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Prevalence and Characteristics of Hospitalizations with Unhealthy Alcohol Use in a Safety-Net Hospital from 2016 to 2018



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INTRODUCTION

Alcohol is a leading cause of preventable death in the USA, accounting for over 95,000 deaths annually.¹ The prevalence of unhealthy alcohol use (UAU)—encompassing both at-risk drinking and alcohol use disorder (AUD)—is increasing. However, little is known about the prevalence of UAU among hospitalizations, a potential opportunity to identify UAU, diagnose AUD, and offer AUD treatment.² We describe the prevalence and characteristics of UAU in an urban safety-net hospital using a nurse-led model of UAU screening and AUD assessment.

METHODS

We identified UAU prevalence among hospitalizations by adults ≥ 18 years on medical-surgical units in a 284-bed level 1 trauma center and urban safety-net hospital in northern California from 2016 to 2018 using electronic health record data.

We defined UAU using a validated, single-question screener (score ≥ 1) administered by admitting nurses to patients.³ Licensed vocational nurses further characterized UAU by administering the Alcohol Use Disorders Identification Test (AUDIT) to those with a positive screener and individuals who may not have received the screener but had an alcohol-related diagnosis. We used AUDIT scores to characterize UAU as at-risk drinking (1–6 women; 1–7 men), mild AUD (7–15 women; 8–15 men), moderate AUD (16–24), and severe AUD (≥ 25).⁴ Primary teams assessed patients with AUDIT scores concerning for moderate-severe AUD for naltrexone treatment.

We excluded transfers and hospitalizations with a length of stay (LOS) < 2 days to include only hospitalizations with adequate time for UAU screening.

We used two-tailed *t*-test to compare means, Kruskal-Wallis to compare medians, z-test to compare proportions, and the chi-square test to compare proportions for categorical variables with multiple categories to assess differences between those with and without UAU (at-risk drinking and mild, moderate, and severe AUD). We conducted all analyses with R version 4.0.5 and Stata version 16.

RESULTS

Patients with and without UAU were racially and ethnically diverse. Of 28,232 hospitalizations, nurses completed UAU screening in 15,162 hospitalizations. Among hospitalizations with an AUDIT, 25.8% had UAU. Upon further UAU characterization, 50.3% had at-risk drinking or did not receive the AUDIT and UAU could not be characterized, while 15.0% had mild, 14.8% moderate, and 19.9% severe AUD.

Compared to non-UAU hospitalizations, those with UAU were more likely to be younger, male, Latinx or White, experiencing homelessness, insured by Medicaid, and self-discharge, and had a stimulant use disorder or mental health diagnosis ($p < .001$ for all, Table 1). Among AUD hospitalizations, 33.6% of mild, 70.9% of moderate, and 97.8% of severe AUD had an alcohol-related diagnosis, with primary alcohol-related diagnoses most prevalent among those with severe AUD. UAU was common across medical and surgical hospitalizations. Of those with moderate and severe AUD, 9.0% and 13.2%, respectively, were prescribed naltrexone for AUD treatment.

DISCUSSION

In this racially and ethnically diverse urban population, 1 in 4 hospitalizations had UAU—much higher than a previously reported prevalence of 11%.⁵ Among hospitalizations with AUD, severe AUD was the most prevalent. Nearly all with severe AUD had an alcohol-related hospitalization diagnosis, likely from having alcohol-related health complications. Though evidence for UAU is limited to outpatient settings, our findings suggest screening for UAU may facilitate diagnosis of at-risk alcohol use and AUD during hospitalization to enable timely education and treatment and potentially prevent subsequent alcohol-related complications.

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Table 1 Sociodemographic, Hospitalization Characteristics, and Comorbidities of Individuals Without and With Unhealthy Alcohol Use

