Disparities in illicit drug use and disability status among a nationally representative sample of U.S. college students

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ABSTRACT

Background: The number of students with disabilities attending postsecondary institutions is increasing. However, research on substance use among this population is limited.
Objective: This study examined disparities in the prevalence of illicit drug use and drug use disorders among college students with disabilities and their counterparts without disabilities.
Methods: Data from the 2017 National Survey on Drug Use and Health were analyzed. We estimated prevalence and odds of disability, illicit drug use, and illicit drug dependence or abuse in a subsample of college students (n = 6,189).
Results: A majority of college students reporting a disability had a cognitive limitation. Students with any disability had a higher prevalence of illicit drug use and significantly higher odds of ever use of illicit drugs (AOR = 1.47; 95% CI 1.20−1.79). Compared to their peers with no disabilities, they were more likely to have misused any psychotherapeutic in the past year (AOR = 1.38; 95% CI 1.08−1.76), and had nearly twice the odds of misusing prescription pain relievers in the past month (AOR = 1.97; 95% CI 1.11−3.49). Additionally, students with disabilities had three times the odds of meeting criteria for past-year dependence or abuse of any illicit drug (AOR = 3.01; 95% CI 2.06−4.40).
Conclusion: This study documented a higher prevalence of drug use and drug use disorders among college students with disabilities compared to their nondisabled peers. Understanding the risk factors for substance use in this population is critical for developing effective prevention and treatment strategies.

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Introduction

There are approximately 20 million students enrolled in colleges and universities in the United States. In the 2018 Fall semester, approximately 85% (17 million) of college students enrolled in undergraduate programs and about 15% in graduate programs.[1] While estimates vary, research suggests that a significant number of those students have some form of disability. The U.S. Department of Education estimates that 11% of undergraduate and 5% of post-baccalaureate students have a disability.[2] This is compared to approximately 20% of adults in the general U.S. population as estimated by the U.S. census.[3,4] Estimates are substantially higher from the American College Health Association - National College Health Assessment II (ACHA-NCHA II), which uses a broader definition of disability, including psychiatric disorders, attention deficit hyperactivity disorder (ADHD), attention deficit disorder (ADD), learning disabilities, and chronic illnesses (e.g., cancer, diabetes, autoimmune disorders). Under this definition, more than half (54%) of students surveyed in 2016 reported a diagnosis or treatment of one or more disabilities by a professional within the past year.[5]

Young adults have the highest prevalence of substance use of any age group. The prevalence of substance dependence or abuse in the past year among adults aged 18 to 25 is higher than that among youths aged 12 to 17 and adults aged 26 or older.[6] Like many young adults, college students with disabilities have an elevated risk of substance use. In 2015, annual prevalence of illicit drug use among college students was 41%.[7] While marijuana is the most widely used illicit drug, with one fifth of students reporting past-month use, and 5% using marijuana daily,[5,7,8] annual prevalence of any illicit drug use other than marijuana is 19%.[7] The popularity of

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marijuana, and the increasing availability through legalization, have contributed to the rise in drug use among college students.[6,7,9] Additionally, there has been an increase in nonmedical use of prescription medications, with approximately 20% of college students reporting nonmedical use of at least one prescription medication in their lifetime.[10] Three percent of college students report past-year use of non-heroin narcotics, primarily Vicodin and Oxy-Contin. Moreover, the annual prevalence of any amphetamine use (e.g., Adderall and Ritalin) is10% for college students. Although prescribed to treat ADHD, these drugs are often misused by college students to stay alert and study for exams.[5,7,10]

Research on substance use among college students with disabilities is limited. However, there is a small but growing body of research on the association between ADHD and substance use disorders. Findings from these studies suggest adolescents and young adults with ADHD are more likely to become dependent upon or abuse nicotine, alcohol, marijuana, cocaine, or other substances. Similar results are found in small studies of college students with learning disabilities.[11–15] According to one study, approximately one third of all adolescents with mental illness have become regular alcohol drinkers or have used illicit drugs by the age of 18.[16] Yet, very little is known about how this population fares after enrolling in college. Even more striking is the lack of information on substance use among students with other forms of disabilities.

This gap in research has significant implications for public health. By age 18, the majority of adolescents with pre-existing mental disorders had consumed alcohol at least once and had reported having the opportunity to use drugs. Furthermore, adolescents with mental disorders also had high lifetime rates of both alcohol and illicit drug abuse.[16] Although most young adults with disabilities continue on to postsecondary education, much remains unknown about this population.

