

Validity of the Alcohol Use Disorders Identification Test in College Students

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Background: High-risk alcohol use among college students is associated with accidents, partner violence, unwanted sexual encounters, tobacco use, and performance issues. The identification and treatment of high-risk drinking students is a priority for many college campuses and college health centers. The goal of this study was to test the psychometric properties of the Alcohol Use Disorders Identification Test (AUDIT) in college students.

Methods: A convenience sample of students coming into a college health clinic was asked to complete the 10-question AUDIT and then participate in a research interview. The interview focused on assessing students for alcohol abuse and dependence by using the Composite International Diagnostic Interview Substance Abuse Module and timeline follow-back procedures to assess a 28-day drinking history.

Results: A total of 302 students met the eligibility criteria and agreed to participate in the study. The sample consisted of 185 females (61%) and 117 males (39%), with a mean age of 20.3 years. Forty students were abstinent, 88 were high-risk drinkers, and 103 met criteria for a 12-month history of dependence. Receiver operator curves demonstrated that the AUDIT had the highest area under the curve for detecting high-risk alcohol use (0.872) and the lowest for identifying persons with a lifetime history of alcohol abuse or dependence (0.775). An AUDIT cutoff score of 6 or greater demonstrated a sensitivity of 91.0% and a specificity of 60.0% in the detection of high-risk drinkers.

Conclusions: The AUDIT has reasonable psychometric properties in sample of college students using student health services. This study supports the use of the AUDIT in this population.

Key Words: College Students, Alcohol Use, Alcohol Screening, AUDIT.

COLLEGE STUDENTS HAVE been identified as a group at risk for risky or hazardous alcohol consumption (Evans and Dunn, 1995; Wechsler et al., 1994; Werner et al., 1994a). One need not be alcohol dependent to experience serious or life-threatening consequences of use: alcohol use in college students has been associated with health risks and psychosocial problems that include motor vehicle accidents, personal injuries, blackouts, missing classes, legal problems, date rape and other types of violence, sexually transmitted diseases, and negative effects on academic performance (Fleming et al., 1991; Kypri et al., 2002; Wechsler et al., 1994; Werner et al. 1994a). Hingson et al. (2002) state that if students who are at the greatest risk for alcohol-related harm are identified, we may be able to reduce the estimated 1,500 deaths and 200,000 serious injuries that occur in the US each year among this population.

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Patterns of alcohol use among college students and the problems associated with alcohol suggest that early screening for problem or hazardous drinking is an important issue for health practitioners and that the need for a quick screening method suitable for primary care settings is important (Barry and Fleming, 1993; Fleming et al., 1991; Werner et al., 1994b). Until recently, screening instruments have mainly focused on identifying alcoholism, not screening for problems at an earlier or milder stage (Clements, 1998; Fiellin et al., 2000). Frequently used interview-based screening instruments to detect alcohol misuse in adult populations, including the CAGE (Ewing, 1984), have limitations: a lack of information on quantity/frequency of alcohol consumption, lack of questions on pathologic drinking patterns such as frequency of binge drinking, lack of a format to assess DSM-IV criteria presence, and lack of a response format to distinguish between past and present use (Fleming et al., 1991). A new instrument called the CUGE is a modification of the CAGE and was developed to detect alcohol use disorders in young adults. The CUGE replaces the "annoyed" question of the CAGE with "driving under the influence," and this substitution resulted in a significantly greater sensitivity and area under the curve by receiver operating characteristic (ROC) analysis than use of the CAGE in Belgian college students (Aertgeerts et al., 2000). The TWEAK screen (tolerance, worried, eye

opener, amnesia, cut down), another modification of the CAGE, was developed for use with young women of child-bearing age and also showed greater sensitivity than the CAGE or MAST in a large population of primarily inner city African American women (Russell et al., 1994). Knight et al. (2002a) have developed the CRAFFT (car, relax, alone, forget, friends tell you to cut down, trouble) alcohol screen for 14- to 18-year-old adolescents and have shown high sensitivity and specificity in identifying problem use, abuse, and dependence in this age group, with the CRAFFT score correlated with increasing severity of diagnostic classification.

