

Prevalence and Impact of Substance and Alcohol Misuse on College Students Presenting to the Emergency Department and Evaluation of Practical Referrals

Derek Blevins MD, Surbhi Khanna MBBS, Diana Robinson MD, Priyanka Vakkalanka ScM, Nassima Ait-Daoud MD, Christopher P Holstege MD

University of Virginia Department of Psychiatry & Neurobehavioral Sciences and Department of Medical Toxicology

NR# 1923



Abstract

The passage from high school to college is one accompanied by significant role transitions that occur during late adolescence, as relationships with parents, siblings, peers and romantic partners change and develop. SAMHSA data from 2010 showed a difference of +24.3% past-month alcohol users between 16-17 year olds and 18-20 year olds, and a +21.1% increase from 18-20 year olds to 21-25 year olds. More specifically, 18-22 year olds enrolled full time in college had a higher prevalence than those not enrolled in full time college of past-month alcohol use (63.3% versus 52.4%), binge drinking (42.2% versus 35.6%), and heavy drinking (15.6% versus 11.9%). The SAMHSA data also showed that illicit drug use was highest among 18-25 year olds (21.5% versus 10.1% in the 12-17 age group and 6.6% in the 26 and older age group). However, unlike alcohol use, the prevalence of illicit drug use was slightly lower in 18-22 year old full time college students compared to their peers (22% versus 23.5%, respectively). Regardless, the data reveal that a substantial number of emerging adults, particularly full time college students, are engaging in substance use behavior that has the potential to cause temporary and lasting effects from the biological to the societal level.

We plan to present data from a cohort of college students attending the University of Virginia who presented to the Emergency Department (ED) and whose medical records indicates misuse of alcohol, pharmaceutical drugs, or illicit substances through specific clinical diagnostic codes based on the ICD-9-CM. The proportion of unique substance-related ED visits will determine the prevalence of substance and alcohol misuse for each academic year.

Clinical presentation characteristics, such as intoxication (clinically or by positive blood alcohol level or urine toxicology screening), clinical withdrawal, delirium (altered mental status), "substance induced" diagnoses (depression, anxiety, mania, psychosis, suicidal or homicidal ideation) and related physical complications will be determined by review of ED documentation. The prevalence of each of these outcomes will be evaluated and stratified by type of substance. This informs us of the impact of substance or alcohol misuse on the clinical presentation and treatment during their ED admission.

This is a significant topic as substance misuse can prevent emerging adults from successfully transitioning into adult roles and responsibilities, with potential long-term consequences. At the biological level, various regions of the brain continue to develop and mature at different intervals throughout this time period, and these active processes appear to make the brain more susceptible to neurotoxic processes that can result from substance use. These neural structural changes have implications for changes in cognition as well as further development of substance use disorders.

Objectives

- Learn about the prevalence of substance misuse amongst college students presenting to the emergency department.
- Understand the impact and role of substance misuse in emergency department visits amongst college students.
- Recognize the importance of substance misuse treatment referrals from the ED and the potential role of University Student Health.

Methods

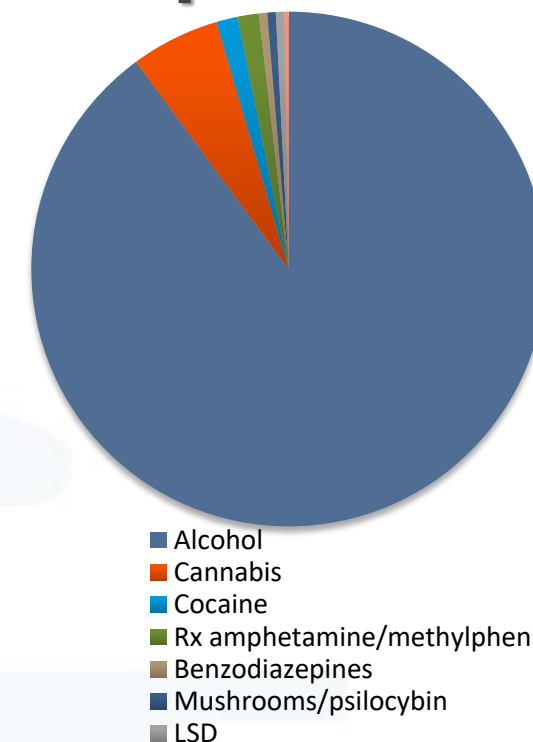
ED admissions were queried for all unique admissions and identified as a substance misuse admissions through a range of diagnostic codes. The prevalence of substance misuse was measured as the proportion of unique student admissions due to substance misuse among all admissions. Demographics were collected from a University student database. Differences in demographics between students with and without substance misuse admissions were evaluated via chi-squared analyses. Clinical presentation characteristics were extracted from admission notes and tabulated. The range of substances were identified through self-report and/or laboratory testing. Clinical characteristics, disposition, and ED referrals were tabulated.

