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Health Disparities Among Young Adult Sexual Minorities in the US

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Abstract

Background—Emerging research suggests that young adult sexual minorities (identifying as lesbian, gay, or bisexual or engaging in same-sex attractions or behaviors) experience poorer health than their majority counterparts, but many measures of health inequity remain unexamined in population-based research.

Purpose—To describe a wide range of health status and healthcare access characteristics of sexual minorities in comparison with those of the majority population in a national sample of U.S. young adults.

Methods—Binary and multinomial logistic regression analyses of Wave IV data (2008) from the National Longitudinal Study of Adolescent Health (participants aged 24–32 years, $n=13,088$) were conducted. Health measures were self-rated health; diagnosis of any of several physical or mental illnesses or sexually transmitted infections; measured body mass index; depression classified from self-reported symptoms; use of antidepressant and anxiolytic medication; uninsured; forgone care; and receipt of physical, dental, and psychological services. Analyses were conducted in 2012–2013.

Results—Sexual minority women had elevated odds of most adverse health conditions and lower odds of receiving a physical or dental examination. Sexual minority men had elevated odds of fewer adverse health conditions.

Conclusions—Young adult sexual minorities are at higher risk of poor physical and mental health. The results highlight the multidimensionality of sexual minority status and respond to calls for greater understanding of the health of this population.

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Introduction

Sexual minorities (SMs), including individuals identifying as lesbian, gay, or bisexual and those engaging in same-sex attractions or behaviors, are understudied in population-based samples with respect to health and healthcare inequalities in the U.S. Concerned about this paucity of information, the IOM developed a research agenda calling for greater understanding of SM health at every age.¹ Proposed recommendations were informed by several theoretical frameworks including the minority stress model, which posits that stigma and discrimination related to SM status lead to chronic stress and mental health problems.²

Research with SM youth has demonstrated significant health disparities compared to majority youth.³ However, sexual orientation in youth is multidimensional and not static,⁴ with variation in the timing and sequence of orientation indicator endorsement through young adulthood.^{5,6} SM definition based solely on identity rather than considering same-sex attraction and other factors ignores that some individuals may never identify as gay, lesbian, or bisexual even though they may routinely have same-sex partners. Indeed, self-identification is particularly low among some SM subgroups (e.g., racial/ethnic minority men engaging in same-sex behavior).⁷ Because sexual orientation includes multiple facets (i.e., attraction, fantasy, partner sex, and identity) that have been shown to have differential relevance for different health outcomes,⁸⁻¹⁰ multiple indicators ideally would be simultaneously measured within and across studies. Use of multifaceted definitions is critical to identify variable patterns of development and potential mechanisms underlying demonstrated disparities.¹¹

Although researchers have identified health inequities for SMs, little is known about whether disparities are present in young adulthood, specifically, a developmental period with unique health issues¹² defined variously as the late teenage years through early 30s.^{13,14} Three limitations characterize the young adult SM health literature: (1) most studies have been conducted with selected samples (e.g., college students) who are more highly educated and likely not representative of all members of this age cohort¹⁵⁻¹⁸; (2) existing population-based national or state-level studies frequently have mixed age cohorts, grouping young adults with midlife and older adults with different developmental and health needs^{10,19-25}; and (3) included health measures have not been comprehensive. The few existing population-based studies of young adults indicated that SMs experience higher prevalence of alcohol, tobacco, and other drug use,^{26,27} and that SM women in particular are more likely to abuse or be dependent on these substances.²⁸ Further, analyses of young adults from the National Longitudinal Study of Adolescent Health (Add Health) demonstrated that SM women are at increased risk of depressive symptoms, perceived stress, and victimization, whereas these associations are not generally seen among SM men.²⁷ However, SM men have elevated levels of cardiovascular biomarkers and hypertension.^{29,30} Whether disparities are also present for other indicators of health status and healthcare access in young adult SMs remains unknown.

To address these limitations, the objective of this study is to describe various health-related characteristics of SMs, most of which have not previously been examined in population-based studies of young adult SMs, in comparison with those of the majority in a nationally

representative sample of U.S. young adults. Further, three groupings of SM status are utilized to explore whether different SM definitions produce different associations with the included health measures.

Methods

Data came from Add Health, a nationally representative sample of U.S. adolescents in grades 7–12 in the 1994–1995 school year. The fourth and most recent wave of data collection occurred in 2008 with respondents aged 24–32 years. Written free and informed consent was obtained from the participants and from a parent when participants were under age 18 years. Further details on Add Health sampling procedures and study design are described elsewhere.³¹ All Add Health procedures were approved by the Public Health IRB at the University of North Carolina, Chapel Hill; present analyses were deemed exempt.

This analytic sample consisted of participants in the Waves I and IV in-home interviews for whom valid sampling weights were available (original N=14,800). Participation rates for the Wave I and IV in-home interviews were 79% and 80%, respectively. Respondents were excluded if they had missing data on all Wave IV indicators of SM status (see below), or missing data on any indicator without endorsing SM status on indicators for which they had provided valid responses ($n=206$). Respondents also were excluded if data were missing on any potential confounders ($n=1,506$, mostly urbanicity of residence) or the health measure for each model ($n=0$ to $n=110$ depending on the measure). The total sample size for health measures with non-missing data was 13,088 (7,068 women and 6,020 men).

Sociodemographic comparisons between the sample and excluded respondents are shown in Appendix Table 1.