The Alcohol Use Disorders Identification Test (AUDIT) was developed by the World Health Organization (WHO) as a brief written screening method to identify current harmful and hazardous drinking and to be useful in primary care settings in both developing and developed countries (Babor et al., 2001). The AUDIT is unique among alcohol screening instruments in that it attempts to identify high-risk drinking and not only alcohol dependence. The AUDIT has been used in many samples and has been found to demonstrate sensitivities and specificities comparable and typically superior to those of other self-report screening measures (Reinert and Allen, 2002). Recently, more research has been done in examining the use of the AUDIT in college-aged samples (Aertgeerts et al., 2000; Clements, 1998; Fleming et al., 1991; Kelly et al., 2002; Kypri et al., 2002). Fleming et al. (1991), in their study of a college-aged sample comparing AUDIT scores with DSM diagnostic criteria, showed that the AUDIT showed a high sensitivity (0.94) at a cutoff score of 8 but showed only moderate specificity (0.66), suggesting the use of a higher cutoff. Other studies have had mixed results, showing the AUDIT to perform significantly better than the CAGE, MAST, and Svanum scale (Svanum and McGrew, 1995) in identifying students who were currently alcohol dependent when compared with DSM-IV criteria. However, the four instruments did not differ significantly in their ability to identify students with a lifetime diagnosis (Clements, 1998). In another study using DSM-IV criteria, neither the CAGE nor the AUDIT was as useful as the CAGE in detecting alcohol abuse and dependence (Aertgeerts et al., 2000). Few studies, including none of the previously referenced studies on college-aged drinking, have evaluated the AUDIT's sensitivity and specificity against a criterion of high-risk drinking. Reinert and Allen (2002) suggest that research to establish an AUDIT cut-point for high-risk drinking is needed so that clinicians might effectively use the AUDIT to screen for this behavior.

The goal of this study of students at a large Midwestern university was to determine the validity of the AUDIT in a sample of university students by using DSM-III-R abuse and dependence criteria and 28-day alcohol use as criterion standards.

METHODS

Research Procedures

Recruitment. The study was conducted at a large Midwestern university with approximately 40,000 undergraduate and graduate students. The University Health Services has approximately 19,000 visits per year, or 47.0 visits per 100 students. Participants were recruited from three clinic waiting rooms at University Health Services during 2 days of each week during the study period. Students coming into the waiting rooms for general medicine, allergy, and immunization clinics, who were aged 18 to 23 years, and who could read and speak English were invited to participate. Participation was voluntary, and the University of Wisconsin Center for Health Sciences Human Subjects Committee approved the study protocol. Students who consented to participate scheduled a 1-hr study session with a member of the research team. Participants received an honorarium of \$20.00.

Measures. Data were collected by asking participants to complete the AUDIT self-administered questionnaire, the timeline follow-back (TLFB) quantity-frequency measure of 28-day alcohol consumption, and the Composite International Diagnostic Interview Substance Abuse Module (CIDI-SAM) standardized diagnostic interview, with questions asked verbally by the interviewer from computer text and participant responses recorded directly to the computer by the interviewer. Interviewers did not score the AUDIT or CIDI. No results were shared with clinical staff or placed in patient charts. A National Institute on Mental Health Certificate of Confidentiality was used to protect subjects from use of data for criminal prosecution. Demographic data were collected by self-administered questionnaire by using questions developed by the authors (Kokotailo et al., 1996). The order of measure administration was demographic information, AUDIT, TLFB, and CIDI-SAM.

The 10 items of the AUDIT cover the conceptual domains of alcohol consumption (questions 1–3), drinking behavior/dependence (questions 4–6), and alcohol-related problems (questions 7–10). The time frame focus was on current behavior, with questions framed in terms of drinking in the past year. Responses were scored according to frequency of occurrence (seven items), amount consumed (one item), or using a no/yes—not in past year/yes—in past year format (two items). Questions 1 to 8 were scored 0, 1, 2, 3, or 4. Questions 9 and 10 were scored 0, 2, or 4 only. Each question was scored 0 to 4, and the range of possible scores was 0 to 40. The WHO recommended a cutoff score of 11 or more in the original use, but the currently generally accepted cut-point of the scale for identifying a potential alcohol problem in adults is 8 (Reinert and Allen, 2002).