Equally important is the paucity of information on estimates of substance use among students with other non-psychiatric forms of disabilities. According to ACHA, 5% of students had chronic illnesses (e.g., cancer, diabetes, autoimmune disorders), 4% had a learning disability, and 9% had other disabilities such as hearing and vision impairments, mobility/dexterity, and speech or language disorders.[5] Examples of research on this topic are few and include a study that found college students with ADHD and learning disabilities reported significantly more substance use than their counterparts without disabilities.[15] Another study of college students with ADHD concluded that such students were nearly four times as likely to have ever used tobacco and report alcohol dependence. They were also three times more likely to have ever used marijuana and approximately five times more likely to use illicit drugs other than marijuana.[14]

People with disabilities have been described as an unrecognized health disparity population, a group that has been largely absent from public health research and health promotion initiatives.[17,18] From a public health policy standpoint, identifying disparities in illicit drug use in this population is important to determine how best to direct resources in order to reduce these disparities. Monitoring and reducing health disparities in populations with disabilities is especially relevant, given current recommendations in *Healthy People 2020* and to comply with certain requirements of the Patient Protection and Affordable Care Act of 2010 (ACA).[19,20]

To that end, this study examined the prevalence of illicit drug use among college students with physical, cognitive, and other disabilities, and their counterparts without disabilities. Although the majority of states and U.S. territories have passed legislation approving medical and/or recreational use of marijuana, the substance is classified under federal law as a Schedule 1 illicit drug. Thus, for the purpose of this study, illicit drugs included marijuana,

cocaine (including crack), heroin, hallucinogens, inhalants, methamphetamine, or prescription psychotherapeutics that were misused, which include pain relievers, tranquilizers, stimulants, and sedatives.[21] We also analyzed the specific use of marijuana due to its high prevalence among college students and changing legal status. Additionally, unlike previous research, this study used a functional perspective in defining disability.

Methods

Data source

This study used data from the 2017 National Survey on Drug Use and Health (NSDUH) public use data file. NSDUH is an annual survey that provides information about the use of illicit drugs, marijuana, alcohol, and tobacco among members of the U.S. civilian, noninstitutionalized population aged 12 and older, including residents of noninstitutionalized group quarters such as college dormitories. It also includes questions on health status, conditions, access, and utilization. Detailed information regarding NSDUH methodology and definitions is available from the Substance Abuse and Mental Health Services Administration (SAMHSA).[21]

The annual NSDUH samples are selected using a multistage, stratified design. The survey was administered in person using computer-assisted personal interviewing (CAPI) and audio computer-assisted self-interviewing (ACASI). The 2017 NSDUH public use data file contains 56,276 interviews. The weighted screening response rate was 75.08% and the weighted interview response rate was 67.12%.[22]

Measures

Demographics

This study included college students in the 2017 NSDUH sample. Respondents were categorized as college students if they: 1) answered *"yes"* to the question, *"Are you now attending or are you currently enrolled in school?"* and 2) indicated that they were enrolled at the college or university level (1st year, 2nd year, 3rd year, 4th year, and 5th or higher year) in answer to the questions, *"What grade or year of school are you now attending? What grade or year of school will you be attending when your vacation is over?"*

Demographic information included in the analysis was: age, gender, race/ethnicity, family income, academic level, marital status, college enrollment status, and self-rated health status.

Self-rated health status

Self-rated health was measured with the following question: *"Would you say your health in general is excellent, very good, good, fair, or poor?"*

Disability

Disability status was assessed using the following six questions from the 2017 NSDUH: *1) Are you deaf or do you have serious difficulty hearing? 2) Are you blind or do you have serious difficulty seeing, even when wearing glasses? 3) Because of a physical, mental or emotional condition, do you have serious difficulty concentrating, remembering, or making decisions? 4) Do you have serious difficulty walking or climbing stairs? 5) Do you have difficulty dressing or bathing? 6) Because of a physical, mental or emotional condition, do you have difficulty doing errands alone such as visiting a doctor's office or shopping?* The questions identified disabilities by six disability types: hearing, vision, cognition, mobility, self-care, and independent living. Any respondent who answered "yes" to any of these questions was categorized as having a disability. Respondents with

"no" responses to all six questions were classified as having no disability. The disability types were not mutually exclusive, and respondents could have more than one type of disability. Responses of "don't know" or "refused" were excluded from analyses which included that variable. Respondents were identified as having a specific disability type if they responded "yes" to the question corresponding to that disability type.

