THE PATTERN OF ALCOHOL CONSUMPTION OF A GENERAL HOSPITAL POPULATION IN NORTH BELFAST

JOHN SHARKEY*, DANIEL BRENNAN¹ and PETER CURRAN¹

Shaftesbury Square Hospital, 116-120 Great Victoria Street, Belfast BT2 7BG and ¹Mater Hospital Trust, Crumlin Road, Belfast, Northern Ireland BT14 6AB, UK

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Abstract — This study aimed to examine the pattern of alcohol use among those attending a General Hospital and to explore the perception of safe drinking. The Alcohol Use Disorders Identification Test (AUDIT) questionnaire was given for self-completion to all inpatients and outpatients on separate days and to all adults attending the Accident and Emergency Department (A&E) on both a midweek and a weekend period. Additional questions to determine attitudes to, and intake of, alcohol were also given. Of the 464 people approached, 82% completed the questionnaire. Twenty-nine per cent of outpatients, 37.5% of inpatients and 20% of those attending A&E were teetotal. Fifteen per cent of outpatients, 16% of inpatients and 38.5% of those attending A&E scored as misusers of alcohol according to the AUDIT questionnaire. Males were three times more likely to misuse alcohol than females. Younger women were much more likely to misuse alcohol than older women. An unexpectedly large number of those attending the gynaecological clinic reported alcohol misuse. Of the inpatient alcohol misusers identified by AUDIT, only 50% were independently detected by either nursing or medical staff, the lower misuse scores being more frequently missed. We conclude that there continues to be a significant identifiable proportion of alcohol misuse that goes undetected. These individuals attend throughout the hospital and a simple self-completion questionnaire would considerably aid their detection.

INTRODUCTION

There is considerable morbidity and mortality related to alcohol misuse in Northern Ireland. This morbidity impacts significantly upon service utilization (Eastern Health and Social Services Board, 1993). There is evidence that a demonstrable decrease in alcohol consumption can be brought about using so-called brief interventions (Effective Health Care Team, 1993). Brief interventions have been shown to be effective in a variety of settings (Wallace et al., 1988; Antti-Poika, 1988; Persson and Magnusson 1989). It is therefore necessary that the appropriate individuals are identified.

The prevalence of alcohol dependence syndrome among inpatients in a rural general hospital in Northern Ireland in 1994 was found to be 13% using the CAGE questionnaire (Mangan and Patterson, 1994). North Belfast is a densely populated urban area with marked socio-economic deprivation. The Mater Hospital is a compact general hospital which serves north Belfast. Given the possible relationship between poverty and misuse of alcohol, we felt it likely that a significant number of the population attending the Mater Hospital could be detected as alcohol misusers using the Alcohol Use Disorders Identification Test (AUDIT) questionnaire (Saunders et al., 1993). This questionnaire is sensitive in identifying those with excessive alcohol consumption before they have developed alcohol-related problems. These people are most amenable to brief intervention and are worthwhile to identify (Heather, 1995).

We aimed to establish a baseline figure for alcohol misuse among inpatients, outpatients and those attending the Accident and Emergency Department (A&E). We attempted to identify characteristics that would facilitate targeting of alcohol misusers and locations for screening that would provide the greatest yield. We examined the AUDIT questionnaire in the different hospital settings and compared it with self-reported alcohol consumption. Our final aim was to gain an insight into the educational needs of the population.

Based on these findings an action plan was drafted for submission to the management of the Hospital Trust with recommendations on how to
deal with alcohol misuse among the attending population.

PATIENTS AND METHODS

The AUDIT questionnaire was considered to be the best screening tool, as it targets not only those who are alcohol-dependent, but also those who misuse alcohol to a potentially hazardous degree. Saunders et al. (1993) reported a 92% sensitivity and a 94% specificity for AUDIT in the identification of persons with 'harmful alcohol consumption'. Isaacson et al. (1994) found sensitivity and specificity of 96% in the detection of 'alcoholism' by AUDIT, compared with the alcohol portion of the structured clinical interview for DSM-III-R. The questionnaire has 10 items which are answered from a range of graded responses. The threshold figure is a score of ≥8 out of a possible 40 marks; the higher the figure the greater the severity of alcohol misuse.