Measures

Respondents were grouped using multiple configurations of three Wave IV indicators of SM status: attraction (self-report of any current same-sex attraction versus none), behavior (self-report of any history of same-sex romantic or sexual partners versus none), and identity (self-report as fully or mostly homosexual, bisexual, or mostly heterosexual versus fully heterosexual). The first group, “Any One Indicator,” consisted of respondents endorsing at least one of the indicators of SM status. The second group, “All Three Indicators,” consisted of respondents endorsing all three indicators. The third group, “Attraction Plus,” included respondents who endorsed same-sex attraction and either involvement in a current same-sex romantic partnership or self-identity as homosexual or bisexual (i.e., excluding “mostly heterosexual”). This combination was driven by the common assumption that attraction is the most fundamental indicator of sexual orientation,³² and is viewed by youth as a critical, though not exclusive, component of SM status.³³ The Any One Indicator group was inclusive of both of the other groups, and the All Three Indicators and Attraction Plus groups were not mutually exclusive. The proportions of respondents endorsing each indicator by SM group are given in Appendix Table 2. Respondents endorsing none of the three indicators were classified as the “heterosexual majority.”

Sociodemographic characteristics were included as confounders owing to established associations with SM status^{34,35} and health.^{36,37} These were respondent self-reported race/

ethnicity at Wave I (collapsed into the categories non-Hispanic White [referent], non-Hispanic Black, Hispanic/Latino, and non-Hispanic other), age at Wave IV (24–27, 28–29, and 30 years [referent]), educational attainment at Wave IV (any or completed high school or general educational development certificate [GED], some college, and college graduate [referent]), household income standardized per household member at Wave IV (<\$10,000, \$10,000–\$24,999, and \$25,000 [referent]), and urbanicity (urban, suburban [referent], and rural) and region of residence at Wave IV (West, Midwest [referent], South, and Northeast).

Health measures represented health and healthcare characteristics measured at Wave IV. Most measures were self-reported by the respondents except for BMI classification (measured height and weight) and medication use (medication inventories conducted by interviewers).³⁸

Health status measures were self-rated health (fair or poor versus excellent, very good, or good), lifetime diagnosis of any of several physical or mental illnesses except during pregnancy (asthma/chronic bronchitis/emphysema, migraine headaches, high blood cholesterol/triglycerides/lipids, high blood pressure/hypertension, depression, anxiety/panic disorder, and attention deficit hyperactivity disorder [ADHD]/attention problems, each yes versus no), lifetime and past-year diagnosis of sexually transmitted infections (STI, yes versus no for each), BMI classification according to WHO criteria³⁹ (overweight [BMI=25–29.9] or obese [BMI>30] versus normal [BMI<25]), meeting criteria for depression from symptoms reported on a modified Centers for Epidemiologic Studies Depression scale (CES-D, yes versus no),⁴⁰ and any use of antidepressant or anxiolytic medication (yes versus no for each).

The five healthcare measures were dichotomized respondent self-report of being uninsured, having forgone care in the past 12 months, or having received a physical examination, dental examination, or psychological counseling in the past 12 months.

Statistical Analysis

Variable distributions across the SM definitions were examined using univariate and bivariate statistics. Differences between each SM group and the majority were assessed with design-based *F*-tests; $p < 0.05$ was considered statistically significant. Binary logistic regression models were used for dichotomous health measures and multinomial logistic regression models were used for BMI to estimate the crude odds of each measure for each definition of SM status (compared to the heterosexual majority), resulting in ORs with 95% CIs. Multivariable binary or multinomial logistic regression models were then used to generate ORs with 95% CIs adjusted for confounders. All analyses were stratified by biological sex, consistent with the literature.^{10,15,16,19–22,26–30,41–43} Formal tests for interactions between sex and SM status for each health measure and for differences in coefficients for the two sexes are shown in Appendix Table 3. Analyses were performed in 2012–2013 with Stata, version 12 (StataCorp LP, College Station TX), using survey commands to incorporate sampling weights and cluster variables to account for Add Health's complex survey design.

Results

A greater proportion of women than men endorsed each of the Any One Indicator (24% vs 9%, respectively), All Three Indicators (8% vs 3%), and Attraction Plus (5% vs 3%) statuses.

Characteristics of the analytic sample are presented in Tables 1 and 2. Household income differed significantly between the analytic sample and the excluded respondents for both sexes such that the sample had greater income (Appendix Table 1). Furthermore, distributions of race/ethnicity and education differed significantly for men, with more white and college-educated men in the sample.

Among women (Table 1), SMs across all definitions were significantly younger and less likely to have graduated from college than majority women. Distributions of race/ethnicity, household income, and residential characteristics varied across SM definitions. Typically, these demographics were similar to those of the majority. Health measure distributions also differed by SM definition, with the prevalence of most poorer measures significantly higher among the SM groups than the majority. Exceptions included receipt of a physical or dental examination, for which prevalence was lower for SM women.

Among men (Table 2), significantly higher proportions of SMs across definitions lived in urban areas. Additionally, men in the All Three Indicators and Attraction Plus groups were significantly more likely than majority men to be college graduates or to report an income of \$25,000 or per household member. Distributions of race/ethnicity, age, and region of residence differed across SM groups but were similar to those of the majority.

