Risk of Substance Abuse and Dependence Among Young Adult Sexual Minority Groups Using a Multidimensional Measure of Sexual Orientation

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ABSTRACT

Objective. We examined associations between two definitions of sexual minority status (SMS) and substance abuse and/or dependence among young adults in a national population.

Methods. A total of 14,152 respondents (7,529 women and 6,623 men) interviewed during wave four of the National Longitudinal Study of Adolescent Health were included in the study (age range: 24–32 years). We used two definitions of SMS based on self-reported attraction, behavior, and identity: 1-indicator SMS (endorsing any dimension) and 3-indicator SMS (endorsing all dimensions). Outcomes included nicotine dependence as well as ≥ 3 signs of substance dependence, any sign of substance abuse, and lifetime diagnosis of abuse or dependence for alcohol, marijuana, and a composite measure of other drugs. Weighted logistic regression models were fit to estimate the odds of each outcome for each of the sexual minority groups (compared with the heterosexual majority), controlling for sociodemographic covariates.

Results. SMS women were more likely than exclusively heterosexual women to experience substance abuse and dependence, regardless of substance or SMS definition. In adjusted models for women, 3-indicator SMS was most strongly associated with abuse/dependence (adjusted odds ratio [AOR] range: 2.74–5.17) except for ≥ 3 signs of cannabis dependence, where 1-indicator SMS had the strongest association (AOR=3.35). For men, the 1-indicator SMS group had higher odds of nicotine dependence (AOR=1.35) and the 3-indicator SMS group had higher odds of ≥ 3 signs of alcohol dependence (AOR=1.64).

Conclusions. Young adult female sexual minority groups, regardless of how defined, are at a higher risk than their heterosexual peers of developing alcohol, drug, or tobacco abuse and dependence.

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Substance abuse and dependence represent significant problems for young adults in the United States. Data from the 2010 National Survey on Drug Use and Health found that 19.8% of emerging adults aged 18–25 years and 7.0% of young adults aged 26 years or older met the criteria for illicit drug or alcohol abuse or dependence in the preceding year.¹

The risk for substance use may be particularly heightened among sexual minority or lesbian/gay/bisexual individuals. Across all ages, sexual minority status (SMS) has been associated with higher odds for smoking,^{2–5} binge drinking and heavy alcohol consumption,^{2,4,6–8} and illicit drug use.^{5,8–11} The potential pathways between sexual orientation and substance use have primarily been examined within the frameworks of social stress and minority-specific stress in particular. Meyer's Minority Stress Model posits that those in sexual minority groups will experience higher amounts of repeated, lifelong stressors than exclusively heterosexual individuals.¹² The convergence of stressors can negatively bias self-perception, which can decrease coping mechanisms and eventually result in negative mental health outcomes. Pascoe and Richman's Perceived Discrimination and Health Model further suggests that continuously experienced discrimination and subsequent increased risk of perceiving or internalizing prejudice can result in the adoption of negative coping health behaviors, such as substance use or heavy drinking.¹³

Not explicitly stated in these models, however, is the understanding that sexual orientation is not a uniform exposure; rather, it is multidimensional and fluid, reflecting attraction, behavior, and self-applied identity dimensions that are not necessarily consistent for a given individual at one time point, nor stable over time.¹⁴ Further, the pathways between experienced stressors and substance abuse may be moderated by differing patterns of expressed or endorsed orientation dimensions. An examination of SMS identification among adolescents found that participants who defined their identity as heterosexual, yet had experienced same-sex attraction or partnering, were significantly more likely than exclusively heterosexual adolescents to smoke, use hard drugs, and have suicidal thoughts.⁵ Similarly, in an examination among adults participating in the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), odds of lifetime alcohol, stimulant, and hallucinogen use disorder were lower among both males and females reporting a heterosexual identity and same-sex attraction (i.e., heterosexual discordant) than among those reporting a gay/lesbian identity and same-sex attraction (i.e., gay/lesbian concordant). When concordance was defined

on the basis of behavior, only heterosexual discordant females had higher odds of lifetime use disorders for alcohol and several classes of drugs than those who reported heterosexual identity and behavior (heterosexual concordant), and no association was observed between heterosexual discordant and gay/lesbian concordant women.¹⁵

