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Prevalence and Correlates of Past-Year Ecstasy/MDMA Use in the United States

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Abstract

Objectives: 3,4-methylenedioxymethamphetamine (MDMA) (also known as “ecstasy” or “Molly”) has regained attention in recent years for its efficacy in treating post-traumatic stress disorder, and the drug was granted breakthrough therapy designation for such use by the US Food & Drug Administration in 2017. However, little is known about the current epidemiology of recreational ecstasy/MDMA use.

Methods: We estimated past-year prevalence and correlates of ecstasy/MDMA use based on a representative sample of noninstitutionalized US individuals age 12 from the 2015–2020 National Survey on Drug Use and Health (N=315,661).

Results: An estimated 0.9% (95% CI: 0.9–1.0) of individuals used ecstasy/MDMA in the past year. Compared to those age 35–49, all younger age groups were at increased odds for use, while those age 50 (aOR=0.14, 95% CI: 0.08–0.23) were at low odds for use. Compared to heterosexual men, those identifying as bisexual women (aOR=1.32, 95% CI: 1.02–1.72) were at increased odds for use, and compared to White individuals, those identifying as Asian (aOR=1.92, 95% CI: 1.42–2.59), Black (aOR=1.70, 95% CI: 1.41–2.06), or multiracial (aOR=1.61, 95% CI: 1.19–2.16) were at increased odds for use. Past-year use of other drugs (e.g., cannabis, ketamine), prescription drug misuse (e.g., pain relievers, stimulants), nicotine dependence (aOR=1.21, 95% CI: 1.00–1.45), and alcohol use disorder (aOR=1.41, 95% CI: 1.25–1.58) were also associated with increased odds for use.

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Conclusions: While use of ecstasy/MDMA continues to be relatively rare, findings from this study can help inform prevention and harm reduction strategies, especially among certain subpopulations that are at high risk for use.

Keywords

MDMA; ecstasy; epidemiology; club drugs

1. Introduction

3,4-methylenedioxymethamphetamine (MDMA) is a phenethylamine that has been used recreationally for decades. Also known as “ecstasy” or “Molly” (hereafter referred to as ecstasy/MDMA), this psychoactive drug is commonly used at raves, music festivals, and nightclubs.^{1,2} Its popularity can be attributed to its unique subjective effects as an entactogen, including increased feelings of pleasure, empathy, intimacy, and sensuality.³ While not as prevalent in the United States (US) as in the late 1990s and early 2000s, ecstasy/MDMA use has remained popular in recent years, especially among adolescents and young adults.^{4,5} For instance, according to the Monitoring the Future (MTF) annual survey, a nationally representative survey of 8th, 10th, and 12th grade high school students (modal ages: 14, 16, and 18 years), past-year ecstasy/MDMA use peaked in 2001 with prevalence estimates of 3.5%, 6.2%, and 9.2%, respectively.⁴ Estimated past-year prevalence in 2021 was estimated to be 0.6%, 0.7%, and 1.1%, respectively.⁴ Among individuals aged 19–30 participating in an MTF follow-up panel study, past-year ecstasy/MDMA use was estimated at 2.6% in 2021.⁵

Ecstasy/MDMA currently remains a Schedule I controlled substance in the US, which is defined as substances with the highest potential for abuse and no known medical use. However, despite this classification, there has been a substantial growth in clinical research exploring the potential efficacy of MDMA in treating post-traumatic stress disorder (PTSD) in recent years, and the drug was granted breakthrough therapy designation for such use by the US Food and Drug Administration (FDA) in 2017.^{6,7} Clinical trials have also demonstrated therapeutic benefits of MDMA in treating social anxiety, psychological distress related to life-threatening illnesses, and alcohol use disorder.^{8,9} These positive findings have led to extensive media coverage on the medical benefits of MDMA, which may subsequently influence subsets of people to use recreationally or for self-medication. For instance, in a cross-sectional survey of New York City nightclub attendees (n=209), a fifth (21.0%) of past ecstasy/MDMA users reported being more likely to use ecstasy/MDMA again in response to the increased media coverage.¹⁰

Notably, MDMA is used in these studies as adjuncts to psychotherapy in supervised, medical settings. However, use outside of clinical contexts may be associated with harms for people that use ecstasy/MDMA. For instance, acute toxicity may be associated with tachycardia, increased blood pressure, anxiety, dehydration, and seizures in some cases.³ In clinical settings, psychotherapeutic interventions and pharmacologic agents may be administered to ameliorate these symptoms, whereas these resources may not be as readily available in recreational settings to manage acute adverse effects. Additionally, while

associations have been detected between ecstasy/MDMA use and decreased psychological distress, depression, and suicidal ideation in epidemiological studies,¹¹ most research appear to indicate significant mood disturbances and cognitive impairments associated with use, especially among chronic users.^{3,12,13} As such, recreational use of ecstasy/MDMA is not without its harms, and understanding which subpopulations may be at high risk for use can help inform prevention, treatment, recovery, and harm reduction strategies.