Results of regression analyses for women are shown in Table 3. Before and after adjustment for confounders, SM women, regardless of definition, were significantly more likely to rate their health status as fair or poor than their majority counterparts, and many of the health measures supported their self-assessment. SM women had significantly elevated odds of being diagnosed with asthma, depression, anxiety, ADHD, and lifetime STIs; meeting CES-D depression criteria; anxiolytic medication use; being uninsured; having forgone care; and having received psychological counseling. AORs for these measures ranged from 1.21 (95% CI=1.01, 1.46) for diagnosed asthma among the Any One Indicator group to 3.57 (95% CI=2.23, 5.71) for psychological counseling among the Attraction Plus group. In addition, SM women across all definitions had significantly lower odds of receiving a physical examination or dental examination compared to the majority, with AORs ranging from 0.48 (95% CI=0.35, 0.67) to 0.78 (95% CI=0.66, 0.92) for physical examination among the Attraction Plus and Any One Indicator groups, respectively.

Some differences were more evident among specific groups of SM women. For example, the All Three Indicators and Attraction Plus groups had significantly elevated odds of migraine headaches. In addition, the Any One Indicator and All Three Indicators groups had higher odds of STI diagnosis in the past year and of antidepressant medication use. For all SM women, diagnosis of high cholesterol and blood pressure and measured BMI did not differ significantly from the majority.

Results of regression analyses for men are provided in Table 4. Across all definitions, SM men had significantly increased odds of being diagnosed with migraine headaches, depression, anxiety, and STIs (both lifetime and in the past year); anxiolytic medication use; and psychological counseling. AORs ranged from 1.49 (95% CI=1.02, 2.17) for psychological counseling among the Any One Indicator group to 6.60 (95% CI=2.87, 15.22) for anxiolytic medication use among the Attraction Plus group. Moreover, the Any One Indicator group experienced significantly increased odds of meeting the CES-D depression criteria and of being uninsured, while antidepressant medication use was elevated among the All Three Indicators and Attraction Plus groups.

In some cases, SM men experienced better health than their majority counterparts. The Any One Indicator group was significantly less likely to be overweight or obese. In addition, the All Three Indicators group had increased receipt of dental examination, although this was not significant after adjustment for confounders. For all SM men, the following measures were not significantly different: fair or poor self-rated health; diagnosed asthma, high cholesterol, high blood pressure, and ADHD; forgone care; and receipt of physical examination in the past year.

Discussion

A number of disparities in health and healthcare measures were identified for young adult SM women, using three definitions of SM status reflecting different levels of endorsement of distinct dimensions of sexual orientation and behavior. In contrast, disparities among men were more limited. Although overlap among the SM groups precluded formal testing for differences in coefficient size, ORs for a given health condition were generally of greater magnitude for the All Three Indicators and Attraction Plus groups than for the Any One Indicator group within each sex. Stress was not included here, but this pattern is consistent with previous Add Health literature on stress²⁷ and with patterns predicted by Meyer's minority stress model.² That is, the existence of multiple potential sources and occasions for discrimination (e.g., an identity in conflict with group values and derided by the group, harassment from being observed with a same-sex partner, differential treatment by a healthcare provider) could produce more hostile contexts and more stress-inducing experiences, thereby increasing the odds of diminished health. Although the minority stress model is focused specifically on mental health, present results support extension of the minority stress model to physical health. Discrimination found within the healthcare system^{44,45} may be particularly influential in discouraging SMs from seeking care. However, this reasoning does not adequately address especially pronounced disparities among women, and points to the need for more nuanced developmental examinations of the intersections of gender role and sexual orientation.

Present results are somewhat consistent with those of prior studies of SM young adults, alone or grouped with older adults, for mutually studied health conditions. For example, the finding that women endorsing even one indicator of SM status fared less well than the majority on many health measures is similar to another analysis of Add Health data in which each of the three individual dimensions of SM status was associated with increased depressive symptoms and other measures of stress and poor health behaviors among women

but not generally among men.²⁷ Consistent with another national analysis using the three dimensions of SM status,¹⁰ current point estimates comparing diagnosed depression and anxiety disorders and medication use for these conditions between SM and majority men were of greater magnitude than those comparing these conditions between SM and majority women. By contrast, the present national study did not replicate a finding from California that SM men (self-identified as gay or bisexual) have greater healthcare utilization than majority men,²⁰ with the exception of the increased likelihood of dental examinations found in our study. The present study extends earlier findings by examining health conditions that had not been addressed in this age group, and by demonstrating that multiple dimensions of sexuality may confer additional risk for previously studied conditions.

The present study has important public health and policy implications. This work highlights the importance of considering a multidimensional definition of SM status when designing health promotion programs, because health risks are not limited to individuals who have same-sex partners or to those who self-identify as lesbian, gay, or bisexual. Indeed, the results indicate that SMs endorsing all three dimensions are at higher risk than those endorsing only one. In addition, the present work highlights the considerable health disparities experienced by SM women, and supports policies like legal same-sex marriage⁴⁶ and inclusion of sexual orientation as a protected category in hate crime and employment discrimination legislation⁴⁷ that discourage stigma, normalize SM status for young adults, and may lead to better health status in this sizeable group.

