

Hazardous and harmful drinking: a comparison of the AUDIT and CAGE screening questionnaires

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Summary

Background: Hazardous and harmful use of alcohol remains a public health concern, and many general hospital admissions are alcohol-related.

Aim: To compare the CAGE and Alcohol Use Disorders Identification Test (AUDIT) questionnaires in screening general medical admissions for harmful or hazardous drinking.

Design: Prospective questionnaire-based study.

Methods: Both questionnaires were administered, and demographic data collected.

Results: One hundred and three patients were included. Of these, 36% were identified by the AUDIT to be drinking hazardously or harmfully,

and 22% were identified as CAGE cases. All CAGE cases were also AUDIT cases.

Discussion: As the CAGE and the AUDIT are designed to identify different populations, it is not surprising that significantly fewer cases were identified using the CAGE. The AUDIT identifies not just the harmful drinkers detected by the CAGE, but also hazardous drinkers, who have not yet reached that level of harm. As drinkers at an earlier stage may respond better to interventions aimed at reducing their consumption, the AUDIT is preferable in clinical practice.

Introduction

Alcohol is consumed by over 90% of the adult population in the UK, and for the foreseeable future is likely to remain our 'favourite drug'. The consumption of small to moderate amounts of alcohol is not thought to be harmful, and may protect against coronary heart disease and stroke.¹ However, hazardous and/or harmful use of alcohol remains a major public health concern, especially as household surveys suggest that as many as 27% of individuals drink more than the weekly limits recommended by the Royal Colleges of Psychiatrists, General Practitioners and Physicians, of 14 units for women and 21 units for men.²

Up to 30% of male admissions to general hospital, and up to 15% of female admissions, are alcohol related.^{3–5} Similar rates are reported in

psychiatric settings.⁶ Unfortunately, problem drinking in patients is often unrecognized by doctors.^{6–8} Consequently, several authors have suggested the routine use of validated screening instruments such as the CAGE questionnaire,⁹ Michigan Alcoholism Screening Test (MAST),¹⁰ or Alcohol Use Disorders Identification Test (AUDIT) to assist identification of excessive drinking.^{11,12}

The CAGE was developed in the 1970s as a short interviewer-administered test to screen for alcoholism or covert problem drinking. CAGE is an acronym referring to four questions pertaining to lifetime drinking experience. Two or more positive answers are believed to indicate covert problem drinking. Although CAGE and MAST are able to detect severe forms of alcohol disorders, i.e. ICD-10

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diagnoses of harmful (consumption which has caused damage to health) or dependent drinking,¹³ these screening tools do not identify those with hazardous use of alcohol. Hazardous drinking is alcohol consumption which confers risk of physical or psychological harm.¹⁴ Individuals in this category will be drinking over medically recommended limits for low-risk drinking (14 units/week for women and 21 for men), but will have so far either avoided or failed to recognize significant alcohol-related problems. This is of clinical relevance, as evidence suggests that brief counselling interventions made at an earlier stage are more likely to be effective,^{15,16} but the majority of patients do not seek help until there are established, and often serious complications resulting from their drinking.¹⁷

The AUDIT questionnaire is sensitive enough to detect hazardous as well as harmful drinking, both when used in primary care settings and, more recently, in hospitals.^{12,18} It is a validated questionnaire consisting of 10 questions, giving a maximum score of 40, and includes items assessing alcohol consumption, problems and dependency.¹² A cut-off score of ≥ 8 is recommended for routine screening of hazardous or harmful use.¹⁵

Comparative studies of the two screening tools indicate that the CAGE is better at identifying lifetime alcohol abuse and dependence (alcohol use disorders, AUDs) in different populations,^{19–21} but the AUDIT is preferred for the detection of hazardous and harmful drinking.^{18,22} Two studies dispute the superiority of the CAGE in detecting AUDs, recommending the AUDIT in preference.^{23,24} However, one of these limited their study sample to elderly medical patients, and the other was a review of alcohol screening questionnaires for women.

We used the AUDIT and CAGE questionnaires to screen for problem drinking in patients admitted as a medical emergency to a busy teaching hospital. A copy of the AUDIT can be found in the Appendix.