To date, several studies have examined how endorsement of individual dimensions of sexual orientation predicts substance use behaviors. For adolescent respondents (aged 15–24 years) in the National Survey of Family Growth, the odds of substance use were higher among SMS women than among exclusively heterosexual women regardless of dimension considered, with expression of a lesbian or bisexual identity emerging as the strongest predictor of use for all substances except cannabis. For men, however, SMS was predictive only for non-cannabis illicit drug use among men endorsing an SMS identity or attraction.¹⁶ An analysis of 24- to 32-year-old respondents in the National Longitudinal Study of Adolescent Health (Add Health) found higher odds of smoking among sexual minority women for each indicator of orientation, as well as higher odds of binge drinking, both among those reporting a lesbian/bisexual identity and those reporting same-sex attraction. For males, same-sex partnering emerged as the only significant predictor, and only for binge drinking; in contrast to the female literature, the association was negative, with those reporting exclusively male partnering having lower rates of binge drinking.¹⁷ Taken together, these varied findings indicate not only that a more expansive definition of sexual orientation is needed when examining associations between sexuality and substance use, but that it is important to consider biological sex in these investigations.

Further, the association between sexual orientation and substance use may differ based on substance use outcome considered. For example, one examination of NESARC respondents found that lesbian-identifying women and sexual minority men (regardless of orientation dimension) were significantly more likely than their exclusively heterosexual peers to have met Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria in the past year for alcohol dependence, but not heavy drinking.¹⁸ Substance dependence, which may or may not include “physical dependence” (withdrawal symptoms) or “tolerance” (the need to use increased amounts of a drug to achieve the desired effect), is indicated by taking a drug in larger amounts than intended, an inability to cut down on drug use, excessive time spent to obtain the drug, and continued drug use despite health or social problems caused by

the drug. Abuse is indicated by a failure to fulfill major role obligations, legal problems, or continued drug use despite persistent social or interpersonal problems.¹⁹ Given the chronic exposures of both minority stressors and dependence and abuse symptoms, such outcomes may be more relevant to this population, particularly as substance dependence and abuse likely have a more significant impact on health and development than simply substance use.

We examined the association between SMS and substance abuse and dependence, incorporating multiple indicators of sexual orientation, in a contemporary population-based sample of young women and men.

METHODS

Data source and analytic sample

We used data from Add Health, a nationally representative sample of U.S. adolescents in grades 7–12 during the 1994–1995 school year. Four waves of in-home data collection have been completed thus far; the most recent wave took place in 2008, when respondents were aged 24–32 years. Further details on the Add Health sampling procedures and study design are described elsewhere.²⁰

Our analytic sample consisted of respondents with valid sampling weights participating in Waves I and IV in-home interviews (original $n=14,800$). We excluded respondents who were missing data on all indicators of SMS ($n=206$) or on any outcome variables or covariates ($n=442$; typically missing substance abuse/dependence variables); the result was a total analysis sample size of 14,152 (7,529 women and 6,623 men).

Measures

We used three indicators of SMS to group respondents, self-reported at Wave IV: attraction (any same-sex attraction vs. none), behavior (same-sex romantic or sexual partners vs. none), and identity (fully or mostly homosexual/bisexual or mostly heterosexual vs. fully heterosexual).

The first group, 1-indicator SMS, consisted of respondents endorsing at least one SMS indicator. The second group, 3-indicator SMS, consisted of respondents endorsing all three indicators. Respondents endorsing none of the three indicators were classified as heterosexual majority.