Limitations of this study include the fact that SM status is a sensitive topic and therefore potentially subject to reporting bias. Add Health mitigates this concern through use of computer-assisted self-interview (CASI) technology, which appears to improve accuracy of reporting sensitive topics by increasing respondent privacy.⁴⁸ Additionally, most measures rely on self-report and many pertain to receipt of diagnoses of adverse health conditions. Therefore, the study cannot address the prevalence of undiagnosed conditions. However, the finding that SM women have higher odds of several diagnoses despite lower odds of healthcare receipt suggests that the estimated ORs are conservative for women. It should be noted that no adjustment to the significance level was made for multiple comparisons, because the study was focused on identifying associations to be explored in future research. Finally, sample size restrictions necessitated collapsing bisexual- and exclusively homosexual-identifying respondents into the same category. Even after collapsing, the relatively small sample sizes for men in the All Three Indicators and Attraction Plus groups make it difficult to distinguish whether the null findings are true or attributable to lower power. In particular for men, null findings may be influenced by the increased socioeconomic advantage for the analytic sample compared to excluded participants. However, aggregated SM classifications have been employed previously in the literature,^{28,49} and the finding that SM women may have more health problems than SM men is consistent with previous studies.^{27,28,50}

Conclusions

This study addresses the IOM's call for more research on SM health,¹ suggesting that young adult SMs, regardless of definition, are at elevated risk for multiple poor health conditions.

Given the consistent patterns revealed within our study, these descriptive findings point to the ongoing need for examination of individual developmental trajectories to understand the individual characteristics, life experiences, and social contexts that foster resilience and healthy development for all young adults. Although future research is needed for confirmation, the results support public health programs that acknowledge the multidimensionality of SM status, and clinical and governmental policies that mitigate stigma to reduce the health disparities particularly evident for SM women.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1Characteristics of young adult women by sexual minority status in Add Health, Wave IV (N=7068)^a

Characteristics, n (weighted %)	Sexual Minority Groups ^b			
	Any One Indicator (n=1690)	All Three Indicators (n=437)	Attraction Plus (n=288)	Heterosexual Majority (n=5378)
Sociodemographics				
Race/ethnicity				
Non-Hispanic White	942 (68.9)	247 (67.4)	134 (63.1)	2803 (65.2)
Non-Hispanic Black	335 (11.8)	99 (13.9)	79 (17.5)	1292 (17.5)
Hispanic/Latino	267 (12.5)	61 (12.0)	51 (12.8)	856 (11.6)
Non-Hispanic other	146 (6.9)	30 (6.8)	24 (6.6)	427 (5.7)
	F=5.76*	F=0.61	F=0.19	
Age				
24-27 years	605 (41.5)	161 (42.5)	108 (43.1)	1647 (36.1)
28-29 years	652 (36.2)	182 (39.4)	113 (38.8)	1982 (33.2)
30 years	433 (22.3)	94 (18.0)	67 (18.1)	1749 (30.6)
	F=10.30	F=7.26	F=5.54	
Current education				
Any or completed high school or GED	382 (25.3)	103 (30.2)	72 (31.6)	1007 (20.3)
Some college	804 (46.2)	229 (49.3)	146 (47.5)	2342 (43.9)
College graduate	504 (28.4)	105 (20.5)	70 (21.0)	2029 (35.8)
	F=11.18	F=14.01	F=9.53	
Household income per member				
<\$10,000	550 (32.1)	166 (40.0)	110 (41.1)	1577 (31.5)
\$10,000-\$24,999	596 (35.5)	145 (32.7)	89 (28.7)	1949 (34.9)
\$25,000	544 (32.4)	126 (27.2)	89 (30.2)	1852 (33.7)
	F=0.23	F=3.65	F=2.97	
Urbanicity				
Urban	731 (38.2)	185 (37.5)	133 (41.0)	1956 (33.3)
Suburban	685 (44.4)	182 (45.5)	115 (43.3)	2392 (45.1)
Rural	274 (17.4)	70 (17.0)	40 (15.7)	1030 (21.7)
	F=6.31	F=1.70	F=2.33	
Region				
West	440 (20.6)	104 (18.1)	77 (19.0)	1210 (15.7)
Midwest	476 (32.1)	132 (35.0)	84 (33.6)	1368 (32.8)
South	532 (32.0)	153 (35.7)	94 (35.6)	2117 (39.0)
Northeast	242 (15.3)	48 (11.3)	33 (11.8)	683 (12.6)
	F=7.48	F=0.72	F=0.55	
Health Measures				
Fair or poor self-rated health	246 (13.9)	70 (15.4)	52 (16.9)	481 (8.2)
	F=29.02	F=16.67	F=16.88	
Diagnosed physical illness				

