Psychometric Evaluation of the Alcohol Use Disorders Identification Test and Short Drug Abuse Screening Test With Psychiatric Patients in India

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Background: The Alcohol Use Disorders Identification Test (AUDIT) and the short Drug Abuse Screening Test (DAST-10) are brief self-report screens for alcohol and drug problems that have not been evaluated for use with psychiatric patients in developing countries. This study was designed to evaluate the factor structure, reliability, validity, and utility of the AUDIT and the DAST-10 in an Indian psychiatric hospital.

Method: Consecutive inpatient admissions from April to December 2001 were sampled. Patients were diagnosed with substance use disorders or psychiatric disorders according to ICD-10 criteria. All patients completed both the AUDIT and the DAST-10 during their intake evaluation.

Results: Of the 2286 admissions to the hospital, 1349 were enrolled in the study (30% women); 361 patients (27%) had primary substance use disorders and 988 patients (73%) had primary psychiatric disorders. Both the AUDIT and the DAST-10 were unidimensional and internally consistent. Total scores significantly differentiated the subsamples with primary substance use from those with primary psychiatric disorders ($p < .0001$). Using cutoff scores of ≥ 8 on the AUDIT and ≥ 3 on the DAST-10, only 10% (N = 100) of the psychiatric subsample exceeded either cutoff, whereas 99% (N = 358) of the addiction treatment subsample exceeded 1 or both cutoffs. Within the psychiatric subsample, 77% (N = 65) of the patients who were identified as high risk on the AUDIT did not receive an additional alcohol use disorder diagnosis at discharge, and 59% (N = 16) of those identified as high risk on the DAST-10 did not receive an additional discharge diagnosis of drug use disorder.

Conclusion: The AUDIT and the DAST-10 demonstrate strong psychometric properties when used in an Indian psychiatric hospital. Routine use of these brief screens can facilitate detection of substance use disorders among psychiatric patients.

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Co-occurrence of substance use disorders (abuse and dependence) with major mental illness is common in the United States.[1,2] The prevalence of substance use disorders among psychiatric patients is higher than that in the general population,[3] perhaps because substance use increases the use of mental health services.[4,5] Similar patterns of comorbidity have been documented in Europe,[6] but few data are available from developing countries. Several studies from India suggest disproportionate rates of substance abuse and dependence in persons having major mental disorders, relative to the general population.[7–9] More severe mental disorders were associated with higher rates of comorbidity than were less severe disorders.

Published guidelines recommend routine screening for alcohol and drug problems in psychiatric settings.[3,10,11] Screening data based on self-report have been shown to be more sensitive than are observational or laboratory data in psychiatric settings.[12] Furthermore, self-report screens are rapid, inexpensive, and noninvasive. Carey and colleagues demonstrated the feasibility of implementing hospital-wide screening for substance use problems in both public[13] and private[14] psychiatric hospitals. They identified 2 promising self-report screens: the Alcohol Use Disorders Identification Test (AUDIT)[15] and the short Drug Abuse Screening Test (DAST-10).[16]

The AUDIT, developed by the World Health Organization, contains 10 items that assess alcohol consumption and its consequences in the past year. This screening tool was designed to identify potentially harmful or hazardous drinking patterns.[17] Positive scores on the AUDIT suggest the need for more intensive assessment of alcohol use.

Reviews indicate that the AUDIT is internally consistent and valid in a variety of populations.[18] The AUDIT is unique because it was developed for use internationally in primary care settings; primary care and mental health care settings are similar in that patients do not present with an alcohol problem. Indeed, the AUDIT manual suggests that psychiatric treatment settings would be appropriate places to use the AUDIT.[17] Research demonstrates that the AUDIT is sensitive and specific (with a cutoff score of ≥ 8) in samples of patients with primary psychiatric disorders.[19,20]

The DAST is also a screening tool that has been evaluated extensively.[16,21,22] The DAST-10, which contains 10 of the original 20 items, assesses drug use behaviors in the last year; a score of 3 or more suggests the likelihood of a drug use disorder. Two studies document its reliability and validity in independent samples of psychiatric outpatients in the United States.[20,23]

In light of the high rates of co-occurring substance use disorders among psychiatric patients, it is important to identify these disorders in order to provide appropriate referrals and treatment. Although research supports the use of the AUDIT and DAST-10 in developed countries, less is known about the psychometric properties of these measures in psychiatric settings in the developing world. The current study sought to address this gap in the literature, using a sample of consecutive admissions to a public psychiatric hospital in India. We evaluated the factor structure and internal consistency reliability and obtained evidence for the validity of the AUDIT and the DAST-10. We also compared information from these 2 screens with discharge diagnoses to provide initial evidence of their utility in psychiatric hospitals in India.

