

Medical, Nonmedical, and Illegal Stimulant Use by
Sexual Identity and GenderMorgan M. Philbin, PhD, MHS,¹ Emily R. Greene, PhD,² Silvia S. Martins, MD,²
Natalie J. LaBossier, BA,³ Pia M. Mauro, PhD²

Introduction: Major knowledge gaps regarding medical and nonmedical prescription stimulant use and illegal stimulant use (i.e., cocaine/crack/methamphetamine) by sexual identity and gender have implications for individuals' health and well-being. This study improves stimulant use measurement by differentiating the type of stimulant use and focusing on lesbian, gay, and bisexual subpopulations.

Methods: Data were pooled for adults in the 2015–2017 National Survey on Drug Use and Health ($n=126,463$; analyzed in 2019). Gender-stratified logistic regression models examined associations between sexual identity and past-year illegal stimulant use. Gender-stratified multinomial logistic regression models estimated odds of (1) medical use only versus no past-year prescription stimulant use, (2) any nonmedical stimulant use versus no past-year use, and (3) any nonmedical stimulant use versus medical use only.

Results: Illegal stimulant use varied by sexual identity (men: gay, 9.2%; bisexual, 7.5%; heterosexual, 3.2%; women: gay/lesbian, 3.2%; bisexual, 7.8%; heterosexual, 1.5%), as did nonmedical prescription stimulant use. Relative to same-gender heterosexuals, gay (AOR=2.61, 95% CI=2.00, 3.40) and bisexual (AOR=1.70, 95% CI=1.24, 2.33) men had higher odds of past-year illegal stimulant use, as did gay/lesbian (AOR=1.63, 95% CI=1.16, 2.28) and bisexual (AOR=2.70, 95% CI=2.23, 3.26) women. Sexual minorities reported higher odds of nonmedical prescription stimulant use than heterosexuals. Any nonmedical prescription opioid use was reported by 26.4% of people who reported nonmedical stimulant use and 27.0% of people who reported illegal stimulant use.

Conclusions: Lesbian, gay, and bisexual individuals had a higher prevalence of stimulant use than their heterosexual counterparts. This has important implications for health disparities, especially given the high levels of polysubstance use. Taking a multilevel approach is crucial to reduce stimulant-related harms for lesbian, gay, and bisexual individuals.

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INTRODUCTION

Prescription stimulant use has increased in the U.S. during the past decade,^{1–3} and the number of prescribed stimulants doubled from 2006 to 2016.^{2,4} Although medically indicated for conditions such as attention-deficit/hyperactivity disorder, medical stimulant use is associated with emotional problems^{5,6} and poorer cardiovascular health.⁷ Nonmedical prescription stimulants use (i.e., use of prescription stimulants in ways not directed by a doctor) has also increased; approximately 3.1% of U.S. adults⁸ and 10% of college

students report past-year nonmedical use.^{9,10} Nonmedical prescription stimulant use is higher among

From the ¹Department of Sociomedical Sciences, Columbia University Mailman School of Public Health, New York, New York; ²Department of Epidemiology, Columbia University Mailman School of Public Health, New York, New York; and ³Boston University School of Medicine, Boston, Massachusetts

Address correspondence to: Morgan M. Philbin, PhD, MHS, Department of Sociomedical Sciences, Columbia University Mailman School of Public Health, 722 West 168th Street, Room R536, New York NY 10032. E-mail: mp3243@columbia.edu.

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individuals who are male,^{8,11–13} of higher SES,¹⁴ aged 18–25 years,^{4,8,15} and White.^{4,8,15} Although the media often portrays nonmedical prescription stimulant use as enhancing academic performance,¹⁶ it is associated with lower grades,^{17,18} drug dependence,^{4,19} and other substance use (i.e., polysubstance use),^{4,20,21} including illegal stimulants.^{18,20,22} Illegal stimulant use (e.g., cocaine/crack, methamphetamine) is also higher among individuals who are male,²³ aged 18–25 years,²⁴ and without a college education.²⁴ Illegal stimulant use is associated with an increased risk for infectious diseases (e.g., HIV),²⁵ lower economic participation,²⁶ poor mental health outcomes,²⁷ substance use disorder,²⁵ and unintentional overdose.²⁸ Because of these negative consequences, identifying populations with higher nonmedical or illegal stimulant use, such as sexual minorities, can lead to targeted interventions to minimize stimulant use–related harm.

Lesbian, gay, and bisexual (LGB) individuals report higher substance use (e.g., alcohol, marijuana, cigarettes, and other drugs^{29–31}) and substance use disorders than their heterosexual counterparts.^{29–32} Although LGB individuals report higher nonmedical prescription drug use,³⁰ that is rarely disaggregated by type of prescription (i.e., stimulant versus opioids). Illegal stimulant use is disproportionately high among LGB individuals: past-year cocaine use was 6.6% (versus 2.0% among heterosexuals), and methamphetamines use was 2.5% (versus 0.69% among heterosexuals).²³ However, these national-level data have yet to be disaggregated by LGB subgroup and gender. Higher drug use among LGB individuals is likely a result of minority stress—that is, exposure to stigma and discrimination based on sexual orientation results in health disparities.³³ Structural stigma (e.g., employment or housing discrimination) drives psychological and physical health morbidities among LGB populations, and perceived stigma is associated with cocaine use.³⁴ Bisexuals experience double discrimination from heterosexuals and lesbian and gay communities,^{35,36} which may account for the particularly high substance use among bisexual individuals.