Demographics

	Substance Abuse		Total Population		p value
	n	%	n	%	
Overall	359	100.0	2,754	100.0	
Gender					
Female	167	46.5	1,453	52.8	0.011
Male	192	53.5	1,301	47.2	
Age					
≤17	6	1.7	23	0.8	<0.001
18	99	27.6	493	17.9	
19	103	28.7	707	25.7	
20	53	14.8	603	21.9	
21	69	19.2	616	22.4	
≥22	29	8.1	312	11.3	
Race/Ethnicity					
White	236	65.7	1,774	64.4	0.347
Asian	35	9.7	304	11.0	
African American	20	5.6	214	7.8	
Hispanic	7	1.9	48	1.7	
Other	61	17.0	414	15.0	
Citizenship Status					
US Citizen	334	93.0	2,542	92.3	0.576
Other	25	7.0	212	7.7	
Undergraduate School					
College of Arts and Sciences	272	75.8	2,024	73.5	0.366
Engineering School	56	15.6	434	15.8	
Other	31	8.6	296	10.7	
Affiliation with					
Interfraternity/sorority council	109	30.4	798	29.0	0.535

Substance(s) Used, self-report

	n	%
Alcohol	338	94.2
Cannabis	21	5.8
Cocaine	5	1.4
Rx amphetamine/methylphenidate	5	1.4
Benzodiazepines	2	0.6
Mushrooms/psilocybin	2	0.6
LSD	2	0.6
MDMA/Ecstasy	1	0.3
Opioids (heroin, Rx pain medications)	0	0.0
Inhalants	0	0.0
PCP	0	0.0
Other stimulants (Methamphetamine, Bath salts)	0	0.0
Other sedative/hypnotic/anxiolytic (Barbiturates, Benzo-like sleep agents)	0	0.0
Other hallucinogens (Peyote/mescaline, DMT, Salvia)	0	0.0



Laboratory Testing

Urine Drug Screen	n	%
Not Done	342	95.3
Completed*		
Amphetamines	1	5.9
Benzodiazepines	1	5.9
Marijuana	1	5.9
Other (Barbiturates, Cocaine, Opiates, PCP)	0	0.0
Blood Alcohol Level	n	%
Not Done	312	86.9
Completed*		
< 10	4	8.5
98-199	9	19.1
200-299	15	31.9
>300	9	19.1

* Percentages among those with completed tests only.

