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Factors influencing alcohol and illicit drug use amongst medical students

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Abstract

Alcohol, illicit drug use, and other lifestyle variables, as well as stress, anxiety and personality were evaluated in 194 first year medical students. 45% of the students reported drinking above the recommended UK limits for alcohol consumption. The age at which the first full drink of alcohol was taken was predictive of the current level of alcohol use. Cannabis was the most frequently used illicit drug (45%). There were significant positive associations between alcohol consumption and experiences such as missing study, becoming more sexually involved and getting into a physical fight or argument. There were also significant positive associations between the personality characteristic of psychoticism and alcohol and illicit drug consumption. The effectiveness of current health education on alcohol and illicit drugs is questioned.

Keywords: Medical students; Alcohol; Illicit drugs; Stress; Personality

1. Introduction

Alcohol and illicit drug use is increasing amongst the young (Miller and Plant, 1996). Research has revealed that some university students drink excessive amounts of alcohol and experiment with illicit drugs (Webb et al., 1996, 1997), and that medical students do not differ markedly from many other student groups, despite their (supposedly) greater knowledge of the potential hazards of alcohol and illicit drugs (Collier and Beales, 1989; File et al., 1994; Ghodse and Howse, 1994; Ashton and Kamali, 1995; Webb et al., 1997; Croen et al., 1997; Webb et al., 1998). Although most medical students are sensible in their alcohol use, a significant minority develops, or persists in, a pattern of behaviour in alcohol use that is potentially harmful (File et al., 1994). Apart from the potential damage to health, excessive use of alcohol has also been reported to increase the risk of road traffic accidents, unsafe sex and violence (Anonymous, 1995).

The problems of excessive drinking and the use of illicit drugs by many university students are a cause for concern, and have resulted in calls for provision of better health care, health education and support systems in universities (Ashton and Kamali, 1995; Webb et al., 1996, 1997, 1998; White, 1997; Gray et al., 1998). However, for such systems to be effective, it is necessary to establish whether university life and atmosphere are to blame for much of the excessive drinking and illicit drug use among students, or whether these habits are formed prior to students entering university. The aim of this study was to investigate lifestyles, including alcohol and illicit drug use and the influence of personality on these in a cohort of first year medical students shortly after arriving at Newcastle University.

2. Subjects and methods

The questionnaire, which was previously employed for assessment of lifestyles among university students, including medical students (Webb et al., 1996, 1997, 1998), was completed anonymously and voluntarily by first year medical students in October 1998 during the first week of their arrival at Newcastle University. It

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included questions on lifestyle, including the use of alcohol, illicit drugs, tobacco, proprietary and prescribed medicines, participation in sports and sleep quality. For assessment of alcohol intake, the students were asked to give an account of their typical weekly alcohol consumption prior to entering university. The Hospital Anxiety and Depression (HAD) scale (Zigmond and Snaith, 1983) was used to measure subjective anxiety and depression; a score of >8 for either the anxiety or the depression component of HAD denotes 'possible' clinical anxiety or depression respectively. The 30-question version of the general health questionnaire (GHQ) was used to measure psychological stress (Goldberg and Williams, 1988). Personality characteristics were assessed by the 90-question version of the Eysenck Personality Questionnaire (EPQ) (Eysenck and Eysenck, 1975). The lifestyle questionnaire was administered by one of the investigators during a scheduled teaching session. Attendance at the session was monitored and the questionnaire was posted to those students who were absent.

The software package Minitab (version 10.2) was used for analysis of data. Relationships between lifestyle variables were tested using the χ^2 test, Students t-tests, Spearman's correlation test, multivariate regression analysis, or one-way analysis of variance as appropriate. The homogeneity of variance was assessed by Bartlett's test.

3. Results

A response rate of 100% was achieved from the 188 students who were present at the lecture session and of 41% (7/17) from those who were contacted by post. One questionnaire returned was marred and thus excluded from analysis. Of a possible 205 students, a total of 194 (64 men and 130 women), aged 18.8 ± 2.1 years (age range 17–39), completed the questionnaire. Fourteen percent (27) of the student sample surveyed were non-white.