METHOD

Participants

Participants were drawn from new admissions to the inpatient psychiatric units of the National Institute of Mental Health and Neuro Sciences (NIMHANS) in Bangalore, India, from April to December 2001. NIMHANS is a 600-bed state psychiatric teaching hospital. Patients come to the hospital directly from urban, semiurban, and rural areas or through referrals from all states of India.

Newly admitted patients were eligible if they were (1) at least 18 years of age, (2) judged by clinical and research staff as able to complete the assessment, (3) not acutely psychotic or otherwise unable to participate meaningfully in the assessment, and (4) able to provide informed consent. Patients who were less than 18 years of age, who stayed in the hospital for less than 1 week (e.g., those discharged early or those who left the hospital against medical advice), or who were too psychiatrically ill to give consent did not participate in this screening study.

Measures

Demographic and psychiatric data. A systematic review of the medical records provided the following information: *International Classification of Diseases*, Tenth Revision (ICD-10) diagnosis for the psychiatric condition (made by 2 psychiatrists), duration of current episode, total duration of illness, treatment compliance, and number of hospitalizations. During the interview, we collected information including age, gender, place of residence (rural, semiurban, or urban), living arrangement, marital status, education, income, and employment status.

AUDIT. The AUDIT (Appendix 1) consists of 10 items designed to identify drinkers at risk for alcohol abuse and dependence.[24] AUDIT scores range from 0 to 40 and correlate with other widely used screening instruments.[18] Internal consistency estimates have ranged from 0.75 to 0.94 in a variety of populations.[18,19,25] A score of 8 or higher identifies persons who are at high risk for alcohol use disorders in psychiatric settings with a high degree of sensitivity and specificity.[19,20] Despite the use of the AUDIT total score to identify high-risk individuals, recent factor analytic studies generally reveal 2 factors.[25–27] One factor consists of items 1 through 3 (consumption), whereas the second factor consists of items 4 through 10 (dependence/consequences).[25–27]

DAST-10. The DAST-10 (Appendix 2) is a short version of the original DAST designed to identify drug-use related problems in the past year.[16] The DAST-10 is internally consistent ($\alpha = .86$), temporally stable (intraclass correlation coefficient = .71), and able to discriminate between psychiatric outpatients with and without current drug abuse/dependence diagnoses.[23] Sensitivity and specificity in this population are optimized with a score of 3 or higher.[20] The only published data regarding the factor structure of the DAST-10 suggest that it has a 3-factor structure accounting for 64% of the variance; the first factor consists of general problems, and the last 2 factors consist of just 1 item each (viz., items 5 [inability to stop] and 7 [feeling bad or guilty about use]).[23]

Procedures

Prior to the start of the study, procedures and materials were reviewed and approved by the Institutional Review Boards of NIMHANS and Syracuse University and by the Indian Council of Medical Research. Admissions to the NIMHANS were reviewed by the research and clinical teams to be certain that each patient was psychiatrically stable and able to participate meaningfully in the research. A member of the research staff then approached all eligible patients to explain the study, answer questions that the patient might have, and invite the patient to participate. Confidentiality was emphasized with assurances that information would be shared with the treating team only with consent from the individual. Patients who were interested in participating provided informed consent by signature or by thumbprint.

To promote candid reporting, research staff first established rapport with patients and provided reassurances regarding confidentiality before conducting the interview. All assessment materials were administered in an interview using the language most comfortable for the patient in order to ease the cognitive burden on the patients and thereby to enhance accurate reporting. An interview (rather than self-administered format) was used to enhance cultural, language, and literacy sensitivity. The interview sequence was demographic items, AUDIT, and DAST-10.

Data Management and Analyses

All data were double entered into Epidata (The EpiData Association, version 2.0) and compared for accuracy. Discrepancies were compared against the raw data to correct any clerical errors.