A paucity of recent work exists on the correlates of ecstasy/MDMA use in the US. Most research using nationally representative samples is becoming outdated,^{14–21} while others are focused on targeted samples of people who use drugs and individuals who identify as gender or sexual minorities.^{22,23} More recently, Salas-Wright et al.²⁴ and Davis et al.²⁵ have characterized people who use hallucinogens (including ecstasy/MDMA), although these studies evaluated lifetime use; examining more recent use may allow for better examination of potential correlates of more recent use. Furthermore, research has detected shifting sociodemographic characteristics among people who use ecstasy/MDMA. For instance, Palamar et al.¹⁷ found that from 2007/2008 to 2014/2015, the proportion of ecstasy users with a college degree increased while the proportion of users who are non-Hispanic Black and reported income <\$20,000 decreased. Thus, in light of a changing legal landscape, increasing media attention on the therapeutic benefits of MDMA, and shifting sociodemographic characteristics among people who use ecstasy/MDMA, research is needed to examine more recent sociodemographic correlates of use to delineate who is at high risk for current use. This present study seeks to estimate the prevalence of and investigate sociodemographic characteristics and drug-use-related correlates associated with past-year ecstasy/MDMA use.

2. Methods

2.1 Data Source

Aggregated data (N=315,661) were examined from individuals aged 12 from the 2015–2020 National Survey on Drug Use and Health (NSDUH). NSDUH is a nationally representative annual cross-sectional survey of non-institutionalized individuals in the US. The survey is based on a multi-stage area probability sample for each of the 50 states and the District of Columbia. Surveys were administered through computer-assisted interviewing (CAI) conducted by an interviewer and audio computer-assisted self-interviewing (ACASI). The weighted interview response rates ranged from 60.4% to 69.3%. This analysis was limited to 2015–2020 due to survey design changes starting in 2015 in which “Molly” was added as a slang term for ecstasy.

2.2 Measures

Participants were asked about ecstasy/MDMA use via the question “Have you ever, even once, used ‘Ecstasy’ or ‘Molly,’ also known as MDMA?” Participants who reported use were then asked about recency of use. This analysis focused on those who reported use within the past 12 months.

Participants were also asked about past-year use of cannabis, cocaine, *gamma*-hydroxybutyrate (GHB), heroin, ketamine, lysergic acid diethylamide (LSD), and methamphetamine, as well as past-year misuse of prescription opioids, stimulants, and tranquilizers/sedatives. Misuse was defined as using in any way not directed by a doctor, including use without a prescription, use in greater amounts, more often, or longer than instructed to take them.

Nicotine dependence in the past year was assessed via the dependence criteria of the Nicotine Dependence Syndrome Scale.²⁶ Past-year alcohol use disorder (AUD) status was assessed with standardized items corresponding to the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV) criteria for either alcohol dependence or abuse.²⁷

Major depressive episode (MDE) in the past year was coded by NSDUH as affirmative when participants reported experiencing at least five of the nine MDE DSM-IV criteria.

Demographic characteristics were categorized as follows: age (i.e., 12–15, 16–17, 18–20, 21–25, 26–34, 35–49, 50), sex/sexual orientation (i.e., heterosexual male, heterosexual female, gay male, lesbian female, bisexual male, bisexual female), race/ethnicity (i.e., White, Black, Native/Alaskan American, Hawaiian/Pacific Islander, Asian, multiracial, Hispanic), education (i.e., less than high school diploma, high school diploma, some college/associate's degree, college degree and higher), and marital status (i.e., married, not married). A variable was coded combining sex and sexual orientation because of prior research demonstrating differences in club drug use among these subgroups.^{22,28} The sex/sexual orientation variable only includes adults age ≥ 18 as NSDUH did not assess for sexual orientation in adolescents. Furthermore, the education variable only includes adults age ≥ 18.