Major knowledge gaps remain about the medical and nonmedical use of prescription stimulants and illegal stimulant use by sexual identity. Although existing research suggests that LGB individuals are at higher risk for prescription stimulant use than heterosexuals,^{37–39} this research has important measurement limitations. First, studies focusing on specific LGB subpopulations, such as methamphetamine use among gay men,^{40,41} exclude other sexual identities. Studies also explore stimulant use separately (i.e., medical use versus nonmedical use) instead of characterizing patterns by type of use.⁴² Relatedly, most studies combine all forms of prescription

drug use (e.g., stimulants and opioids),^{31,43} which obscures important patterns. Finally, despite women reporting a lower prevalence of use, methamphetamine use has increased significantly among women since 2017.²³ Given these discrepancies, this study explores separate analyses by gender.

This study aims to improve the measurement of stimulant use by differentiating medical, nonmedical, and illegal stimulant use and focusing on LGB subpopulations who are at an elevated risk of use. The 2015–2017 National Survey on Drug Use and Health (NSDUH) is used to (1) describe the prevalence of medical prescription stimulant use, nonmedical prescription stimulant use, and illegal stimulant use by sexual identity and gender in a national sample of U.S. adults and (2) describe differences in overlapping stimulant use and polysubstance use by sexual identity. Stimulant use outcomes are expected to be higher among LGB individuals than among heterosexuals and highest among bisexual women and gay men compared with other sexual identity and gender subgroups. Characterizing LGB-based disparities among adults can help identify different points for multilevel interventions, such as increased screening and access to treatment at the clinical-level and policy-level legislation to increase healthcare access and minimize LGB-focused housing and workforce discrimination, which are associated with substance use.⁴⁴

METHODS

Study Sample

The 2015–2017 NSDUH included data from annual cross-sectional surveys assessing substance use among a nationally representative sample of the U.S. civilian population. Data were collected using face-to-face household interviews, computer-assisted interviewing, and audio computer-assisted survey instruments to maximize participant privacy. Additional details can be found elsewhere.^{23,45} The weighted interview response rates among adults for 2015–2017 ranged from 66.3% to 68.4%.⁴⁵

Observations were pooled across the 3 years ($n=170,319$), adding a year indicator and dividing yearly survey weights by 3. Individuals who lacked sexual identity data, including individuals aged 12–17 years ($n=41,579$; 9.2%), were excluded, as were adults who responded *don't know/refuse* to the sexual identity item ($n=2,277$; 1.7%). The final analytic sample included 126,463 adults.

Measures

Participants were asked: *Which of the following do you consider yourself to be?* Response categories included *heterosexual, that is, straight; lesbian or gay; bisexual; don't know; and refuse to answer.* A 3-level variable was created to describe mutually exclusive sexual identities, including heterosexual, gay/lesbian, or bisexual adults. Individuals who selected *don't know* or *refused to answer* were excluded.

Participants were asked whether they had used prescription stimulants (e.g., Adderall, Ritalin, dextroamphetamine) in the past 12 months. People who reported any past-year prescription stimulant use were further asked whether they had used prescription stimulants in a way other than the doctor had directed in the past 12 months, which identified people reporting nonmedical prescription stimulant use. A 3-level categorical variable was created to reflect past-year use: (1) no use, (2) medical use only (i.e., prescription stimulant use but no self-reported nonmedical use), or (3) any nonmedical use of prescription stimulants.

Participants were asked whether they had used cocaine or methamphetamine in the past 12 months. A dichotomous variable of illegal stimulant use was created to indicate any cocaine or methamphetamine use in the past year.

To assess the overlap between past-year nonmedical and illegal stimulant use, the 3-level categorical variable included (1) only nonmedical prescription stimulant use, (2) only illegal stimulant use, and (3) use of both nonmedical prescription stimulants and illegal stimulants.

Participants reported whether they drank any alcohol, used marijuana, prescription opioids, or heroin in the past year. Past-month binge drinking was defined as 5 or more (males) or 4 or more (females) drinks on a single occasion.

Sociodemographic variables included age (18–25, 26–34, 35–49, ≥50 years), race/ethnicity (White, non-Hispanic; Black, non-Hispanic; any race, Hispanic; other, non-Hispanic), annual household income (<\$20,000, \$20,000–\$49,999, \$50,000–\$74,999, ≥\$75,000), population density (large metro, small metro, nonmetro), and survey year indicators. The NSDUH computer-assisted interview guide determines gender by asking the interviewer to record respondent's gender as either male or female.

Statistical Analysis

The weighted prevalences of (1) medical prescription stimulants, (2) nonmedical prescription stimulants, and (3) illegal stimulants (i.e., cocaine or methamphetamine) were calculated by sexual identity and gender. Demographic characteristics were described for individuals who reported using any stimulant nonmedically or illegally, differentiating past-year nonmedical use only, illegal use only, or both. Gender-stratified multinomial logistic regression models estimated odds of (1) medical prescription stimulant use only versus no past-year prescription stimulant use, (2) any nonmedical stimulant use versus no nonmedical use, and (3) any nonmedical stimulant use versus medical use only. A gender-stratified logistic regression model examined the association between sexual identity and past-year illegal stimulant use. All models were adjusted for sociodemographics. Analyses were conducted in SAS, version 9.4, and accounted for the NSDUH complex survey design using sampling weights. All statistical tests were 2-sided and were considered statistically significant at the Bonferroni-adjusted p -value of <0.0125. These data, analyzed in 2019, were deemed non-human subjects research.

