

Substance Use in the US College-Age Population: Differences according to Educational Status and Living Arrangement

ABSTRACT

Objectives. Substance use in the college-age population is an important public health and educational concern. This study compared rates of use among college students and nonstudents, including high school dropouts, from a single data source representative of the nation.

Methods. Rates of use were estimated from the combined National Household Surveys on Drug Abuse from 1991 to 1993. Logistic regression models were used to test the effects of educational status and living arrangement.

Results. Educational status and living arrangement were found to be significant predictors of substance use. Rates of illicit drug and cigarette use were highest among high school dropouts, while current and heavy alcohol use were highest among college students who did not live with their parents.

Conclusions. Substantial variation in substance use patterns within the college-age population suggests that overall rates of use for young adults should not be used to characterize specific subgroups of young adults. These data from a single source will thus help planners more clearly distinguish the service needs of the diverse subgroups within this population. (*Am J Public Health.* 1997;87:62-65)

Joseph C. Gfroerer, Janet C. Greenblatt, MS, and Douglas A. Wright, MS

Introduction

Substance use in the college-age population is an important public health and educational concern. Surveys have consistently found young adults to have the highest rates of substance use.^{1,2} Recent studies have suggested that rates of illicit drug and alcohol use are high among college students^{3,4} and even higher among high school dropouts.⁵⁻⁷

These people are at a key point in their lives, often making transitions to different lifestyles such as living on their own or attending college. Their independence from parental control and the increased availability of substances on college campuses may lead to their initiation into or escalation of substance use. Higher educational attainment in adults aged 18 to 49 is associated with lower rates of substance use,^{6,7} suggesting that young adults who attend college may be at lower risk than those who do not attend college, particularly those who have not completed high school.^{1,2,6-10} However, living arrangement (i.e., living with parents vs not with parents), which could influence parental control and availability of substances, may also be an important factor. A recent survey found that residential colleges tend to have higher rates of binge drinking than commuter schools⁴ and that residence in a fraternity or sorority is a strong predictor of binge drinking.¹¹

Studies based on samples of college students or follow-ups of high school students cannot fully address the issues raised above because they do not include young adults who have not completed high school. It is estimated that 14% of people aged 21 to 22 in 1993 had not completed high school and that 11% of youths aged 16 to 24 were high school dropouts.¹² High school dropouts are of

particular interest because their low educational attainment makes them vulnerable to a variety of social and economic problems throughout their lives. They are also more likely to have psychiatric disorders than high school graduates.¹³

This paper presents rates of substance use prevalence in the US college-age population, identifying differences by educational status and living arrangement. Although these differences have important implications for targeting prevention and intervention efforts, no previous single study has adequately measured them. Taking advantage of the broad population coverage of the National Household Survey on Drug Abuse, we address two hypotheses. First, we hypothesize that the differences in substance use by educational attainment seen in older adults, particularly those who did not complete high school, are also present for the college-age population. Confirmation of this hypothesis would show that these patterns of substance use begin at an early age. Second, we hypothesize that college students living away from their parents are more likely to use substances than college students living with their parents. Confirmation of this hypothesis would support previous findings for binge drinking^{4,11} and extend them for other substance use behaviors.

The authors are with the Office of Applied Studies, Substance Abuse and Mental Health Services Administration, Rockville, Md.

Requests for reprints should be sent to Joseph C. Gfroerer, Office of Applied Studies, Substance Abuse and Mental Health Services Administration, 5600 Fishers Lane, Room 16C-06, Rockville, MD 20857.

This paper was accepted August 6, 1996.

Methods

Data Source

Data from the National Household Surveys on Drug Abuse for 1991 to 1993 were used.^{2,5,8-10} This survey is conducted by the Substance Abuse and Mental Health Services Administration to provide estimates of the prevalence, consequences, and patterns of drug use and abuse in the United States. The universe is the civilian noninstitutionalized population aged 12 years and older, including residents in noninstitutional group quarters (e.g., shelters, rooming houses, dormitories) as well as residents of civilian housing on military bases. Other studies report data on drug use among persons with no fixed address, residents of jails and hospitals, and active military personnel.¹⁴⁻¹⁷ From 1991 through 1993, more than 12 000 interviews were completed with college-age youths (Table 1). The response rate in this population was approximately 83%.

The sample design of this survey is a multistage, stratified cluster design that oversamples African Americans, Hispanics, and young people. The stages of selection are counties or groups of counties, blocks, households, and persons. Data are collected by using confidential self-administered answer sheets to maximize honest reporting. Research has generally shown that while some underreporting of use occurs, it is not substantial and does not significantly affect relationships with predictor variables, especially when confidentiality and privacy are enhanced.^{5,18-21}

Data Analysis

For this study, the college-age population was defined as persons aged 17 to 22 who were not enrolled in high school and had not completed 4 years of college. Respondents were classified by educational status and living arrangement. Some college students living in dormitories while attending school may have been sampled while living at home during school breaks; these students would have been classified as living with parents.