2.3 Statistical Analysis

First, we estimated past-year use of ecstasy/MDMA in the population. Next, Rao-Scott chi square was used to compare the past-year prevalence of ecstasy/MDMA use according to each independent variable in a bivariable manner. Then, we fit all independent variables into a multivariate logistic regression model, which generated adjusted odds ratios (aORs) for each variable. These variables included survey year, age, sex/sexual orientation, race/ethnicity, education, marital status, past-year use of cannabis, cocaine, GHB, heroin, ketamine, LSD, and methamphetamine, past-year prescription misuse of pain reliever, stimulant, and tranquilizer/sedative, past-year nicotine dependence and AUD, and past-year MDE. Indicators for “missing” education and sexual orientation for adolescents were included in the multivariable model to ensure that data for adolescents were not case-wise deleted. Stata SE 17 (StataCorp, College Station, TX) was used for all analyses and weights were used to account for the complex survey design, non-response, selection probability, and population distribution. This secondary analysis was exempt from review at the New York University Langone Medical Center's Institutional Review Board.

3. Results

An estimated 0.9% (95% CI: 0.9–1.0) of individuals aged ≥ 12 used ecstasy/MDMA in the past year (N=4,188). Table 1 presents bivariable and multivariable correlates of past-

year ecstasy/MDMA use. Compared to those age 35–49, all younger age groups (12–15 [aOR=1.64, 95% CI: 1.19–2.26], 16–17 [aOR=1.42, 95% CI: 1.04–1.94], 18–20 [aOR=1.86, 95% CI: 1.45–2.37], 21–25 [aOR=1.75, 95% CI: 1.39–2.22], and 26–34 [aOR=1.84, 95% CI: 1.41–2.41]) were at increased odds for use, while those age 50 (aOR=0.14, 95% CI: 0.08–0.23) were at low odds for use. Compared to heterosexual men, those identifying as bisexual women (aOR=1.32, 95% CI: 1.02–1.72) were at increased odds for use, and compared to White individuals, those identifying as Asian (aOR=1.92, 95% CI: 1.42–2.59), Black (aOR=1.70, 95% CI: 1.41–2.06), or multiracial (aOR=1.61, 95% CI: 1.19–2.16) were also at increased odds for use. Compared to those with less than high school education, those with at least some college education (aOR=1.61, 95% CI: 1.23–2.12) were at increased odds for use, while those married (aOR=0.63, 95% CI: 0.53–0.74) were at decreased odds for use.

With regard to substance use, past-year use of cannabis (aOR=8.95, 95% CI: 7.29–10.97), LSD (aOR=7.77, 95% CI: 6.59–9.16), cocaine (aOR=6.54, 95% CI: 5.55–7.71), ketamine (aOR=6.09, 95% CI: 4.14–8.95), GHB (aOR=5.08, 95% CI: 2.28–11.31), and methamphetamine (aOR=1.37, 95% CI: 1.01–1.84) were each associated with increased odds of use. In addition, past-year misuse of prescription simulant (aOR=1.88, 95% CI: 1.61–2.21), tranquilizer/sedative (aOR=1.49, 95% CI: 1.26–1.77), and pain reliever (aOR=1.46, 95% CI: 1.21–1.76) as well as past-year nicotine dependence (aOR=1.21, 95% CI: 1.00–1.45) and AUD (aOR=1.41, 95% CI: 1.25–1.58) were each associated with increased odds for use. Finally, while past-year heroin use and past-year major depressive episode were associated with ecstasy use in bivariable models, these associations were not held in multivariable models.

4. Discussion

Based on a nationally representative sample of noninstitutionalized US individuals, we found that past-year ecstasy/MDMA use appears to be rare, with an estimated prevalence of 0.9% among individuals aged 12. However, this study demonstrated that several factors were associated with increased odds of use, including use of other illicit drugs, misuse of prescription drugs, nicotine dependence, and AUD. We also found that certain subpopulations are at higher risk for reporting use, including those in younger age groups, individuals identifying as bisexual women, individuals identifying as Asian, Black or multiracial, and those reporting at least some college education and being unmarried. These findings add to the literature by providing the most up-to-date correlates of past-year ecstasy/MDMA use. Results suggest that despite the low prevalence of ecstasy/MDMA use in the general population, increased screening and targeted interventions are warranted in higher-risk populations.