RESULTS

Of the participants, 48.4% were male, and majority White (64.8%), followed by Hispanic (15.6%) and Black (11.8%). The majority (52.5%) reported an annual

income of ≥\$50,000 and lived in a large metro area (53.8%) (Table 1).

The prevalence of past-year medical stimulant use for U.S. adults was 4.5% among heterosexuals, 7.0% among gays/lesbians, and 7.4% among bisexuals; the prevalence of nonmedical use was 1.9%, 4.5%, and 6.8%, respectively (Table 1). The prevalence of illegal stimulant use was 2.3% for heterosexuals, 6.6% for gays/lesbians, and 7.7% for bisexual adults.

Differences in past-year prescription stimulant use, nonmedical prescription stimulant use, and illegal stimulant use emerged by gender and sexual identity (Figure 1). Past-year medical stimulant use was higher for women (4.9%–7.9%) than for men (4.1%–6.4%). Past-year nonmedical stimulant use was higher among gay men than among gay/lesbian women (5.4% vs 3.3%), whereas there were no gender differences among heterosexuals or bisexuals. Illegal stimulant use was two-fold higher among heterosexual men than among women (3.2% vs 1.5%), nearly threefold higher among gay men than among gay/lesbian women (9.2% vs 3.2%), and consistent across bisexual men and women (7.5% vs 7.8%).

There were gender and sexual identity-specific disparities in patterns of medical and nonmedical prescription stimulant use. In adjusted models, gay men were more likely than heterosexual men to report medical stimulant use (adjusted relative OR [AROR]=1.62, 95% CI=1.25, 1.10) (Table 2). Similar patterns emerged for bisexual women (AROR=1.39, 95% CI=1.18, 1.63) but not for gay/lesbian women. Compared with heterosexual men, bisexual men (AROR=1.86, 95% CI=1.40, 2.47) and gay men (AROR=2.01, 95% CI=1.48, 2.73) were more likely to report nonmedical versus no prescription stimulant use. Similarly, bisexual (AROR=2.05, 95% CI=1.73, 2.43) and gay/lesbian (AROR=1.70, 95% CI=1.21, 2.38) women were more likely than heterosexual women to report nonmedical prescription stimulant use. Among people who reported any prescription stimulant use, only bisexual women were more likely than heterosexual women to report nonmedical use (AROR=1.47, 95% CI=1.20, 1.81) than medical stimulant use. There were no statistically significant gender-specific differences comparing the type of prescription stimulant use between bisexual and gay/lesbian men and women.

Patterns of illegal stimulant use differed by gender and sexual identity. Compared with heterosexual men, bisexual men were more likely to report past-year illegal use (AOR=1.70, 95% CI=1.24, 2.33), as were gay men (AOR=2.61, 95% CI=2.00, 3.40). Bisexual (AOR=2.70, 95% CI=2.23, 3.26) and gay/lesbian (AOR=1.63, 95% CI=1.16, 2.28) women were more likely to report

Table 1. Sociodemographic Characteristics of Adults by Sexual Identity and Medical and Nonmedical Prescription Stimulant and Illegal Stimulant Use