The TLFB (Sobell and Sobell, 1992) measures alcohol consumption over a specified time period ranging up to 12 months; the time period examined in this study was the 28 days before the date of the interview. Participants were asked to identify the number of standard drinks they considered to be representative of a high, medium, and low number of drinks in a day for them. There was a fair amount of consistency on the student's definition of these categories, such that most students defined high as six to eight, medium as four to five, and low as two to three. Participants then reported actual alcohol consumption for each day examined as high, medium, low, or abstinent. Participants used a calendar and were asked to recall as accurately as possible the number of days they had consumed alcohol and the amount consumed on each of those days. Besides the use of a visual calendar, other memory-enhancement methods used were marking the calendar with key dates or special events, allowing participants to use personal calendars to help with recall, and verbal definition and visual display of standard drink conversions (one standard drink was 12 ounces of beer, 5 ounces of wine, or 1.5 ounces of hard liquor).

The TLFB has been used in a variety of populations—college students, problem drinkers, and male and female normal drinkers in the general population—and has had generally high test-retest reliability across multiple types of populations (Sobell and Sobell, 1992). Studies using the TLFB in college student samples have shown a test-retest reliability of 0.77 to 0.97 for 30- to 90-day recall periods (Sobell et al., 1986).

The CIDI-SAM, the expanded version of the substance abuse and

dependence section of the CIDI-Core, using DSM-III-R and ICD-10 classifications, was the diagnostic criterion standard for this study. The CIDI-SAM has been found to have good to excellent interrater reliability (Cottler et al., 1991) and test-retest reliability. Computer administration was used in this study. Participants were asked questions as they appeared on the computer screen, and answers were entered directly into the computer. Participants were given a printed interview guide containing an alcohol drink equivalency chart and response keys matching the oral interview for frequency and recency questions.

Statistical Methods

Proportions of the sample belonging to demographic subgroups based on age, college year, gender, race, and marital status were tabulated. Proportions of students meeting NIAAA criteria for high-risk drinking, CIDI criteria for lifetime abuse and dependence, and CIDI criteria for past-year abuse and dependence were also tabulated. Comparisons of these rates between demographic subgroups were based on Pearson's χ^2 test. Summary statistics were calculated for the AUDIT score. Item-to-total correlations based on Pearson's correlation coefficient were also calculated. The most commonly met CIDI criteria were tabulated. Sensitivity and specificity for various AUDIT score cutoffs to diagnose high-risk drinking, past-year CIDI abuse or dependence, and lifetime CIDI abuse or dependence were calculated and presented as ROC curves. Area under the ROC curves was used as a summary measure of the capacity of the diagnostic tool to detect high-risk drinking behavior (McDowell and Newell, 1996). Pairwise comparison of area under the ROC curve was corrected for correlation when the ROC curves were derived from the same set of subjects (Hanley and McNeil, 1983).

RESULTS

Sample

A total of 391 students who met the eligibility criteria were approached about the study in 1994 to 1995. Of these, only 350 were able to hear the entire invitation; the other 41 invitations were interrupted by students being called away for procedures or appointments, and, therefore, the entire invitation was not received. Of the 350 students who both were eligible and heard the entire invitation, 303 accepted. Refusals were as follows: time ($n = 22$), interest ($n = 14$), privacy concerns ($n = 5$), too sick ($n = 4$), and unrecorded reason ($n = 2$). One participant's data were not used secondary to a computer failure during CIDI administration that resulted in incomplete data collection. The total sample size was 302.

As noted in Table 1, the sample of 302 students was mainly white (90.1%), with African Americans comprising 2.0% of the sample, Hispanics 2.3%, Asian/Pacific Islanders 4.0%, and others 1.7%. The sample was 61.3% female. The mean age was 20.3 years, with the following age distribution: 18 years (9.9%), 19 years (22.8%), 20 years (26.8%), 21 years (18.9%), 22 years (12.9%), and 23 years (8.6%). Student-reported year in college was distributed as