Clinical Characteristics

Chief Complaint	n	%
Alcohol intoxication/OD	285	79.4
Altered mental status	13	3.6
Psychiatric evaluation NOS	6	1.7
Suicidal ideation	6	1.7
Depression	3	0.8
Non-Alcohol intoxication	2	0.6
Anxiety	1	0.3
Psychosis	1	0.3
Agitation	1	0.3
Homicidal ideation	0	0.0
Primary medical chief complaint	75	20.9
Detox/Request for detox	0	0.0
Other	19	5.3
Consultations	n	%
None	325	90.5
Psychiatry	8	2.2
ED social worker	7	1.9
Toxicology	3	0.8
General medicine	2	0.6
Other*	16	4.5
* Hand Surgery (3), Community mental health services (2), Neurosurgery (2), Sexual assault team (2), ENT (2), Plastic Surgery (2), Student Health counseling services (1), Cardiology (1), Dentistry (1), Orthopedics (1), Trauma surgery (1), ICU (1), GI (1), Ophthalmology (1)		
Current Outpatient Psychiatric Prescriptions	n	%
Antidepressant	15	4.2
Mood stabilizer	1	0.3
Antipsychotic	1	0.3
Stimulant	8	2.2
Nicotine replacement therapy	0	0.0
Anticraving medications or Disulfiram	0	0.0
Opioid replacement therapy	0	0.0
Other psychiatric medication	5	1.4
None or Unknown	330	91.9
Disposition	n	%
Discharged	331	92.2
AMA	10	2.8
Psychiatry inpatient (in-house or off-site)	4	1.6
General medicine	2	0.6
ICU	2	0.6
Other or Unknown	10	2.8
Current Outpatient Substance Abuse Treatment	n	%
Yes	1	0.3
Unknown	358	99.7
Current Other Outpatient Mental Health Follow Up	n	%
Yes	12	3.3
Unknown	347	96.7

Referrals

Referrals	n	%
University Student Health	252	70.2
Outpatient Psychiatry	3	0.9
Community Mental Health	2	0.6
Primary Care	17	4.7
Other Medical/Surgical	29	8.1
None	61	17.0
Source of Referral	n	%
ED Physician	278	77.4
ED Case Manager or Social Worker	0	0.0
Psychiatry consultant	4	1.1
Other consulting team	6	1.7
Other	3	0.8
Follow-up Scheduled	3	0.8
Student Health Contacted	2	0.6

Conclusions

The misuse of alcohol and other substances amongst college students is problematic on the individual and societal level, and is furthermore burdensome for Emergency Departments (ED) caring for this population:

- Alcohol misuse is the most frequent substance involved in the vast majority of visits (94.2% versus 5.8% for all other substance combined).
- 13% of students being seen in the University Emergency Department are either solely or in-part due to substance misuse with higher male involvement than female.
- There could be an underestimation of the role of alcohol in the clinical presentation to the ED, as only 13.1% of the students who reported use of alcohol prior to their presentation had blood alcohol levels tested, and 51% of those had levels greater than or equal to 200.

The data analyzed highlights the importance of clinical interview in the ED:

- Only 79.4% of the population reported alcohol use as a chief complaint in triage, versus 94.2% later reporting consumption of alcohol prior to their arrival in the ED.
- Discussing substance abuse in the ED could be the first opportunity the student has to address his or her drinking habits and get referrals when appropriate. It has to be done and it has to be done right.

Even when college students report misuse of alcohol or other drugs that contributed to their ED visit, referral for treatment was not done in a systematic way:

- The majority of students (70.2%) who were discharged with substance-related diagnoses received referrals to University Student Health (which has a division of Counseling and Psychological Services, or CAPS).
- Coordination between the ED and Student Health was not optimal with only 0.8% of follow up scheduled and 0.6% times when Student Health was contacted by someone from the ED.
- Student Health must be prepared to receive these referrals and would likely need dedicated staff trained in substance abuse treatment to manage such a large referral population.
- A large number of these ED referrals are being lost to follow up and are at an increased risk of substance-related complications and future ED visits for the same.

References

- Hingson RW, Zha W, Weitzman, ER. Magnitude of and trends in alcohol-related mortality and morbidity among U.S. college students ages 18–24, 1998–2005. *Journal of Studies on Alcohol and Drugs Supplement* 16:12–20, 2009.
- Johnston LD, O'Malley PM, Bachman JG, Schulenberg JE. Monitoring the Future National Survey Results on Drug Use, 1975-2005. Vol II: College Students and Adults Ages 19-25. NIH Publication No. 06-5884. Bethesda, MD: National Institute on Drug Abuse, 2006b.
- Spear LP. The adolescent brain and age related behavioral manifestations. *Neuroscience and Biobehavioral Reviews* 24(4):417–463, 2000.
- Substance Abuse and Mental Health Services Administration, Results from the 2010 National Survey on Drug Use and Health: Summary of National Findings, NSDUH Series H-41, HHS Publication No. (SMA) 11-4658. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2011.