Factor	Overall, n (wt col %)	Heterosexual (n=118,222), wt row % (SE)				Gay/lesbian (n=2,731), wt row % (SE)				Bisexual (n=5,510), wt row % (SE)			
		Prescription stimulant use				Prescription stimulant use				Prescription stimulant use			
		Any	Medical only	Nonmedical	Illegal stimulant use	Any	Medical only	Nonmedical	Illegal stimulant use	Any	Medical only	Nonmedical	Illegal stimulant use
Overall, N (wt %)		10,005 (6.5)	6,172 (4.5)	3,833 (2.0)	3,774 (2.3)	379 (11.5)	220 (7.0)	159 (4.5)	211 (6.6)	898 (14.2)	462 (7.4)	436 (6.8)	451 (7.7)
Gender													
Male	58,815 (48.4)	6.5 (0.1)	4.1 (0.1)	2.4 (0.1)	3.2 (0.1)	12.0 (1.0)	6.6 (0.7)	5.4 (0.8)	9.2 (1.1)	13.0 (1.1)	6.4 (0.8)	6.6 (0.9)	7.5 (5.4)
Female	67,648 (51.6)	6.5 (0.1)	4.9 (0.1)	1.6 (0.1)	1.5 (0.1)	10.7 (1.2)	7.4 (1.1)	3.3 (0.5)	3.2 (0.5)	14.7 (0.7)	7.9 (0.4)	6.8 (0.7)	7.8 (0.6)
Age, years													
18–25	41,379 (14.2)	14.1 (0.2)	6.8 (0.2)	7.3 (0.2)	5.7 (0.2)	19.2 (1.4)	9.7 (1.1)	9.4 (1.0)	11.1 (1.2)	18.0 (0.8)	8.3 (0.6)	9.7 (0.5)	9.8 (0.7)
26–34	26,114 (15.9)	9.2 (0.3)	5.6 (0.2)	3.6 (0.2)	4.4 (0.2)	16.4 (2.3)	9.1 (1.3)	7.3 (1.4)	10.4 (1.6)	15.5 (1.6)	7.9 (1.0)	7.6 (1.0)	7.4 (1.0)
35–49	33,090 (24.7)	6.1 (0.1)	4.9 (0.1)	1.2 (0.1)	1.9 (0.1)	10.2 (1.5)	6.4 (1.0)	3.8 (1.0)	6.6 (1.4)	11.5 (1.2)	7.0 (1.0)	4.5 (0.9)	6.7 (0.9)
≥50	25,880 (45.2)	3.6 (0.1)	3.3 (0.1)	0.3 (0.1)	0.9 (0.1)	5.2 (1.1)	4.7 (1.1)	0.5 (0.4)	1.9 (0.8)	6.1 (1.7)	5.0 (1.6)	1.1 (0.6)	4.5 (1.5)
Race/ethnicity													
White, NH	77,100 (64.8)	7.7 (0.1)	5.3 (0.1)	2.4 (0.1)	2.5 (0.1)	12.3 (1.3)	7.1 (0.8)	5.2 (0.7)	5.8 (0.9)	16.5 (0.9)	8.8 (0.7)	7.7 (0.7)	8.6 (0.7)
Black, NH	15,888 (11.8)	3.5 (0.2)	2.9 (0.2)	0.6 (0.1)	2.0 (0.2)	7.1 (0.5)	3.5 (0.8)	3.6 (1.2)	8.7 (1.9)	7.8 (1.5)	4.1 (1.0)	3.7 (0.8)	4.8 (1.2)
Hispanic	21,186 (15.6)	4.7 (0.2)	3.3 (0.2)	1.4 (0.1)	2.3 (0.2)	13.5 (2.1)	10.1 (1.7)	3.4 (0.8)	8.3 (1.5)	12.2 (1.5)	5.6 (1.1)	6.6 (1.1)	7.2 (1.2)
Other	12,289 (7.8)	4.5 (0.2)	3.0 (0.2)	1.5 (0.1)	1.9 (0.2)	7.5 (2.0)	5.2 (1.7)	2.3 (0.8)	5.3 (1.9)	11.4 (1.5)	6.3 (1.1)	5.1 (0.9)	6.9 (1.3)
Income, \$													
<20,000	26,280 (16.8)	7.8 (0.2)	4.9 (0.2)	2.9 (0.2)	4.2 (0.2)	12.4 (1.7)	8.1 (1.4)	4.3 (1.1)	10.0 (1.8)	14.5 (1.1)	7.6 (0.9)	6.9 (0.9)	10.8 (1.1)
20,000–49,999	39,996 (29.7)	5.7 (0.2)	4.1 (0.1)	1.6 (0.1)	2.4 (0.1)	11.5 (1.7)	7.4 (1.4)	4.1 (0.8)	5.1 (0.9)	14.9 (1.0)	7.7 (0.8)	7.2 (0.7)	6.9 (0.9)
50,000–74,999	38,548 (16.2)	6.3 (0.2)	4.6 (0.2)	1.7 (0.1)	2.1 (0.1)	9.8 (1.9)	5.0 (1.3)	4.8 (1.4)	5.0 (1.3)	11.7 (1.5)	6.4 (1.1)	5.3 (1.0)	5.5 (1.1)
≥75,000	40,435 (37.3)	6.6 (0.2)	4.7 (0.2)	1.9 (0.1)	1.6 (0.1)	11.7 (1.1)	7.0 (0.8)	4.7 (0.7)	6.5 (1.3)	14.3 (1.1)	7.5 (0.8)	6.8 (0.9)	6.6 (0.9)
Population density													
Large metro	53,653 (53.8)	6.4 (0.1)	4.4 (0.1)	2.0 (0.1)	2.4 (0.1)	12.2 (1.1)	7.3 (0.7)	4.9 (0.7)	7.5 (1.0)	13.6 (0.9)	6.5 (0.7)	7.1 (0.6)	8.5 (0.8)
Small metro	62,958 (40.4)	6.7 (0.1)	4.7 (0.1)	2.0 (0.1)	2.3 (0.1)	9.8 (1.1)	6.3 (0.8)	3.5 (0.6)	4.5 (0.7)	14.8 (1.0)	8.4 (0.8)	6.4 (0.6)	6.8 (0.6)
Rural	9,852 (5.8)	5.3 (0.3)	4.1 (0.2)	1.1 (0.1)	1.7 (0.2)	15.0 (3.6)	8.1 (3.1)	6.9 (2.4)	10.2 (3.9)	16.3 (3.3)	10.8 (2.5)	5.5 (2.3)	5.6 (1.7)

NH, non-Hispanic; wt col %, survey-weighted column percentage; wt row %, survey-weighted row percentage.