Additional questions covered the other information sought, namely: (1) presenting complaint; (2) average weekly alcohol intake; (3) awareness of guidelines regarding safe drinking; (4) the greatest amount of alcohol the patients considered safe to drink in one week; (5) personal details, such as age, sex and occupation. These questions were written by the Alcohol Working Party for the Mater Hospital. The questions regarding alcohol consumption and safe drinking were to be answered in actual measures of alcohol which were later translated into units of alcohol for data collection. The guidelines referred to are agreed by the British Royal Colleges of Physicians, Psychiatrists and General Practitioners. These guidelines recommend a maximum of 21 units of alcohol per week for a man and 14 units of alcohol per week for a woman, and were the threshold for excessive alcohol consumption quoted in the Health of the Nation document (Secretary of State for Health, 1992). A unit of alcohol is equivalent to 8 g of ethanol.

A survey staff of six nurses were trained in the use and origin of the AUDIT questionnaire and in the potential consequences of alcohol misuse. These nurses distributed the questionnaires to those of 16 years of age or more, making themselves available to address any difficulties that arose.

The study took place during a week in mid-November 1994. The questionnaire was given to all outpatients on the Wednesday, all inpatients at 9 a.m. on Thursday and to all those attending A&E on both the Tuesday and Saturday 24 h periods. The questionnaire for outpatients and A&E patients asked them to give their presenting complaint and was administered anonymously. The inpatient survey used a slightly different questionnaire in that the patient's junior doctor was asked to give the working diagnoses. A nurse and a junior doctor familiar with the patient were asked to comment on whether they considered each individual to be a misuser of alcohol. Mean corpuscular volume (MCV) and gamma-glutamyl transpeptidase (GGT) were recorded, if available, in those with an AUDIT score of ≥8. The information obtained from all questions and all locations was condensed onto a Data Summary Sheet. The information gained from each patient was confidential and was not disclosed to the treatment staff.

RESULTS

The questionnaire was completed by 379 of the 464 people approached (82%). The 379 were: 136 inpatients, 139 outpatients and 104 attending A&E. Completion rates were 82% among inpatients, 91% among outpatients and 71% of those attending A&E. Those who failed to complete the questionnaire either refused or were too ill to do so.

Inpatient results

Of the 136 inpatients surveyed, 58% were female and 42% were male. Their average age was 56 years. The overall rate of alcohol misuse according to the AUDIT questionnaire was 16%. Among male inpatients 32% scored as misusers of alcohol, compared to 5% among female inpatients. Notably 37.5% of inpatients stated that they never drink alcohol.

The male medical and surgical wards produced the highest yields with rates of 32 and 27%, respectively. Psychiatric inpatients were reluctant to cooperate; the questionnaire having been completed by only 52%. Despite this, 23% scored as misusers of alcohol, all of whom were male. The female wards were relatively low in yield (Table 1).

Presenting complaints were documented as
Table 1. Breakdown of AUDIT scores among inpatients according to ward

<table>
<thead>
<tr>
<th>Ward</th>
<th>0 n (%)</th>
<th>1–7 n (%)</th>
<th>≥8 n (%)</th>
<th>Total</th>
<th>Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male surgical</td>
<td>5 (23)</td>
<td>11 (50)</td>
<td>6 (27)</td>
<td>22</td>
<td>79</td>
</tr>
<tr>
<td>Male medical</td>
<td>10 (36)</td>
<td>9 (32)</td>
<td>9 (32)</td>
<td>28</td>
<td>91</td>
</tr>
<tr>
<td>Female surgical</td>
<td>17 (59)</td>
<td>10 (34)</td>
<td>3 (7)</td>
<td>29</td>
<td>100</td>
</tr>
<tr>
<td>Female medical</td>
<td>10 (48)</td>
<td>5 (25)</td>
<td>21 (5)</td>
<td>36</td>
<td>83</td>
</tr>
<tr>
<td>Maternity</td>
<td>2 (12.5)</td>
<td>14 (87.5)</td>
<td>0 (0)</td>
<td>16</td>
<td>100</td>
</tr>
<tr>
<td>Gynaecology</td>
<td>2 (33)</td>
<td>3 (50)</td>
<td>1 (17)</td>
<td>6</td>
<td>86</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>4 (31)</td>
<td>6 (46)</td>
<td>13 (23)</td>
<td>30</td>
<td>52</td>
</tr>
<tr>
<td>Coronary care</td>
<td>1 (100)</td>
<td>0 (0)</td>
<td>1 (17)</td>
<td>2</td>
<td>33</td>
</tr>
<tr>
<td>Total</td>
<td>51 (37.5)</td>
<td>63 (46.3)</td>
<td>22 (16.2)</td>
<td>136</td>
<td>82</td>
</tr>
</tbody>
</table>

