

IN BRIEF

- An insight into the lifestyle of dental colleagues-to-be.
- To open up a debate on health-related issues concerning the dental profession.
- Potential problems that the profession and the individual may have to deal with.

The changing patterns of drinking, illicit drug use, stress, anxiety and depression in dental students in a UK dental school: a longitudinal study

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Objective To investigate alcohol and illicit drug use in a cohort of dental undergraduates through to VT year.

Setting A UK dental school (with a medical school comparison group).

Subjects and methods A cohort of dental students anonymously completed a lifestyle questionnaire about drinking and smoking, illicit drug use, stress, anxiety and depression in the spring of 1995 and 1998 as second and final year undergraduate students respectively, and in the summer of 1999 after one year working as qualified dentists. A parallel cohort of medical students also anonymously completed the questionnaire at the same time points in their undergraduate course as for the dental students, and at the end of a year working as Pre-Registration House Officers (PRHOs).

Results The proportion of dental students in Newcastle drinking above the recommended low risk limits of alcohol declined from 47% as second year students to 25% as final year students and then it increased to 41% as qualified dentists, whilst in medical students it steadily increased over the three time points of the survey (33% to 43% to 54%). A greater proportion of dental students were drinking at hazardous levels at all three time-points, compared with medical students. Experimentation with illicit drugs ranged from 47% as second year students to 54% as final year students and to 51% as dentists. The prevalence of illicit drug use in medical students was similar to that in dental students. Forty seven per cent of the dental student cohort as second year students, 67% as final year students and 16% as dentists suffered from possible pathological anxiety, compared with 47%, 26% and 30% in the medical student cohort. The proportion of dentists suffering from stress decreased from 72% as final year students to 19% as dentists. In the medical student group, the proportion increased from 32% as final year students to 39% as PRHOs.

Conclusion This longitudinal study revealed that a high proportion of dental students from Newcastle continue to drink excessively and experiment with illicit drugs both as undergraduates and as practising

dentists. A significant proportion also suffer from anxiety and stress. Further measures are needed in order to reduce alcohol and substance misuse and stress and anxiety among dental students and dentists.

Several studies have demonstrated that many university students drink excessively and that the use of illicit drugs, particularly cannabis, is widespread.¹⁻⁹ A recent cross-sectional study of dental students in the UK reported excessive alcohol consumption and illicit drug use among dental students;¹⁰ of those drinking, 63% of males and 42% of females drank in excess of sensible weekly limits (<14 units for females, <21 units for males),¹⁴ with 56% of males and 58.5% of females classified as 'binge drinking'. Fifty five per cent of the students reported cannabis use at least once or twice since starting dental school, with 8% of males and 6% of females reporting current regular use at least once a week. These findings are similar to those of an earlier cross-sectional nationwide study of student lifestyles in UK universities.⁷

The aforementioned cross-sectional studies can only reveal a snapshot, in relation to time, of the drinking and drug taking behaviours of students surveyed. However, it is not clear whether the prevalence of excessive drinking and substance misuse in dental students alters with time as these individuals progress through their degree course and work as dentists. This study thus longitudinally examined the changing patterns of alcohol and illicit drug use, as well as other lifestyle variables in a cohort of dental undergraduates at Newcastle University. The dental students' lifestyles were compared with those of a group of medical students.

SUBJECTS AND METHODS

A cohort of dental students from Newcastle University were surveyed in the spring of 1995 and 1998 as second and final year undergraduate students respectively, and in the summer of 1999 after 1 year working as qualified dentists. For comparison purposes, a parallel study was carried out with a cohort of medical students who were surveyed at the same time points in their undergraduate course as for the dental students, and at the end of a year working as Pre-Registration House Officers (PRHOs).

