

The Severity of Unhealthy Alcohol Use in Hospitalized Medical Patients

The Spectrum is Narrow

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BACKGROUND: Professional organizations recommend screening and brief intervention for unhealthy alcohol use; however, brief intervention has established efficacy only for people without alcohol dependence. Whether many medical inpatients with unhealthy alcohol use have nondependent use, and thus might benefit from brief intervention, is unknown.

OBJECTIVE: To determine the prevalence and spectrum of unhealthy alcohol use in medical inpatients.

DESIGN: Interviews of medical inpatients (March 2001 to June 2003).

SUBJECTS: Adult medical inpatients (5,813) in an urban teaching hospital.

MEASUREMENTS: Proportion drinking risky amounts in the past month (defined by national standards); proportion drinking risky amounts with a current alcohol diagnosis (determined by diagnostic interview).

RESULTS: Seventeen percent (986) were drinking risky amounts; 97% exceeded per occasion limits. Most scored ≥ 8 on the Alcohol Use Disorders Identification Test, strongly correlating with alcohol diagnoses. Most of a subsample of subjects who drank risky amounts and received further evaluation had dependence (77%).

CONCLUSIONS: Drinking risky amounts was common in medical inpatients. Most drinkers of risky amounts had dependence, not the broad spectrum of unhealthy alcohol use anticipated. Screening on a medicine service largely identifies patients with dependence—a group for whom the efficacy of brief intervention (a recommended practice) is not well established.

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People with unhealthy alcohol use often go unidentified and do not receive timely care despite the existence of brief, valid screening tools.¹ Given the availability of these tools and the magnitude of alcohol-related health problems, professional organizations recommend that clinicians screen

for unhealthy alcohol use, and, when indicated, conduct a brief intervention.²

In 1990, the Institute of Medicine (IOM) described a spectrum of unhealthy alcohol use in the general population.³ The spectrum included drinking risky amounts (amounts that increase the risk of health consequences); problem drinking (use associated with consequences); harmful drinking and alcohol abuse (diagnoses characterized by recurrent consequences); and alcohol dependence (alcoholism, the most severe alcohol problem). The IOM emphasized that most people with unhealthy alcohol use were not alcohol dependent and that they would likely benefit from brief intervention.

Few studies have characterized this spectrum in medical inpatients through systematic screening with validated measures. However, determining whether medical inpatients as a whole have a range of unhealthy alcohol use has important treatment implications. It can help establish whether they are likely to benefit from screening and brief intervention—a currently recommended practice that has proven helpful for drinkers with nondependent unhealthy alcohol use but has less established efficacy for those with alcohol dependence.⁴

Therefore, this study aimed to characterize unhealthy alcohol use in medical inpatients. We hypothesized that the prevalence of unhealthy alcohol use would be high and that the spectrum would be broad.

METHODS

Design

We conducted a cross-sectional study to determine the prevalence and spectrum of unhealthy alcohol use in medical inpatients. First, we screened patients for drinking risky amounts. A subgroup of patients who screened positive enrolled in a clinical trial of an alcohol brief intervention (i.e., “enrolled subsample”) and was evaluated more extensively. We compared this enrolled subsample to subjects who were drinking risky amounts but did not enroll (i.e., the “nonenrolled subsample”) to determine the similarities between these groups and thus make inferences about medical inpatients with unhealthy alcohol use.

The authors have no conflicts of interest to declare.

Preliminary results were presented at the following meetings: Research Society on Alcoholism, June 2004, Vancouver, BC, Canada; Association for Medical Education and Research in Substance Abuse, November 2003, Baltimore, MD; and American Public Health Association, November 2003, San Francisco, CA.

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Subjects

We recruited subjects from the inpatient medicine service of a large, urban teaching hospital between March 2001 and June 2003. On weekdays, trained research associates (RAs) reviewed an admissions database and approached all patients who were ≥ 18 years, hospitalized on the medicine service, and whose physicians permitted contact. Patients who were fluent in English or Spanish and gave oral consent were screened.