First, we provided descriptive information for the sample as a whole and for the subsamples with (1) primary psychiatric disorders and (2) primary substance use disorders.

Second, we evaluated the factor structures of the 2 screening tools using a multi-step process. Because one half of the full sample (N = 678) reported never using alcohol or drugs in their lifetimes, the factor analysis and reliability analyses were conducted using only the lifetime users (N = 671) in order to avoid excessive influence of zero scores on inter-item relationships. Then, we randomly split the sample of lifetime users to allow exploratory (N = 336) and confirmatory (N = 335) factor analyses on independent samples.

For the exploratory factor analyses, initial estimates of communalities were obtained from the squared multiple correlation coefficients. Factors were extracted using the principal factor method in Stata 7.0 (Stata Corporation, 2001). The number of retained factors was determined based on the eigenvalue > 1 guideline and the scree test.[28] Next, we conducted confirmatory factor analyses using LISREL 8.14[29] to cross-validate the original factor solutions. Model fits were evaluated with the chi-square statistic, the goodness of fit index (GFI), the standardized root mean square residual (SRMR), and the Root Mean Square Error of Approximation (RMSEA). Good model fits are indicated by nonsignificant chi-square, but because a large N such as ours can cause the chi-square to be significant even in the presence of other indices of good fit, a ratio of $\chi^2 \div df < 2$ was used.[30] Model fit is good if GFI > 0.95, SRMR < 0.08, and RMSEA > 0.06.[30] Differences between nested models were computed using the difference in chi-square approach.

Third, we evaluated internal consistency using coefficient alpha and item-total correlations.

Fourth, we used t tests (for continuous scores) and chi-square tests (for high/low risk groups) to compare the addiction treatment and psychiatric subsamples, providing evidence of known groups validity.

Fifth, we focused on the psychiatric subsample for the final analyses to address the utility of the AUDIT and DAST-10 as screening tools in a psychiatric treatment setting. We report the percentage of the psychiatric subsample identified as high-risk on each measure and present cross-tabulations between risk status and discharge diagnoses.

RESULTS

Sample Description

Of the 2286 admissions to the hospital during the 8-month period, 937 (41%) were not interviewed because they left the hospital against medical advice (N = 317), were discharged early (N = 165), could not comprehend and respond to the interview because of the psychiatric problem (N = 385), did not consent to the interview (N = 3), or their primary therapist advised not to interview the patient (N = 4). Sixty-three were not eligible for other reasons (e.g., age more than 65 years, language constraints, transferred to other medical units). Thus, 1349 patients (59% of all inpatient admissions) were eligible and consented to participate in the study.

The sample consisted of 404 women and 945 men with a mean ± SD age of 33 ± 10 years. Fifty percent were married and living with their spouse, 38% were not married, 8% were married but living apart, 3% were widowed, and 1% were divorced. Preferred language was Kannada (39%), Telugu (17%), Tamil (15%), Hindi (6%), English (2%), and others (21%); religious affiliation was Hindu (83%), Moslem (10%), Christian (7%), and Sikh or others (less than 1%). Approximately 46% of the sample lived in an urban area; 37%, in a rural area; and 17%, in a semiurban area. Most lived with their family (50%) or in their own home (39%), but a minority lived in the home of another person (8%), an institution (1%), or were homeless (1%). With regard to education, 64% completed high school or beyond, 25% completed primary level education, and 12% reported no formal education; 55% of the sample were employed outside the home.

Of the 1349 patients, 361 had a primary diagnosis of substance use disorder (352 men and 9 women) and were admitted into an addiction treatment unit of the hospital. The remaining 988 (593 men and 395 women) had a primary psychiatric diagnosis and were admitted to the inpatient psychiatric unit. Most patients in the alcohol/drug addiction treatment subsample received a primary diagnosis of alcohol use disorder (N = 319; 88%). However, 7% had a drug use disorder (N = 27; 20 with opiate dependence, 6 with cannabis dependence, and 1 with barbiturate dependence) or multiple substance use disorder (N = 15; 4%). Patients in the psychiatric subsample were diagnosed as follows: psychotic disorder (N = 388; 39%) including schizophrenia (N = 224), acute psychosis (N = 26), delusional disorders (N = 23), schizoaffective