Methods

Participants

Subjects were recruited from the Chelsea and Westminster Hospital, a district general and teaching hospital serving inner West London. Over a 9-month period (June 1997 to February 1998) 156 (77 male, 79 female) new medical admissions, aged ≥ 17 years, were approached by one of the two Specialist Registrars (JB and MK), and were invited to participate in the study. The two investigators

attended the hospital on different days of the week and identified new medical admissions (defined as those admitted in the previous 24 h period). All patients admitted to the medical wards on the day chosen were approached. Using this approach, all days of the week were covered although some days were more represented than others, as it depended on the Specialist Registrars' availability. The investigators also examined the notes of new admissions in order to determine the primary reason for admission.

Instruments to detect problem drinking

Patients who agreed to participate were screened using the Alcohol Use Disorders Identification Test (AUDIT) and the CAGE questionnaires.

Other data

Demographic data and reason for admission were also collected for each patient. Participants identified by the AUDIT as having a drinking problem were asked if they would be interested in receiving treatment, and if they agreed, were contacted by the Trust alcohol service.

Results

There were 156 eligible patients (77 males, 44%), of whom 56 (26 males, 34%) were excluded. Reasons for exclusion included: too ill ($n=28$); refusal ($n=11$); transferred from the ward before they could be assessed ($n=7$); did not comprehend English ($n=3$), and blindness (thus unable to complete the questionnaires) ($n=2$). Those excluded from the study were slightly older than those who participated (excluded median 71 ± 21.7 years vs. included 56 ± 23.9 years; $p < 0.05$) and were less likely to have been admitted with diseases of the genitourinary tract (2% vs. 11%; $p < 0.05$) or with respiratory tract problems (8% vs. 20%; $p < 0.05$).

Demographic characteristics and reason for admission

Of the 103 patients who participated in the study, there was an equal proportion of male ($n=52$) and female ($n=51$) subjects. The median age of patients interviewed was 56 (SD 23.9) years. The sample was predominantly White (90%; 93/103); 76% (77/103) described themselves as White/UK, 4% (4/103) as White/Irish; 12% (12/103) as White/Other. Of the remaining ten, four (4%) described

themselves as Afro-Caribbean, one (1%) as Black/UK, one (1%) as Chinese, one (1%) as Indian, one (1%) as Bangladeshi/UK and one (1%) as Pakistani.

AUDIT questionnaire results

AUDIT cases (hazardous or harmful drinking) represented 36% (37/103) of participants. Almost half of the males (48%) were cases, compared with just under a quarter of females (24%) and a male:female ratio of 2:1 (68%:32%; $\chi^2 = 6.74$; $p = 0.013$). The mean age of AUDIT cases was 57 (SD 22.7) years. Cases were not younger than non-cases (mean age 56, SD 24.8). AUDIT cases were more likely to be White than other ethnic groups ($n = 35$ vs. $n = 1$; $\chi^2 = 4.33$, $p = 0.052$).

CAGE questionnaire results

Only 22% of participants were CAGE cases, compared to the 36% of AUDIT cases. CAGE cases were younger than non-cases (mean \pm SD age 48 ± 20.0 vs. 58 ± 24.7 years; $t = -1.74$; $p = 0.046$).

Comparison of CAGE and AUDIT performance

Significantly fewer cases were identified using the CAGE than the AUDIT (22% and 36% respectively; $\chi^2 = 51.4$; $p < 0.0001$). As expected, all CAGE cases were also AUDIT cases. Twenty-two (61%) of the AUDIT cases were also CAGE cases.

