysis

Three sets of analyses were conducted using SAS 9.1 software[51]; trimmed weights (sample weights in which the outlier values have been limited in their size so as to limit their possible biasing effects on estimates) were adjusted for selection probability and survey nonresponse. We first evaluated possible demographic correlates (gender, age, race/ethnicity, educational attainment, work status, nativity, family income, and current marital or cohabitation status) of sexual orientation with logistic regression. We also examined possible differences in health insurance status while we controlled for these demographic factors. Next, we hypothesized that sexual orientation was a direct risk indicator for health conditions, physical health status, and disability, as suggested by Sandfort et al.[33]

We used multivariate logistic or linear regression methods, as appropriate, to estimate associations between sexual orientation and indicators of physical health adjusting for possible demographic confounding because of age, race/ethnicity, educational attainment, relationship status, nativity, and family income.[3–6,9,10,14,44,52] All of these analyses were conducted separately by gender because of the consistent gender disparity in risk for HIV infection among lesbians, gay men, and bisexual individuals.[53] We then treated psychological distress as an additional confounder to the demographic confounders. For distress to confound associations, we had

to assume that distress had a causal role in generating some medical conditions and that distress itself was not generated substantially by ill health.[54] Log transformations of both the Kessler Psychological Distress Scale score and the number of chronic conditions were used in our analyses; for clarity, we present only the raw scores.

For some rarely reported conditions such as recently diagnosed cancer, we dropped those groups in which reported prevalence was zero. We also conducted a parallel set of analyses that examined differences among men who did not report prevalent HIV infection while we controlled for either demographic confounding alone or in conjunction with psychological distress levels. For all analyses, exponentiated logistic regression coefficients are in the form of odds ratios (ORs) with 95% confidence intervals (CIs). Both weighted point estimates and their standard errors are presented; the significance of study findings was evaluated at the $P<.05$ level.

RESULTS

Sample Characteristics

Twelve percent of the weighted sample of respondents reported a minority sexual orientation (lesbian, gay, bisexual, or having a positive adult history of same-gender sexual partners), which reflected the oversampling design (Table 1). This differed significantly between men and women (14.0% vs 9.8%; OR=0.66; 95% CI=0.51, 0.86). Approximately 87% of homosexually experienced individuals who currently self-identified as being heterosexual reported their most recent homosexual experience occurred more than 1 year before the interview. Overall, minority sexual orientation was associated with higher levels of education (OR=1.38; 95% CI=1.23, 1.55), a nonmarried or cohabiting status (OR=2.42; 95% CI=1.87, 3.13), non-Hispanic White versus Hispanic race/ethnicity (OR=0.35; 95% CI=0.25, 0.50) or other race/ethnicity (OR=0.54; 95% CI=0.36, 0.80), US nativity (OR=2.43; 95% CI=1.72, 3.43), and higher family income (OR=1.38; 95% CI=1.05, 1.82). Insurance coverage did not differ by sexual orientation (OR=1.13; 95% CI=0.76, 1.67).

TABLE 1—Weighted Sample Characteristics, by Sexual Orientation: California Quality of Life Survey, 2004–2005

Characteristics	Heterosexual (n = 1999)	Lesbian/Gay (n = 158)	Bisexual (n = 67)	Homosexually Experienced Heterosexual (n = 51)
Women,* %	52.9	32.2	67.4	51.2
Age, %				
18–29 y	21.6	7.6	25.7	8.1
30–39 y	22.9	21.4	26.8	34.3
40–49 y	21.9	34.7	25.3	37.8
50–59 y	19.8	25.1	15.0	17.6
60–72 y	13.8	11.2	7.2	2.2
Education,* %				
High school or less	38.4	18.1	26.3	37.3
Some college	27.4	26.6	26.9	35.4
College degree	18.8	27.1	25.4	15.5
Graduate school	15.4	28.2	21.4	11.8
Married/cohabiting,* %	66.2	43.9	38.2	61.0
Race/ethnicity,* %				
Non-Hispanic White	53.8	72.3	70.9	69.8
Hispanic	31.1	17.1	11.4	26.1
Other	15.1	10.6	17.7	4.0
Foreign nativity,* %	30.6	17.0	11.7	27.2
Family income below 300% of US poverty level,* %	37.5	25.0	34.1	44.6
Employed, %	69.0	72.1	74.2	66.4
Has health insurance, %	82.5	84.2	87.7	71.7
K-10 distress score, mean (SE)	5.6 (0.2)	6.5 (0.3)	9.0 (0.6)	9.4 (0.8)