3.1. Alcohol consumption

Twenty (10%) of the students (five men and 15 women) did not drink alcohol. Of these, 14 (three men and 11 women) were non-white students. Amongst drinkers the mean weekly alcohol consumption in males was 29.8 ± 22.6 units (range 3–90; median 21), and in females15.5 ± 10.9 units (range 1–60; median 13). Fifty one percent of men and 56% of women drank within the 'low risk' level of alcohol consumption (1–21 units/week men, 1–14 units/week women) (Royal College of Physicians, 1995), but the remaining men and women drank within the 'medium to high risk' and 'hazardous risk' levels (Fig. 1). Forty one percent of men and 19% of women who drank also exceeded the less stringent limits (28 units/week men, 21 units/week women) proposed by the Department of Health (Department of Health, 1995). 'Binge drinking', defined as drinking more than half the 'low risk' weekly limit on one occasion (Moore et al., 1994) was reported by 27% of men and 14% of women. There were ethnic differences in alcohol consumption with 50% of non-white students being non-alcohol drinkers compared to only 4% of white students. The overwhelming reason given for current drinking was pleasure (92% of men and women).

Seventy four percent of men and 77% of women reported having taken their first ever drink of alcohol before the age of 12, 17% of men and 20% of women between the ages of 13 and 15 and 9% of men and 3% of women after the age of 16. 25% of men and 23% of women reported having taken their first full drink of alcohol before the age of 12; 51% of men and 61% of women between the ages of 13 and 15 and 24% of men and 16% of women after the age of 16. 42% of men and 36% of women reported that within the previous year, due to alcohol intoxication, they had 'felt so ill to have missed at least half a day of study'; 61% of men and 58% of women were 'unable to remember part of the evening the next day'; 48% of men and 43% of women had 'become more sexually involved with someone than they would normally have wanted'; 31% of men and 10% of women got 'involved in a physical fight or argument'; 10% of men and 13% of women had 'not taken contraceptive precautions when having sex'; and 2% of men and 1% of women had 'an accident while driving a car or motorcycle'.

3.2. Smoking

The frequency of current regular smoking (more than one cigarette or cigar per day) was 9% in men and 10%

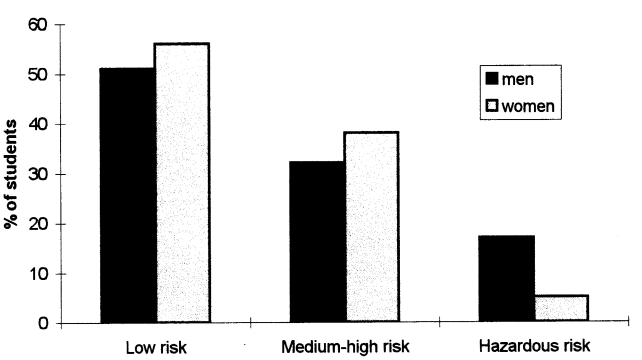

Fig. 1. Prevalence of 'low risk' ,'medium-high risk' and 'hazardous' levels of alcohol consumption. Low risk: <21 units/week (men), <14 units/week (women). Medium-high risk: 22–50 units/week (men), 15–35 units/week (women). Hazardous risk >50 units/week (men), >35 units/week (women) (Royal College of Physicians, 1995). One unit defined as $\frac{1}{2}$ pint beer/1 glass wine/1 measure of spirits.

Table 1
Use of cannabis and other illicit drugs reported by students

	'Ever used'		'Current user'	
	Men *n* (%)	Women *n* (%)	Men *n* (%)	Women *n* (%)
Cannabis	32 (51)	54 (42)	14 (23)	23 (18)
Amyl/butyl nitrite	6 (9)	5 (4)		
Amphetamines	3 (5)	7 (5)	1 (2)	2 (1.5)
Magic Mushrooms	4 (6)	7 (5)		
Cocaine/crack	2 (3)	5 (4)		3 (2)

in women. The main reasons given for smoking were 'pleasure' 83% (men) and 62% (women), and habit 83% (men) and 77% (women).