Prevalence estimates were computed for both past month and past year substance use by educational status and living arrangement. Results are presented only for past month use, however, since the results were similar for past year use. Heavy alcohol use was defined as having five or more drinks per occasion on 5 or more different days in the past month.

TABLE 1—Sample Sizes and Population Estimates in the College-Age Population^a: The 1991 to 1993 National Household Surveys on Drug Abuse

Educational Status and Living Arrangement	Sample Size	US Estimated No. People ^b (in thousands)
Total	12 026	16 092
College student	4 848	7 136
With parents	2 855	3 305
Not with parents	1 993	3 831
In dormitory	857	1 568
Not in dormitory	1 111	2 240
Not college student	7 134	8 914
High school graduate	4 116	5 653
With parents	2 305	2 939
Not with parents	1 780	2 664
Not high school graduate	3 018	3 260
With parents	1 560	1 582
Not with parents	1 433	1 661

Note. Subgroup counts do not sum to totals because cases with missing educational status or living arrangement are included in totals.

^aPersons aged 17 to 22 who are not enrolled in high school and have not completed 4 years of college.

^bAverage annual estimate.

Differences in substance use rates between subgroups were tested for significance with SUDAAN software to account for the complex design of the national survey.²² Differences are mentioned only if they are statistically significant at the .05 level.

Differences in substance use across educational status and living arrangement subgroups could result from variations in the groups' demographic characteristics. To evaluate the independent effects of educational status and living arrangement, multiple logistic regression analysis was used, including controls for age, race, and sex. For each drug, these models tested both the significance of the effects of educational status and living arrangement and the interaction between them. A test of the overall significance of these variables was done. Separate models were also run to test the two hypotheses described above. These models generated adjusted odds ratios for the effects of attending college, of not completing high school, and, for college students, of not living with a parent. For this, the LOGISTIC procedure in the SUDAAN software was used.

Research has suggested that teenagers are less likely to report drug use when their parents are present during the interview.^{5,18,19} Because this could have affected our analysis, the data were reanalyzed after interviews in which

parents were noted to be present were excluded. No differences in results were found. The data were also reanalyzed with the age range restricted to 18 to 21; again, no differences in results were found.

Results

The combined effect of educational status and living arrangement was significantly associated with each measure of substance use, after adjustment was made for all other variables in the model. Thus, at least one of these two variables or their interaction was a significant predictor in every model.

Marijuana

The highest rates of past month marijuana use were found among high school dropouts, particularly those living with parents, and college students not living with parents (Table 2). The lowest rates were among college students living with parents. Both of our hypotheses were confirmed in the logistic regression models, although college students were not more likely than high school graduates to use marijuana (Table 3).

Cocaine

There was wide variation within the college-age population. High school dropouts were more likely than college stu-

TABLE 2—Rates of Past Month Substance Use in the College-Age Population^a: The 1991 to 1993 National Household Surveys on Drug Abuse

Educational Status and Living Arrangement	Marijuana, % (SE)	Cocaine, % (SE)	Cigarettes, % (SE)	Alcohol, % (SE)	Heavy Alcohol, ^b % (SE)
Total	13.2 (0.6)	1.9 (0.2)	31.4 (0.8)	58.4 (0.9)	11.7 (0.7)
College student	12.4 (0.9)	1.0 (0.2)	21.9 (1.1)	62.5 (1.4)	12.4 (1.1)
With parents	8.4 (0.9)	1.0 (0.4)	19.4 (1.3)	54.0 (1.6)	7.2 (1.0)
Not with parents	15.8 (1.4)	1.0 (0.3)	24.0 (1.6)	69.8 (2.2)	16.9 (1.7)
In dormitory	15.2 (1.8)	0.3 (0.2)	18.9 (1.9)	70.2 (4.0)	17.7 (2.6)
Not in dormitory	16.3 (2.1)	1.4 (0.5)	27.8 (2.5)	69.8 (2.5)	16.6 (2.1)
Not college student	13.8 (0.7)	2.6 (0.3)	39.0 (1.0)	55.2 (1.0)	11.2 (0.7)
High school graduate	12.4 (0.9)	2.2 (0.4)	32.8 (1.2)	58.4 (1.4)	11.1 (0.9)
With parents	12.4 (1.3)	1.8 (0.4)	27.4 (1.5)	59.9 (1.8)	12.5 (1.4)
Not with parents	12.2 (1.4)	2.6 (0.6)	38.3 (2.0)	56.7 (2.1)	9.5 (1.2)
Not graduate	16.2 (1.1)	3.3 (0.6)	49.8 (1.6)	49.7 (1.6)	11.2 (1.0)
With parents	18.6 (1.7)	3.6 (0.9)	49.2 (2.3)	50.8 (2.3)	12.8 (1.5)
Not with parents	13.9 (1.6)	3.1 (0.9)	50.5 (2.3)	48.7 (2.2)	9.7 (1.5)

^aPersons aged 17 to 22 who are not enrolled in high school and have not completed 4 years of college.