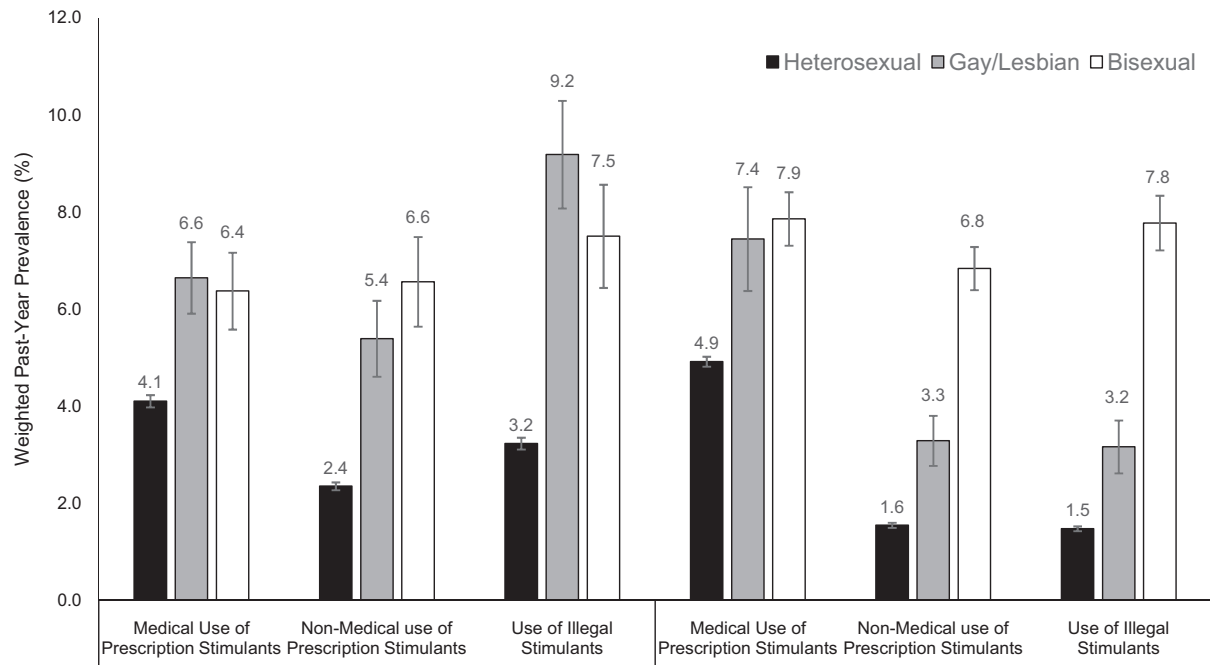


Figure 1. Prevalence of medical and nonmedical prescription stimulant and illegal stimulant use: sexual identity and gender.

past-year illegal stimulant use than their heterosexual counterparts.

The study also explored patterns of polysubstance use by sociodemographic characteristics among adults who use stimulants, differentiating by use of nonmedical prescription stimulants only, illegal stimulant use, or both. Among adults who reported nonmedical stimulant use, 1.1% reported heroin use, and 52.3% reported nonmedical prescription opioid use. Among adults who reported only illegal stimulant use, 9.6% also reported heroin use, whereas 58.2% also reported nonmedical prescription opioid use. Among adults who reported both nonmedical prescription stimulant and illegal stimulant use, 10.4% reported heroin use, whereas 44.5% also reported nonmedical prescription opioid use. Gender differences emerged by LGB status for individuals who reported nonmedical use of prescription stimulants or illegal stimulant use or both (Table 3).

DISCUSSION

This study is the first to use a nationally representative sample of U.S. adults to describe LGB-related disparities in the use of medical and nonmedical prescription stimulants and illegal stimulants. Patterns of nonmedical use and illegal use differed by gender and sexual identity: LGB adults reported higher medical and nonmedical prescription stimulant use and illegal stimulant use than their heterosexual counterparts. Although additional

work is needed to explore potential differences in this relationship by gender, findings are consistent with the minority stress model.^{46,47} This model may be particularly salient for bisexual individuals who can face discrimination from both heterosexual and sexual minority communities,^{35,36,48} although such communities can also be sources of support. This highlights the need for future harm reduction interventions to target stimulant use among LGB populations. The findings have important implications across sexual identities, especially related to polysubstance use, because 25%–50% of people reporting nonmedical and illegal stimulant use also used other substances (e.g., nonmedical prescription opioid use).

The magnitude of LGB disparities in illegal stimulant use is concerning; bisexual women's illegal stimulant use was fivefold that of heterosexual women, whereas gay men's use was threefold that of heterosexual men. By contrast, gay/lesbian women reported lower illegal stimulant use than bisexuals or gay men, but prevalence was still twofold higher than that among heterosexual women. This study builds on past research reporting disproportionately high rates of illegal^{25,49,50} (and nonmedical prescription^{51–53}) stimulant use among men who have sex with men (MSM). The findings extend these associations to include sexual identity, not sexual behavior (e.g., bisexual or gay men versus MSM). Owing to the past focus on MSM and illegal stimulant use, little is known about the patterns of LGB women's use. Studies

Table 2. Medical and Nonmedical Prescription Stimulant Use and Illegal Stimulant Use by Sexual Identity and Gender