Table 1. Sample Characteristics by Alcohol-Problem Classifications

Variable	Total sample		CIDI lifetime alcohol problem ^a		CIDI past-year alcohol problem ^b		Timeline follow-back high-risk drinking ^c	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Overall	302	100.0	155	51.3 ^d	131	43.4 ^d	88	29.1 ^d
Sex								
Male	117	38.7	69	44.5	60	45.8	37	42.0
Female	185	61.3	86	55.5	71	54.2	51	58.0
Race								
White	272	90.1	141	91.0	117	89.3	80	90.9
Black	6	2.0	2	1.3	2	1.5	0	0.0
Hispanic	7	2.3	3	1.9	3	2.3	3	3.4
Asian ^e	12	4.0	6	3.9	6	4.6	2	2.3
Other	5	1.7	3	1.9	3	2.3	3	3.4
Age (years)								
18	30	9.9	14	9.0	13	9.9	8	9.1
19	69	22.8	24	15.5	21	16.0	22	25.0
20	81	26.8	44	28.4	37	28.2	22	25.0
21	57	18.9	31	20.0	26	19.8	16	18.2
22	39	12.9	25	16.1	22	16.8	12	13.6
23	26	8.6	17	11.0	12	9.2	8	9.1
Year in college								
First	58	19.2	19	12.3	16	12.2	13	14.8
Second	62	20.5	30	19.4	25	19.1	20	22.7
Third	77	25.5	40	25.8	35	26.7	23	26.1
Fourth	54	17.9	34	21.9	28	21.4	18	20.5
Fifth or more	51	16.9	32	20.6	27	20.6	14	15.9
Marital status								
Single	280	92.7	143	92.3	124	94.7	83	94.3
Living together	17	5.6	11	7.1	7	5.3	5	5.7
Married	3	1.0	1	0.6	0	0.0	0	0.0
Other	2	0.7	0	0.0	0	0.0	0	0.0

^a Includes students classified as having lifetime alcohol abuse or dependence by using DSM-III-R criteria.

^b Includes students classified as having past-year alcohol abuse or dependence by using DSM-III-R criteria.

^c Includes students classified as engaging in high-risk drinking according to NIAAA criteria.

^d Percentage of total sample.

^e Includes Pacific Islanders.

Table 2. Twenty-eight-Day Alcohol Use and 28-Day Binge Drinking

Variable	Males		Females		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
28-day alcohol use						
0 drinks	12	10.3	28	15.1	40	13.2
1–14 drinks	32	27.4	82	44.3	114	37.7
15–28 drinks	19	16.2	35	18.9	54	17.9
29–42 drinks	19	16.2	20	10.8	39	12.9
43–56 drinks	9	7.7	10	5.4	19	6.3
≥57 drinks	26	22.2	10	5.4	36	11.9
Total	117	100.0	185	100.0	302	100.0
28-day binge drinking ^a						
0 times	36	30.8	80	43.2	116	38.4
1 times	22	18.8	38	20.5	60	19.9
2 times	16	13.7	13	7.0	29	9.6
3 times	8	6.8	9	4.9	17	5.6
4 times	3	2.6	15	8.1	18	6.0
≥5 times	32	27.4	30	16.2	62	20.5
Total	117	100.0	185	100.0	302	100.0

^a Five or more drinks consumed in one sitting for males; four or more drinks consumed in one sitting for females.

follows: first year (19.2%), second year (20.5%), third year (25.5%), fourth year (17.9%), and fifth year or above (16.9%). Most reported marital status as single (92.7%).

Students were classified into three overlapping categories: high-risk drinkers, current problem drinkers, and lifetime problem drinkers. By using TLFB procedures, high-risk drinking was defined for males on the basis of modified NIAAA criteria of 57 or more drinks overall or 4 or more occasions when 5 or more drinks were consumed in 1 sitting (binge drinking) over the past 28 days. For females, high-risk drinking was defined on the basis of 29 or more drinks overall or 4 or more occasions when 4 or more drinks were consumed in 1 sitting (binge drinking) over the past 28 days. The distributions of the sample on these criteria are shown in Table 2. Current problem drinkers were defined as students who met DSM-III-R criteria for alcohol abuse or dependence in the past year. Lifetime problem drinkers were students who met DSM-III-R criteria for alcohol abuse or dependence in their lifetime.

For the year leading up to the study, 40 students were abstinent, and 174 drank some alcohol but less than the NIAAA criteria for high-risk drinking. Approximately 29% ($n = 88$) of students had patterns of drinking that met NIAAA criteria for high risk drinking (Table 1). Of the 88 students that drank above NIAAA-recommended levels, 29.5% ($n = 26$) were classified with neither current abuse nor current dependence, 20.5% ($n = 18$) were classified with current abuse, and 50.0% ($n = 44$) were classified with current dependence by using DSM-III-R criteria.