Primary outcomes included dichotomous measures (1 = yes) of abuse and/or dependence of four substances at Wave IV: nicotine, alcohol, cannabis, and other drugs (a composite of each respondent's most-used other drug and most common misuse of prescription medications). Nicotine dependence was

defined as meeting the diagnostic criteria for dependence on either the Fagerström scale²¹ or heavy smoking index.²² For alcohol, cannabis, and other drugs, outcomes included three measures: (1) ≥ 3 symptoms of dependence as listed in the DSM-IV,²³ (2) any symptoms of substance abuse as listed in the DSM-IV, and (3) lifetime diagnosis of abuse or dependence based on DSM-IV symptoms and assessment of tolerance and withdrawal symptoms. Symptoms measured in Add Health are a subset of the full DSM-IV assessment.

Respondent demographic characteristics included as covariates were self-reported race/ethnicity at Wave I (non-Hispanic white [the reference group], non-Hispanic black, Hispanic/Latino, and non-Hispanic other); age at Wave IV (24–27, 28–29, and ≥ 30 years [the reference group]); the highest of the respondent's parents' educational attainment as reported at Wave I (<high school, completed high school diploma or general equivalency diploma, some college, and college graduate [the reference group]); and family structure at Wave I (two biological parents [the reference group], other two-parent household, single mom, and other).

Analysis

We used logistic regression models to estimate the odds of each substance abuse or dependence outcome for each sexual minority definition (compared with the majority), resulting in odds ratios (ORs) with 95% confidence intervals (CIs). We used multivariable logistic regression to generate adjusted ORs (AORs) with 95% CIs, adjusting for the aforementioned covariates. All analyses were stratified by biological sex. We performed analyses using Stata[®] version 12²⁴ 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 1-indicator SMS and 3-indicator SMS. Descriptive characteristics for each sexual minority group, stratified by biological sex, are shown in Table 1.

Among women, sexual minority groups across both definitions were younger and less likely than majority (i.e., heterosexual) women to have come from a two-biological parent household. The distributions of race/ethnicity and parent education varied between definitions of minority status and were similar to those of the majority. The prevalence of each measure of substance abuse or dependence was higher for minority than for majority women across both SMS definitions.

Among men, distributions of age and race/ethnicity

Table 1. Characteristics of respondents, including prevalence of substance abuse and dependence disorders, by biological sex and sexual minority status definition: Add Health, U.S., 2008

Characteristic	Females (n = 7,529)		Males (n = 6,623)	
	Weighted percent (unweighted N)		Weighted percent (unweighted N)	
	1-indicator SMS ^a 24.7% (n = 1,804)	3-indicator SMS ^a 7.8% (n = 466)	1-indicator SMS ^a 9.4% (n = 640)	3-indicator SMS ^a 3.2% (n = 226)
		Heterosexual 75.3% (n = 5,725)		Heterosexual 90.6% (n = 5,983)
Self-reported race/ethnicity				
Non-Hispanic white	69.3 (1,009)	68.4 (262)	63.1 (340)	66.6 (3,272)
Hispanic	11.8 (276)	11.5 (64)	16.0 (127)	11.3 (928)
Non-Hispanic black	11.8 (361)	14.1 (110)	15.0 (119)	15.3 (1,189)
Non-Hispanic other	7.0 (158)	6.0 (30)	5.9 (54)	6.8 (594)
Wave IV age (in years)				
24–27	42.3 (663)	43.0 (178)	33.5 (173)	35.2 (1,679)
28–29	36.5 (692)	39.9 (193)	31.3 (247)	33.3 (2,248)
≥30	21.2 (449)	17.1 (95)	35.1 (220)	31.5 (2,056)
Parent education in Wave I				
<High school diploma	12.2 (783)	10.4 (48)	13.6 (87)	11.8 (680)
High school diploma/GED	26.2 (445)	32.2 (132)	24.7 (153)	26.8 (1,482)
Some college	30.9 (542)	30.3 (136)	27.2 (174)	31.1 (1,826)
College graduate	30.6 (595)	27.1 (150)	34.5 (226)	30.3 (1,995)
Family structure in Wave I				
Two biological parents	49.7 (839)	45.8 (200)	51.8 (325)	56.3 (3,314)
Other two parents	19.8 (398)	20.7 (123)	17.6 (118)	17.2 (1,114)
Single mother	23.4 (435)	24.6 (110)	22.6 (145)	18.3 (1,123)
Other	7.1 (132)	8.9 (33)	8.0 (52)	8.2 (432)