Table 1. Mean Scores and Percentages Above the Cutoffs for the AUDIT and DAST-10 in the Psychiatric (N = 988) and Addiction Treatment (N = 361) Subsamples

Variable	Subsample		Test Statistic
	Psychiatric	Addiction Treatment	
AUDIT			
Mean ± SD score	2.0 ± 5.7	27.7 ± 10.2	t = –54.0, df = 1347, p < .0001
Percentage above cutoff (N)	8 (84)	92 (332)	χ^2 = 863.6, df = 1, p < .001 (N = 1349)
DAST-10			
Mean ± SD score	0.2 ± 1.0	1.2 ± 2.7	t = –10.4, df = 1347, p < .0001
Percentage above cutoff (N)	3 (27)	17 (63)	χ^2 = 92.0, df = 1, p < .001 (N = 1349)
Either AUDIT or DAST = 10			
Percentage above cutoff (N)	10 (100)	99 (358)	χ^2 = 934.9, df = 1, p < .001 (N = 1349)
Both AUDIT and DAST = 10			
Percentage above cutoff (N)	1 (11)	10 (37)	χ^2 = 64.3, df = 1, p < .001 (N = 1349)

Abbreviations: AUDIT = Alcohol Use Disorders Identification Test, DAST-10 = short Drug Abuse Screening Test.

disorder (N = 18), and unspecified psychosis (N = 97); mood disorder (N = 464; 47.0%) including bipolar disorder (N = 310) and depression (N = 154); severe anxiety and somatization disorders (N = 83; 8%); organic psychiatric syndromes (N = 19; 2%); or another disorder (N = 34; 3%). The number of previous psychiatric admissions ranged from 0 to 20 (median and mode = 0).

Factor Structure

Factor analyses were conducted using data from patients who reported using alcohol or drugs at least once in their lifetime; this set included all of the addiction treatment subsample and 310 patients (31%) from the psychiatric subsample. Randomly dividing this group into 2 groups (N = 336 and N = 335) allowed both exploratory and subsequent confirmatory factor analysis of the AUDIT and DAST-10. The split samples did not differ in gender, age, likelihood of being in the addiction treatment or psychiatric subsample, or on AUDIT or DAST-10 total scores.

Results of the exploratory factor analysis for the AUDIT items supported a single-factor solution, with an eigenvalue of 6.4 (second factor eigenvalue = 0.3), which accounted for 97% of the variance. All items loaded > 0.73 on the first factor with the exception of item 9, which had a lower but acceptable factor loading of 0.46. In the confirmatory sample, an uncorrelated 1-factor model did not fit well: χ^2 = 292.62, df = 31, p < .0001 (N = 335); GFI = 0.84; SRMR = 0.052; RMSEA = 0.15. The modification indices presented in LISREL indicated a significant degree of correlated error variance among several items. Thus, a second 1-factor model that allowed the errors of items 1, 7, and 10 and the errors of items 2 and 3 to correlate was fit to the data. This second model provided a better fit, as shown by the test of the difference between the 2 models: χ^2 = 238.77, df = 4, p < .0001 (N = 335). This solution provided a good fit to the data for the AUDIT, χ^2 = 53.85, df = 31, p < .01 (N = 335); GFI = 0.97; SRMR = 0.025; RMSEA = 0.047. Thus, a single-factor solution containing all 10 items provided the best and most parsimonious solution.

Results of the exploratory factor analysis for the DAST-10 items also supported a single-factor solution; the first eigenvalue was 6.0 (second eigenvalue = 0.3), accounting for 94% of the variance in the DAST-10 total score. The minimum factor loading was 0.63. The confirmatory factor analysis for the DAST-10 items indicated that a 1-factor uncorrelated model did not fit well: χ^2 = 351.51, df = 31, p < .0001 (N = 335); GFI = 0.85; SRMR = 0.045; RMSEA = 0.16. Again, modification indices reported by LISREL suggested a significant problem with correlated error variance. Therefore, a second 1-factor model was fit, allowing error terms to correlate. This second model provided a much better fit than the first: χ^2 = 290.46, df = 4, p < .0001 (N = 335). This 1-factor solution provided a good overall fit to the DAST-10 data: χ^2 = 61.05, df = 25, p < .01 (N = 335); GFI = 0.97; SRMR = 0.028; RMSEA = 0.066. Again, a single-factor model with all 10 items provided the optimal solution.