Note. K-10 = 10-item Kessler Psychological Distress Scale. Unweighted sample size was 1617 exclusively heterosexual individuals, 422 lesbians or gay men, 179 bisexual men and women, and 58 individuals who reported sexual relations with a same-sex partner since age 18 years but considered themselves to be heterosexual. Where relevant, percentages were summed to 100%, except for rounding error.
*$P<.05$.

Health Condition Reports

More than half of the respondents reported at least 1 health condition other than an HIV-related illness (Table 2). Among women, homosexually experienced heterosexual women reported the greatest number of non–HIV-related health conditions (mean=1.6; SE=0.3) compared with bisexual women (mean=1.5; SE=0.2), lesbians (mean=1.4; SE=0.2), and exclusively heterosexual women (mean=1.2; SE=0.1). However, multivariate comparisons that adjusted for demographic confounding showed only bisexual women compared with exclusively heterosexual women reported significantly greater numbers of non-HIV/AIDS health conditions (adjusted b=0.21; $P=.01$). For individual health conditions, bisexual women were more likely than exclusively heterosexual women to report several health problems, including digestive complaints, back problems, and chronic fatigue syndrome (Table 3). Homosexually experienced heterosexual women were more likely than exclusively heterosexual women to report asthma and back problems. By contrast, lesbians were more likely than exclusively heterosexual women to report having arthritis.

Among men, homosexually experienced heterosexual men reported the most number of non-HIV/AIDS health conditions

TABLE 2—Weighted Sample Prevalences of Self-Reported Health Conditions, Health Status, and Disability, by Gender and Sexual Orientation: California Quality of Life Survey, 2004–2005