Findings from this study suggest that individuals who use ecstasy/MDMA use are more likely to also report use of cannabis, LSD, cocaine, ketamine, GHB, and methamphetamine, consistent with prior epidemiologic studies indicating that ecstasy users are disproportionately at risk for other drug use.^{14,18,24,28} Our study further contributes to existing literature as we found additional associations between ecstasy/MDMA use and club drugs (i.e., GHB and ketamine), which were not added as variables to NSDUH until 2006, after which some of these studies were published. Furthermore, we found that misuse of

psychoactive, controlled prescription medications (i.e., stimulant, tranquilizer/sedative, and pain relievers), nicotine dependence, and AUD were all correlates of ecstasy/MDMA use. These findings corroborate older nationally representative studies that found that ecstasy users were at increased risk for numerous substance use disorders.^{14,16,19} Interestingly, while we found ecstasy/MDMA use to be positively associated with reporting AUD, MDMA is actually currently being studied to treat this very disorder along with other substance use disorders. Understanding why recreational ecstasy/MDMA use in particular is associated with these outcomes is imperative to reduce MDMA-related harms.

With respect to demographic characteristics, we found that ecstasy/MDMA use varies considerably by age group. Compared to individuals aged 35–49, all younger age groups were at increased odds for reporting use, consistent with prior research.^{15,19} For instance, compared to those aged 35–49, those aged 18–20 had an aOR of 1.86 (95% 1.45–2.37) for past-year ecstasy/MDMA use. The increased prevalence of ecstasy/MDMA use among adolescents and young adults poses an area of concern due to their potential effects on the developing brain and body; the methylenedioxy derivatives of amphetamines may cause neurotoxicity, with multiple studies demonstrating poor cognitive and psychological outcomes associated with ecstasy/MDMA use among young adults, even from small recreational doses.^{12,13,29} Given the increased prevalence of use among young adults, healthcare providers should screen for use and provide education about harms from use.

We found that bisexual women were more likely to report ecstasy/MDMA use (aOR = 1.32, 95% 1.02–1.72), which is consistent with findings from other studies in which bisexual women were at increased odds for not only ecstasy/MDMA use, but many other drugs as well.^{1,23,28} A qualitative study by McElrath³⁰ suggests that the unique sensual/sexual effects may be reasons for ecstasy/MDMA use among sexual minority individuals. Previous studies, however, have suggested that gay and bisexual men are also at increased odds of reporting ecstasy/MDMA use,^{1,22,28} though this was not detected in our study. More research on the reasons for use and how they differ among varying subpopulations are thus warranted.

Compared to individuals identifying as White, those identifying as Asian, Black, or multiracial were more likely to report past-year ecstasy/MDMA use. Similar demographic findings were reported by Davis et al.²⁵ in relation to past-year hallucinogen use. However, our findings are in contrast to older epidemiologic research, in which those identifying as Black were actually less likely to use ecstasy/MDMA.^{16,18,20} We are also one of the first studies to report that those identifying as Asian were at increased odds for ecstasy/MDMA use (aOR = 1.92, 95% 1.42–2.59). Asian Americans are one of the fastest growing minority groups in America, yet due to the “model minority” stereotype and limited research on substance use among this population in comparison to other major ethnic groups, Asian Americans have been thought to have lower than expected rates of substance use disorders.^{31–33} However, more recent research has shown that this is not the case.^{25,34} Some studies suggest that factors including trauma from resettlement, acculturation, urbanicity, and cultural influences may explain the increasing substance use seen in both Asian and Black populations.^{21,35–37} These data suggest that ecstasy/MDMA use patterns are heterogeneous by racial and ethnic subgroups and different from prior epidemiological

studies of ecstasy/MDMA. Qualitative studies and longitudinal studies further examining reasons for and patterns of ecstasy/MDMA use among these populations will be crucial.

Finally, compared to individuals reporting less than a high school education, those with at least some college education were more likely to report ecstasy/MDMA use. This is consistent with prior research, which found that the percent of young adults with a college degree using ecstasy/MDMA more than doubled from 2007/2008 to 2013/2014.¹⁷ Reasons for increased use among this group include increased opportunities to use, increased availability of such substances, and peer pressure.³⁸ College health and wellness programs should be aware of such findings and develop health promotion campaigns to minimize risks of ecstasy/MDMA use among college-aged adults.