Variable	Prescription stimulants ^a				Illegal stimulants ^b			
	Medical use ONLY vs no past-year prescription stimulant use ^{c,d}		Any nonmedical use vs no past-year prescription stimulant use ^{c,d}		Any nonmedical use vs medical use ONLY ^{e,f}		Any past-year illegal stimulant use vs no past-year illegal stimulant use	
	Men, AOR (95% CI)	Women, AOR (95% CI)	Men, AOR (95% CI)	Women, AOR (95% CI)	Men, AOR (95% CI)	Women, AOR (95% CI)	Men, AOR (95% CI)	Women, AOR (95% CI)
Heterosexual	ref	ref	ref	ref	ref	ref	ref	ref
Bisexual ^g	1.38 (1.05, 1.82)	1.39 (1.18, 1.63)	1.86 (1.40, 2.47)	2.05 (1.73, 2.43)	1.34 (0.91, 1.97)	1.47 (1.20, 1.81)	1.70 (1.24, 2.33)	2.70 (2.23, 3.26)
Lesbian/gay ^g	1.62 (1.25, 2.10)	1.47 (1.08, 2.02)	2.01 (1.48, 2.73)	1.70 (1.21, 2.38)	1.24 (0.84, 1.84)	1.15 (0.79, 1.68)	2.61 (2.00, 3.40)	1.63 (1.16, 2.28)
Lesbian/gay	Ref	Ref	Ref	Ref	Ref	Ref	Ref	Ref
Bisexual ^h	0.86 (0.61, 1.20)	0.94 (0.67, 1.33)	0.92 (0.66, 1.31)	1.21 (0.90, 1.63)	1.08 (0.67, 1.74)	1.06 (0.75, 1.50)	0.65 (0.42, 1.00)	1.65 (1.12, 2.44)

Note: Boldface indicates statistical significance at Bonferroni-adjusted $p < 0.0125$.

^aMultinomial logistic regression model.

^bBinary logistic regression model.

^cReferences are heterosexual for sexual identity and no past-year use for use.

^dModels adjust for survey year, age, race/ethnicity, annual household income, urbanicity.

^eReferences are heterosexual for sexual identity past-year medical use for use.

^fSexual identity: lesbian/gay, use: no past-year use.

^gAROR, adjusted relative OR.

frequently collapse LGB women, eliminating the potential to tease out differences between bisexual and lesbian/gay women as the authors have done. In a recent study, bisexual adult women reported higher rates of all substance use measures than lesbian/gay women,⁵⁴ although they did not measure stimulant use. Bisexual women have reported higher past-year and daily marijuana use than gay/lesbian women,^{30,55} and gay/lesbian women report higher lifetime cocaine use than heterosexual women.⁵⁶ These findings begin to build evidence to fill this knowledge gap.

Although beyond the scope of this study, understanding the drivers of illegal and nonmedical stimulant use merits further attention. Substantial research has explored the drivers of illegal stimulant use among MSM,^{41,57} primarily in the context of HIV.^{25,49} These include experiences of social discrimination,⁵⁰ sexuality-related stigma,⁵⁰ and racism.⁵⁸ Although the drivers of illegal stimulant use among bisexual women are likely similar, for example, homophobia and social and gender discrimination, future work should explicitly explore them in this understudied subgroup. Differences in illegal stimulant use may also result from differences in overall patterns of drug use (e.g., there are fewer gender differences among sexual minorities for past-year nonmedical opioid use⁵⁹ and past-year and daily marijuana use).⁵⁵

The high prevalence of illegal stimulant use, combined with nonmedical stimulant use, could increase LGB individuals' risks for negative consequences related to stimulant use. These potential consequences include substance use disorder and overdose^{60,61} given the increases in fentanyl contamination in illegally produced pills⁶² and cocaine and methamphetamine.^{63,64} Moreover, a high percentage of individuals who reported illegal and nonmedical stimulant use also reported prescription opioid use. Some experts warn that stimulant use disorders could be the next epidemic, indicating the need for research to understand who is most at risk for exposure to stimulant-related adverse outcomes.^{61–65}

Nonmedical use of prescription stimulants was significantly higher for LGB individuals. This study extends previous findings to adults because the majority of existing evidence was based on college students^{38,39} or youth.^{31,39} Bisexual women reported twofold higher nonmedical use and illegal stimulant use than gay/lesbian women. Findings addressed previous study measurement limitations among bisexuals, such as combining all nonmedical prescription drug use (i.e., stimulants and opioid use³⁰) or folding illegal stimulant use in an illegal drug category, which made it difficult to tease apart the drivers potentially unique to stimulant use.³⁰

Future research should explore the structural drivers of nonmedical and illegal stimulant use for LGB individuals

Table 3. Sociodemographic Characteristics of U.S. Adults Reporting Past-Year Nonmedical or Illegal Stimulant Use by Sexual Identity