^bFive or more drinks per occasion on each of 5 or more days in the past 30 days.

TABLE 3—Adjusted Odds Ratios (ORs) and 95% Confidence Intervals (CIs) for Substance Use, by Educational Status and Living Arrangement

Dependent Variable (Use in Past Month)	Educational Status among College-Age Persons ^a						Living Arrangement among College Students		
	College Student			High School Dropout			Not Living with Parent ^b		
	OR	95% CI	P ^c	OR	95% CI	P ^c	OR	95% CI	P ^c
Marijuana	0.88	0.69, 1.11	.28	1.36	1.06, 1.76	.02	2.03	1.46, 2.84	.00
Cocaine	0.43	0.22, 0.86	.02	1.55	0.93, 2.58	.09	0.75	0.26, 2.11	.58
Cigarettes	0.54	0.45, 0.66	.00	2.59	2.17, 3.08	.00	1.13	0.87, 1.45	.37
Alcohol	1.25	1.07, 1.46	.01	0.84	0.69, 1.02	.07	1.86	1.41, 2.45	.00
Heavy alcohol	1.06	0.82, 1.37	.64	1.19	0.88, 1.59	.24	2.25	1.49, 3.39	.00

^aModels include controls for age, race/ethnicity, sex, and living arrangement. Reference group for educational status is "high school graduate."

^bModels include controls for age, race/ethnicity, and sex. Reference group for living arrangement is "living with parent."

^cTest of hypothesis that the adjusted odds ratio equals 1.

dents to have used cocaine. The lowest rate was in the college dormitory population. The logistic regression models confirmed the association of cocaine use with educational status in the college-age population, showing that college students were less likely to use cocaine than high school graduates. However, the models did not show a significant effect of living arrangement for college students.

Cigarettes

Substantial differences in rates of smoking in the past month were found across subgroups of the college-age population. As in older populations, rates of use increase with decreasing educational attainment. About half of the high school dropouts were current smokers, but fewer

than a quarter of the college students smoked. These differences were confirmed by the logistic regression models. Among college students, living arrangement was not a significant predictor.

Alcohol

College students not living with parents had the highest rates of current use and heavy use of alcohol. High school dropouts had the lowest rate of current use, while college students living with their parents had the lowest rate of heavy use. Logistic regression models confirmed that college students not living with parents were more likely to drink heavily than those living with parents. They also indicated that college students were more likely than high school graduates to have

used alcohol in the past month. In contrast with findings among older populations, educational status was not found to be a significant predictor of heavy alcohol use in the college-age population.

Discussion

This study presents important data on substance use among young adults. For the first time, rates of use among college students and nonstudents of the same age, including high school dropouts, were compared from a single data source representative of the nation. Our analysis confirms that substance use is more prevalent in this age range than in others. We found rates of marijuana and cocaine use to be about three times as high in this

age group as in the remainder of the population. Cigarette and alcohol use rates were also found to be higher among the college-age population.

Both of our hypotheses were confirmed, with some notable exceptions. After controlling for age, race, and sex, we found educational status to be a significant predictor of marijuana, cocaine, cigarette, and past month alcohol use, but not of heavy alcohol use. The relationships were in the same direction as is found in older adult populations. Thus, patterns of use of these substances appear to be present at an early age. College students living away from their parents were significantly more likely than students living with their parents to use marijuana and alcohol and to drink heavily. However, cocaine and cigarette use rates showed no difference between students living with and away from parents.

Unlike older high school dropouts (who have a higher rate of heavy alcohol use than high school and college graduates), college-age high school dropouts did not have higher rates of heavy alcohol use. This suggests that as young adults get older, those with greater educational attainment are more likely to reduce their alcohol use, while those with low educational attainment are more likely to continue drinking heavily.

Although illicit drug use rates are higher among high school dropouts even at ages 17 to 22, our results do not infer a causal link between drug use and dropping out of school. In fact, only a small percentage (4.4%) of dropouts in one study indicated that using drugs or alcohol was the reason for their dropping out of school.²³

It is possible that variations in the rate of marijuana use among college students could be related to greater availability of marijuana on college campuses. However, responses to a question on the National Household Survey on Drug Abuse about the perceived availability of marijuana do not support this. The percentages of college students reporting that marijuana would be easy to get if they wanted it were 82.5% among those living in dormitories, 78.8% among others not living with parents, and 81.2% among those living with parents.

In conclusion, the substantial variation in substance use patterns within the college-age population suggests that overall rates of use for young adults should not be used to characterize specific subgroups of young adults. Surveys that cover only particular subgroups of the college-age population should be used to characterize only those subgroups surveyed. The results of this study will help prevention and treatment planners to more clearly distinguish the needs of the diverse subpopulations in this age group. □

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