This six-item set of questions is used on the American Community Survey (ACS) and other major surveys to measure disability and is the standard tool for surveys to assess disability. This set of questions was developed by a U.S. federal interagency committee to be consistent with the World Health Organization's International Classification of Functioning, Disability and Health (ICF). The question set defines disability from a functional perspective and was developed to monitor disparities between persons with disabilities and those without disabilities.[20]

Illicit drug use

Ever use, past-year use, and past-month (past 30 days/current) use of illicit drugs were examined. Illicit drugs include marijuana, cocaine, heroin, hallucinogens, inhalants, methamphetamine, and the misuse of prescription psychotherapeutic drugs (i.e., pain relievers, tranquilizers, stimulants, and sedatives). Misuse of prescription psychotherapeutic drugs is use in any way not directed by a doctor, including (1) use without a prescription of one's own; (2) use in greater amounts, more often, or longer than told to take a drug; and (3) use in any other way not directed by a doctor.[21] Due to small cell sizes, only ever use of heroin and ever misuse of sedatives were assessed. Information about misuse of OxyContin was obtained only for the past year. However, it was analyzed separately because of the significant role of this prescription pain reliever in the current opioid epidemic.

Illicit drug dependence and abuse

The 2017 NSDUH assessed illicit drug dependence and abuse based on the criteria for dependence and abuse in the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV).[23] For each illicit drug, a respondent was defined as dependent or having abused that substance if he or she met dependence or abuse criteria for the substance of interest.[22]

Data analysis

Data analysis was conducted using SAS version 9.4 (SAS Institute, Cary, NC) survey procedures. Sample weights were applied in all analyses to adjust for non-response and the probabilities of selection, including those resulting from over-sampling. The 2017 NSDUH used 2010 census-based population estimates in the post-stratification adjustment.

Ever use, past-month, and past-year prevalence of illicit drug use, misuse, and illicit drug use disorders (dependence and abuse) were estimated with cross-tabulations. Sociodemographic correlates were examined with logistic regression to predict prevalence in students with and without a disability. Adjusted odds ratios (AORs) with 95% confidence intervals (CIs) for each explanatory variable were estimated. Standard errors were estimated using the Taylor series linearization method to account for sample weights and clustering.

The association between having one or more disabilities and illicit drug use, adjusting for demographic variables, was estimated using multivariable logistic regression. Variables for inclusion in the model were primarily based on relevant extant research. Covariates included in the final adjusted models were gender, age, race/ethnicity, perceived health status, academic level, and tobacco use. The dependent variables for the logistic regression models were illicit drug use, psychotherapeutics misuse, and illicit drug dependence or abuse. The study was approved by the Rutgers University Institutional Review Board.

Results

There were 6,189 college or university students in the 2017 NSDUH sample, of whom 15.5% had a disability (Table 1). The most common type of disability was cognitive impairment (10.1%) followed by independent living limitation (3.5%) and vision impairment (3.2%). Mobility limitations were reported by 2.2%, and 1.6% had a hearing impairment. The prevalence of self-care limitations was the lowest at 0.6%. A larger proportion of students with any disability were female (60.4% vs. 51.6%; $p = 0.0014$) compared to students without a disability (Table 2). Compared to non-Hispanic white participants, the odds of having a disability were significantly lower among non-Hispanic black (AOR = 0.72; 95% CI 0.57–0.91), Hispanic (AOR = 0.52; 95% CI 0.38–0.71), or Asian respondents (AOR = 0.63; 95% CI 0.42–0.96). The percentage of students with any disability who reported their self-rated health

Table 1
Prevalence of sociodemographic characteristics of college students (n = 6189). 2017 National Survey on Drug Use and Health.