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Table 1 (continued). Characteristics of respondents, including prevalence of substance abuse and dependence disorders, by biological sex and sexual minority status definition: Add Health, U.S., 2008

Characteristic	Females (n = 7,529)			Males (n = 6,623)		
	Weighted percent (unweighted N)			Weighted percent (unweighted N)		
	1-indicator SMS ^a 24.7% (n = 1,804)	3-indicator SMS ^a 7.8% (n = 466)	Heterosexual 75.3% (n = 5,725)	1-indicator SMS ^a 9.4% (n = 640)	3-indicator SMS ^a 3.2% (n = 226)	Heterosexual 90.6% (n = 5,983)
Wave IV substance use						
Nicotine dependence ^b	21.2 (315)	28.6 (100)	10.6 (501)	22.8 (133)	18.9 (42)	18.9 (998)
Alcohol						
≥3 symptoms of dependence ^c	19.8 (330)	24.4 (100)	8.2 (424)	22.6 (132)	26.4 (54)	18.1 (1,014)
Any symptoms of abuse ^d	32.4 (532)	34.2 (147)	15.7 (798)	28.3 (184)	30.9 (61)	30.1 (1,666)
Lifetime diagnosis of abuse/ dependence ^e	35.6 (598)	38.2 (167)	18.0 (915)	32.7 (206)	33.9 (70)	33.3 (1,868)
Cannabis						
≥3 symptoms of dependence ^c	13.0 (244)	12.5 (71)	3.9 (202)	14.1 (97)	8.8 (28)	11.0 (191)
Any symptoms of abuse ^d	11.9 (214)	14.3 (66)	4.2 (214)	11.6 (93)	8.7 (30)	12.9 (706)
Lifetime diagnosis of abuse/ dependence ^e	18.1 (325)	19.6 (100)	6.0 (309)	17.7 (126)	12.1 (37)	17.4 (984)
Other drugs						
≥3 symptoms of dependence ^c	13.8 (233)	17.7 (72)	3.6 (174)	9.4 (67)	8.1 (22)	7.9 (431)
Any symptoms of abuse ^d	11.1 (195)	15.2 (65)	3.1 (152)	9.6 (63)	9.7 (21)	7.2 (386)
Lifetime diagnosis of abuse/ dependence ^e	15.1 (261)	18.9 (81)	4.0 (199)	11.1 (74)	10.6 (25)	9.5 (515)

^a1-indicator SMS was defined as endorsing at least one of the following SMS indicators: same-sex attraction, history of same-sex sexual partnering, and/or self-identified homosexual or bisexual identity. 3-indicator SMS was defined as endorsing all three SMS indicators.

^bNicotine dependence was defined as meeting the diagnostic criteria for dependence on either the Fagerström scale or heavy smoking index.

^cThree or more symptoms of dependence as assessed in the Add Health subset of DSM-IV diagnostic criteria

^dAny symptoms of abuse as assessed in the Add Health subset of DSM-IV diagnostic criteria

^eLifetime diagnosis of abuse or dependence as assessed in the Add Health subset of DSM-IV diagnostic criteria for tolerance and withdrawal symptoms

Add Health = National Longitudinal Study of Adolescent Health

SMS = sexual minority status

GED = general equivalency diploma

DSM-IV = Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition

were similar between those in sexual minority groups and the majority across all definitions of SMS. Compared with sexual majority men, higher proportions of sexual minority men had a parent with a college degree, but minority men were also more likely to live with a single mother during adolescence. Prevalence of substance abuse or dependence was relatively similar for minority groups across both definitions and, in some cases, was lower than those of majority men (e.g., most cannabis measures).