Discussion

The prevalence of excessive drinking amongst medical admissions to the general hospital is substantial and the proportions identified will not only vary with the population being surveyed, but also with the instrument used to detect excessive drinking. The AUDIT identified 36% of this general hospital population as being hazardous or harmful drinkers, while the CAGE detected only 22% as cases. The differences in performance of the two instruments is likely to be due to the fact that the CAGE identifies mostly the more severe end of the problem drinking spectrum, while the AUDIT detects anyone with hazardous drinking or worse. These findings add to those already published on the greater sensitivity of AUDIT to CAGE. Previous studies have shown this to be true in different US populations, such as trauma patients,¹⁹ Latinos,²⁰ and elderly veterans.²³

A greater proportion of AUDIT (and CAGE) cases were male. Although this has been supported by

others,^{18,25} our study detected more women problem drinkers than were found in these two UK studies, at 20% compared to 5%. Although the CAGE cases tended to be younger than the non-cases, supporting the findings of others,⁶ this difference was not apparent for hazardous/harmful drinkers.

As the sample size was small, based on acute medical admissions to one particular hospital, the findings may not be generally applicable. The time available to undertake the study (9 months) and the rate of medical admissions to the hospital also limited the sample. We did not include a 'gold standard' measure of alcohol misuse, in the form of a detailed interview. However, both the CAGE and the AUDIT have been well-validated,^{9,12} and the latter has been specifically validated for use in the general medical setting.²⁵ We were not aiming to repeat such work, rather to compare the two screening instruments.

The prevalence of hazardous/harmful drinking, as indicated by the AUDIT, was higher in our study than that reported by other UK investigators. Sharkey *et al.* reported 16% of medical in-patients in Northern Ireland were drinking at hazardous or harmful levels.²⁶ However, they found a higher rate (39%) in those patients attending the accident and emergency department. A recent US study found 28% of current drinking medical in-patients scored positively on the AUDIT.²⁷ Australian investigators reported a similar rate of hazardous or harmful drinking to that found in our study (41%); however, the study was conducted using a structured interview schedule to detect hazardous and harmful drinking, rather than a screening tool.²⁸ The rate of problem drinking detected by the CAGE in this study was in accordance with several previous studies.^{29–30}

Several authors have commented on the limitations of the CAGE. Although developed to identify the more severe drinker, it fails to do so adequately by including previous problem drinkers and missing those without insight.³¹ Knowledge and concern about safe levels of drinking vary with social climate, and influence responses to the questions about guilt and the need to cut down consumption.³²

In summary, our study indicates the advantage of the AUDIT over the CAGE as a screening tool for use in the general medical setting. The advantage of the AUDIT is that it identifies not just all those harmful drinkers likely to be picked up by the CAGE, but also hazardous drinkers who have not yet reached that level of harm. In recent years there has been a move to encourage brief alcohol interventions as a public health measure. Such

interventions have been shown to be effective in reducing alcohol consumption by over 20% in hazardous drinkers.³³ Based on the assumption that heavy drinkers at an earlier stage (hazardous drinkers) in their drinking career will be more responsive to brief interventions, we recommend the routine use of the AUDIT for screening in routine clinical practice.

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Appendix: Alcohol Use Disorders Identification Test (AUDIT)

Please circle the answer that is correct for you.

How often do you have a drink containing alcohol?

Never Monthly or less 2–4 times per month 2–3 times per week 4 or more times per week

How many drinks containing alcohol do you have on a typical day when you are drinking?

1 or 2 3 or 4 5 or 6 7, 8 or 9 10 or more

How often do you have six or more drinks on one occasion?

Never Less than monthly Monthly Weekly Daily or almost daily

How often during the last year have you found that you were not able to stop drinking once you had started?

Never Less than monthly Monthly Weekly Daily or almost daily

How often during the last year have you failed to do what was normally expected from you because of drinking?

Never Less than monthly Monthly Weekly Daily or almost daily

How often during the last year have you been unable to remember what happened the night before because you had been drinking?

Never Less than monthly Monthly Weekly Daily or almost daily

How often during the last year have you had a feeling of guilt or remorse after drinking?

Never Less than monthly Monthly Weekly Daily or almost daily

How often during the last year have you been unable to remember what happened the night before because you had been drinking?

Never Less than monthly Monthly Weekly Daily or almost daily

Have you or someone else been injured as a result of your drinking?

No Yes, but not in the last year Yes, during the last year

Has a relative or friend, or a doctor or other health worker been concerned about your drinking or suggested you cut down?

No Yes, but not in the last year Yes, during the last year