	Women				Men			
Health markers	Heterosexual (n = 1058), % (SE)	Lesbian/Gay (n = 48), % (SE)	Bisexual (n = 38), % (SE)	Homosexually Experienced Heterosexual (n = 28), % (SE)	Heterosexual (n = 946), % (SE)	Gay (n = 101), % (SE)	Bisexual (n = 29), % (SE)	Homosexually Experienced Heterosexual (n = 23), % (SE)
Current conditions								
Heart disease	3.2 (0.6)	2.6 (1.5)	0.7 (0.7)	0.0	3.3 (0.6)	4.2 (1.3)	3.0 (2.8)	9.4 (6.6)
Hypertension	14.9 (1.2)	12.6 (3.1)	7.4 (2.7)	8.1 (4.7)	16.1 (1.4)	21.9 (3.1)	14.0 (6.1)	20.1 (8.8)
Cancer diagnosed within past 3 years[a]	2.0 (0.5)	1.9 (1.2)	0.0	0.0	1.1 (0.4)	0.8 (0.5)	0.0	4.3 (4.2)
Diabetes	6.9 (0.9)	2.2 (1.0)	1.3 (0.9)	0.0	8.3 (1.1)	6.7 (1.8)	5.2 (3.7)	11.2 (10.3)
Liver disease	1.0 (0.3)	1.8 (1.3)	1.0 (1.0)	0.0	0.9 (0.4)	3.7 (1.3)	4.3 (3.1)	13.3 (7.5)
Stomach ulcer, enteritis, colitis (digestive)	7.9 (1.0)	6.1 (2.5)	15.4 (4.4)	8.8 (5.1)	2.6 (0.6)	7.9 (2.2)	5.6 (3.3)	19.4 (11.0)
Urinary problems	4.3 (0.7)	0.5 (0.4)	7.2 (3.3)	0.0	2.2 (0.6)	6.5 (1.8)	6.5 (3.4)	0.0
Migraines or headaches	19.1 (1.4)	18.4 (4.4)	26.4 (5.9)	32.0 (10.2)	7.2 (1.0)	15.5 (2.9)	6.5 (3.3)	32.4 (12.5)
Asthma	8.6 (1.0)	13.1 (3.6)	19.2 (4.7)	24.5 (8.4)	6.5 (1.0)	4.2 (1.6)	9.0 (4.1)	21.1 (11.4)
Arthritis	21.4 (1.4)	33.5 (5.0)	17.7 (4.1)	19.7 (7.5)	15.7 (1.3)	14.5 (2.5)	17.2 (6.2)	18.1 (8.4)
Back problems	14.4 (1.2)	23.3 (4.3)	26.5 (5.2)	37.0 (10.4)	14.4 (1.3)	11.6 (2.5)	19.7 (5.8)	32.7 (12.0)
Chronic pain[b]	11.6 (1.1)	18.5 (3.8)	18.5 (4.4)	24.5 (8.1)	9.3 (1.1)	11.8 (2.4)	11.9 (4.6)	12.0 (6.8)
Chronic fatigue syndrome, fibromyalgia	4.7 (0.7)	9.0 (3.0)	12.4 (3.8)	6.4 (3.9)	2.8 (0.7)	8.0 (2.2)	3.7 (2.1)	15.5 (10.7)
HIV infection	0.0	0.0	2.9 (2.2)	0.0	0.0	22.5 (3.2)	6.8 (3.8)	7.7 (5.4)
AIDS/HIV illness	0.0	0.0	0.9 (0.9)	0.0	0.0	13.1 (2.6)	6.5 (3.8)	0.0
At least 1 condition reported other than AIDS/HIV illness	57.0 (1.8)	65.8 (5.3)	65.8 (5.7)	63.2 (9.9)	46.4 (1.9)	54.0 (3.8)	54.8 (7.2)	52.5 (12.5)
Health status indicators								
Health status rated fair or poor	16.7 (1.4)	8.2 (2.3)	19.1 (5.3)	10.3 (5.2)	15.1 (1.5)	16.9 (2.9)	16.5 (6.2)	30.7 (11.9)
SF-12 Physical Health Component Score < 50	47.8 (1.8)	54.3 (5.4)	57.6 (6.0)	53.0 (10.2)	38.7 (1.9)	42.7 (3.8)	49.3 (7.9)	60.0 (12.3)
Disability status								
Reports functional health limitation	21.0 (1.4)	30.5 (4.8)	37.6 (5.7)	21.1 (7.3)	18.9 (1.5)	23.5 (3.2)	30.5 (7.2)	30.6 (11.3)
Major physical disability	2.8 (0.6)	1.7 (1.0)	0.7 (0.5)	0.0	3.4 (0.7)	1.9 (0.7)	4.2 (3.0)	6.4 (4.7)
Receives disability income	5.1 (0.8)	12.6 (3.5)	12.4 (3.7)	5.0 (3.6)	6.4 (0.9)	11.2 (2.4)	11.2 (4.5)	9.0 (6.4)

Note. SF-12 = Short Form-12 Health Survey. Unweighted sample size was 867 exclusively heterosexual women, 152 lesbians, 116 bisexual women, 35 homosexually experienced heterosexual women, 753 exclusively heterosexual men, 263 gay men, 63 bisexual men, and 23 homosexually experienced heterosexual men.
[a]Excludes skin cancer.
[b]Excludes back pain.