3.3. Illicit drugs

Cannabis was the most frequently reported illicit drug 'ever used' by both men and women (Table 1). Other illicit drugs 'ever used' included amyl/butyl nitrite, amphetamines, Magic Mushrooms, and cocaine/Crack. 12% of both sexes used cannabis 'monthly or more often'. All those who reported having experimented with other illicit drugs had also taken cannabis (Table 1). All but one man and two women reported first using illicit drugs before beginning of their studies at university. The reasons for taking illicit drugs included 'pleasure' 63% (men) and 50% (women), 'social pressures' 22% (men) and 7% (women), as well as 'curiosity/experimentation' 13% (men) and 13% (women) and 'habit' 9% men and 2% women. The average age for first experience with an illicit drug was 16.3 ± 1.3 years (range 14–19 years; median 16) for men and 15.6 ± 1.7 years (range 13–19 years; median 16) for women.

3.4. Prescribed drugs, proprietary medicines and vitamins

Use of prescribed tranquillisers, sleeping pills, or antidepressants (prescribed for more than 2 days since starting university) was reported by 1 man and 1 woman. Proprietary medicines were taken once a month or more by 44% (men) and 74% (women). The latter excluded the use of the oral contraceptive pill. Vitamins and mineral supplements were used daily by 21% (men) and 25% (women).

3.5. Anxiety, depression and stress

A significant proportion of the students surveyed suffered from anxiety and depression, with 29% (men) and 39% (women) scoring 8 or more on the anxiety component of the HAD and 10% (men) and 6% (women) scoring 8 or more on the depression component of the HAD. 28% (5/18) of men and 14% (7/50) of women with anxiety ratings greater than 8 also had depression ratings of 8 or more. A significant proportion of students also suffered from psychological stress with 36% (men) and 39% (women) scoring more than 4 on the GHQ. The main factors which students identified as causes of stress at the time of survey were concerns regarding 'time management' 73% (men) and 71.5% (women), 'study load' 58% (men) and 65% (women), 'financial worries' 39% (men) and 38% (women) and 'personal problems' 25% (men) and 32% (women).

3.6. Personality characteristics

Mean EPQ scores for Extraversion (E) were 15.0 ± 3.6 (men) and 14.7 ± 3.9 (women), Neuroticism (N) 10.0 ± 5.5 (men) and 12.5 ± 12.3 (women), Psychoticism (P) 4.6 ± 3.1 (men) and 3.0 ± 2.5 (women) and Lie scale (L) 6.6 ± 4.1 (men) and 7.8 ± 3.8 (women).

3.7. Exercise and sleeping

Daily, twice weekly, or weekly physical exercise was reported by 84% (men) and 76% (women). The remainder took exercise monthly or hardly ever. 72% (men) and 70% (women) reported sleeping 7–8 h per night, 6% (men) and 3% (women) 9 h or more, 19% (men) and 26% (women) 5–6 h per night and 3% (men) and 1% (women) 4 h or less per night. 30% (men) and 23% (women) complained of difficulty getting to sleep and 55% (men) and 46% (women) unable to wake up properly. 30% (men) and 32% (women) had no sleep problems.

3.8. Associations

There was a statistically significant association between the age at which the first full drink of alcohol was taken and the current level of alcohol use, with mean alcohol consumption being significantly greater in the 0–12 and 13–15 years age groups compared to the 16+ group (Table 2). Tobacco smoking and cannabis

Table 2
Association between the age at which the first full drink of alcohol was consumed and the current level of alcohol use

Age (years) of first drink	Number	Mean ($\pm$SD) weekly units of alcohol
0–12	42	23.9 ± 18.2[a]
13–15	96	17.6 ± 17.6[b]
16+	32	13.9 ± 14.0

[a] $P = 0.012$;
[b] $P = 0.033$ compared to 16+ group (Student's *t*-test).