Unadjusted and adjusted results for the regression analyses are shown in Table 2, stratified by biological sex and SMS definition. For women, the estimated unadjusted associations between sexual minority membership and the substance abuse or dependence variables were large in magnitude and statistically significant for both definitions. Estimates did not change appreciably after adjusting for covariates. The substance for which adjusted associations were of the largest magnitude was the composite other drugs; AORs for other drug abuse and dependence measures ranged from 4.83 to 5.17 for 3-indicator SMS and 3.54 to 3.90 for 1-indicator SMS. Associations for the 3-indicator SMS group were of a larger magnitude than for the 1-indicator SMS group for all substance abuse/dependence measures with the exception of ≥ 3 signs of cannabis dependence, where associations were higher among 1-indicator SMS women.

In contrast with the findings for women, the estimated associations for men were small in magnitude, and most of the 95% CIs included the null value. These findings persisted after adjusting for covariates. Exceptions to this pattern were nicotine dependence for the 1-indicator SMS group (AOR=1.35, 95% CI 1.06, 1.72) and ≥ 3 symptoms of alcohol dependence for the 3-indicator SMS group (AOR=1.64, 95% CI 1.05, 2.57).

DISCUSSION

Using two definitions of SMS reflecting varying levels of endorsing multiple sexual orientation dimensions, we found statistically significant and sizable disparities in multiple indicators of substance abuse and dependence for young adult women. In this population-based sample, young women from sexual minority groups have anywhere from two to almost five times the odds of abuse/dependency compared with peers who do not endorse any sexual minority indicators. Results for males were quite different, with only nicotine or alcohol dependence showing significantly elevated odds for sexual minority groups. Our findings are consistent with findings from both population-based^{7,15,17,18} and

college-based²⁵ samples that report greater substance use disparity linked to sexual minority women than men, and our work extends these patterns to abuse and dependence.

It is not clear why sexual minority women appear to be at greater risk of substance abuse/dependency than sexual minority men. One potential explanation is that SMS women (compared with SMS men) may experience heightened emotional and/or psychological distress as a result of encountered minority-specific stressors. According to minority stress and perceived stress theory, this heightened distress may further heighten the adoption of negative coping mechanisms (e.g., substance use), resulting in higher rates of substance abuse/dependence among SMS women compared with men. Findings from two review articles support this hypothesis: a meta-analysis of 28 articles noting higher rates of both depression and substance use and alcohol/drug dependence among sexual minority women compared with men,²⁶ demonstrating robustness of the association, and a systematic review concluding that women in general have higher rates of comorbid psychiatric disorders, particularly anxiety and depression.²⁷ Further, such disorders develop before the onset of substance use, indicating that a causal relationship between mood disorders and subsequent substance use is plausible. More developmentally oriented research is needed to understand the processes underlying differential rates of substance abuse and dependence between males and females.

Although we did not test for statistical differences in coefficient size between minority groups, our results suggest that endorsing all three indicators of SMS (identity, attraction, and behavior) confers relatively greater risk of substance abuse/dependence among women. This finding expands on existent congruency literature, which has predominantly compared outcomes on the basis of congruency in one indicator (e.g., identity only) vs. two indicators (e.g., identity plus behavior or attraction)^{5,15,28,29} rather than all three. Previously, a higher risk of substance use and mental health disorders observed among those endorsing SMS identity plus same-sex attraction (compared with exclusively endorsing same-sex attraction) provided partial evidence for an additive stress model.¹⁵ Our findings suggest that additional SMS-indicator endorsement may be associated with cumulative risk. In light of minority stress theory,¹² this association further suggests that individuals with multiple sexual orientation minority indicators/characteristics may incur additional sources of stigma and discrimination. Future research should examine whether this apparent additive effect can be replicated before an additive stress model can be endorsed.