Reliability

Internal consistency of the screening measures was evaluated using the data from the 671 participants who reported using alcohol or drugs in their lifetime. These analyses yielded strong evidence of internal consistency reliability for the AUDIT (α = .94, item-total [less item] correlations range, .45–.88) and for the DAST (α = .94, item-total [less item] correlations range, .61–.85).

Known Groups Validity

To provide evidence for the validity of the 2 screens, we compared the psychiatric and addiction treatment subsamples on total AUDIT and DAST-10 scores and on the proportions of patients in each subsample who exceeded the cutscores for each of the screening measures. As shown in Table 1, the addiction treatment subsample obtained significantly higher scores on both the AUDIT and the DAST-10 than did the psychiatric subsample. Significantly greater percentages of the addiction treatment subsample exceeded the cutoff for both measures as well.

Table 2. Discharge Diagnosis by AUDIT and DAST-10 Status in the Psychiatric Subsample (N = 988)

	Discharge Diagnosis of Alcohol Use Disorder?	
AUDIT Score	Yes	No
≥ 8 (N = 84)	19	65
< 8 (N = 904)	2	902
	Discharge Diagnosis of Drug Use Disorder?	
DAST-10 Score	Yes	No
≥ 3 (N = 27)	11	16
< 3 (N = 961)	6	955

Abbreviations: AUDIT = Alcohol Use Disorders Identification Test, DAST-10 = short Drug Abuse Screening Test.

Concordance Between AUDIT/DAST-10 Scores and Discharge Diagnoses

Although all of the participants in the psychiatric sample had primary psychiatric diagnoses, some were discharged with secondary diagnoses of substance use disorders. The AUDIT and DAST-10 data were not available to the treatment teams to inform the discharge diagnoses. Table 2 (top) presents the cross-tabulations of patients designated as high- or low-risk on the AUDIT and whether or not they received a discharge diagnosis of alcohol abuse or dependence. Only 2 (10%) of the 19 patients who were discharged with an alcohol use disorder diagnosis did not exceed the AUDIT cutoff; this represents an estimate of false negatives on the AUDIT. However, 65 (77%) of the 84 patients who were considered high-risk on the AUDIT did not receive a diagnosis of alcohol use disorder at discharge. Thus, the majority of the patients who were identified by the AUDIT did not receive a corresponding diagnosis. In the absence of a gold standard for diagnosis (e.g., a diagnostic evaluation of known reliability and validity), this group may represent either (1) false positives (i.e., those who did not warrant an alcohol use disorder diagnosis on formal evaluation) or (2) potential alcohol abusers not detected by the examining psychiatrists.

To explore the likelihood that the AUDIT screen may be identifying otherwise undetected cases of alcohol abuse, a series of follow-up analyses were conducted. These focused on the 84 participants who were identified as high-risk for alcohol abuse on the AUDIT. Those who received discharge diagnoses of alcohol use disorder did score significantly higher on the AUDIT than those who did not (25.8 vs. 15.7; $t = -5.01$, $df = 82$, $p < .0001$), indicating that they experienced higher severity of use or consequences that may have been more easily identified by the diagnosing clinicians. However, the mean score for the "undiagnosed" group (15.7) exceeded the cutoff score of 8 substantially, ruling out the possibility that the undiagnosed group was identified as high-risk for exceeding the cutoff by just a small margin.

Next, responses to the first 3 alcohol use questions were explored as a function of discharge diagnosis. Consistent with the analysis of the total AUDIT score, all comparisons of responses to AUDIT questions 1 through 3 showed significantly higher use among the 19 patients who were discharged with an alcohol use disorder diagnosis ($p < .01$). However, the 65 undiagnosed patients reported substantial levels of use: 60% reported drinking 2 to 3 times a week or more often (vs. 84% in the diagnosed group), 40% reported consuming at least 5 to 6 drinks on a typical drinking day (vs. 79%), and 28% drank 6 or more drinks either weekly or daily (vs. 74%). Thus, these additional data suggest that some hazardous drinkers were not detected by routine diagnostic interview.

