ORIGINAL ARTICLES

The Prevalence of Alcohol Misuse Among Acute Admissions: Current Experience and Historical Comparisons

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ABSTRACT

Background
Over the last 25 years there has been a large increase in alcohol related deaths in Scotland. Medical patients who misuse alcohol may have overt alcohol related disease, but may also present with other unrelated illness.

Aim
We examined alcohol misuse amongst acute medical admissions to compare this with other similar studies at the same hospital since 1974.

Patients and Methods
850 consecutive admissions to the medical receiving unit of Victoria Infirmary were assessed. They were assessed using the modified Michigan Alcohol Screening Test (MAST) and also by a medical consultant. 414 patients also had their blood ethanol levels measured on admission.

Results
18.6% admissions had a MAST greater than 5 and were considered to misuse alcohol (24.8% male and 12.2% female; p<0.0001). Patients from socio-economic group V and patients presenting with gastro-intestinal haemorrhage or self-poisoning were more likely to misuse alcohol. The sensitivity and specificity of consultant opinion regarding alcohol misuse were 0.55 and 0.97 compared with the MAST. There was an increase in the alcohol misuse amongst women admitted (12.2%) compared to 1977 (5.5%; p=0.0026) and 1981/2 (6.3%; p=0.004).

Conclusion
Alcohol misuse is common amongst acute medical admissions. Since 1979, there has been a particular increase in female medical admissions who misuse alcohol. Medical opinion regarding alcohol misuse lacks sensitivity in identifying at risk individuals compared with a validated questionnaire.

Introduction

Historically alcohol use has been seen as widespread in Scottish society. However in recent years alcohol has become 49% more affordable and there has been a 20% increase in average national alcohol consumption.[1] The annual mortality from alcohol related causes in Scotland has increased by 236% between 1980 and 2002. The annual cost of alcohol related illness in 2001/02 was £110.5 million.[2] Alcohol misuse is recognised as an important cause of medical admissions and there has been a 22% increase in alcohol related problems amongst acute hospital discharges between 1997/98 and 2002/03.[1] In general medicine, the greater burden of this disease is borne by gastroenterologists.[3]

We aimed to examine alcohol use and misuse amongst acute medical admissions. This is the sixth study in a series looking at alcohol related admissions to the Victoria Infirmary, Glasgow. Similar studies were performed in 1974/75, 1981/82 and 1988/89 for male admissions and in 1977 and 1981/82 for female admissions.[4,5,6,7,8] We were therefore in a unique position to assess trends in alcohol related medical admissions over 28 years.

Methods

The Victoria Infirmary is located in the south-east of Glasgow with a catchment population of approximately 250,000. The study was conducted from 14 December 2002 to 12 March 2003, correlating with the time of year of previous studies. Data from 850 consecutive admissions were recorded. In keeping with the previous studies, patients triaged on admission to the Department for the Care of the Elderly were excluded.

On admission, our patients were invited to undertake the modified Michigan Alcohol Screening Test (MAST). This has been validated as a self-assessment tool for determining alcohol use.[9,10,11,12]

In addition, a proportion of our patients had a venous blood sample taken on admission for subsequent analysis of blood alcohol concentration. This was stored in a sodium fluoride tube, which was then stored at 4°C overnight. Consent was obtained from the patient the following morning prior to analysis.

On discharge the consultant responsible for the patient was invited to complete four questions related to whether the patient's admission was alcohol related. The questions were identical to those asked in previous studies:

Q1 Was the patient alcoholic?
Q2 Was their admission mainly due to alcohol?
Q3 Was their admission in part, due to the effects of alcohol?

Q4 Was their progress complicated by the effects of alcohol or its withdrawal?

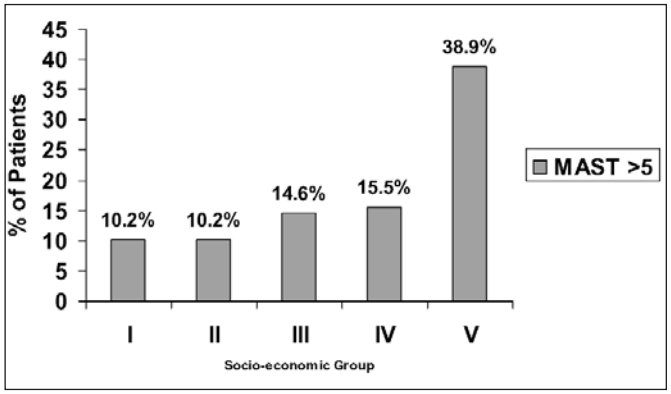
Data was collated and statistical analysis made using SigmaStat v2.03, SPSS Inc.