Demographic characteristic	n	Weighted n	% (95% CI)
Gender			
Male	2724	9672522	47.0 (45.3–48.8)
Female	3465	10888635	53.0 (51.2–54.7)
Age group (yrs.)			
18–20	2315	6244027	30.4 (28.1–32.6)
21–25	2482	6617105	32.2 (30.5–33.9)
26–34	826	3900172	19.0 (17.3–20.6)
35 or Older	566	3799852	18.5 (16.6–20.3)
Race/ethnicity			
White, non-Hispanic	3325	10766916	52.4 (50.5–54.3)
Black, non-Hispanic	874	3134905	15.2 (13.9–16.6)
Hispanic	1148	4180940	20.3 (18.6–22.0)
Asian	485	1856139	9.0 (7.9–10.2)
Other	357	622257	3.0 (2.5–3.5)
Family income			
Less than $20,000	1911	5309453	25.8 (23.6–28.1)
$20,000 - $49,999	1702	5606053	27.3 (25.9–28.6)
$50,000 - $74,999	837	3005975	14.6 (13.1–16.2)
$75,000 or More	1739	6639677	32.3 (30.4–34.2)
Academic year			
1st year	1675	4966820	24.2 (22.2–26.1)
2 nd Year, 3rd year	2456	7868613	38.3 (36.4–40.2)
4th Year, 5th or higher year	2058	7725724	37.6 (35.2–39.9)
Marital status			
Married	941	4450635	21.6 (19.7–23.6)
Widowed	12	121149	0.6 (0.1–1.2)
Divorced or Separated	203	946318	4.6 (3.6–5.6)
Never Been Married	5033	15043054	73.2 (71.1–75.2)
Self-rated health status			
Excellent	1819	5901309	28.7 (26.7–30.7)
Very Good	2670	8819312	42.9 (40.8–45.0)
Good	1361	4630387	22.5 (20.9–24.1)
Fair/Poor	338	1209358	5.9 (5.0–6.8)
College enrollment status			
Full-time	4316	13018886	63.3 (61.4–65.2)
Part-time	1834	7325588	35.6 (33.8–37.5)
Disability			
No Disability	5236	17384243	84.5 (83.3–85.8)
Any disability	953	3176914	15.5 (14.2–16.7)
Hearing	83	337143	1.6 (1.2–2.1)
Vision	201	650850	3.2 (2.6–3.7)
Cognition	626	2068786	10.1 (8.9–11.2)
Mobility	117	454426	2.2 (1.6–2.8)
Self-care	36	130542	0.6 (0.4–0.9)
Independent living	249	715619	3.5 (2.8–4.1)

Percentages are weighted and may not total 100% in each category due to rounding.
CI = Confidence interval.

Table 2
Prevalence of sociodemographic characteristics among college students by disability status and association between disability, sociodemographic and other risk factors estimated using logistic regression modeling[a]. 2017 National Survey on Drug Use and Health.

Demographic characteristic	Disability status[b]		Type 3 p-value	AOR[a] 95%CI
	No disability % (95% CI) (n = 5236; 84.5%)	Any disability % (95% CI) (n = 953; 15.5%)		
Gender				
Male	48.4 (46.7–50.1)	39.6 (34.6–44.5)	**0.0014**	REF
Female	51.6 (49.9–53.3)	60.4 (55.5–65.4)		**1.43 (1.15–1.79)**
Age group (yrs.)				
18–20	30.0 (27.7–32.4)	32.2 (27.8–36.7)	0.4505	1.49 (0.90–2.48)
21–25	32.2 (30.2–34.2)	32.3 (28.8–35.8)		1.35 (0.81–2.28)
26–34	18.9 (17.1–20.6)	19.6 (15.0–24.2)		1.40 (0.80–2.49)
35 or older	19.0 (16.8–21.1)	15.9 (11.4–20.4)		REF
Race/ethnicity				
White non-Hispanic	51.1 (49.2–53.0)	59.3 (55.0–63.7)	< .0001	REF
Black non-Hispanic	15.3 (14.0–16.6)	14.8 (11.9–17.7)		**0.72 (0.57–0.91)**
Hispanic	21.2 (19.3–23.1)	15.8 (12.4–19.1)		**0.52 (0.38–0.71)**
Asian	9.4 (8.1–10.8)	6.8 (4.7–8.8)		**0.63 (0.42–0.96)**
Other	3.0 (2.3–3.6)	3.4 (2.2–4.5)		0.85 (0.54–1.34)
Family income				
Less than $20,000	25.3 (23.2–27.4)	28.6 (23.6–33.6)	0.1721	1.24 (0.95–1.62)
$20,000 - $49,999	26.6 (25.0–28.2)	30.7 (27.5–33.9)		**1.32 (1.03–1.69)**
$50,000 - $74,999	14.8 (13.2–16.4)	13.6 (10.5–16.7)		1.11 (0.82–1.52)
$75,000 or More	33.2 (31.1–35.4)	27.1 (22.9–31.3)		REF
Academic year				
1st year	23.3 (21.2–25.3)	29.1 (25.4–32.9)	0.3228	1.22 (0.93–1.61)
2 nd Year, 3rd year	38.2 (36.1–40.2)	38.9 (34.6–43.1)		1.10 (0.84–1.42)
4th Year, 5th or higher year	38.6 (36.0–41.1)	32.0 (27.8–36.3)		REF
Marital Status				
Married	22.8 (20.6–24.9)	15.6 (11.8–19.4)	0.1301	0.74 (0.50–1.10)
Widowed	0.5 (0.0–1.0)	1.1 (0.0–2.4)		2.28 (0.52–10.04)
Divorced or Separated	4.3 (3.3–5.3)	6.3 (4.0–8.7)		1.21 (0.73–1.99)
Never Been Married	72.5 (70.2–74.7)	77.0 (72.7–81.3)		REF
Self-rated health status				
Excellent	30.8 (28.7–32.8)	17.5 (13.6–21.3)	< 0.0001	REF
Very Good	44.2 (41.8–46.5)	35.9 (31.7–40.2)		**1.41 (1.08–1.84)**
Good	20.8 (18.9–22.8)	31.8 (27.4–36.1)		**2.67 (1.94–3.69)**
Fair/Poor	4.2 (3.4–5.1)	14.8 (11.4–18.3)		**6.45 (4.37–9.52)**
College enrollment status				
Full-time	64.1 (62.1–66.1)	58.9 (54.6–63.2)	0.0040	**0.75 (0.62–91)**
Part-time	34.9 (33.0–36.9)	39.4 (35.1–43.7)		REF