Table 2. Possible AUDIT false negatives

<table>
<thead>
<tr>
<th>Age (years) and sex</th>
<th>Evidence in medical notes</th>
<th>Evidence in nursing notes</th>
<th>Alcohol intake units per week</th>
<th>AUDIT score</th>
<th>Most likely explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>65, M</td>
<td>No mention of alcohol</td>
<td>'Heavy drinker'*</td>
<td>0</td>
<td>0</td>
<td>Untruthful answers or nursing error</td>
</tr>
<tr>
<td>59, M</td>
<td>12 cans at weekend*</td>
<td>12 cans at weekend*</td>
<td>21</td>
<td>6</td>
<td>Genuine AUDIT false negative</td>
</tr>
<tr>
<td>52, F</td>
<td>History of alcohol abuse*</td>
<td>History of alcohol abuse*</td>
<td>0</td>
<td>0</td>
<td>AUDIT focuses on current drinking</td>
</tr>
<tr>
<td>72, F</td>
<td>No mention of alcohol, raised GGT*</td>
<td>No mention of alcohol</td>
<td>0</td>
<td>0</td>
<td>Perceptiveness by the ward doctor</td>
</tr>
<tr>
<td>64, F</td>
<td>No mention of alcohol*</td>
<td>No mention of alcohol</td>
<td>0</td>
<td>0</td>
<td>Completely inexplicable</td>
</tr>
<tr>
<td>58, M</td>
<td>No mention of alcohol, raised GGT and MCV*</td>
<td>No mention of alcohol</td>
<td>13.5</td>
<td>5</td>
<td>Understandable suspicion, but no direct evidence</td>
</tr>
</tbody>
</table>

* Denotes the source of identification.
available for 17 of 22 misusers and was raised in only two (range 82–100 fl, average 90.3, normal range 76–96 fl). GGT was recorded for 15 of 22 misusers. Of the 13 males, 7 were raised (range 20–106 IU/l, average 52, normal range for males 11–51 IU/l).

No occupation displayed any particular association with alcohol misuse.

**Outpatient results**

Of the 139 outpatients, 76% were female and 24% were male. The average age was 45 years. The clinics surveyed were antenatal, gynaecological, medical, surgical and dermatological. Overall, 15% scored as misusers of alcohol. Among male patients, 27% scored as misusers, compared with 10% among females.

Notable figures were found for certain categories of presenting complaint. Alcohol misuse featured infrequently among those with gastrointestinal complaints (1 out of 12). The greatest detection rate was among those with cardiovascular pathology, with two from six scoring as alcohol misusers. Among female outpatients, there was significantly greater alcohol misuse among those attending with gynaecological complaints, compared with those attending the medical, surgical and dermatological wards: six out of 26 compared with none from 29 (Fisher’s exact test gives a one-tailed $P$ value of 0.0087). The antenatal figures were less dramatic, three out of 38 (8%).

The overall average AUDIT score for those detected as alcohol misusers was 14.2.

**Results from A&E patients**

Of the 104 people who completed questionnaires in A&E, 57% were male and 43% were female. The average age was 36 on each day and overall. Thirty-eight per cent scored as misusers of alcohol on the Tuesday and 39% on the Saturday (38.5% overall). Among male patients, 47% scored as misusers, compared to 28% among females.