Characteristics, n (weighted %)	Sexual Minority Groups ^b			
	Any One Indicator (n=1690)	All Three Indicators (n=437)	Attraction Plus (n=288)	Heterosexual Majority (n=5378)
Asthma/chronic bronchitis/emphysema	344 (20.0) F=6.39	104 (24.5) F=8.42	63 (24.6) F=7.73	831 (16.5)
Migraine headaches	392 (22.9) F=4.10	120 (28.4) F=8.38	73 (28.2) F=5.88	1008 (19.8)
High cholesterol	145 (8.6) F=1.98	33 (7.1) F=0.002	26 (7.6) F=0.05	377 (7.2)
High blood pressure	159 (9.7) F=0.92	42 (8.7) F=0.003	28 (10.0) F=0.39	433 (8.6)
Diagnosed mental illness				
Depression	569 (36.1) F=98.58	175 (43.1) F=74.17	106 (38.2) F=31.22	879 (18.5)
Anxiety/panic disorder	426 (27.8) F=64.46	124 (32.9) F=40.01	76 (29.0) F=17.76	683 (15.0)
ADHD/attention problems	90 (5.2) F=17.84	30 (7.2) F=14.66	19 (7.5) F=10.56	132 (2.8)
Diagnosed STI				
Lifetime	729 (44.5) F=96.43	181 (46.1) F=32.41	104 (38.5) F=6.75	1618 (29.6)
In past year	317 (20.0) F=46.66	86 (21.6) F=20.06	47 (16.7) F=3.83	696 (11.9)
BMI classification				
Normal or Underweight	618 (38.9)	151 (35.6)	90 (32.2)	1955 (37.0)
Overweight	416 (22.6)	106 (23.4)	66 (22.7)	1366 (25.4)
Obese	635 (38.5) F=1.51	174 (41.0) F=0.56	127 (45.1) F=1.80	1979 (37.7)
Meeting CES-D depression criteria	375 (21.9) F=75.83	112 (26.4) F=46.77	72 (25.0) F=28.11	631 (11.7)
Medication use				
Antidepressant	194 (12.9) F=17.92	56 (12.3) F=6.36	30 (10.7) F=1.38	373 (8.0)
Anxiolytic	97 (6.3) F=14.63	35 (8.8) F=20.58	19 (6.8) F=4.35	158 (3.5)
Uninsured	372 (22.6) F=22.09	131 (32.6) F=57.65	90 (35.8) F=58.16	803 (16.1)
Forgone care in past year	592 (35.3) F=81.94	184 (46.3) F=88.13	124 (44.3) F=51.03	1100 (21.3)
Healthcare in past year				
Physical examination	1136 (65.6) F=13.53	270 (57.7) F=23.16	173 (54.4) F=21.04	3990 (71.9)
Dental examination	934 (53.5)	232 (50.6)	150 (48.1)	3442 (63.3)

Characteristics, n (weighted %)	Sexual Minority Groups ^b			Heterosexual Majority (n=5378)
	Any One Indicator (n=1690)	All Three Indicators (n=437)	Attraction Plus (n=288)	
	F=28.68	F=15.11	F=14.53	
Psychological counseling	330 (20.5)	97 (24.3)	65 (25.5)	480 (9.1)
	F=80.65	F=48.59	F=33.41	

ADHD, attention deficit hyperactivity disorder; CES-D, Centers for Epidemiologic Studies Depression scale; GED, general educational development certificate; STI, sexually transmitted infection. Boldface indicates statistically significant difference from heterosexual majority ($p < 0.05$).

^aSample sizes for the following health measures vary slightly due to missing data: diagnosed high blood pressure (missing n=1); diagnosed STI lifetime (missing n=89); diagnosed STI in past year (missing n=6); BMI classification (missing n=99); meeting CES-D depression criteria (missing n=2); uninsured (missing n=8); forgone care in past year (missing n=1); physical examination in past year (missing n=11); dental examination in past year (missing n=1).

^bThe three sexual minority groups are not mutually exclusive; comparisons are between each group and the heterosexual majority.

Table 2Characteristics of Young Adult Men by Sexual Minority Status in Add Health, Wave IV (N=6020)^a

Characteristics, n (weighted %)	Sexual Minority Groups ^b			
	Any One Indicator (n=572)	All Three Indicators (n=200)	Attraction Plus (n=189)	Heterosexual Majority (n=5448)
Sociodemographics				
Race/ethnicity				
Non-Hispanic White	303 (63.0)	99 (63.4)	94 (64.2)	3014 (67.6)
Non-Hispanic Black	103 (14.6)	41 (14.0)	36 (12.4)	1048 (14.6)
Hispanic/Latino	119 (16.5)	43 (17.9)	41 (17.7)	865 (11.5)
Non-Hispanic other	47 (5.9)	17 (4.7)	18 (5.7)	521 (6.4)
	F=2.32	F=1.64	F=1.48	
Age				
24-27 years	154 (32.9)	56 (35.4)	54 (37.3)	1513 (34.3)
28-29 years	222 (31.9)	82 (33.7)	78 (31.3)	2040 (33.3)
30 years	196 (35.2)	62 (30.9)	57 (31.4)	1895 (32.4)
	F=0.46	F=0.04	F=0.14	
Current education				
Any or completed high school or GED	149 (28.5)	31 (16.1)	29 (15.6)	1526 (31.3)
Some college	237 (40.2)	86 (43.5)	84 (44.0)	2419 (42.3)
College graduate	186 (31.3)	83 (40.4)	76 (40.4)	1503 (26.3)
	F=1.06	F=5.85	F=5.54	
Household income per member				
<\$10,000	153 (30.0)	37 (19.6)	31 (15.8)	1256 (24.7)
\$10,000-\$24,999	194 (31.5)	60 (26.0)	61 (29.6)	1990 (35.9)
\$25,000	225 (38.4)	103 (54.4)	97 (54.6)	2202 (39.5)
	F=2.58	F=5.23	F=5.18	
Urbanicity				
Urban	272 (45.3)	106 (47.8)	105 (48.9)	1984 (34.2)
Suburban	213 (37.0)	73 (37.4)	67 (37.4)	2360 (42.6)
Rural	87 (17.7)	21 (14.8)	17 (13.7)	1104 (23.2)
	F=6.90	F=3.63	F=3.89	
Region				
West	143 (20.1)	50 (18.0)	50 (18.3)	1245 (15.6)
Midwest	134 (31.7)	39 (28.0)	40 (31.0)	1431 (31.2)
South	207 (33.4)	81 (35.6)	72 (32.8)	2052 (39.4)
Northeast	88 (14.8)	30 (18.5)	27 (18.0)	720 (13.9)
	F=1.39	F=0.58	F=0.57	
Health Measures				
Fair or poor self-rated health	50 (10.0)	16 (8.4)	14 (8.9)	463 (8.6)
	F=0.74	F=0.004	F=0.01	
Diagnosed physical illness				