(mean = 2.1; SE = 0.7) compared with gay men (mean = 1.2; SE = 0.1), bisexual men (mean = 1.1; SE = 0.2), and exclusively heterosexual men (mean = 0.9; SE = 0.1). However, statistical comparisons that were adjusted for demographic confounding did not achieve statistical significance. Both gay men and homosexually experienced heterosexual men were more likely than exclusively heterosexual men to report several health conditions (Table 3). Specifically, gay men were significantly more likely than exclusively heterosexual men to report digestive problems, urinary problems, migraines or headaches, and chronic fatigue syndrome. Additionally, homosexually experienced heterosexual men were more likely than exclusively heterosexual men to report heart disease, liver disease, digestive problems, migraines or headaches, asthma, back problems, and chronic fatigue syndrome.

Although HIV infection was rarely reported by respondents (1.2% of the weighted sample), approximately 17.3% of gay, bisexual, or homosexually experienced heterosexual men reported they were HIV positive, with about half of these men also reporting symptomatic HIV/AIDS. After excluding men who were HIV positive from analyses, gay men were still more likely than exclusively heterosexual men to report migraines or headaches (adjusted OR = 2.16; 95% CI = 1.02, 4.57), but differences in reports of urinary problems, digestive problems, and chronic fatigue syndrome were statistically nonsignificant. By contrast, homosexually experienced heterosexual men remained more likely than exclusively heterosexual men to report prevalent liver disease (adjusted

TABLE 3—Partial Results of Multivariate Logistic Regression Analyses for Self-Reported Health Conditions, Health Status, and Disability, by Gender and Sexual Orientation: California Quality of Life Survey, 2004–2005