Approximately half of all students in the sample ($n = 155$) met DSM-III-R criteria for lifetime problems. Specifically, 22.2% ($n = 67$) were classified under DSM-III-R criteria as having lifetime alcohol abuse, and a further 29.1% ($n = 88$) were classified as having lifetime alcohol dependence.

Just under half of the students ($n = 131$) met DSM-III-R criteria for past-year problems. Using DSM-III-R criteria, 15.2% ($n = 46$) were classified as having past-year alcohol

Table 3. Relative Frequency of Positive Scores on Major DSM-III-R Criteria for Students in the Lifetime Abuse and Dependence Categories

DSM-III-R criterion	Abuse ($n = 67$)	Dependence ($n = 88$)
Often drank in larger amounts or over longer period than intended	17.9%	84.1%
Persistent desire to drink or unsuccessful attempts to cut down	0.0%	6.8%
Great deal of time spent in alcohol-related activities	11.9%	45.5%
Often under the effect when hazardous or during major obligations	83.6%	89.8%
Important activities given up or reduced because of drinking	0.0%	8.0%
Continued drinking despite knowledge of having alcohol problems	40.3%	72.7%
Marked tolerance	9.0%	69.3%
Characteristic withdrawal symptoms	0.0%	10.2%
Often drink to relieve or avoid withdrawal symptoms	0.0%	0.0%

abuse, and a further 28.1% ($n = 85$) were classified as having past-year alcohol dependence. There were higher rates of alcohol problems in males, both in the past year ($\chi^2 = 4.859$; $p = 0.03$) and lifetime ($\chi^2 = 4.474$; $p = 0.03$). Comparisons based on age and college year found no significant differences in the frequency of high-risk drinking, current alcohol problems, or lifetime alcohol problems.

Table 3 illustrates the DSM-III-R items that were most commonly endorsed by students classified as having lifetime alcohol abuse ($n = 67$) and dependence ($n = 88$). Frequent intoxication or withdrawal symptoms when expected to fulfill major role obligations or when alcohol use was physically hazardous was the predominant item (83.6%) among those with lifetime abuse. This item was also commonly positive (89.8%) among those with lifetime dependence. As expected, there were multiple positive indicators for those with lifetime dependence, including drinking in larger amounts or over longer periods than expected (84.1%), continued drinking despite knowledge of alcohol problems (72.7%), and marked tolerance (69.3%).