Characteristics, n (weighted %)	Sexual Minority Groups ^b			
	Any One Indicator (n=572)	All Three Indicators (n=200)	Attraction Plus (n=189)	Heterosexual Majority (n=5448)
Asthma/chronic bronchitis/emphysema	89 (16.2) F=2.55	43 (17.6) F=1.82	36 (15.4) F=0.44	677 (12.8)
Migraine headaches	59 (13.7) F=6.21	24 (16.4) F=6.34	23 (16.7) F=6.80	426 (8.6)
High cholesterol	63 (10.0) F=1.15	16 (5.9) F=0.72	13 (5.1) F=1.33	475 (8.2)
High blood pressure	71 (14.2) F=0.72	28 (16.5) F=1.94	25 (15.8) F=1.17	683 (12.5)
Diagnosed mental illness				
Depression	105 (20.2) F=31.78	50 (26.3) F=30.20	46 (26.0) F=27.20	453 (9.1)
Anxiety/panic disorder	73 (12.1) F=8.89	41 (20.1) F=25.57	36 (18.1) F=18.00	365 (8.9)
ADHD/attention problems	46 (8.3) F=0.31	17 (8.5) F=0.17	15 (7.9) F=0.04	339 (7.4)
Diagnosed STI				
Lifetime	117 (18.8) F=10.40	61 (29.0) F=28.36	59 (29.8) F=28.82	705 (12.3)
In past year	57 (9.4) F=16.02	28 (12.7) F=18.83	26 (12.2) F=14.87	275 (4.5)
BMI classification				
Normal or Underweight	199 (37.4)	74 (34.9)	72 (36.4)	1525 (29.1)
Overweight	184 (31.4)	59 (31.6)	58 (32.3)	1902 (35.0)
Obese	178 (31.2) F=4.98	63 (33.5) F=0.93	56 (31.3) F=1.34	1953 (35.9)
Meeting CES-D depression criteria	113 (20.4) F=7.10	37 (18.2) F=0.87	32 (17.1) F=0.36	776 (14.7)
Medication use				
Antidepressant	41 (6.1) F=3.50	21 (9.6) F=8.83	18 (8.7) F=5.90	178 (3.9)
Anxiolytic	29 (7.0) F=20.61	16 (10.6) F=24.04	15 (11.4) F=26.19	103 (2.2)
Uninsured	168 (32.6) F=10.03	50 (24.9) F=0.0004	47 (25.6) F=0.03	1266 (24.9)
Forgone care in past year	174 (29.9) F=2.91	57 (24.9) F=0.02	55 (25.3) F=0.003	1370 (25.6)
Healthcare in past year				
Physical examination	299 (52.1) F=2.05	115 (59.3) F=3.40	107 (57.3) F=2.11	2665 (47.8)
Dental examination	287 (48.5)	117 (61.8)	107 (60.6)	2819 (51.0)

Characteristics, n (weighted %)	Sexual Minority Groups ^b			Heterosexual Majority (n=5448)
	Any One Indicator (n=572)	All Three Indicators (n=200)	Attraction Plus (n=189)	
	F=0.63	F=4.70	F=3.38	
Psychological counseling	70 (10.9)	35 (18.4)	31 (17.2)	369 (7.4)
	F=5.02	F=16.12	F=11.82	

ADHD, attention deficit hyperactivity disorder; CES-D, Centers for Epidemiologic Studies Depression scale; GED, general educational development certificate; STI, sexually transmitted infection. Boldface indicates statistically significant difference from heterosexual majority ($p < 0.05$).

^a Sample sizes for the following health measures vary slightly due to missing data: diagnosed depression (missing n=1); diagnosed STI lifetime (missing n=110); diagnosed STI in past year (missing n=2); BMI classification (missing n=79); meeting CES-D depression criteria (missing n=1); uninsured (missing n=6); forgone care in past year (missing n=2); physical examination in past year (missing n=14); psychological counseling in past year (missing n=2).

^b The three sexual minority groups are not mutually exclusive; comparisons are between each group and the heterosexual majority.