	Women[a]			Men[a]		
Health markers	Gay/Lesbian, Adjusted OR (95% CI)	Bisexual, Adjusted OR (95% CI)	Homosexually Experienced Heterosexual, Adjusted OR (95% CI)	Gay, Adjusted OR (95% CI)	Bisexual, Adjusted OR (95% CI)	Homosexually Experienced Heterosexual, Adjusted OR (95% CI)
Current conditions						
Heart disease	1.00 (0.16, 6.35)	0.41 (0.01, 17.87)	. . .[b]	1.23 (0.38, 3.98)	1.04 (0.10, 10.24)	6.28 (1.29, 30.60)
Hypertension	0.91 (0.35, 2.34)	0.88 (0.23, 3.33)	0.74 (0.17, 3.22)	1.55 (0.86, 2.79)	0.82 (0.26, 2.61)	1.68 (0.56, 5.04)
Cancer diagnosed past 3 years[c]	0.76 (0.09, 6.48)	. . .[b]	. . .[b]	0.58 (0.06, 5.84)	. . .[b]	4.18 (0.44, 39.36)
Diabetes	0.41 (0.06, 2.95)	0.27 (0.02, 4.80)	. . .[b]	0.97 (0.39, 2.39)	0.76 (0.14, 4.27)	2.04 (0.52, 7.98)
Liver disease	2.46 (0.24, 24.80)	2.20 (0.08, 62.76)	. . .[b]	3.65 (0.92, 14.46)	3.00 (0.39, 22.85)	16.14 (3.48, 74.85)
Stomach ulcer, enteritis, colitis (digestive)	0.96 (0.28, 3.29)	2.77 (1.06, 7.22)	0.98 (0.25, 3.82)	3.60 (1.41, 9.20)	2.52 (0.44, 14.31)	7.40 (2.29, 23.94)
Urinary problems	0.13 (0.02, 8.27)	2.03 (0.55, 7.46)	. . .[b]	3.93 (1.39, 11.12)	3.76 (0.72, 19.57)	. . .[b]
Migraines or headaches	1.22 (0.57, 2.62)	1.75 (0.82, 3.74)	1.94 (0.84, 4.47)	2.74 (1.43, 5.23)	0.85 (0.19, 3.90)	6.35 (2.51, 16.04)
Asthma	1.38 (0.57, 3.31)	2.00 (0.85, 4.70)	2.88 (1.15, 7.19)	0.60 (0.21, 1.70)	1.13 (0.29, 4.46)	3.45 (1.15, 10.29)
Arthritis	2.02 (1.00, 4.08)	1.40 (0.55, 3.60)	0.98 (0.34, 2.84)	0.79 (0.41, 1.52)	1.08 (0.37, 3.13)	1.14 (0.37, 3.57)
Back problems	1.66 (0.80, 3.43)	2.39 (1.10, 5.20)	3.05 (1.32, 7.04)	0.76 (0.39, 1.49)	1.22 (0.46, 3.25)	2.95 (1.15, 7.56)
Chronic pain[d]	1.48 (0.68, 3.23)	1.74 (0.73, 4.15)	2.15 (0.85, 5.42)	1.46 (0.73, 2.94)	1.19 (0.36, 3.92)	1.32 (0.35, 4.94)
Chronic fatigue syndrome, fibromyalgia	1.92 (0.66, 5.61)	3.30 (1.14, 9.55)	1.18 (0.24, 5.77)	3.20 (1.24, 8.24)	1.62 (0.20, 12.89)	6.33 (1.79, 22.46)
At least 1 condition reported except AIDS/HIV illness	1.33 (0.70, 2.56)	1.82 (0.90, 3.85)	1.23 (0.54, 2.86)	1.43 (0.90, 2.27)	1.41 (0.63, 3.12)	1.23 (0.51, 2.94)
Health status indicators						
Health status rated fair or poor	0.69 (0.23, 2.09)	2.00 (0.79, 5.08)	0.48 (0.13, 1.83)	1.47 (0.78, 2.76)	1.07 (0.36, 3.18)	2.62 (0.95, 7.22)
SF-12 Physical Health Component Score < 50	1.72 (0.92, 3.20)	2.14 (1.07, 4.31)	1.17 (0.52, 2.67)	1.24 (0.78, 1.97)	1.39 (0.62, 3.10)	2.64 (1.06, 6.55)
Disability status						
Reports functional health limitation	1.53 (0.79, 2.98)	2.46 (1.21, 5.00)	0.84 (0.32, 2.33)	1.30 (0.75, 2.26)	1.72 (0.71, 4.17)	1.82 (0.68, 4.86)
Major physical disability	0.77 (0.08, 7.10)	0.24 (0.01, 10.29)	. . .[b]	0.52 (0.11, 2.39)	0.97 (0.14, 6.65)	1.52 (0.26, 9.02)
Receives disability income	2.88 (1.11, 8.14)	2.97 (1.02, 8.61)	0.76 (0.13, 4.50)	2.13 (0.97, 4.68)	1.61 (0.43, 5.99)	1.13 (0.24, 5.34)

Note. OR = odds ratio; CI = confidence interval; SF-12 = Short Form-12 Health Survey. For total sample, N = 2272. Logistic regression analyses that evaluated the effects of sexual orientation were conducted separately by gender. Where a group reported zero prevalence for individual health conditions or major physical disability, the entire group was excluded from analyses. ORs and 95% CIs were adjusted for age, educational attainment, race/ethnicity, relationship status, US nativity, and family income.

[a] For each sexual orientation category, exclusive heterosexuals were the reference category.

[b] Parameter not estimated.

[c] Excludes skin cancer.

[d] Excludes back pain.

OR = 14.00; 95% CI = 2.56, 76.48), digestive problems (adjusted OR = 9.05; 95% CI = 2.71, 30.21), migraines or headaches (adjusted OR = 7.54; 95% CI = 2.91, 19.54), heart disease (adjusted OR = 6.78; 95% CI = 1.36, 33.75), asthma (adjusted OR = 4.42; 95% CI = 1.45, 13.45), and chronic fatigue syndrome (adjusted OR = 4.84; 95% CI = 1.16, 20.30), but they were not more likely to report back problems.