Factor	Heterosexual (n=6,410), wt col % (SE)				Gay/lesbian (n=311), wt col % (SE)				Bisexual (n=718), wt col % (SE)			
	Nonmedical stimulant use only	Illegal stimulant use only	Both nonmedical and illegal stimulant use	χ^2 p-value	Nonmedical stimulant use only	Illegal stimulant use only	Both nonmedical and illegal stimulant use	χ^2 p-value	Nonmedical stimulant use only	Illegal stimulant use only	Both nonmedical and illegal stimulant use	χ^2 p-value
Overall N (wt %)	2,636 (36.2)	2,577 (47.0)	1,197 (16.8)		100 (29.0)	152 (51.5)	59 (19.5)		267 (34.2)	282 (42.2)	169 (23.6)	
Sex	<0.0001				0.0020				0.2669			
Male	56.7 (1.6)	68.7 (1.4)	64.6 (1.8)		56.4 (7.3)	76.7 (4.0)	85.1 (4.1)		23.9 (4.1)	24.8 (4.1)	33.6 (4.9)	
Female	43.3 (1.6)	31.3 (1.4)	35.4 (1.8)		43.6 (7.3)	23.3 (4.0)	14.9 (4.1)		76.1 (4.1)	75.2 (4.1)	66.3 (4.9)	
Age, years	<0.0001				0.4968				0.0237			
18–25	50.3 (1.4)	26.5 (1.0)	50.0 (2.1)		39.5 (5.7)	29.0 (4.3)	45.3 (8.6)		56.7 (3.8)	46.4 (3.5)	52.2 (5.4)	
26–34	26.4 (1.3)	27.9 (1.3)	32.3 (1.8)		38.4 (7.0)	35.6 (4.8)	29.5 (8.3)		28.6 (4.4)	22.0 (3.6)	30.7 (5.3)	
35–49	16.0 (1.1)	23.5 (1.0)	13.0 (1.6)		18.5 (6.4)	23.1 (4.4)	19.4 (6.4)		12.2 (3.3)	18.6 (2.3)	14.3 (4.0)	
≥50	7.3 (1.1)	22.1 (1.4)	4.7 (1.3)		3.6 (3.4)	12.3 (5.7)	5.8 (5.1)		2.5 (1.7)	13.0 (4.2)	2.8 (2.6)	
Race/ethnicity	<0.0001				0.0141				0.1833			
White, NH	77.9 (0.9)	63.4 (1.6)	82.1 (1.6)		79.1 (5.1)	52.4 (6.6)	63.4 (7.3)		65.0 (4.0)	63.2 (4.0)	75.3 (4.0)	
Black, NH	4.1 (0.4)	12.9 (1.2)	2.1 (0.5)		6.7 (2.8)	18.2 (3.7)	16.9 (6.2)		10.1 (2.5)	10.9 (2.9)	3.1 (1.5)	
Hispanic	11.7 (0.8)	17.1 (1.2)	10.0 (1.2)		11.7 (3.9)	23.3 (4.8)	14.0 (4.6)		17.2 (2.7)	16.4 (2.9)	15.4 (4.0)	
Other	6.3 (0.6)	6.5 (0.7)	5.7 (0.9)		2.5 (1.1)	6.0 (2.4)	5.6 (3.4)		7.7 (1.7)	9.5 (1.9)	6.1 (1.2)	
Education	<0.0001				0.2823				0.0039			
Less than high school	7.4 (0.7)	18.1 (1.0)	8.6 (1.2)		3.9 (1.8)	13.5 (4.9)	10.4 (5.2)		3.7 (1.1)	16.7 (3.0)	6.8 (2.1)	
High school/GED	17.6 (1.0)	29.5 (1.1)	20.5 (1.7)		16.3 (5.3)	23.4 (5.0)	14.5 (6.0)		29.2 (3.9)	27.3 (3.7)	23.3 (4.9)	
Some college	43.3 (1.4)	34.3 (1.1)	41.6 (1.9)		41.3 (5.8)	30.5 (3.8)	43.3 (8.6)		48.4 (4.7)	36.4 (3.9)	42.6 (5.3)	
College graduate	31.6 (1.3)	18.1 (0.9)	29.3 (2.4)		38.5 (6.7)	32.6 (3.8)	30.8 (6.2)		18.6 (3.7)	19.6 (3.9)	27.3 (4.2)	
Income, \$	<0.0001				0.0472				0.0259			
<20,000	22.8 (1.1)	30.5 (1.4)	27.9 (2.2)		9.6 (2.8)	30.1 (4.6)	34.4 (7.6)		22.6 (3.1)	39.7 (4.3)	35.0 (5.1)	
20,000–49,999	23.8 (1.1)	31.8 (1.4)	24.9 (1.5)		32.0 (6.1)	24.1 (5.6)	17.6 (6.0)		42.3 (3.7)	32.7 (4.1)	27.4 (4.1)	
50,000–74,999	14.1 (1.0)	14.4 (1.0)	14.0 (1.3)		20.6 (5.3)	12.1 (3.7)	14.7 (6.8)		9.4 (2.0)	8.3 (1.9)	13.3 (4.0)	
≥75,000	39.3 (1.2)	23.3 (1.0)	33.2 (1.8)		37.8 (5.9)	33.7 (7.2)	33.3 (7.2)		25.7 (3.8)	19.3 (3.0)	24.3 (4.9)	
Urbanicity	0.3015				0.4700				0.7498			
Large metro	54.6 (1.3)	55.9 (1.7)	57.4 (2.1)		66.1 (6.3)	71.8 (4.1)	70.9 (7.1)		56.2 (3.9)	61.9 (4.2)	63.9 (5.1)	
Small metro	42.2 (1.2)	39.6 (1.8)	38.8 (1.8)		31.2 (6.3)	24.6 (4.3)	21.4 (5.9)		40.0 (3.8)	34.9 (4.1)	33.7 (5.0)	
Rural	3.2 (0.4)	4.5 (0.5)	3.8 (0.7)		2.6 (1.5)	3.6 (1.6)	7.6 (4.1)		3.8 (1.8)	3.2 (1.1)	2.3 (1.3)	
Other substance use												
Any alcohol use	92.5 (0.8)	91.5 (0.8)	96.1 (1.1)	0.0107	90.3 (3.8)	89.7 (3.5)	92.5 (5.2)	0.8996	96.7 (2.4)	89.3 (2.9)	99.6 (0.3)	0.0039
Binge drinking, past month	64.3 (1.3)	67.1 (1.3)	77.5 (1.8)	<0.0001	65.6 (7.9)	65.3 (5.5)	73.6 (7.4)	0.7241	63.1 (4.1)	67.7 (3.8)	77.2 (3.8)	0.0868
Marijuana use	63.0 (1.3)	73.3 (1.1)	89.4 (1.4)	<0.0001	50.2 (6.8)	70.3 (6.3)	87.6 (5.7)	0.0057	74.4 (3.3)	78.4 (3.4)	87.4 (3.5)	0.0665