Percentages are weighted and may not total 100% in each category due to rounding.
CI = Confidence interval.
[a] AOR = Adjusted odds ratio, modeling odds of having a disability (dependent variable) versus no disability. Results are adjusted for gender, age, race/ethnicity, family income, academic year, marital status, self-rated health status, and college enrollment status.
[b] The reference group is college students with no disability.

status as fair or poor was more than three times higher when compared to their non-disabled counterparts (14.8% vs. 4.2%; AOR = 6.45; 95% CI 4.37–9.52). Moreover, individuals who reported a disability had significantly lower prevalence of full-time enrollment (58.9% vs. 64.1%) compared to students without disabilities. After adjusting for demographic characteristics, there was no statistically significant difference between the two groups with respect to age, family income, academic year, and marital status.

Illicit drug use

Overall, college students with any disability reported higher levels of drug use than their counterparts without a disability, including ever-use and past-year use of illicit drugs (40.2% vs. 30.6% for past-year use, respectively; *p* < 0.0001), and a significantly higher prevalence of current use of marijuana (20.1% vs. 15.7%) and cocaine (2.3% vs. 1.2%). Less than one percent of students without a disability had ever used heroin while 2.5% of students with any disability reported using the drug (*p* < 0.01). Disabled students also reported higher levels of ever misuse, past-year misuse, or current misuse of prescription pain relievers, OxyContin, tranquilizers, sedatives, and other psychotherapeutics (Table 3).

Students with any disability had significantly higher odds of having ever used any illicit drug overall (AOR = 1.47; 95% CI 1.20–1.79), after adjusting for gender, age, race/ethnicity, academic year, self-rated health status, and tobacco use. Compared to their counterparts with no disabilities, they had 28% higher odds of having used any illicit drug in the previous year (AOR = 1.28; 95% CI 1.07–1.54). However, after multivariable regression, there was no significant difference by disability status in the odds of using marijuana, cocaine, or heroin.

Increased odds of having ever misused (AOR = 1.36; 95% CI 1.07–1.72) and past-year misuse (AOR = 1.38; 95% CI 1.08–1.76) of psychotherapeutics were found for students with any disability. The odds of past-year misuse of prescription pain relievers, in general, was almost twice as high for students with any disability (AOR = 1.92; 95% CI 1.36–2.75), while the odds of misusing Oxy-Contin in particular, was 2.55 times higher. Current misuse of prescription pain relievers (AOR = 1.97; 95% CI 1.11–3.49) and tranquilizers (AOR = 1.71; 95% CI 1.01–2.88) was significantly higher in this population, as was ever misuse of tranquilizers (AOR = 1.39; 95% CI 1.02–1.88) and sedatives (AOR = 1.86; 95% CI 1.17–2.94). Stimulant misuse behaviors were not found to be significantly different between students with and without any disability.

Table 3
Prevalence of illicit drug use and misuse of psychotherapeutics by disability status among college students, bivariate association with disability status, and results of adjusted logistic regression modeling[a] for disability status and odds of illicit drug use and misuse of psychotherapeutics use. 2017 National Survey on Drug Use and Health.