Table 3
Regression Analyses for Sexual Minority Status and Health or Healthcare – Women

Health Measure	Sexual Minority – Any One Indicator		Sexual Minority – All Three Indicators		Sexual Minority – Attraction Plus	
	Crude OR (95% CI)	Adj. OR ^a (95% CI)	Crude OR (95% CI)	Adj. OR ^a (95% CI)	Crude OR (95% CI)	Adj. OR ^a (95% CI)
Fair or poor self-rated health	1.81 (1.45-2.26)	1.80 (1.42-2.28)	2.05 (1.44-2.92)	1.86 (1.28-2.71)	2.29 (1.52-3.46)	2.01 (1.29-3.15)
Diagnosed physical illness						
Asthma/chronic bronchitis/emphysema	1.27 (1.05-1.53)	1.21(1.01-1.46)	1.64 (1.17-2.31)	1.54 (1.10-2.16)	1.65 (1.15-2.37)	1.53 (1.07-2.18)
Migraine headaches	1.21 (1.00-1.46)	1.18 (0.98-1.42)	1.61 (1.16-2.24)	1.53 (1.11-2.11)	1.59 (1.09-2.34)	1.54 (1.06-2.23)
High cholesterol	1.22 (0.92-1.61)	1.25 (0.95-1.65)	0.99 (0.60-1.62)	1.08 (0.66-1.77)	1.06 (0.62-1.80)	1.16 (0.68-1.98)
High blood pressure	1.14 (0.87-1.50)	1.19 (0.91-1.56)	1.01 (0.64-1.59)	0.98 (0.63-1.53)	1.18 (0.70-1.98)	1.12 (0.67-1.88)
Diagnosed mental illness						
Depression	2.49 (2.07-2.99)	2.42 (2.00-2.91)	3.35 (2.50-4.47)	3.13 (2.37-4.14)	2.72 (1.89-3.93)	2.60 (1.80-3.76)
Anxiety/panic disorder	2.18 (1.79-2.65)	2.05 (1.68-2.52)	2.78 (2.00-3.87)	2.58 (1.83-3.63)	2.32 (1.55-3.47)	2.24 (1.45-3.46)
ADHD/attention problems	1.89 (1.40-2.56)	1.78 (1.31-2.43)	2.65 (1.57-4.46)	2.20 (1.34-3.59)	2.76 (1.45-5.26)	2.50 (1.31-4.79)
Diagnosed STI						
Lifetime	1.90 (1.67-2.17)	2.03 (1.78-2.31)	2.03 (1.58-2.61)	2.02 (1.55-2.63)	1.49 (1.10-2.02)	1.42 (1.05-1.92)
In past year	1.85 (1.54-2.21)	1.86 (1.55-2.24)	2.04 (1.48-2.81)	2.02 (1.47-2.76)	1.49 (0.99-2.22)	1.42 (0.96-2.12)
BMI classification ^b						
Normal or Underweight	1.00 [Referent]	1.00 [Referent]	1.00 [Referent]	1.00 [Referent]	1.00 [Referent]	1.00 [Referent]
Overweight	0.85 (0.69-1.04)	0.86 (0.70-1.05)	0.96 (0.67-1.38)	0.93 (0.64-1.36)	1.03 (0.67-1.58)	1.00 (0.64-1.56)
Obese	0.97 (0.82-1.15)	0.99 (0.84-1.17)	1.13 (0.81-1.58)	1.07 (0.76-1.51)	1.38 (0.93-2.05)	1.29 (0.85-1.95)
Meeting CES-D depression criteria	2.12 (1.78-2.52)	2.14 (1.77-2.58)	2.71 (2.01-3.65)	2.49 (1.84-3.38)	2.52 (1.77-3.60)	2.25 (1.57-3.23)
Medication use						
Antidepressant	1.70 (1.32-2.19)	1.68 (1.30-2.19)	1.61 (1.10-2.35)	1.60 (1.08-2.38)	1.37 (0.80-2.35)	1.44 (0.83-2.50)
Anxiolytic	1.84 (1.34-2.54)	1.84 (1.33-2.53)	2.65 (1.71-4.13)	2.64 (1.71-4.07)	2.00 (1.02-3.90)	2.09 (1.08-4.05)
Uninsured	1.52 (1.28-1.82)	1.49 (1.23-1.80)	2.52 (1.97-3.23)	2.20 (1.67-2.90)	2.91 (2.18-3.89)	2.71 (1.95-3.77)
Forgone care in past year	2.01 (1.72-2.35)	2.00 (1.71-2.34)	3.18 (2.47-4.10)	2.98 (2.28-3.90)	2.94 (2.15-4.01)	2.73 (2.01-3.72)
Healthcare in past year						
Physical examination	0.75 (0.64-0.87)	0.78 (0.66-0.92)	0.53 (0.41-0.69)	0.57 (0.44-0.74)	0.47 (0.33-0.65)	0.48 (0.35-0.67)
Dental examination	0.67 (0.57-0.77)	0.67 (0.57-0.79)	0.59 (0.45-0.78)	0.67 (0.50-0.89)	0.54 (0.39-0.74)	0.61 (0.43-0.85)
Psychological counseling	2.59 (2.09-3.22)	2.62 (2.09-3.29)	3.22 (2.27-4.56)	3.31 (2.31-4.74)	3.44 (2.20-5.37)	3.57 (2.23-5.71)

ADHD, attention deficit hyperactivity disorder; CES-D, Centers for Epidemiologic Studies Depression scale; STI, sexually transmitted infection. Boldface indicates statistical significance.

^a Adjusted for age, race/ethnicity, current educational attainment, standardized household income, and urbanicity and region of residence.

^b Multinomial logistic regression was used for BMI classification whereas binary logistic models were used for all other health measures.