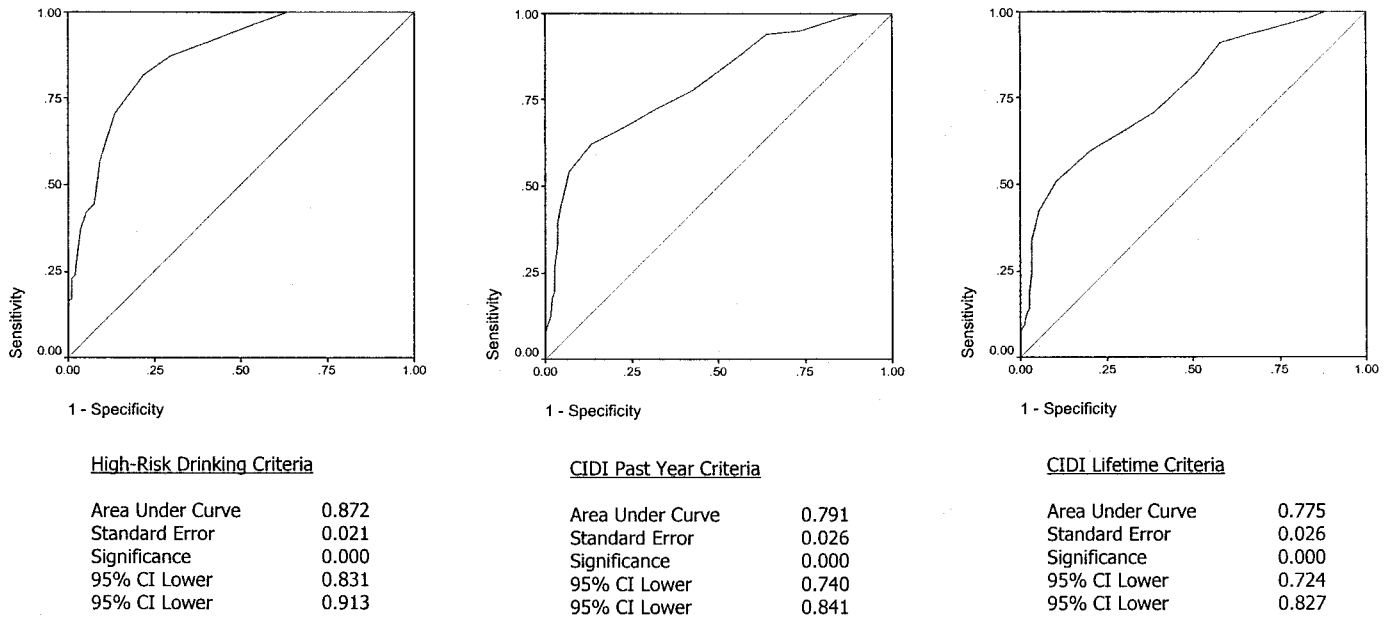


Fig. 1. ROC curves for the AUDI by using high-risk criteria, CIDI past-year criteria, and CIDI lifetime criteria for actual state indicators. CI, confidence interval.

Table 4. Sensitivity and Specificity Values for Audit Cutoff Levels for Alternative Alcohol-Problem Diagnoses

AUDIT Cutoff	CIDI lifetime alcohol problem		CIDI past-year alcohol problem		TLFB high-risk drinking	
	Sensitivity	Specificity	Sensitivity	Specificity	Sensitivity	Specificity
12	0.29	0.97	0.40	0.96	0.42	0.95
11	0.34	0.97	0.45	0.95	0.44	0.93
10	0.42	0.95	0.54	0.93	0.57	0.91
9	0.51	0.90	0.62	0.86	0.70	0.86
8	0.59	0.80	0.68	0.75	0.82	0.78
7	0.65	0.71	0.73	0.67	0.88	0.70
6	0.71	0.61	0.78	0.57	0.91	0.60
5	0.82	0.49	0.87	0.44	0.97	0.46
4	0.91	0.42	0.94	0.36	1.00	0.36

The mean score on the AUDIT measure for all students drinking alcohol was 7.45 (SE, 0.29) and for all students was 7.00 (SE, 0.30). The items with the highest item-to-total correlations were frequency of binge drinking (0.73), quantity (0.63), blackouts (0.61), and feeling guilty (0.60). The items with the lowest correlation were morning drinking (0.27), alcohol-related injury (0.33), and concern of a friend, family, or physician (0.39). These lower values were not due to lower response rates. The Cronbach α internal reliability coefficient for the scale was 0.81, indicating that students exhibited adequate consistency in their responses.

Figure 1 shows the ROC curves for the true-positive rate (sensitivity) and false-positive rate (1 – specificity) for the AUDIT by using high-risk drinking criteria by TLFB data, a past-year CIDI diagnosis for problem drinking, and lifetime CIDI diagnosis. A risk measure is considered to have predictive efficacy to the extent that the proportionate area under the ROC curve approaches 1.00. The minimum possible proportion is 0.50. In each case, it was found that the null hypothesis that the true

area under the curve in the population was 0.50 could be rejected ($p = 0.000$).

The AUDIT demonstrated its primary capacity in detecting students who were high-risk drinkers—students drinking above recommended levels in the past 28 days. The area under the curve was 0.872 (95% confidence interval, 0.831–0.913). The AUDIT was less effective ($z = 2.70; p = 0.007$) in distinguishing persons who had a past-year history of alcohol problems, with an area under the curve of 0.791 (95% confidence interval, 0.740–0.841), and was least effective ($z = 3.69; p < 0.001$) in detecting persons who had a lifetime history of alcohol problems, with an area under the curve of 0.775 (95% confidence interval, 0.724–0.827). Pairwise comparison of area under the ROC curve was corrected for correlation when the ROC curves were derived from the same set of subjects (Hanley and McNeil, 1983).