Substances	Disability status[b]		Chi-Square p-value	AOR 95%CI
	No disability % (95% CI) (n = 5236; 84.5%)	Any disability % (95% CI) (n = 953; 15.5%)		
Any illicit drug[c]				
Ever use	51.9 (49.9−53.9)	65.4 (61.2−69.6)	< **0.0001**	**1.47 (1.20−1.79)**
Past year use	30.6 (28.8−32.5)	40.2 (36.1−44.2)	< **0.0001**	**1.28 (1.07−1.54)**
Past month use	17.5 (16.1−18.9)	24.1 (20.6−27.7)	**0.0007**	1.21 (0.95−1.55)
Marijuana				
Ever use	47.5 (45.5−49.6)	57.2 (53.4−61.1)	< **0.0001**	1.18 (1.00−1.41)
Past year use	26.9 (25.0−28.8)	32.6 (28.6−36.5)	**0.0079**	1.06 (0.87−1.30)
Past month use	15.7 (14.4−17.0)	20.1 (17.0−23.1)	**0.0111**	1.07 (0.82−1.38)
Cocaine				
Ever use	11.4 (10.3−12.5)	14.0 (11.2−16.9)	0.0642	0.92 (0.69−1.22)
Past year use	4.5 (3.7−5.4)	4.6 (3.2−6.0)	0.9424	0.76 (0.51−1.11)
Past month use	1.2 (0.9−1.6)	2.3 (1.2−3.4)	**0.0191**	1.52 (0.87−2.68)
Heroin				
Ever use	0.9 (0.5−1.4)	2.5 (1.0−4.0)	**0.0068**	1.37 (0.59−3.16)
Prescription pain relievers				
Ever misused	10.3 (9.0−11.5)	16.8 (14.3−19.4)	< **0.0001**	**1.49 (1.16−1.91)**
Past year misuse	4.4 (3.7−5.1)	9.9 (7.6−12.1)	< **0.0001**	**1.92 (1.36−2.75)**
Past month misuse	0.9 (0.6−1.2)	3.2 (1.8−4.6)	**0.0024**	**1.97 (1.11−3.49)**
OxyContin				
Past year misuse	0.6 (0.3−1.0)	1.9 (0.6−3.1)	**0.0079**	**2.55 (1.09−6.00)**
Tranquilizers				
Ever misused	5.4 (4.6−6.3)	9.4 (7.3−11.6)	**0.0001**	**1.39 (1.02−1.88)**
Past year misuse	3.3 (2.7−3.9)	6.4 (4.4−8.3)	**0.0002**	**1.53 (1.10−2.13)**
Past month misuse	0.88 (0.6−1.2)	2.0 (1.0−3.0)	**0.0047**	**1.71 (1.01−2.88)**
Stimulants				
Ever misused	9.1 (8.0−10.3)	11.5 (8.9−14.2)	0.1077	1.10 (0.77−1.59)
Past year misuse	6.5 (5.6−7.4)	7.7 (5.5−9.8)	0.3159	1.02 (0.71−1.48)
Past month misuse	1.9 (1.3−2.4)	2.5 (1.4−3.5)	0.2612	1.04 (0.62−1.75)
Sedatives				
Ever misused	1.9 (1.4−2.4)	5.7 (3.9−7.6)	< **0.0001**	**1.86 (1.17−2.94)**
Psychotherapeutics[d]				
Ever misused	17.6 (16.1−19.1)	25.3 (21.8−28.9)	**0.0001**	**1.36 (1.07−1.72)**
Past year misuse	11.2 (10.1−12.4)	17.3 (14.5−20.2)	**0.0002**	**1.38 (1.08−1.76)**
Past month misuse	3.5 (2.8−4.2)	6.0 (4.2−7.9)	**0.0097**	1.38 (0.93−2.05)

Percentages are weighted.
CI = Confidence interval.
[a] AOR = Adjusted odds ratio, modeling odds of illicit drug use and misuse of psychotherapeutics (dependent variables). Results are adjusted for gender, age, race/ethnicity, academic year, self-rated health status, and tobacco use.
[b] The reference group is college students without a disability.
[c] Illicit drugs include marijuana, cocaine (including crack), heroin, hallucinogens, inhalants, methamphetamine, or prescription psychotherapeutics that were misused, which include pain relievers, tranquilizers, stimulants, and sedatives.
[d] Psychotherapeutics include pain relievers (e.g., OxyContin), tranquilizers, stimulants, and sedatives.

Illicit drug dependence or abuse

A higher proportion of students with any disability met the criteria for illicit drug dependence or abuse than students without a disability (11.8% vs 3.9%; $p < 0.0001$). Additionally, compared to students without a disability, students with any disability had significantly higher odds of meeting the criteria for past-year dependence or abuse of any illicit drug (AOR = 3.01; 95% CI 2.06−4.40). Results were significant for marijuana (AOR = 2.59; 95% CI 1.68−3.99) and illicit drugs other than marijuana (AOR = 3.24; 95% CI 1.81−5.80). Higher odds of dependence or abuse of psychotherapeutics (AOR = 3.59; 95% CI 1.99−6.46) in general, and prescription pain relievers (AOR = 6.54; 95% CI 2.94−14.56), in particular, were observed (Table 4).