(continued on next page)

Table 3. Sociodemographic Characteristics of U.S. Adults Reporting Past-Year Nonmedical or Illegal Stimulant Use by Sexual Identity (continued)

Factor	Heterosexual (n=6,410), wt col % (SE)			Gay/lesbian (n=311), wt col % (SE)			Bisexual (n=718), wt col % (SE)		
	Nonmedical stimulant use only	Illegal stimulant use only	Both nonmedical and illegal stimulant use	Nonmedical stimulant use only	Illegal stimulant use only	Both nonmedical and illegal stimulant use	Nonmedical stimulant use only	Illegal stimulant use only	Both nonmedical and illegal stimulant use
Nonmedical use of prescription opioids	25.4 (1.1)	27.1 (1.0)	43.7 (1.6)	36.0 (6.4)	22.6 (4.9)	55.9 (8.2)	32.8 (4.2)	28.9 (3.2)	45.5 (5.1)
Heroin	1.1 (0.3)	9.8 (0.8)	10.5 (1.2)	0 (0.0)	3.7 (1.6)	6.8 (3.1)	0.9 (0.5)	10.2 (2.8)	11.7 (3.3)
				χ^2 p-value			χ^2 p-value		χ^2 p-value
				<0.0001			0.0020		0.0272
				<0.0001			-		0.0002

Note: Boldface indicates statistical significance ($p < 0.05$). NH, non-Hispanic; wt col %, weighted column percentage.

to better understand the causes of the differences by gender and sexual identity (especially for gay men and bisexuals), such as state-level factors that might drive substance use (e.g., homophobia^{34,66} or regulations of physician-prescribing patterns).^{2,67,68} Individual-level analyses that also include state-level variables should control for state-level differences in laws relating to sexual minority discrimination (e.g., housing- and employment-based discrimination), which may affect substance use. Work should also explore reasons why (1) gay/lesbian women have a lower prevalence than their sexual minority peers, (2) medical stimulant use was higher among LGB individuals than among heterosexuals, and (3) few differences in medical use existed within LGB individuals. Work should also explore stimulant use patterns among individuals who chose the don't know category of sexual identity. Patterns of use among youth remain of interest because many prescriptions for stimulants begin at age 12–17 years.

Limitations

This study used nationally representative data to compare and disaggregate stimulant use by sexual identity and gender. Limitations include that sexual identity and substance use measures were self-reported, which may lead to recall bias or socially desirable reporting.⁶⁹ This exploratory study did not adjust for multiple comparisons. Owing to NSDUH's question framing, the authors could not differentiate between only nonmedical use and both nonmedical and medical use. The NSDUH started assessing sexual identity among adults in 2015, therefore these relationships could not be examined in earlier years or among adolescents. The NSDUH options for gender include only male or female and thus, did not allow researchers to differentiate between transgender and cisgender individuals. The NSDUH did not explicitly oversample LGB populations, therefore findings may not be representative of all LGB adults; this also meant that the authors had to exclude the *don't know* category of sexual identity owing to the lack of power to estimate gender-specific effects. The NSDUH does not assess sexual behavior, therefore this study only captured associations on the basis of individuals' sexual identity. The NSDUH excluded individuals who were incarcerated or homeless,⁴⁵ among whom LGB individuals are over-represented.⁷⁰

CONCLUSIONS

In this study, LGB individuals had uniformly higher stimulant use than their heterosexual peers. Exploring the drivers of stimulant use is important for health disparities, given the risk for disordered use and overdose and in the context of increased fentanyl contamination of illegal

stimulants.^{28,64} *Widespread stimulant use*, alongside opioid use, is referred to as the fourth wave of the epidemic.⁶⁵ Multilevel interventions to minimize stimulant-related harms, many of which require clinical support, should pay particular attention to LGB populations. Providers who focus on LGB communities should screen for and discuss substance use, including stimulants, because the U.S. Preventive Services Task Force updated its draft recommendations for substance use screening to demonstrate moderate evidence.⁷¹ Drug screening and discussions with providers remain low,⁷² indicating that additional training and resources may be required to increase discussions about stimulant use and related treatment options tailored for LGB adults. Communities and providers can scale up access to medication disposal and harm reduction services. Structural-level targets include reducing unnecessary prescribing, offering nonstigmatizing and affordable treatment when clinically indicated,⁷³ and addressing fentanyl contamination through harm reduction approaches, such as providing fentanyl test strips.⁷⁴ Taking such a multilevel approach is crucial to reduce unintended stimulant-related harms that could disproportionately impact LGB adults.

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SUPPLEMENTAL MATERIAL

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