All participants anonymously completed a lifestyle questionnaire, which included questions on alcohol consumption, use of illicit drugs, tobacco, as well as demographic details. Details

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Refereed paper

Received 02.10.01; Accepted 22.02.02

© British Dental Journal 2002; 192: 646-649

regarding the evaluation of alcohol consumption, binge drinking and illicit drug use have been published previously.⁷ The Hospital Anxiety and Depression (HAD) scale¹² was used for measurement of subjective anxiety and depression, wherein a score of ≥ 8 for either the anxiety or the depression component denotes possible 'pathological' anxiety or depression respectively. The 30 question version of the General Health Questionnaire (GHQ) was used in 1998 and 1999 for the measurement of psychological stress, wherein a score of > 4 denotes the possible presence of psychological stress.¹³ The self-completed lifestyle questionnaire was personally administered to the group by D. N-B. either in classroom sessions or group meetings. Attendance at all sessions was monitored and the questionnaire was posted to those who were absent from the sessions or meetings. The questionnaire was also posted to those who were working outside the north east of England for their dentist/PRHO post.

The statistical package, *Minitab* (version 11.21), was used for the statistical analysis of the data. Because of the anonymous nature of the questionnaire it was not possible to compare the results for the same individual at the three time points in the survey. Thus the data pertaining to each time point were analysed as three independent sets, giving results which are likely to be conservative in the sense that significance levels are underestimated.

Alcohol consumption (units/week), depression, anxiety and stress scores were analysed using multi-way Analysis of Variance (ANOVA) with year (1995, 1998, 1999) as a covariant and sex (male or female) as a factor. Because of the positively skewed distributions of scores, log-transforms were used: $\log(x+20)$ for alcohol, depression and stress; $\log(x+1)$ for anxiety. In all cases these produced results giving residuals which were very well approximated by a normal distribution, indicating a good fit of the ANOVA models. *Post hoc* comparisons were carried out using Tukey's family error rate.

The use of alcohol in excess of the recommended sensible limits (≤ 21 units/week for men and ≤ 14 units/week for women)¹⁴ and cannabis use were analysed using binary logistic regression. Alcohol consumption was related to cannabis use and anxiety using analysis of covariance, with sex as a factor.

The analysis of illicit drug use other than cannabis was based on Fisher's exact tests applied to 2×2 contingency tables, implemented using the package *StatXact-3 Version 3.0.1*.

RESULTS

Response rates

Of dentists, 47/66 (16M/31F) as second year students, 53/66 as final year students (27M/26F) and 49/62 as dentists (25M/24F),

and of medical students, 122/152 (42M/80F) as second year students; 114/143 as final year students (38M/76F) and 110/137 as PRHOs (33M/77F) completed the questionnaire.

Alcohol consumption

Mean alcohol consumption in the dental student group was not significantly altered over the 4 year period of the survey for both men and women (Table 1). By comparison, mean alcohol consumption in the medical student group increased significantly ($P < 0.015$) over the three time points; from 22.9 to 23.6 to 27.1 units/week for men and from 11.2 to 12.2 to 15.3 units/week for women. For the dental student cohort the proportion of individuals drinking above the recommended limits (≤ 21 units/week for men and ≤ 14 units/week for women)¹⁴ declined from 47% as second year students to 25% as final year students and then increased to 41% as qualified dentists, compared with the corresponding values of 33% to 43% to 54% in the medical student group.

Analysis of variance showed that the pattern of alcohol consumption differed significantly between medics and dentists ($P = 0.018$). In the dental student group binge drinking was reported by 35% of the cohort as second year students, 27% as final year students and 35% as dentists. The corresponding values for the medical student group were 15% as second year and final year students and 18% as PRHOs.

Smoking

The prevalence of smoking (smoking $> one$ cigar or cigarette per day) in the dental student group was 11% as second year students, 4% as final year students and 6% as dentists. In comparison, the prevalence of smoking in the medical student group was 15% as second year students, 5% as final year students and 6% as PRHOs.

Illicit drug use

Cannabis was the most frequently reported illicit drug 'ever used' by both men and women in both the dental and medical student groups. Fifty one per cent of the dental student group as dentists and 66% of the medical student group as PRHOs reported having experimented with it (Table 2). Twenty seven per cent of the dental student group as dentists and 35% of the medical student group as PRHOs reported having experimented with at least one other drug in addition to cannabis. Five per cent of the dental student group as dentists and 3% of the medical student group as PRHOs reported having used four different illicit drugs in addition to cannabis.