Discussion

College students with disabilities had significantly higher overall prevalence of illicit drug use than nondisabled college students, were more likely to be current marijuana and cocaine users,

and to have ever used heroin. Nearly one quarter of disabled students reported current illicit drug use. A higher prevalence was also observed for misuse of prescription psychotherapeutic medications among students with disabilities. The most common medications for past year misuse were prescription pain relievers (e.g., OxyContin), followed by stimulants, and tranquilizers. In fact, students with any disability were two and a half times more likely to have misused OxyContin. These results are supported by previous research suggesting disability related to activities of daily living was significantly correlated with prescription drug misuse.[24] Likewise, persons with disabilities were more likely to be prescribed opioids and have higher rates of opioid misuse and use disorders.[25]

While students with any disability reported higher prevalence of currently using prescription pain relievers and tranquilizers, current use of stimulants was not significantly different from that of their nondisabled peers. This result is somewhat surprising as research has shown increasing stimulant use among college students in the general population.[7] A possible hypothesis is that pain and stress management may contribute significantly to illicit drug use by students with disabilities. Also notable was that overall use

Table 4
Prevalence of illicit drug dependence or abuse by disability status, bivariate association with disability status, and results of adjusted logistic regression modeling[a] for illicit drug dependence or abuse among college students. 2017 National Survey on Drug Use and Health.

Past year dependence or abuse	Disability status[b]		Chi-Square p-value	AOR 95% CI
	No disability % (95% CI) (n = 5236; 84.5%)	Any disability % (95% CI) (n = 953; 15.5%)		
Any illicit drug[c]	3.9 (3.2–4.6)	11.8 (8.6–15.0)	< 0.0001	**3.01 (2.06–4.40)**
Marijuana	3.0 (2.4–3.6)	7.7 (5.0–10.4)	< 0.0001	**2.59 (1.68–3.99)**
Illicit drugs other than marijuana[d]	1.2 (0.8–1.6)	5.0 (3.22–6.9)	< 0.0001	**3.24 (1.81–5.80)**
Psychotherapeutics[e]	0.8 (0.5–1.1)	3.6 (2.3–4.8)	< 0.0001	**3.59 (1.99–6.46)**
Prescription Pain relievers	0.3 (0.1–0.4)	2.5 (1.3–3.8)	< 0.0001	**6.54 (2.94–14.56)**

Percentages are weighted.
CI = Confidence interval.
[a] AOR = Adjusted odds ratio, modeling odds of illicit drug dependence or abuse (dependent variable). Results are adjusted for gender, age, race/ethnicity, academic year, self-rated health status, and nicotine dependence in the past month.
[b] The reference group is college students with no disability.
[c] Illicit drugs include marijuana, cocaine (including crack), heroin, hallucinogens, inhalants, methamphetamine, or prescription psychotherapeutics that were misused, which include pain relievers, tranquilizers, stimulants, and sedatives.
[d] Illicit drugs other than marijuana include cocaine (including crack), heroin, hallucinogens, inhalants, methamphetamine, or prescription psychotherapeutics that were misused, which include pain relievers, tranquilizers, stimulants, and sedatives.
[e] Psychotherapeutics include pain relievers (e.g., OxyContin), tranquilizers, stimulants, and sedatives.

of marijuana was similar among the two groups. These results may be due to the increasing acceptance and popularity of legal marijuana in the U.S. The fact that there is much controversy in the literature on the harmfulness of marijuana, and that several states have allowed its use for medicinal purposes may portend even wider use of the substance. The public health implications of these issues have yet to be fully examined.

The majority of students reporting a disability had a cognitive limitation. Our results showing higher prevalence of illicit drug use in this population are consistent with previous studies of young adults and college students with ADHD (the most commonly researched disability).[11,12,26] We also found illicit drug dependence and abuse was more prevalent among students with any disability compared to their nondisabled peers. Notably, nearly 12% of students with any disability met criteria for the disorders in the past year. Although research suggests college students are generally less likely to have a diagnosis of illicit drug use disorder than their non-college-attending peers,[27] this study found high prevalence of the disorders among students with disabilities.