Current Health Status

Overall, few respondents reported impaired health (Table 2). Nevertheless, bisexual women were more likely than exclusively heterosexual women to report a functional health limitation and poorer physical health (as indexed by the SF–12). Lesbians and bisexual women were more likely than exclusively heterosexual women to report they were receiving disability income. Among men, no significant differences were observed in overall ratings of health or disability by sexual orientation, except that homosexually

experienced heterosexual men reported poorer overall physical health compared with exclusively heterosexual men. After we restricted analyses to men who did not report prevalent HIV infection, the difference in SF–12 scores between homosexually experienced heterosexual men and exclusively heterosexual men was not significant.

Psychological Distress and Health Indicators

As predicted, sexual orientation was associated with psychological distress. Among women, bisexual women reported the highest levels of distress (mean=10.5, SE=1.1) compared with homosexually experienced heterosexual women (mean=7.7; SE=1.1), lesbians (mean=7.2; SE=0.7), and exclusively heterosexual women (mean=6.1; SE=0.2). After we adjusted for demographic differences, women who identified as lesbian (adjusted b=0.25; $P<.05$) or bisexual (adjusted b=0.60; $P<.001$) had significantly higher levels of psychological distress compared with women who identified as exclusively heterosexual.

Among men, homosexually experienced heterosexual men reported the highest levels of distress (mean=11.5; SE=1.5) compared with bisexual men (mean=7.0; SE=0.9), gay men (mean=6.4; SE=0.5), and exclusively heterosexual men (mean=5.0; SE=0.2). Both gay men (adjusted b=0.27; $P<.01$) and homosexually experienced heterosexual men (adjusted b=1.01; $P<.001$) reported significantly higher levels of psychological distress compared with exclusively heterosexual men after we adjusted for confounding. When we restricted the sample to men who did not report HIV infection, the difference somewhat attenuated for gay men (adjusted b=0.15; $P=.06$) but not for homosexually experienced heterosexual men (adjusted b=1.05; $P<.001$).

When levels of psychological distress were treated as a confounder, we observed no significant sexual orientation–related differences among women in reports of health conditions, physical health status, and disability, with 2 exceptions: homosexually experienced heterosexual women remained more likely than exclusively heterosexual women to report asthma (adjusted OR=2.73; 95% CI=1.09, 6.86) and back problems (adjusted OR=2.73; 95% CI=1.14, 6.57). By contrast, similar adjustment for psychological distress among men reduced few health-related differences. Gay men remained more likely than exclusively heterosexual men to report digestive problems (adjusted OR=3.13; 95% CI=1.22, 8.02), urinary problems (adjusted OR=3.60; 95% CI=1.28, 10.16), migraines or headaches (adjusted OR=2.29; 95% CI=1.18, 4.42), and chronic fatigue syndrome (adjusted OR=2.91; 95% CI=1.08, 7.81).

Although the odds ratios that evaluated differences between homosexually experienced heterosexual men and exclusively heterosexual men in reports of asthma, back problems, and chronic fatigue syndrome were statistically nonsignificant, homosexually experienced heterosexual men remained more likely than exclusively heterosexual men to report heart disease (adjusted OR=5.92; 95% CI=1.18, 29.75), liver disease (adjusted OR=11.05; 95% CI=2.24, 54.67), digestive problems (adjusted OR=4.38; 95% CI=1.33, 14.44), and migraines or headaches (adjusted OR=3.35; 95% CI=1.30, 8.63). Restricting comparisons to men who did not report HIV infection demonstrated no significant differences between gay men and exclusively heterosexual men, but it had little effect on observed differences between homosexually experienced heterosexual men and exclusively heterosexual men. Specifically, the former group was still more likely to report heart disease (adjusted OR=6.57; 95% CI=1.27, 33.90), liver disease (adjusted OR=9.36; 95% CI=1.58, 55.25), digestive problems (adjusted OR=5.45; 95% CI=1.59, 18.67), and migraines or headaches (adjusted OR=4.03; 95% CI=1.52, 10.67).