The bottom half of Table 2 shows the cross-tabulation of patients identified as high-risk on the DAST-10 and their discharge diagnosis. Six (35%) of the 17 patients who were discharged with either a drug or a multiple drug use disorder did not screen positive on the DAST-10 (false negatives). Inspection of the clinical record indicated that these 6 subjects appeared to be in remission; they had histories of drug use but reported no drug use in the last year. Hence, given the 1-year time frame of the DAST-10, these patients did not screen positive. However, 16 (59%) of the 27 patients who screened positive on the DAST-10 were discharged without a drug use disorder diagnosis. Again, the majority of the patients who were identified as high risk by the DAST-10 screen did not receive a corresponding drug use disorder diagnosis.

A supplemental analysis focusing on the 27 patients identified as high-risk on the DAST-10 revealed no significant differences in total DAST-10 score according to the presence or absence of a drug use disorder discharge diagnosis (5.5 vs. 5.6; $t = 0.2$, $df = 25$, NS). Thus, the undiagnosed and diagnosed groups reported equivalent levels of risk, each endorsing over 5 risk factors for drug abuse in the last year on average.

DISCUSSION

This study is the first to evaluate the use of alcohol and drug abuse screening tools in a psychiatric hospital in India. Several key findings were obtained. First, we demonstrated the feasibility of using the AUDIT and DAST-10 by successfully screening a consecutive sample of 1349 psychiatric admissions. Second, both screens proved to be unidimensional and internally consistent. Third, both screens differentiated the psychiatric subsample from the addiction treatment subsample as expected. Fourth, our findings indicate that use of these screening tools may assist in the detection of substance use disorders among persons with comorbid psychiatric conditions. Thus, the AUDIT and DAST-10 retain strong psychometric properties when used in a psychiatric treatment context in a developing country. The similarities and differences of the current findings to the findings of similar research conducted in the United States will be highlighted.

The screening data demonstrate that a subset of patients admitted to an inpatient psychiatric unit drink alcohol or use drugs in hazardous fashion, consistent with similar findings from the West. Base rates of co-occurring alcohol or drug abuse are lower in the Indian sample than those in the United States. That is, in the psychiatric subsample described here, 8% exceeded the cutoff on the AUDIT, and 3% exceeded the cutoff on the DAST-10. In contrast, the figures reported by Carey and colleagues[13] were 19% for the AUDIT and 13% for the DAST. One explanation for these discrepant findings may involve sampling differences. That is, perhaps the presence of an addiction treatment unit at NIMHANS diverted some of the patients who may have entered the general psychiatric sample described by Carey et al.[13] Among those who were admitted to the addiction treatment unit, 17 had a comorbid psychiatric diagnosis, and all 17 exceeded the cutoffs on AUDIT or DAST. A second explanation is that variation in substance abuse comorbidity may be related to the cultural differences in substance use in the general population and in persons with mental illness.

The prevalence estimates obtained in this Indian psychiatric sample appear to be lower than expected based on data on alcohol use in the general population. The prevalence of alcohol use in the general population in southern India has been reported to range from 26% to 50%,[31,32] and problem drinking has been estimated at 16.7%.[33] Earlier surveys suggested elevated rates of substance abuse among persons in treatment for mental illness.[8,9] However, the prevalence of harmful use appears to be less in this psychiatrically ill sample compared with the general population. Clearly, research is needed to establish accurate base rates for substance use disorders in psychiatric samples in India.

Psychometric analysis supports the internal consistency of both self-report screens; reliability coefficients obtained in this study were equivalent to the best estimates previously reported.[18,23] Both the AUDIT and DAST-10 proved to be unidimensional in this sample; confidence in these findings increases because of the use of both exploratory and confirmatory factor analytic strategy on independent subsets of patients. The single-factor solution for the AUDIT is consistent with a previous study of substance abusers,[34] although some studies of mental health samples have found 2 factors in the AUDIT.[25,27] The unidimensionality of the DAST-10 is consistent with the data reported by Cocco and Carey,[23] who concluded that a single-factor solution was possible. Thus, the factor analytic studies of the DAST-10 in psychiatric samples in both the United States and India support a single-factor scale.

This study provides evidence that more patients are identified as high-risk for alcohol use disorder or drug use disorder on the screening measures than actually receive these diagnoses upon discharge from the psychiatric hospital. This pattern is consistent with earlier studies reported in the West that showed an underdetection of substance use disorders in psychiatric settings.[35] Given that substance abuse screens are not generally used in psychiatric hospitals in India, use of a brief screen may help to increase detection of psychiatric patients with co-occurring substance use disorders.