Sensitivities and specificities for varying cutoff points were determined for the AUDIT and are illustrated in Table 4 for high-risk drinkers and for current and lifetime problem drinkers. The data presented in this table suggest that a cutoff score of 6 to 8 is optimal.

DISCUSSION

This study provides new information on the validity of the AUDIT for alcohol screening in a college student population. It is the first study to assess the validity of the AUDIT based on 28 days of alcohol use as an intended criterion standard. Previous studies with the AUDIT in a college sample have focused on students who met DSM criteria for alcohol abuse or dependence. Because the primary population of interest in college prevention programs is composed of students drinking alcohol above recommended limits, as opposed to those who meet psychiatric criteria for alcohol abuse or dependence, it is important to test the ability of the AUDIT to identify high-risk drinkers.

The study found that a cutoff score of 6 or more detected 91% of high-risk drinkers. The traditional cutoff score of 8 or more resulted in a sensitivity of 0.82 and a specificity of 0.78. Of the three ROC curves presented in this report, the AUDIT had the best fit with alcohol use data (area under the curve, 0.87) and the worst fit with students with a lifetime history of abuse or dependence (area under the curve, 0.77). These findings support the observation that the AUDIT is better at identifying high-risk drinkers than persons who are alcohol dependent. This fits with the original intent of the AUDIT, because this instrument was developed by the WHO to detect hazardous alcohol use.

The CIDI-SAM was the state-of-the-art instrument available to diagnose alcohol abuse and dependence when the study was conducted. The CIDI is a reliable and valid instrument when administered by nonclinician researchers. The frequencies of the most common diagnostic criteria found by administration of the CIDI in our study were similar to those of Knight et al. (2002b) in the 1999 Harvard School of Public Health College Alcohol Study, a large self-report study that used written questionnaires, for several lifetime and past-year abuse criteria. The criteria of use in risky situations and for alcohol-related school and interpersonal problems were noted as some of the most common criteria met in both studies, although the percentages of students who met these criteria were higher for our study. The frequencies for the most common diagnostic criteria for both lifetime and past-year dependency were also similar to those found by Knight et al. (2002b) in taking larger amounts than planned, symptoms of tolerance, and continued use despite negative effects. The percentages of students reporting these criteria were higher for our students than those surveyed in the College Alcohol Study.

The frequency of alcohol use found in our study was similar to that reported by the Harvard Alcohol Study (Wechsler et al., 2002). However, we found that 15.2% of students in the sample experienced past-year alcohol abuse, whereas the Harvard Alcohol Study reported a rate of 31.0%. Also, although we found that 28.1% of students in the sample experienced past-year alcohol dependence, the Harvard Alcohol Study reported a rate of 6.0%. This dif-

ference is accounted for by the fact that our data for abuse and dependence were based on DSM-III-R criteria, whereas Wechsler et al. (2002) used DSM-IV criteria. Mikulich et al. (2001) have found that DSM-III-R estimates for alcohol abuse can be 20 percentage points lower on a scale of 0–100% than DSM-IV estimates of the same sample. Similarly, they found DSM-III-R estimates for alcohol dependence can be 20 percentage points higher on a scale of 0–100% than DSM-IV estimates of the same sample. This variation, resulting from different instruments, is in line with the differences between our local sample and those reported by Wechsler et al. (2002).

Strengths of the study include the use of a calendar method to determine levels of alcohol use in the previous 28 days. The study had a very high response rate, with more than 80% of students who were invited to participate completing the research procedures. The study site is a large university health center and is representative of similar large state universities. The primary limitation of the study is the sample size and the use of students from a single health center. Limitations also include the relatively homogeneous racial composition of the sample and, therefore, insufficient power to make subgroup comparisons.

The study suggests that the AUDIT is a valid instrument for alcohol screening in a college health population. The authors recommend that AUDIT question 3 (on binge drinking) be reduced to five or more drinks for men and four or more for women, rather than six or more. The original AUDIT was developed in Great Britain, where the alcohol content of a standard drink is 10 to 12 g, whereas in the US, most standard drinks contain 14 g of alcohol. In addition, all national alcohol surveys use five or more drinks for men and four or more for women. This study supports the widespread implementation of the AUDIT in college health centers.

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