Results

Assessment of Alcohol Misuse

MAST questionnaires were completed by 850 patients during the study period. Of these 158 (18.6%) had a score greater than 5 and were considered to misuse alcohol. Of the 432 men, 107 (24.8%) had a MAST greater than 5. Of the 418 women, 51 (12.2%) had a MAST score greater than 5 ($p<0.0001$ compared with male admissions). There was no significant difference within socio-economic groups I – IV with regard to MAST scores greater than 5. MAST 'positives' were more common in socio-economic group V (38.9% compared with 13.7%; $p<0.0001$) (Figure 1). When patients were split into age groups, we found the highest rates of alcohol misuse in the age groups 20-29 (35%), 40-49 (27.8%) and 50-59 (32.3%). Patients in their 70s were less likely to be alcohol misusers (7.0%), as were patients in their 80s (1.3%).

Figure 1 Percentage of patients with a MAST >5 relative to Socio-economic Group.



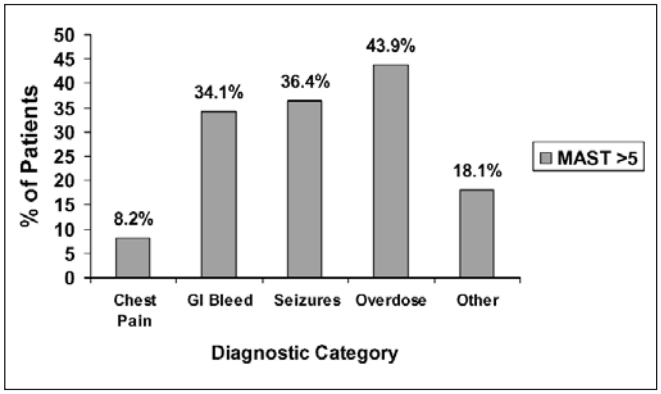
Consultant opinion identified 105 (12.3%) patients as alcohol misusers, and 70 (8.2%) patients whose admission was directly related to alcohol misuse. In comparison with the 'gold standard' of a MAST assessment, consultant opinion had a sensitivity of 55%, a specificity of 97%, a positive predictive value 83%, a negative predictive value 90% and an overall accuracy of 89%. In this study 71 patients with a MAST score indicative of alcohol misuse were not thought by consultants to have an alcohol problem.

Blood ethanol levels were measured in 414 patients. Ethanol was detectable in 54 samples (13%). Patients with a 'positive' MAST were more likely to have detectable alcohol than those without MAST evidence of alcohol misuse (36% *cf* 20%; $p=0.0051$). Patients whose admission was thought by the consultant to be alcohol related were more likely to have detectable alcohol (9.9% *cf* 40%; $p<0.001$). However as a screening test for alcohol misuse, the presence of alcohol in the blood of acute medical admissions had a sensitivity of 36%, a specificity of 92%, a positive predictive value 48%, a negative predictive value 87% and an overall accuracy of 82%.

Alcohol Use Relative to Diagnosis

The patients were also split into diagnostic categories as in the previous studies. We found that on comparison with admissions overall, two groups were significantly more likely to misuse alcohol on comparison with other acute medical admissions: those admitted with gastro-intestinal (GI) bleed (34.1%; $p=0.012$) and those with intentional self-poisoning (43.9%; $p<0.001$) (Figure 2).

Figure 2 Percentage of patients with a MAST >5 relative to admission diagnosis



Patients admitted with chest pain were significantly less likely to misuse alcohol by MAST (8.2%; $p<0.001$) compared with the other acute admissions. Although eight out of 22 (36.4%) of patients admitted with seizures were misusing alcohol by MAST, this was found not to be statistically significant ($p=0.058$). It was noted that consultants are significantly more likely to over-diagnose alcohol misuse in patients with seizures if the MAST score is used as the "gold standard" (13.6% false positives compared to 1.8% in the non-seizure admissions $p<0.001$).

Comparison with Previous Surveys

When we compared this to the previous studies, we found a large and significant increase in the rate of self-reported alcohol misuse amongst women admitted to acute medical receiving (12.2%) compared to 1977 (5.5%; $p=0.0026$) and 1981/82 (6.3%; $p=0.004$).

There was no significant difference in the rate of alcohol misuse in men (24.8%) compared to the 1988/89 study (28.4%; p=0.241), or the 1974/75 study (22.9%; p=0.613). However, there was a significant increase compared to 1981/2 (13.2%; p<0.001).

The proportions of patients with a 'positive' MAST for the diagnostic groups did not differ from those of male admissions in 1988/89 except for an apparent fall in the proportion of male patients presenting with chest pain who misuse alcohol (14.6% *cf* 28.8%; p=0.0083). There was no significant difference in the proportion of alcohol misuse in each socio-economic group or age group amongst male admissions compared with 1974/75.