DISCUSSION

Although some associations between sexual orientation and health have long been recognized, such as high rates of STIs among homosexually active men,[55,56] other possible associations have been greatly understudied.[33,57] To that end, our findings underscore 3 key points. First, although the majority of individuals who were classified as a sexual orientation minority reported being in good physical and mental health, minority sexual orientation seems to be associated with some elevation in risk for common health conditions and health limitations. Among women, greater health complaints were evident primarily among bisexual women and homosexually experienced heterosexual women; among men, homosexually experienced heterosexual men and gay men had higher levels of health problems. As anticipated, prevalent HIV infection among gay men was a critical factor for this greater morbidity. When men who reported prevalent HIV infection were excluded from our analyses, many of the health differences between gay men and exclusively heterosexual men disappeared. Thus, it appears to be HIV infection rather than sexual orientation that increases health risks among gay-identified men. Nevertheless, because approximately one fifth of the gay men in this study reported prevalent HIV infection, our results highlight the ongoing need for models of general health care for homosexually active men that are cognizant of how HIV infection shapes general health risks among gay men.

Second, consistent with previous studies,[6,58] we observed elevated levels of psychological distress among individuals who identified as gay, lesbian, or bisexual or who reported same-gender sexual histories compared with exclusively heterosexual individuals. Although explicating the reasons for this distress were beyond the scope of our study, when psychological distress was treated as a confounder of associations between sexual orientation and health, differences associated with sexual orientation among lesbians and bisexual women nearly disappeared. A similar effect was observed among gay men who did not report HIV infection. Thus, our findings suggest that higher levels of psychological distress in minority sexual orientation populations may have harmful health effects on some individuals.

Third, health complaints were not uniformly distributed among individuals with minority sexual orientations. For example, bisexual men in our study did not differ from exclusively heterosexual men in their reports of physical health or disability. By contrast, homosexually experienced heterosexual men had a variety of health complaints that seemed unrelated to the effects of known HIV infection or psychological distress. Because this latter group represented relatively few respondents in our sample, replication of these

findings is critical before it is concluded that these men truly represent a higher-risk group.

There are several limitations to our study. First, the California Quality of Life Survey sample was recruited by contacting anonymous 2003 CHIS respondents with a telephone call. Loss to follow-back was associated with younger age; thus, for all respondents, our estimates of rates of health conditions and disability may have been biased upward. Second, because the presence of medical conditions was determined by self-report, it is likely that some men were HIV-infected but were not aware of their infection.[59] Third, our treatment of psychological distress as a confounder was predicated on the assumption that distress increases the risk for—but is itself not primarily caused by—ill health. To the extent that this assumption is incorrect, then the association between sexual orientation and ill health is underestimated when levels of distress are included in the models.

Despite these limitations, our findings contribute to the growing body of work that is examining the ways in which sexual orientation might be an underrecognized risk factor for differences in health and well-being. Our findings indicate that minority sexual orientation alone is not associated with poorer physical health.[33] Instead, we found a predictable harmful effect of HIV infection on gay men's health and the possibility that well-documented higher levels of psychological distress among lesbians, bisexual women, and gay men might harm physical well-being. We also observed that those individuals who identified as heterosexual but had positive histories of same-gender sexual partners experienced a somewhat greater burden of physical health complaints that were not accounted for by HIV status or psychological distress. This latter group underscores the complexity of positing a simple association between sexual orientation and health. Clarification of the ways in which sexual orientation is associated with health outcomes, and the mechanisms by which this occurs, are critical for developing appropriate and efficacious health interventions for lesbians, gay men, bisexual individuals, and homosexually experienced heterosexual persons. ■

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Contributors

S.D. Cochran originated the study, conducted the analyses, and wrote an initial draft of the article. Both authors developed the California Quality of Life Survey, collected data, originated ideas, interpreted findings, and edited drafts of the article.

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