Over two-thirds (70 out of 104) attended due to trauma. Of these 70 people, 28 (40%) scored on AUDIT as misusers of alcohol. The rate of detected alcohol misuse among those attending for a reason other than personal injury was 35% (12 out of 34). There were no demonstrable trends in diagnostic category among the latter group, except that two out of three people with urological complaints scored as misusers.

The average AUDIT score among those detected as misusers of alcohol was 16.3 on Tuesday, 18.75 on Saturday and 17.3 overall.

**Weekly alcohol consumption compared to the AUDIT questionnaire**

When the performance of the AUDIT questionnaire was compared to the self-reported average weekly alcohol consumption, the results were surprisingly close. Of those whose AUDIT score was <$8$, only six of the 146 (4%) who answered the question said they consumed a number of units in excess of the guidelines for sensible drinking. These six scored, on average, just 1 unit over the limit. Those whose AUDIT score was $\geq 8$ had a less impressive showing in comparison. Virtually all identified alcohol misusers answered this question, with 56 of 77 (73%) declaring an intake above the limit. The mode for male misusers falling short of the figure was 20 with a frequency of five out of 14. When compared to self-reported alcohol consumption, the AUDIT questionnaire had a sensitivity of 90% and a specificity of 88%. Given the tendency to underestimation of alcohol intake, it seems reasonable to assume that the additional components in the AUDIT questionnaire enhance its specificity.

**Awareness of and views about ‘sensible drinking’**

Each person was asked if they knew the upper limit considered ‘safe by doctors’. A minority answered ‘yes’ (27%). Of the 103 who answered ‘yes’ only 18 gave the correct figure for their gender. The degree of awareness was evenly distributed by location with on average 1.4% of males and 7.4% of females answering correctly. A separate question was asked in order to examine individual opinion as to the level of alcohol consumption in a week that would be considered to be the upper safe limit. This answer was to be given in actual measures of alcohol. When translated in units of alcohol the average figure for alcohol consumption per week stated by males was 20.8 and 12.8 by females. Further trends emerge when these figures are broken down by gender and location (Table 3).
Table 3. Average suggested upper limit of safe drinking in units of alcohol per week

<table>
<thead>
<tr>
<th>Gender</th>
<th>Location</th>
<th>AUDIT score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Male</td>
<td>Inpatients</td>
<td>18.3 (6)</td>
</tr>
<tr>
<td></td>
<td>Outpatients</td>
<td>9.7 (3)</td>
</tr>
<tr>
<td></td>
<td>A&amp;E</td>
<td>11.2 (3)</td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>14.5 (12)</td>
</tr>
<tr>
<td>Female</td>
<td>Inpatients</td>
<td>11.9 (22)</td>
</tr>
<tr>
<td></td>
<td>Outpatients</td>
<td>13.6 (8)</td>
</tr>
<tr>
<td></td>
<td>A&amp;E</td>
<td>14.4 (4)</td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>12.6 (34)</td>
</tr>
</tbody>
</table>

The figures in brackets represent the number of people who answered the question in each group.

Alcohol misuse in relation to age, sex and location

The age of the individual surveyed gave a useful indication of the likelihood of their being an alcohol misuser. Among females under 46 years of age, the rate of identification by AUDIT was 19%, as compared to 1% for the over-45s. The overall rate for males demonstrated a rate of 44% for those of 65 years or less, whereas only 10% of males over 65 scored as misusers of alcohol. In practical terms, 95% of those identified would have been detected by surveying only women under 46 and men under 66 years of age. Males were three times more likely to be identified as misusers of alcohol than females (37% versus 12%). The frequency of detection of alcohol misuse varied by location however; the most likely reasons for this were the age and gender of the attending populations.

DISCUSSION

Population characteristics

The Mater Hospital is surrounded by areas that have become familiarly known during the years of sectarian violence as ‘the Troubles’: e.g. the Shankill, Crumlin Road, New Lodge and Ardoyne. As a result, there is massive socio-economic deprivation. Poverty and unemployment perhaps influence alcohol consumption. Northern Ireland displays a peculiar distribution of alcohol consumption. A recent report for the Department of Health and Social Services for Northern Ireland (Sweeney et al., 1990) found a rate of abstinence from alcohol of 31%, compared to the British level of 10% (Paton, 1994). The rate of excessive consumption of alcohol was, however, similar to that found by Smyth and Browne (1992) in England and Wales for 1990 (26% for men and 11% for women in Northern Ireland, compared with 28% for men and 11% for women in England and Wales).