Discussion

Our data indicate that almost one fifth of acute medical admissions misuse alcohol. The prevalence of alcohol misuse in male admissions seems relatively stable over the last thirty years. However there has been almost a doubling of alcohol misuse amongst female acute medical admissions. Whether this is a true reflection of increasing prevalence of alcohol misuse in our population is unclear. The rise may be partly explained by less social stigma in admitting to an alcohol problem. However within the general population, the Scottish Executive study recorded a trend of increasing alcohol consumption, especially in women, of over the recommended limit of 14 units a week. The Scottish Health Survey in 1998 reported 4% of females aged 16-74 could be classed as problem drinkers using the CAGE questionnaire.[13] Our data is consistent with that of Chick et al, 1994 who reported a prevalence of 8-15% of alcohol related problems in women.[14]

The relationship with social class is more complex. Though consumption levels across the social classes in surveys of the general population do not demonstrate a linear pattern of increasing use with decreasing social class, when medical and psychiatric admissions are analysed, alcohol plays a role in many more admissions from of patients with from deprived areas.[13,14,15]

Another observation of our study was that the sensitivity of medical staff in identifying patients with alcohol misuse was only 55% when compared with a validated alcohol assessment questionnaire. This implies that patients who might benefit from some form of brief intervention to prevent subsequent alcohol-related harm are not being identified. It might be argued that the acute medical setting offers a unique opportunity for such intervention to be provided with perhaps greater likelihood of modifying drinking behaviour. A recent study has indicated that the opportunity to intervene in the acute setting is time-limited.[16]

In conclusion our study has confirmed a high prevalence of alcohol misuse amongst acute medical admissions. There has been a significant increase in alcohol misuse amongst female admissions over twenty-five years, but no obvious change in the proportions of specific age groups or socio-economic groups misusing alcohol. Routine use of a validated alcohol assessment questionnaire would improve the detection of problem drinkers in the acute medical setting.

REFERENCES

1.Alcohol Statistics Briefing June 2004, National Alcohol Information Resource, Information Services Division, Scottish Executive. Available at http://www.alcoholinformation.isdscotland.org (Accessed 30th August 2006)

2.Cost to Society of Alcohol Misuse in Scotland, An Update to Alcohol Misuse in Scotland Trends and Costs (Scottish Executive, October 2001) July 2004. Health Economics Unit, Scottish Executive. Available at http://www.scotland.gov.uk/Resource/Doc/35596/0012562.pdf (Accessed on 30th August 2006)

3.Hislop WS, Heading RC. Impact of alcohol related disease and inpatient workload of gastroenterologists in Scotland. Scot Med J 2004; 49: 57–60

4.Quinn MA, Johnston RV. Alcohol problems in acute male medical admissions. Health Bulletin. 1976 34: 253–6

5.Lennox IM, Tait CM Blood alcohol levels in female acute medical admissions Health Bulletin 1979: 37; 127–129

6.Martin BJ. Northcote RJ. Scullion H. et al. Alcohol related morbidity in acute male medical admissions. Health Bulletin 1983; 41 263–7

7.Northcote RJ. Martin BJ. Scullion H. et al. Changing pattern of alcohol abuse in female acute medical admissions. Br Med J1983; 286: 1702

8.Trevett AJ. Currie NM. MacConnell TJ. Alcohol intoxication and alcoholism in acute male medical admissions. Scot Med J 1990; 35: 134–5

9.Selzer ML. The Michigan alcoholism screening test: the quest for a new diagnostic instrument. Am J Psychiatry 1971; 127: 1653–8

10.Pokorny AD, Millar BA, Kaplan HB. The brief MAST. A shortened version of the Michigan Alcohol Screening Test. Am J Psychiatry. 1972: 129; 342–5

11.Bernadt MW, Mumford J, Taylor L. Comparison of questionnaire and laboratory tests in the detection of excessive drinking and alcoholism. Lancet 1982: 1; 325–8

12.Chan AWK, Pristach EA, Welte JW. Detection of alcoholism in three populations by the brief MAST. Alcohol Clin Exp Res 1994; 8: 695–701

13.The Scottish Executive Department of Health. The Scottish Health Survey 1998 Volume 1 [London: HMSO], 2000; 286–7

14.Chick J. Alcohol problems in the general hospital. Br Med Bull 1994; 50: 200–10

15.Chick J. Evidence suggesting increasing health damage in Scotland related to alcohol. Health Bulletin 1997; 55: 134–9

16.Williams S, Brown A, Patton R, et al The half–life of the 'teachable moment' for alcohol misusing patients in the emergency department. Drug Alcohol Depend 2005; 77: 205–208