Table 4
Regression Analyses for Sexual Minority Status and Health or Healthcare – Men

Health Measure	Sexual Minority – Any One Indicator		Sexual Minority – All Three Indicators		Sexual Minority – Attraction Plus	
	Crude OR (95% CI)	Adj. OR ^a (95% CI)	Crude OR (95% CI)	Adj. OR ^a (95% CI)	Crude OR (95% CI)	Adj. OR ^a (95% CI)
Fair or poor self-rated health	1.17 (0.81-1.70)	1.14 (0.77-1.69)	0.98 (0.49-1.93)	1.13 (0.55-2.31)	1.03 (0.52-2.08)	1.23 (0.59-2.55)
Diagnosed physical illness						
Asthma/chronic bronchitis/emphysema	1.31 (0.94-1.84)	1.30 (0.93-1.81)	1.46 (0.84-2.54)	1.43 (0.82-2.51)	1.24 (0.65-2.35)	1.23 (0.64-2.35)
Migraine headaches	1.70 (1.11-2.60)	1.76 (1.17-2.66)	2.10 (1.16-3.80)	2.24 (1.23-4.09)	2.14 (1.19-3.86)	2.29 (1.26-4.14)
High cholesterol	1.24 (0.83-1.86)	1.26 (0.83-1.90)	0.70 (0.31-1.60)	0.68 (0.30-1.58)	0.60 (0.25-1.45)	0.57 (0.24-1.38)
High blood pressure	1.16 (0.82-1.63)	1.21 (0.86-1.71)	1.38 (0.87-2.20)	1.47 (0.92-2.35)	1.31 (0.80-2.16)	1.40 (0.84-2.31)
Diagnosed mental illness						
Depression	2.53 (1.81-3.55)	2.56 (1.80-3.66)	3.57 (2.19-5.81)	3.87 (2.32-6.47)	3.52 (2.12-5.84)	3.87 (2.28-6.57)
Anxiety/panic disorder	1.60 (1.17-2.20)	1.66 (1.19-2.30)	2.94 (1.89-4.56)	3.10 (1.95-4.93)	2.58 (1.63-4.07)	2.70 (1.66-4.39)
ADHD/attention problems	1.14 (0.72-1.81)	1.18 (0.73-1.91)	1.17 (0.55-2.47)	1.36 (0.67-2.77)	1.08 (0.49-2.38)	1.27 (0.60-2.65)
Diagnosed STI						
Lifetime	1.66 (1.21-2.26)	1.60 (1.17-2.19)	2.91 (1.92-4.41)	2.89 (1.92-4.34)	3.02 (1.97-4.64)	3.04 (2.01-4.61)
In past year	2.22 (1.48-3.33)	2.18 (1.46-3.25)	3.09 (1.80-5.30)	3.01 (1.75-5.20)	2.95 (1.65-5.28)	2.89 (1.60-5.19)
BMI classification ^b						
Normal or Underweight	1.00 [Referent]	1.00 [Referent]	1.00 [Referent]	1.00 [Referent]	1.00 [Referent]	1.00 [Referent]
Overweight	0.70 (0.53-0.91)	0.69 (0.53-0.90)	0.75 (0.51-1.11)	0.71 (0.48-1.05)	0.74 (0.49-1.12)	0.69 (0.45-1.05)
Obese	0.68 (0.51-0.90)	0.70 (0.53-0.93)	0.78 (0.50-1.19)	0.82 (0.53-1.27)	0.70 (0.44-1.11)	0.73 (0.45-1.17)
Meeting CES-D depression criteria	1.49 (1.11-2.00)	1.47 (1.10-1.97)	1.29 (0.75-2.22)	1.49 (0.86-2.58)	1.20 (0.66-2.20)	1.41 (0.76-2.64)
Medication use						
Antidepressant	1.59 (0.97-2.60)	1.57 (0.91-2.68)	2.61 (1.34-5.06)	2.68 (1.32-5.41)	2.34 (1.15-4.76)	2.36 (1.11-5.01)
Anxiolytic	3.39 (1.93-5.96)	3.81 (2.04-7.12)	5.33 (2.51-11.32)	5.92 (2.60-13.51)	5.74 (2.68-12.30)	6.60 (2.87-15.22)
Uninsured	1.46 (1.15-1.86)	1.60 (1.24-2.08)	1.00 (0.65-1.56)	1.45 (0.89-2.37)	1.04 (0.67-1.62)	1.60 (1.00-2.57)
Forgone care in past year	1.24 (0.97-1.59)	1.24 (0.96-1.60)	0.96 (0.58-1.59)	1.05 (0.63-1.73)	0.99 (0.58-1.66)	1.08 (0.64-1.82)
Healthcare in past year						
Physical examination	1.19 (0.94-1.52)	1.19 (0.93-1.51)	1.60 (0.96-2.64)	1.53 (0.94-2.51)	1.47 (0.87-2.48)	1.43 (0.85-2.38)
Dental examination	0.91 (0.71-1.16)	0.90 (0.70-1.16)	1.56 (1.04-2.33)	1.33 (0.86-2.06)	1.48 (0.97-2.26)	1.23 (0.78-1.92)
Psychological counseling	1.54 (1.05-2.25)	1.49 (1.02-2.17)	2.82 (1.66-4.82)	2.68 (1.57-4.59)	2.59 (1.47-4.58)	2.46 (1.39-4.38)

ADHD, attention deficit hyperactivity disorder; CES-D, Centers for Epidemiologic Studies Depression scale; STI, sexually transmitted infection. Boldface indicates statistical significance.

^a Adjusted for age, race/ethnicity, current educational attainment, standardized household income, and urbanicity and region of residence.

^b Multinomial logistic regression was used for BMI classification whereas binary logistic models were used for all other health measures.