	No unhealthy alcohol use	Unhealthy alcohol use				p-value**
		At-risk use*	Mild AUD	Moderate AUD	Severe AUD	
Total (%)	11244	2266 (50.3)	676 (15.0)	666 (14.8)	897 (19.9)	p<0.001
Age, Mean (SD)	57.79 (18.1)	49.84 (14.7)	49.59 (14.9)	51.66 (12.5)	49.31 (10.8)	p<0.001
Sex (%)						p<0.001
Male	8576 (76.3)	1791 (79)	538 (79.6)	543 (81.6)	756 (84.3)	
Female	2668 (23.7)	475 (21)	138 (20.5)	123 (18.5)	141 (15.8)	
Race/ethnicity (%)						p<0.001
Latinx	3157 (28.1)	700 (30.9)	200 (29.6)	213 (32)	335 (37.4)	
White	2915 (25.9)	813 (35.9)	204 (30.2)	210 (31.6)	368 (41.1)	
Black/AA	2477 (22.0)	512 (22.6)	196 (29)	188 (28.3)	135 (15.1)	
Other/unknown	2695 (24.0)	241 (10.8)	76 (11.3)	55 (8.3)	59 (6.7)	
Language (%)						p<0.001
English	8628 (76.7)	1947 (86)	586 (86.7)	560 (84.1)	752 (83.9)	
Spanish	1312 (11.7)	227 (10.1)	68 (10.1)	89 (13.4)	127 (14.2)	
Other	1304 (11.6)	92 (4.1)	22 (3.3)	17 (2.6)	18 (2.1)	
Homelessness (%)	2295 (20.4)	768 (33.9)	215 (31.8)	306 (46.0)	527 (58.8)	p<0.001
Length of stay, median (IQR)*** (%)	4 (5)	3 (4)	4 (5)	5 (5)	4 (4)	0.781
Insurance (%)						p<0.001
Private	781 (7.0)	266 (11.8)	71 (10.5)	25 (3.8)	21 (2.4)	
Medicare	810 (7.2)	106 (4.7)	28 (4.2)	15 (2.3)	10 (1.2)	
Medicaid	5745 (51.1)	1393 (61.5)	402 (59.5)	486 (73)	706 (78.8)	
Dual	3186 (28.3)	382 (16.9)	121 (17.9)	120 (18.1)	141 (15.8)	
Other	722 (6.4)	119 (5.4)	54 (8.0)	20 (3.1)	19 (2.2)	
Service (%)						p<0.001
Medicine	7171 (63.8)	1422 (62.8)	356 (52.7)	490 (73.6)	761 (84.9)	
Surgery	3133 (27.9)	693 (30.6)	274 (40.6)	142 (21.4)	107 (12.0)	
Other	940 (8.4)	151 (6.7)	46 (6.9)	34 (5.1)	29 (3.3)	
Disposition (%)						p<0.001
Home	8688 (77.3)	1741 (76.9)	573 (84.8)	537 (80.7)	747 (83.3)	
Skilled nursing facility	1290 (11.5)	167 (7.4)	58 (8.6)	58 (8.8)	40 (4.5)	
Self-discharge	383 (3.4)	167 (7.4)	17 (2.6)	41 (6.2)	63 (7.1)	
Died	375 (3.3)	69 (3.1)	7 (1.1)	8 (1.2)	11 (1.3)	
Other	508 (4.5)	122 (5.6)	11 (1.7)	22 (3.3)	36 (4.1)	
Alcohol-related diagnosis (%) ⁺						
Any	805 (7.2)	1018 (45)	227 (33.6)	472 (70.9)	877 (97.8)	p<0.001
Primary	82 (0.7)	259 (11.5)	14 (2.1)	89 (13.4)	299 (33.4)	p<0.001
Nicotine use (%)	3640 (32.4)	902 (39.8)	351 (51.9)	395 (59.3)	531 (59.2)	p<0.001
Other SUD (%)						
Opioid	701 (6.2)	136 (6.1)	41 (6.1)	47 (7.1)	96 (10.7)	p=0.046
Stimulants	1019 (9.1)	281 (12.5)	89 (13.2)	97 (14.6)	119 (13.3)	p<0.001
Opioid and stimulant	497 (4.4)	117 (5.2)	38 (5.7)	38 (5.8)	62 (7)	p<0.001
Other	507 (4.5)	148 (6.6)	33 (4.9)	46 (7)	53 (6)	p<0.001
Mental health diagnosis (%)	2295 (20.4)	505 (22.3)	133 (19.7)	190 (28.6)	364 (40.6)	p<0.001
Naltrexone at discharge (%)	23 (0.2)	64 (2.8)	7 (1.0)	60 (9.0)	118 (13.2)	p<0.001

*At-risk use is defined by a positive single question screener without an AUDIT or AUDIT score of 1–6 women and 1–7 men

**p-value for no unhealthy alcohol use versus unhealthy alcohol use

***Interquartile range

⁺Alcohol-related diagnosis refers to alcohol intoxication, alcohol use disorder, and alcohol related diseases (e.g., hepatitis, gastrointestinal bleeding, pancreatitis)

Hospitalizations with UAU were more likely than those without to be associated with Latinx race/ethnicity, stimulant use disorder, mental health diagnoses, and other social determinants, including homelessness and Medicaid insurance. Some of these factors portend worse alcohol-related complications and decreased access to outpatient AUD treatment.⁶ Our naltrexone prescription rates were low at 9.0–13.2% but higher than the 1.6% of individuals with AUD prescribed medication treatment in a national survey.⁷ Improving initiation of AUD pharmacotherapy and linkage to outpatient treatment are key areas for future hospital-based UAU interventions.

Our study had some limitations. This was a single-site study with uncertain generalizability. UAU screening captured only 53.7% hospitalizations, and we also excluded hospitalizations

with LOS <2 days. However, even assuming these hospitalizations had negative screens, our estimated UAU prevalence would be 13.2%—higher than national estimates.

UAU is prevalent among hospitalizations and may be associated with psychosocial factors that make accessing outpatient treatment challenging. Hospitalization presents an important opportunity to recognize UAU and diagnose, offer, and initiate treatment for AUD.

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Declarations:

Conflict of Interest: The authors declare that they do not have a conflict of interest.

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