Table 3
Relationships between tobacco smoking and cannabis use with alcohol consumption

	Number	Mean (±SD) weekly units of alcohol
Use of cannabis[a]		
Never	90	14.2 ± 11.9
Once or twice	37	21.5 ± 14.7
> once or twice	28	29.8 ± 19.8
Regularly	18	33.7 ± 24.4
Tobacco smoking[b]		
Never	71	13.8 ± 13.7
Tried a few	73	22.4 ± 16.4
Ex-smoker	12	29.3 ± 24.1
Regular smoker	18	31.8 ± 18.4

[a] $F = 8.46$; $P < 0.0001$; ANOVA.
[b] $F = 8.46$, $P < 0.0001$; ANOVA.

use was significantly related to alcohol consumption (Table 3). Levels of alcohol consumption (categorised as either 'low risk', 'medium to high risk' or 'hazardous risk'; for definition see key in Fig. 1) were significantly associated with each of the following experiences reported by the students: 'feeling so ill to miss at least half a day of study' ($\chi^2 = 36.377$, $P < 0.0001$), 'becoming more sexually involved with someone than normally would have wanted' ($\chi^2 = 14.647$, $P = 0.001$), and 'getting into a physical fight or argument' ($\chi^2 = 15.878$, $P < 0.0001$). Students with binge drinking habits were more prone to exhibiting the aforementioned risky behaviours compared to the rest; the odds ratio for such individuals reporting 'feeling so ill to miss at least half a day of study' was 2.10 (95% CI 0.76–5.77), 'becoming more sexually involved with someone than normally would have wanted' was 2.17 (95% CI 0.84–5.60) and 'getting into a physical fight or argument' was 1.14 (95% CI 0.36–3.57).

The psychoticism scores for male and female students who had taken illicit drugs were significantly greater than the scores for the corresponding students who were not taking drugs (males: 3.83 ± 2.75 versus 2.38 ± 2.16, $P = 0.0012$; females: 5.94 ± 3.18 versus 3.26 ± 2.52; $P = 0.0005$). Further, there was a significant positive association between psychoticism scores and the number of different illicit drugs 'ever used' (Table 4). Multivariate analysis of relationships between alcohol use and personality characteristic scores of EPQ showed that psychoticism scores were significantly related to alcohol consumption (Table 5).

There were no associations between the frequency of physical exercise and either alcohol consumption, cannabis use, anxiety, depression, or stress, nor between the anxiety scores and drinking or illicit drug use.

Table 4
Relationships between number of illicit drugs 'ever used' and EPQ psychoticism score[a]

Number of different illicit drugs 'ever used'	Number	Mean (±SD) psychoticism score
0	105	2.6 ± 2.3
1	56	4.1 ± 2.9
2	15	5.0 ± 3.5
3+	12	6.6 ± 2.8

[a] $F = 12.13$; $P < 0.0001$; ANOVA

3.9. Discussion

This study of a cohort of first year medical students shortly after commencing their study at Newcastle University showed that many were already drinking excessive amounts of alcohol and experimenting with illicit drugs, particularly cannabis before starting university life. 49% of men and 43% of women medical students reported to be drinking above the 'low risk' level of alcohol, compared to 41% of men and only 24% of women in 18–24 year age group in the general population (Office for National Statistics, 1998a,b). We found a link between alcohol consumption among students and other risk taking behaviours, such as getting into physical fights or arguments and having unsafe sex. Such findings corroborate those of an earlier report on alcohol use among the young by the Royal College of Physicians and the British Paediatric Association (Anonymous, 1995). We also found that those students who started drinking at an earlier age were currently drinking more heavily than others. This finding is in keeping with research carried out in the United States of America which showed that in a population of midwestern high school seniors onset of alcohol use by the age of 12 years was associated with excessive use of alcohol in later adolescence (Gruber et al., 1996).