A limitation of this study is the absence of a gold standard for a substance use disorder diagnosis, such as a structured diagnostic interview. A formal validity study is needed to determine the meaning of the discrepancy between cases that exceeded the cutoffs on both screening measures but did not receive a diagnosis of substance use disorder.

In conclusion, this study showed that the AUDIT and DAST-10 can be used in the Indian context and that these measures are reliable and valid. Both screens clearly differentiated patients who would be admitted to a facility that offers specialty services for addictive disorders rather than to a general psychiatric unit. Furthermore, these brief, self-report screens identified some psychiatric patients who were not identified by treatment staff as having a substance use disorder. Future research should address the sensitivity and specificity of these self-report tools, and address the utility of this screening information. Treatment utility would be demonstrated if the outcomes improved or treatment recommendations changed when clinicians had the information provided by the AUDIT and/or DAST-10.

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Appendices 1 and 2 appear on page 774.

Appendix 1. Items on the Alcohol Use Disorders Identification Test (AUDIT)[a]

Directions: Now I am going to ask you some questions about your use of alcoholic beverages in the past year. (Code in terms of standard drinks):

1. How often do you have a drink containing alcohol?	Never (0)	Monthly or less (1)	2–4 times per month (2)	2–3 times per week (3)	≥ 4 times per week (4)
2. How many drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2 (0)	3 or 4 (1)	5 or 6 (2)	7 to 9 (3)	> 10 (4)
3. How often do you have 6 or more drinks on one occasion?	Never (0)	Less than monthly (1)	Monthly (2)	Weekly (3)	Daily or almost daily (4)
4. How often during the last year have you found that you were not able to stop drinking once you had started?	Never (0)	Less than monthly (1)	Monthly (2)	Weekly (3)	Daily or almost daily (4)
5. How often during the last year have you failed to do what was normally expected of you due to drinking?	Never (0)	Less than monthly (1)	Monthly (2)	Weekly (3)	Daily or almost daily (4)
6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Never (0)	Less than monthly (1)	Monthly (2)	Weekly (3)	Daily or almost daily (4)
7. How often during the last year have you had a feeling of guilt or remorse after drinking?	Never (0)	Less than monthly (1)	Monthly (2)	Weekly (3)	Daily or almost daily (4)
8. How often during the last year have you been unable to remember what happened the night before because you had been drinking?	Never (0)	Less than monthly (1)	Monthly (2)	Weekly (3)	Daily or almost daily (4)
9. Have you or someone else been injured as a result of your drinking?	No (0)	Yes, not last year (2)	Yes, in past year (4)		
10. Has a relative or friend or doctor or other health worker been concerned about your drinking or suggested you cut down?	No (0)	Yes, not last year (2)	Yes, in past year (4)		

[a]Available at http://www.who.int/substance_abuse/docs/audit2.pdf.

Appendix 2. Items on the Short Drug Abuse Screening Test (DAST-10)[a]

Directions: Now I want to ask you some questions about drugs *not including alcoholic beverages* that some people use. When we talk about "drugs" and "drug use," we mean the use of any street drugs or the use of prescribed or over the counter drugs in excess of the directions or for any nonmedical use of the drugs.

In the past year:

1. Have you used drugs other than those required for medical reasons?	No (0)	Yes (1)
2. Do you abuse more than 1 drug at a time?	No (0)	Yes (1)
3. Are you always able to stop using drugs when you want to?	No (1)	Yes (0)
4. Have you had "blackouts" or "flashbacks" as a result of drug use?	No (0)	Yes (1)
5. Do you ever feel bad or guilty because of your use of drugs?	No (0)	Yes (1)
6. Does your spouse or parents ever complain about your involvement with drugs?	No (0)	Yes (1)
7. Have you neglected your family because of your use of drugs?	No (0)	Yes (1)
8. Have you engaged in illegal activities in order to obtain drugs?	No (0)	Yes (1)
9. Have you ever experienced withdrawal symptoms (felt sick) when you stopped taking drugs?	No (0)	Yes (1)
10. Have you had medical problems as a result of your drug use (e.g., memory loss, hepatitis, convulsions, bleeding)?	No (0)	Yes (1)

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