Limitations

This study has several limitations. First, these data are based on self-report, which is subject to social desirability and recall bias. Second, institutionalized individuals such as jail inmates, active military personnel, and homeless persons not living in a shelter were excluded, and thus the past-year prevalence of ecstasy/MDMA use may not be generalizable to these populations. Third, because NSDUH is a cross-sectional survey, we cannot establish causality or temporality. Fourth, data on sex/sexual orientation were limited to adults because sexual orientation was not queried among adolescents. Fifth, neither the dosage nor intensity of ecstasy/MDMA use were queried. Future longitudinal studies incorporating these variables may help to better understand the epidemiology of recreational ecstasy/MDMA use. Sixth, ecstasy/MDMA is commonly adulterated with other drugs, and ecstasy/MDMA may actually contain little to no MDMA.³⁹ Thus, it is possible that while respondents indicated that they had used ecstasy/MDMA, they may not have actually known what substance(s) they had consumed. A final limitation is that 2020 was the most recent year of data available for this analysis. A recent study of nightclub and festival attendees estimated that ecstasy/MDMA use has decreased through 2022 (since the onset of COVID), so it is possible that prevalence and correlates of use have begun to shift, nationally.⁴⁰

Conclusions

Although the estimated past-year prevalence of ecstasy/MDMA use in the general population is low, we found certain subpopulations that were at particularly high risk for use. Given the changing legal landscape, increasing clinical research and media attention on the therapeutic benefits of MDMA, and positive experiences that many people associate with recreational use, the general population may increasingly perceive ecstasy/MDMA as a non-risky substance and subsequently decide to use. Prevention efforts should focus on educating those at highest risk regarding the potential adverse effects of use. Educational programs can start as early as middle school, and should take age, gender identity, sexual orientation, and racial and ethnic background into consideration. Renewed prevention efforts and harm reduction strategies should be created for at-risk subpopulations including young adults and people who engage in polydrug use.

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Table 1:
Sample Characteristics and Correlates of Past-Year Ecstasy/MDMA Use

Characteristic	Full Sample % (95% CI) N=315,661	No Ecstasy/MDMA use % (95% CI) N=311,473	Ecstasy/MDMA use % (95% CI) N=4,188	aOR (95% CI)
Age				
12–15	6.1 (6.0–6.2)	6.1 (6.0–6.2)	2.0 (1.6–2.5) ^c	1.64 (1.19–2.26) ^b
16–17	3.1 (3.0–3.2)	3.1 (3.0–3.2)	4.2 (3.6–4.9)	1.42 (1.04–1.94) ^a
18–20	4.7 (4.6–4.8)	4.6 (4.5–4.7)	15.2 (13.8–16.7)	1.86 (1.45–2.37) ^c
21–25	7.8 (7.7–8.0)	7.6 (7.5–7.8)	29.6 (27.8–31.5)	1.75 (1.39–2.22) ^c
26–34	14.5 (14.3–14.7)	14.4 (14.1–14.6)	33.1 (30.6–35.7)	1.84 (1.41–2.41) ^c
35–49	22.4 (22.1–22.6)	22.5 (22.2–22.7)	14.2 (12.0–16.8)	1.00
≥50	41.4 (41.0–41.8)	41.8 (41.3–42.2)	1.7 (1.0–2.7)	0.14 (0.08–0.23) ^c
Sex/Sexual Orientation				
Heterosexual Male	46.4 (46.1–46.8)	46.4 (46.0–46.7)	51.3 (48.9–53.7) ^c	1.00
Heterosexual Female	48.3 (47.9–48.6)	48.5 (48.1–48.8)	28.6 (26.4–30.9)	0.99 (0.86–1.15)
Gay Male	1.1 (1.1–1.2)	1.1 (1.0–1.2)	4.6 (3.6–6.0)	1.49 (0.98–2.25)
Lesbian Female	0.9 (0.8–0.9)	0.9 (0.8–0.9)	1.7 (1.1–2.5)	1.34 (0.82–2.18)
Bisexual Male	0.9 (0.9–1.0)	0.9 (0.9–1.0)	3.6 (2.8–4.6)	1.14 (0.73–1.79)
Bisexual Female	2.4 (2.3–2.5)	2.3 (2.2–2.4)	10.2 (8.8–11.9)	1.32 (1.02–1.72) ^a
Teens 12–17	Omitted			
Race/Ethnicity				
NH White	62.6 (62.1–63.2)	62.6 (62.1–63.2)	62.9 (60.1–65.6) ^c	1.00
NH Black	12.0 (11.7–12.4)	12.1 (11.7–12.4)	11.3 (9.8–13.0)	1.70 (1.41–2.06) ^c
NH Native/Alaskan American	0.6 (0.5–0.6)	0.6 (0.5–0.6)	0.4 (0.3–0.6)	0.75 (0.47–1.20)
NH Hawaiian/Pacific Islander	0.4 (0.3–0.4)	0.4 (0.3–0.4)	0.2 (0.1–0.5)	0.76 (0.39–1.51)
NH Asian	5.7 (5.4–5.9)	5.7 (5.5–5.9)	5.1 (4.2–6.3)	1.92 (1.42–2.59) ^c
NH More than One Race	1.9 (1.8–1.9)	1.8 (1.8–1.9)	4.1 (3.4–5.1)	1.61 (1.19–2.16) ^b
Hispanic	16.9 (16.5–17.3)	16.9 (16.5–17.3)	15.9 (14.1–17.9)	1.21 (0.99–1.48)
Education				
Less than High School	12.5 (12.2–12.7)	12.5 (12.2–12.8)	8.6 (7.2–10.3) ^c	1.00
High School	25.3 (25.0–25.6)	25.4 (25.1–25.7)	20.0 (18.1–22.0)	0.91 (0.72–1.14)
Some College	30.8 (30.5–31.1)	30.7 (30.4–31.0)	39.7 (37.3–42.2)	1.17 (0.92–1.49)
College Degree or Higher	31.4 (31.0–31.9)	31.4 (31.0–31.9)	31.7 (28.8–34.7)	1.61 (1.23–2.12) ^b
Married	49.0 (48.6–49.5)	49.4 (49.0–49.8)	11.2 (9.8–12.9) ^c	0.63 (0.53–0.74) ^c
Past-Year Other Substance Use				
Cannabis	15.6 (15.4–15.8)	14.9 (14.7–15.1)	88.7 (87.1–90.0) ^c	8.95 (7.29–10.97) ^c
Cocaine	1.9 (1.9–2.0)	1.5 (1.4–1.5)	51.7 (49.1–54.4) ^c	6.54 (5.55–7.71) ^c
GHB	0.05 (0.04–0.06)	0.03 (0.02–0.04)	2.0 (1.3–3.0) ^c	5.08 (2.28–11.31) ^c
Heroin	0.3 (0.3–0.4)	0.3 (0.2–0.3)	4.7 (3.9–5.8) ^c	0.83 (0.56–1.23)