Illicit drug use was prevalent amongst the students surveyed, with 45% having experimented with cannabis at some stage during their life, compared to 42% in

Table 5
Multiple regression analysis of alcohol and personality characteristics[a]

	Regression coefficient	SD	*P* value
Males			
Neuroticism	0.5045	0.4654	0.283
Psychoticism	3.6837	0.8166	<0.0001
Extraversion	1.2438	0.7196	0.089
Females			
Neuroticism	−0.00328	0.07630	0.966
Psychoticism	1.4992	0.3715	<0.0001
Extraversion	0.7679	0.2385	0.002

[a] Non alcohol drinkers are included in the analysis.

people of similar age group in the general population (Office for National Statistics, 1998) and 46% in our national survey of second year medical students (Webb et al., 1998). However, the current use of cannabis by medical students is considerably higher than that of a survey carried out by medical students at Newcastle University more than a decade ago, in which only 21% of students were reported as having ever used cannabis (Golding and Cornish, 1987), suggesting that cannabis use has become more acceptable in the young today. We also found, as in our previous surveys, a significant association between drinking and cannabis use (Webb et al., 1996), which tends to support the notion that alcohol could act as a 'gateway' to the use of illicit drugs (Anonymous, 1995; Gruber et al., 1996).

The psychoticism component of the EPQ is a measure of risk taking and sensation seeking behaviour in an individual and it may be expected that individuals who experiment with illicit drugs and drink excessive amounts of alcohol have higher psychoticism scores than others. In support of this we found that psychoticism scores for both male and female students who reported using illicit drugs were significantly higher than for those who did not use drugs and that psychoticism score increased with increasing number of different illicit drugs ever used. We also found that psychoticism scores were significantly positively related to alcohol consumption. The presence of a significant relationship between psychoticism component of the EPQ and illicit drug taking corroborates the findings of a previously reported study in university students (Golding and Cornish, 1987).

A significant proportion of the students suffered from anxiety and/or stress. Like previous studies in medical students (Ashton and Kamali, 1995; Webb et al., 1996) the anxiety scores did not relate to drinking or illicit drug use. We also found that, unlike in our previous surveys of university students, a number of first year medical students had depression ratings within the clinically significant range. Surprisingly, we found that more men than women suffered from depression. The reasons for this are unclear, but it could be related to students being homesick; arrival at university may have been their first experience of coping with living away from their immediate family, friends and surroundings, which could have contributed to their depression.

As with all questionnaire surveys, it is difficult to assess the reliability and accuracy of the data. However the questionnaire was completed by the students on a voluntary, anonymous and confidential basis, which we think promotes a more reliable response. The session was also well attended by the students (92% attendance), and follow-up of non-attenders by post ensured a $>94\%$ overall response rate.

There is increasing concern about excessive drinking and the use of illicit drugs among the young (Cabinet Office, 1999). Heavy drinking and illicit drug use has been shown to be common among university students, including medical students (Collier and Beales, 1989; File et al., 1994; Ghodse and Howse, 1994; Ashton and Kamali, 1995; Webb et al., 1996; Croen et al., 1997; Webb et al., 1997, 1998) and more recently in junior doctors (Birch et al., 1998). It has long been perceived by some that university life is a factor that promotes or facilitates excessive drinking and illicit drug use among students. It has been advocated that universities should provide better health education regarding alcohol and illicit drugs (Forney et al., 1988; Webb et al., 1996; White, 1997; Gray et al., 1998). The results of the present study, however, suggest that many medical students are drinking excessive amounts of alcohol and experimenting with illicit drugs before commencing their study at university. The results further show that the use of illicit drugs by many students is related to their personality characteristics of risk taking and impulsiveness, rather than any other psychological factors. Moreover, 92% of students reported drinking for pleasure, indicating that drinking is about hedonism rather than about escaping from problems.

Although it has been identified that some groups of young people are more vulnerable to illicit drug use and drinking than others (Health Advisory Service, 1996), this study, along with others (Miller and Plant, 1996; Webb et al., 1996, 1997), has shown that such problems can affect a wider range of young people today, irrespective of their social standing. In order to reduce the current levels of drug and alcohol abuse it may be necessary to educate children about such issues at an even earlier age.

As this study has revealed, personality characteristics influence the drug taking and drinking habits of students, suggesting that such individuals may still pursue these habits irrespective of current forms of health education. In the light of this, it may be prudent to consider the promotion of harm reduction and safer use of drugs and alcohol as an adjunct to the existing health education programmes.

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