The present study contributes to extant research by documenting the prevalence of illicit substance use and dependence or abuse among persons with a variety of disabilities. Additionally, we examined disability based on a standardized measure of functional disability rather than using proxy variables for disability. Another strength of this study is that it employs data from a nationally representative sample of college students. Although the vast majority of college students are 18–22 years old, our analysis included older students. According to the National Center for Education Statistics (NCES), the number of older, "nontraditional" students attending post-secondary institutions is projected to increase by almost 20% in the coming years.[2]

A potential limitation of this study is that results are based on self-reported survey data. However, most substance use prevalence estimates, including those produced for NSDUH, are based on self-reports. Research has generally supported the validity of self-report data, although it is well documented that these data may be biased.[21,28] Self-report data regarding drug use by young adults have been found to be most reliable in studies that guarantee confidentiality.[28] To that end, NSDUH uses widely accepted practices for protecting participant confidentiality. Most of the questions in NSDUH were administered with computer-assisted self-interviewing, which is designed to protect privacy and

confidentiality of respondents in order to encourage honest reporting of illicit drug use and other sensitive behaviors. Further, it is well documented that most young adults report their drug use accurately.[21,29] Self-report of disability is also well validated and predictive of mobility-related limitations and other impairments, as well as mortality.[30] Poor self-rated health has been shown to be predictive of chronic conditions including diabetes and heart disease.[31] Research suggest self-reports of conditions may be better than medical examinations or performance-based assessments of physical limitations in predicting disability.[30,32]

Another limitation is that the NSDUH is cross-sectional rather than longitudinal, and as such, it cannot provide insight into the causal sequence of substance use and disability. Within the category of "any disability" could be persons whose disability onset and drug misuse onset are closely related. Disability varies substantially from person to person, even within limitation categories. Small sample sizes limited analysis of substance use by disability type. Future research is warranted, as there is evidence to suggest variability in substance use by disability type. For example, persons with cognitive limitations, particularly mental illness, report higher smoking prevalence.[33–36] Prescription drug misuse has been associated with daily living limitation and chronic pain management.[24,25] Persons with mental illness, those with cognitive limitations, and persons with conditions that involve chronic pain, are more likely to be prescribed drugs that are often misused and abused.

Notwithstanding these limitations, findings from this study highlight the significant burden of illicit drug use and illicit drug use disorders among students with disabilities in postsecondary institutions. Drug use and drug use disorders can affect college students with disabilities during a critical neurodevelopmental period, impairing cognition and negatively impacting academic achievement. These behaviors can increase medical noncompliance and thus contribute to poor health, especially in students with comorbid conditions. Students who are using illicit drugs or misusing psychotherapeutics put themselves at risk for overdose and other negative outcomes. These substances can interact with prescribed medications and interfere with successful adherence to rehabilitation services.[37]

The significantly higher prevalence of opioid use in college students with disabilities is a serious cause for concern. Indeed, the use and abuse of opioids such as heroin and prescription pain

relievers — including OxyContin — has been declared a national public health crisis in the U.S.[38] Our finding that college students with disabilities commonly misuse psychotherapeutic medications suggests that health care providers should be especially cognizant when treating this population, particularly when prescribing medications that may lead to misuse, abuse, or dependence. We found that most students reporting a disability had a cognitive limitation and students with any disability reported higher prevalence of currently misusing prescription pain relievers and tranquilizers. This suggests that tailoring interventions for students with cognitive impairments should be incorporated into drug prevention and treatment programs.

Higher prevalence of substance use may be due, in part, to individuals with disabilities self-medicating. In that case, referral to health care providers is necessary for medical screening and intervention. It is well established that young adults are especially vulnerable to mental illness and drug use disorders. Having a disability may increase their risk for substance use. Hence, it is important to identify these young people, develop appropriate outreach and engagement processes, and create access to effective clinical and supportive interventions in the college/university setting. These results indicate the need for robust coordination between offices of disability services and substance use services on campuses.

Conclusion

These nationally representative data indicate that disability is significantly associated with illicit drug use, abuse, and dependence among college students. People with disabilities experience health disparities such as poorer health outcomes and higher prevalence of engaging in health risk behaviors. Results from this study suggest significant health disparities exist in the form of illicit drug use and disorders in this subpopulation of college students with disabilities. As more young adults with disabilities are encouraged to pursue a postsecondary education, the number of students with disabilities in these institutions will continue to rise, thereby increasing the need for services and support. It is essential that mechanisms are in place to monitor risk factors for substance use and other behaviors in this population. Colleges and universities need to develop strategies specifically geared to the prevention and treatment of substance use and disorders among students with disabilities.

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Declaration of competing interest

The authors have no conflicts of interest to report.

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