Table 2. Unadjusted and adjusted odds ratios for substance abuse/dependence and SMS definition, by respondent biological sex and SMS definition: Add Health, U.S., 2008

Variable	Females						Males					
	1-indicator SMS			3-indicator SMS			1-indicator SMS			3-indicator SMS		
	OR (95% CI)	AOR ^a (95% CI)	OR (95% CI)	OR (95% CI)	AOR ^a (95% CI)	OR (95% CI)	OR (95% CI)	AOR ^a (95% CI)	OR (95% CI)	OR (95% CI)	AOR ^a (95% CI)	OR (95% CI)
Nicotine dependence	2.27 ^b (1.84, 2.80)	2.13 ^b (1.71, 2.66)		3.38 ^b (2.49, 4.59)	3.12 ^b (2.28, 4.28)	1.26 (0.99, 1.61)	1.35 ^b (1.06, 1.72)		1.00 (0.64, 1.54)		1.06 ^b (0.68, 1.64)	
Alcohol												
≥3 symptoms of dependence	2.76 ^b (2.18, 3.50)	2.57 ^b (2.02, 3.27)		3.60 ^b (2.54, 5.11)	3.43 ^b (2.38, 4.95)	1.32 ^b (1.00, 1.76)	1.34 ^b (1.00, 1.81)		1.63 ^b (1.08, 2.46)		1.64 ^b (1.05, 2.57)	
Any symptoms of abuse	2.59 ^b (2.18, 3.07)	2.49 ^b (2.07, 2.98)		2.81 ^b (2.10, 3.74)	2.76 ^b (2.03, 3.76)	0.92 (0.71, 1.19)	0.92 (0.69, 1.23)		1.03 (0.71, 1.50)		1.04 (0.69, 1.56)	
Lifetime diagnosis of abuse/dependence	2.53 ^b (2.14, 2.99)	2.41 ^b (2.02, 2.88)		2.83 ^b (2.12, 3.77)	2.74 ^b (2.01, 3.73)	0.97 (0.76, 1.25)	0.98 (0.74, 1.30)		1.03 (0.71, 1.49)		1.03 (0.69, 1.54)	
Cannabis												
≥3 symptoms of dependence	3.66 ^b (2.68, 5.01)	3.35 ^b (2.43, 4.62)		3.51 ^b (2.29, 5.38)	3.18 ^b (2.04, 4.95)	1.33 (0.93, 1.89)	1.29 (0.90, 1.86)		0.78 (0.42, 1.46)		0.73 (0.39, 1.36)	
Any symptoms of abuse	3.11 ^b (2.30, 4.19)	2.90 ^b (2.11, 3.98)		3.84 ^b (2.50, 5.88)	3.57 ^b (2.26, 5.63)	0.89 (0.63, 1.27)	0.87 (0.60, 1.26)		0.64 (0.34, 1.22)		0.61 (0.33, 1.14)	
Lifetime diagnosis of abuse/dependence	3.44 ^b (2.66, 4.45)	3.19 ^b (2.44, 4.18)		3.79 ^b (2.63, 5.46)	3.49 ^b (2.36, 5.17)	1.02 (0.74, 1.42)	1.00 (0.71, 1.40)		0.65 (0.38, 1.13)		0.62 (0.36, 1.07)	
Other drugs												
≥3 symptoms of dependence	4.30 ^b (3.19, 5.80)	3.90 ^b (2.86, 5.33)		5.81 ^b (3.98, 8.49)	5.17 ^b (3.44, 7.76)	1.21 (0.83, 1.76)	1.17 (0.80, 1.73)		1.03 (0.54, 1.95)		0.97 (0.50, 1.89)	
Any symptoms of abuse	3.92 ^b (2.93, 5.24)	3.54 ^b (2.58, 4.85)		5.63 ^b (3.77, 8.41)	4.83 ^b (3.13, 7.44)	1.37 (0.95, 1.99)	1.35 (0.92, 1.97)		1.39 (0.76, 2.54)		1.34 (0.71, 2.50)	
Lifetime diagnosis of abuse/dependence	4.23 ^b (3.20, 5.57)	3.84 ^b (2.87, 5.14)		5.54 ^b (3.83, 8.01)	4.92 ^b (3.30, 7.33)	1.26 (0.99, 1.61)	1.16 (0.83, 1.62)		1.12 (0.64, 1.96)		1.08 (0.60, 1.93)	