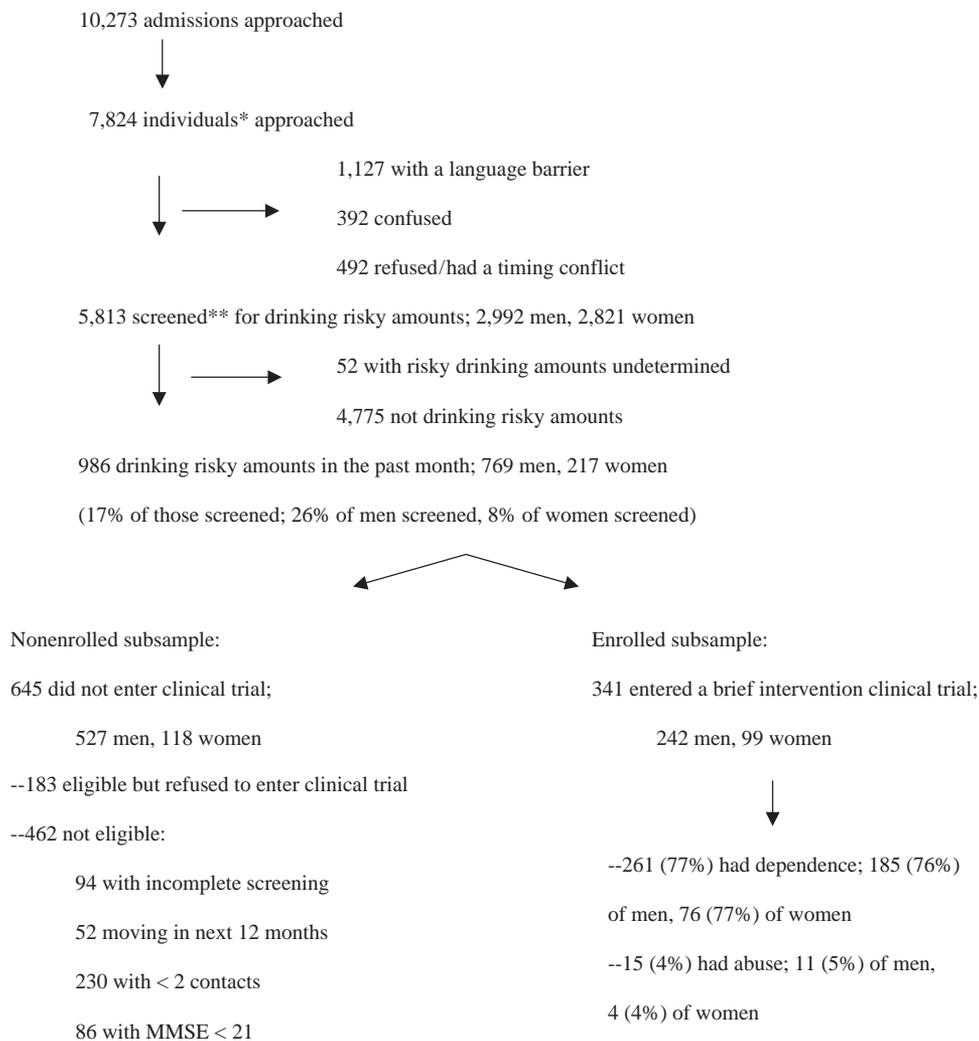
The Institutional Review and Privacy Boards of Boston University Medical Center approved this study. We secured additional protection with a Certificate of Confidentiality from the National Institute on Alcohol Abuse and Alcoholism (NIAAA).

Measurements

Research associates collected demographic data and administered the Alcohol Use Disorders Identification Test (AUDIT) by interview⁵ (online Appendix A). For the first 7 months, RAs

asked subjects with an AUDIT score of ≥ 8 (the validated cut-off) their average number of drinking days per week, average number of drinks consumed on a typical day, and maximum number of drinks consumed on an occasion to better characterize current (past month) alcohol use.⁶ For the remaining 22 months of the study, RAs asked the additional questions to all who drank more than “never” in the past 12 months (determined by the AUDIT’s first item). We changed our screening approach to maximize identification of drinkers of risky amounts; the newer approach allowed us to identify all of these drinkers, not only those who had reached a specific threshold on the AUDIT. Similar to NIAAA guidelines,⁵ we defined risky amounts as >14 standard drinks per week or ≥ 5 drinks per occasion for men (>11 and ≥ 4, respectively, for both women and people ≥ 66 years).

Research associates asked subjects drinking risky amounts about their readiness to change drinking using a visual analogue scale ranging from 0 to 10⁷ and then established subjects’ eligibility for a brief intervention trial. Eligible subjects (provided 2 contacts, did not anticipate mov-



*For individuals with more than 1 admission, we included only data gathered during our first contact with the individual.