Limitations of the study

The data obtained in the present study relate to a single week in the middle of November 1994. This week was chosen, as there were no events that would cause an unrepresentative peak in the results. As such, this is more likely to lead to an under-representation, due to either a lull after Halloween or in preparation for Christmas. It is notable that the cease-fire in the Province was only a couple of months old. This may have had an influence on the figures. Days were chosen in order to gain a good yield of patients attempting to achieve a balance between representative days and patient numbers. The choice of Thursday for inpatients may have led to a lower pick-up rate as admissions due to alcohol misuse would be more likely during or shortly after the weekend. It would have been preferable to have conducted the study over a longer period of time in order to obtain a larger sample which covered a broader spread of days. The questionnaire was given out for self-completion and therefore the results are only as accurate as the answers are. The reasons why people did not complete the questionnaire unfortunately were not recorded.

Comparative studies

There are no studies that we are aware of that have used the AUDIT questionnaire to determine
the extent of alcohol misuse in a general hospital population. The most comparable study is that of Mangan and Patterson (1994), which found a prevalence of alcohol dependence of 30% among male inpatients and 2% among female inpatients in a rural general hospital population in Northern Ireland. Those identified scored ≥ 2 on the CAGE questionnaire. Given that we were looking at a broader group of alcohol misusers in a deprived urban area, we had expected our figures to be notably higher. We were somewhat surprised to find such a small increase in the figure for alcohol misuse. The proportion of teetotallers is similar to that found by other studies in Northern Ireland.

The study by Schofield (1991) of a general hospital population in the Republic of Ireland displayed a less dramatic distribution of drinkers with 23% teetotal and 11% scoring ≥ 2 on the CAGE questionnaire. The Northern Irish seem to have more extreme drinking behaviours with higher rates of both alcohol misuse and abstention. Our results display other similarities to the study of Mangan and Patterson (1994). Both studies demonstrated that medical staff missed as many alcohol misusers as they identified. Both concluded that MCV and GGT, however useful as general markers, lacked the sensitivity and specificity for their use as a screening tool. The breadth of focus of our study was a major difference.

A local study carried out in the A&E department of the Belfast City Hospital found that the guidelines for sensible drinking were exceeded by 27% of men and 15% of women (Dowey, 1993). As reported alcohol consumption is subject to considerable subjective distortion—these figures are likely to be an underestimation of the prevalence of alcohol misuse. It should be noted that consumption figures, even if accurate, take no account of individual susceptibility to harm from excessive drinking, an aspect well explored in the AUDIT questionnaire. A recent study by Isaacson et al. (1994) used the AUDIT questionnaire among those attending the equivalent of medical outpatients in inner-city Detroit, USA. The rate of alcohol misuse was slightly higher, with 21% identified. The sample studied was more specialized with a lower completion rate.

**Notable results**

The greatest influences on the rate of alcohol misuse are age and gender: there is a greater level of alcohol misuse among males and younger age groups. We expected to observe a relationship between presenting complaint and frequency of alcohol misuse. The one association demonstrated was that between gynaecological disorders and alcohol misuse. With greater numbers it is possible that associations between alcohol misuse and certain physical complaints may emerge.

**Implications for the future**

Given the targets regarding alcohol in Health of the Nation document (Secretary of State for Health, 1992) it seems advisable for a pilot study to be conducted in each hospital facility to determine the baseline level of misuse of alcohol among its attending public. The AUDIT questionnaire can be used for this purpose. Once the target populations are agreed, a strategy could be set up whereby those whose alcohol misuse can be identified are offered the appropriate intervention. Various studies have demonstrated that offers of help will be accepted by a significant proportion of those attending A&E (Green et al., 1993) and the considerable majority of inpatients (Chick et al., 1985) who are identified as alcohol misusers. Aware of the good research-based results of brief interventions, the baseline prevalence can be used to indicate the efficacy of locally introduced intervention.

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