Characteristic	Full Sample % (95% CI) N=315,661	No Ecstasy/MDMA use % (95% CI) N=311,473	Ecstasy/MDMA use % (95% CI) N=4,188	aOR (95% CI)
Ketamine	0.2 (0.1–0.2)	0.06 (0.05–0.07)	10.1 (8.7–11.6) ^c	6.09 (4.14–8.95) ^c
LSD	0.8 (0.8–0.8)	0.5 (0.5–0.5)	34.3 (32.4–36.2) ^c	7.77 (6.59–9.16) ^c
Methamphetamine	0.7 (0.6–0.7)	0.6 (0.5–0.7)	9.1 (7.6–11.0) ^c	1.37 (1.01–1.84) ^a
Pain Reliever Misuse	3.9 (3.8–4.0)	3.7 (3.6–3.8)	28.6 (26.6–30.6) ^c	1.46 (1.21–1.76) ^c
Stimulant Misuse	2.0 (1.9–2.0)	1.7 (1.6–1.7)	34.6 (32.4–36.8) ^c	1.88 (1.61–2.21) ^c
Tranquilizer/Sedative Misuse	2.4 (2.3–2.5)	2.2 (2.1–2.3)	29.7 (27.6–31.9) ^c	1.49 (1.26–1.77) ^c
Nicotine Dependence	8.3 (8.1–8.5)	8.2 (8.0–8.4)	19.5 (17.4–21.7) ^c	1.21 (1.00–1.45) ^a
Alcohol Use Disorder	5.5 (5.4–5.7)	5.3 (5.1–5.4)	33.0 (30.9–35.1) ^c	1.41 (1.25–1.58) ^c
Past-Year Major Depressive Episode	8.0 (7.8–8.1)	7.8 (7.7–8.0)	22.0 (20.3–23.8) ^c	1.01 (0.88–1.15)

Note:

^a p<0.05,

^b p<0.01,

^c p<0.001.

CI = confidence interval. aOR = adjusted odds ratio. NH = Non-Hispanic. GHB = *gamma*-hydroxybutyrate. LSD = lysergic acid diethylamide.

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