**During the first 7 months of the study, before we changed screening criteria, 22% of the 5,813 subjects were screened.

FIGURE 1. Process of screening medical inpatients and further assessment of subjects enrolled in a study of an alcohol brief intervention.

ing from the area in the next year, had a Mini-Mental State Examination score of ≥ 21 ,⁸ and provided written informed consent) underwent additional evaluation. Research associates assessed this “enrolled subsample” for current (past year) diagnoses of alcohol abuse and dependence according to the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition IV (DSM IV)* using the Composite International Diagnostic Interview Alcohol Module⁹; alcohol problems with the Short Inventory of Problems¹⁰; medical comorbidity¹¹; and alcohol treatment utilization. Structured medical record review (by author R.S.) determined the principal diagnosis of the current admission and current alcohol-related diagnoses.

Analyses

We conducted analyses with SAS/STAT software.¹² We compared the enrolled and nonenrolled subsamples with the χ^2 test, Fisher’s exact test, 2-sample *t*-test, and Wilcoxon rank sum test, as appropriate. Reported *P* values are 2-tailed.

RESULTS

Research associates approached 10,273 admissions (representing 7,824 individuals) and screened 5,813 individuals (2,992 [51%] male; 2,821 [49%] female) (Fig. 1). Of those screened, 986 (17%) reported drinking risky amounts in the past month. A higher percentage of men than women screened positive (26% vs 8%, *P* < .0001).

Almost all drinkers of risky amounts reported exceeding per occasion drinking limits (Table 1). Most had AUDIT scores of ≥ 8 ; 38% had scores of ≥ 20 (indicating need for alcohol treatment). Readiness to change was high.

Among the drinkers of risky amounts, 341 entered a brief intervention trial (i.e., the enrolled subsample). To make inferences about medical inpatients with unhealthy alcohol use, we compared the enrolled subsample with subjects not enrolled in the trial. The enrolled subsample had a lower percentage of men, higher percentage of blacks, and lower mean age. However, both groups were similar on most alcohol use characteristics, including AUDIT scores. When differences occurred (i.e., maximum drinks per occasion and readiness), they were small.

Table 1. Characteristics of Medical Inpatients Drinking Risky Amounts of Alcohol

	Nonenrolled Subsample* (N=645)	Enrolled Subsample* (N=341)	P Value
Male, number (%)	527 (82)	242 (71)	<.001
Race	—	—	<.001
Hispanic, number (%)	89 (14)	30 (9)	—
Black, number (%)	209 (32)	155 (45)	—
White, number (%)	256 (40)	133 (39)	—
Other, number (%)	91 (14)	23 (7)	—
Age, mean y (SD)	48 (12)	44 (11)	<.001
AUDIT	—	—	—
≥ 8 , number (%)	527 (82)	294 (86)	.07
≥ 20 , number (%)	234 (36)	143 (42)	.08
Exceeded maximum per occasion amounts (≥ 5 drinks for men, ≥ 4 for women and people 66 y or older), number (%)	624 (97)	337 (99)	.06
Maximum number of drinks per occasion, median (IQR) [†]	12 (6 to 20)	12 (7 to 24)	.004
Number of drinks per week, median (IQR)	21 (8 to 60)	24 (8 to 72)	.46
Readiness to change, median (IQR)	8 (2 to 10)	8 (5 to 10)	.02
Diagnoses of current alcohol use disorders	—	—	—
Alcohol dependence, number (%)	N/D	261 (77)	—
Alcohol abuse, number (%)	N/D	15 (4)	—
No diagnosis, number (%)	N/D	65 (19)	—
Alcohol-related medical diagnosis, lifetime, self-report, number (%)	N/D	323 [‡] (95)	—
Alcohol-related medical diagnosis, past 3 mo, self-report, number (%)	N/D	285 [§] (84)	—
Alcohol problems (≥ 1), past 3 mo, number (%)	N/D	304 (89)	—
Alcohol-related medical diagnosis, medical record review, number (%)	N/D	156 (46)	—
Principal diagnosis, current admission	—	—	—
Rule out myocardial infarction, number (%)	N/D	61 (18)	—
Alcohol-related, number (%)	N/D	51 (15)	—
Reactive airways diseases, number (%)	N/D	36 (11)	—
Pancreatitis, number (%)	N/D	33 (10)	—
Cellulitis, number (%)	N/D	22 (6)	—
Diabetes, number (%)	N/D	14 (4)	—
Alcohol assistance, past 3 mo	—	86 [‡] (25)	—
Residential program, number (%)	N/D	11 [‡] (3)	—
Outpatient treatment (e.g., counseling or therapy), number (%)	N/D	16 [‡] (5)	—
Mutual-help group (e.g., Alcoholics Anonymous), number (%)	N/D	65 (19)	—
Employee assistance program, number (%)	N/D	1 (0.3)	—
Naltrexone or disulfiram, number (%)	N/D	5 (1)	—
Detoxification program, past 3 mo, number (%)	N/D	56 (17)	—