^aAdjusted for age, race/ethnicity, adolescent family structure, and parental educational attainment

^bStatistically significant association

SMS = sexual minority status

Add Health = National Longitudinal Study of Adolescent Health

OR = odds ratio

CI = confidence interval

Strengths

Our study benefited from the nationally representative design of Add Health, which allowed for examining sexual orientation and substance use among a diverse national sample of young adults, rather than a convenience sample of respondents selected on one or more indicators of orientation. Such sampling methodology benefits from a lower risk of selection bias, which may be particularly significant given the population under examination. An additional strength of the present analysis was its use of a comprehensive, multidimensional definition of sexual orientation that included attraction, behavior, and self-identity. Given the highly personalized fluidity of orientation, this flexibility allows for a respondent-driven approach to defining sexual orientation rather than an investigator-driven one, and facilitates the examination of additive stress models.

Our results indicate that individuals, especially women, who endorse even one indicator may be at a higher risk for substance abuse/dependence than exclusively heterosexual individuals. Use of dimension-targeted recruitment (i.e., recruiting on the basis of self-identifying as lesbian/gay) may miss a significant number of at-risk individuals, as their lack of a self-labeled sexual minority identity precludes them from enrollment in potentially helpful prevention/intervention efforts. Clinicians, public health professionals, and paraprofessionals hoping to focus on SMS health should screen patients and participants not just on their identity, but also on their behaviors and attractions—both past and present—to more fully identify those at risk.

Limitations

This study was subject to several limitations. Most notably, sample size restrictions necessitated collapsing bisexual- and exclusively homosexual-identifying respondents into the same categories, whereas evidence suggests that there may be significant differences in substance use outcomes between bisexual and exclusively homosexual individuals.³⁰ While our decision to collapse sexual minority classifications reflected a need to ensure sufficient cell sizes for analysis, and reflects aggregation employed in other Add Health analyses¹¹ and the broader sexual orientation literature,³¹ future research is needed to better elucidate the possible implications of different combinations of more nuanced indicators (e.g., mostly heterosexual identity with both male and female partners) of sexual orientation for substance use.

Similarly, a significant discrepancy was observed between the number of women (1,804, or 24.7%)

and men (640, or 9.4%) endorsing any sexual minority indicator. The fairly small number available for male-specific analyses made it difficult to ascertain if gender-specific differences in associations were due to insufficient sample sizes or true differences in substance use between SMS males and females. However, because our findings replicate previous results indicating that sexual minority women are more at risk than sexual minority men for developing substance use disorders, and because similar proportions of men and women fell into the stricter classification of SMS, there is reason to believe that our findings highlight actual sex differences.

Further, both sexual history and substance use are sensitive topics; therefore, they may be subject to reporting bias. Add Health mitigates this concern through the use of computer-assisted self-interview (CASI) technology for sensitive questions. By increasing respondent privacy, CASI is assumed to improve accuracy based on increased reporting of sensitive behaviors under private conditions.³²

CONCLUSIONS

Although most people in sexual minority groups do not develop substance abuse or dependence problems, the likelihood of these conditions, particularly for women, is significantly elevated, regardless of how sexual minority is defined. Future research is needed to understand the mechanisms underlying cumulative risk, as reflected in the 3-indicator group, and to determine if particular combinations of indicators vary in their implications for substance abuse as well as other health outcomes. In particular, additional research is needed on the influence of structural, familial, and environmental factors and contexts on the relationship between substance use and sexual orientation. Such knowledge will allow for targeting interventions focusing on the most relevant risk factors for each group.

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All Add Health procedures were approved by the Public Health Institutional Review Board at UNC Chapel Hill; present analyses were deemed exempt.

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