*The nonenrolled subsample underwent screening only; the enrolled subsample entered a clinical trial and underwent both screening and further evaluation.

[†]25th and 75th percentiles reported.

[‡]N = 340; [§]N = 338; ^{||}N = 339.

SD, standard deviation; IQR, interquartile range; N≠D, not determined.

We evaluated the enrolled subsample more extensively. Most (77%) had current alcohol dependence. Alcohol-related medical diagnoses were common. In the past 3 months, 25% had received alcohol assistance.

CONCLUSIONS

A substantial proportion of medical inpatients had unhealthy alcohol use. However, contrary to our hypothesis, the spectrum of use was narrow: most patients screening positive had alcohol dependence.

Numerous studies have assessed the prevalence of alcohol problems among hospitalized patients.¹³⁻¹⁷ Prevalence figures vary widely—from 2% to 60%^{13,14}—and are influenced by many factors (e.g., patient population, definitions, assessments). In the smaller subset of studies that have both examined current alcohol problems among medical inpatients and used validated measures, prevalence ranges from 3% to 47%.^{15,16} The prevalence of current drinking of risky amounts in our study falls in the middle range of most commonly reported estimates. Notably, the prevalence of dependence—determined by a diagnostic instrument—among these drinkers of risky amounts is very high.

This study has some limitations and several notable strengths. First, the prevalence of drinking risky amounts was undetermined for some patients (Fig. 1). However, this study—unlike many others—attempted to screen all medical admissions with validated tools that identify the spectrum of unhealthy alcohol use. Second, diagnoses were determined only for the enrolled subsample. However, a similar proportion of the nonenrolled subsample would presumably also have dependence because the groups were quite similar (e.g., the majority of both groups scored ≥ 8 on the AUDIT, strongly correlating with abuse or dependence diagnoses). Third, despite the change in screening criteria, the proportions of subjects identified as drinking risky amounts with the original criteria and the changed criteria were similar (19% and 17%, respectively). Fourth, RAs reviewed admissions databases only on weekdays and may have missed patients admitted on the weekends, although most weekend admissions remain hospitalized on a weekday. Lastly, we defined weekly risky amounts for women as > 11 rather than > 7 drinks per week, NIAAA's recommended cutoff,⁵ to ensure that the trial could detect intervention effects (to avoid floor effects). Still, very few additional women would have been classified as drinkers of risky amounts using the NIAAA cutoff (6 of 2,592 women not drinking > 11 drinks per week).

Despite these limitations, our findings have implications for screening and intervention practices. Current practice guidelines recommend screening and brief intervention, when indicated, for unhealthy alcohol use. If widely adopted in general hospitals, screening will reveal that a substantial proportion of patients (17%) has unhealthy alcohol use, and that most of these patients have dependence. However, whether this population may benefit from brief intervention is not well established. Studies on brief intervention's efficacy for inpatients are limited (e.g., variable exclusion criteria, few specific to medical inpatients) and conflicting. A systematic review found that brief intervention did not reduce consumption among inpatients on various units in all 6 trials examined.¹⁸ However, other studies specific to medical inpatients suggest that brief interventions may be useful.^{19,20}

A substantial proportion of medical inpatients has unhealthy alcohol use, mainly alcohol dependence. Because the efficacy of known approaches to help these primarily alcohol-dependent medical inpatients is not yet well established—despite the substantial contribution of alcohol to inpatient medical problems—enhanced brief intervention strategies as well as new practical and effective interventions must be developed and disseminated to decrease the direct complications associated with unhealthy alcohol use.

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Supplementary Material

The following supplementary material is available for this article online at www.blackwell-synergy.com

Appendix A.