Experimentation with illicit drugs in the dental student cohort ranged from 47% as second year students to 54% as final year students and to 51% as dentists.

Table 1 Summary statistics for alcohol consumption in the dental student group as second and final year students and as dentists

	Alcohol (units/week)*					
	As second year dental students		As final year dental students		As dentists	
	Men n = 16	Women n = 31	Men n = 27	Women n = 25	Men n = 25	Women n = 24
Mean (+SD)	34.6 (29.2)	14.7 (13.9)	26.0 (26.0)	7.3 (5.3)	25.2 (15.7)	10.7 (6.2)
Median (range)	26.5 (0-88)	8 (0-55)	18 (0-106)	8 (0-22)	25 (0-70)	10 (1-28)
No alcohol	3 (18.8%)	4 (12.9%)	2 (7.4%)	2 (8.0%)	1 (4.0%)	0
Low risk level [†]	3 (18.8%)	15 (48.4%)	13 (48.1%)	22 (88.0%)	10 (40.0%)	18 (75.0%)
Med-high risk level ^α	4 (25.0%)	9 (29.0%)	10 (37.0%)	1 (4.0%)	13 (52.0%)	6 (25.0%)
Hazardous level ^β	6 (37.5%)	3 (9.7%)	2 (7.4%)	0	1 (4.0%)	0
Binge drinking	8 (61.5%)	6 (22.2%)	11 (44.0%)	2 (8.7%)	7 (29.2%)	3 (12.5%)

* Alcohol units: 1 pint strong beer/lager = 3 units; 1 pint ordinary beer/lager = 2 units; 1 glass wine = 1 unit; 1 measure of spirits = 1 unit (1 UK pint=0.57 L, 1 UK measure of spirit = 25.0 mL in England, 35.0 mL in Scotland).

[†] < 22 units (men), < 15 units (women); ^α 22-50 units (men), 15-35 units (women); ^β > 50 units (men), > 35 units (women)

One unit = 1 centilitre/7.9 grams absolute or pure alcohol.

Table 2 Reported experience with cannabis and other illicit drugs ('ever used') in the group as PRHOs and dentists

Drug	PRHOs				Dentists			
	M	n = 33	W	n = 77	M	n = 25	W	n = 24
	n	%	n	%	n	%	n	%
Cannabis	22	66.7	50	64.9	16	64.0	9	37.5
LSD	6	18.2	8	10.4	7	28.0	1	4.2
Amphetamines	8	24.2	13	16.9	6	24.0	2	8.3
Ecstasy	8	24.2	7	9.1	5	20.0	3	12.5
Amyl/butyl nitrate	9	27.3	9	11.7	6	24.0	1	4.2
Magic mushrooms	11	33.3	6	7.8	5	20.0	2	8.3
Cocaine/crack	4	12.1	3	3.9	5	20.0	2	8.3
Temazepam/diazepam	3	9.1	6	7.8	2	8.0	1	4.2
Opium/morphine/heroin	2	6.1	0	0	0	0	1	4.2
Steroids	1	3.0	0	0	1	4.0	0	0

Table 3 Summary statistics of anxiety, depression and stress in dentists as second and final year students and as dentists

	As second year dental students		As final year dental students		As dentists	
	Men	Women	Men	Women	Men	Women
	n = 16	n = 31	n = 27	n = 25	n = 25	n = 24
HAD (Anxiety)						
Mean (\pm SD), range	7.0 (3.6) 4–17	8.7 (3.7) 2–16	7.7 (3.2) 1–13	10.3 (4.1) 4–19	5.0 (3.3) 0–13	5.6 (2.3) 0–11
≥ 8	4 (25.0%)	18 (58.1%)	13 (50.0%)	21 (27.6%)	4 (16.0%)	4 (16.7%)
HAD (Depression)						
Mean (\pm SD), range	4.2 (2.3) 1–10	4.2 (3.0) 0–10	3.0 (2.8) 0–10	4.3 (3.2) 0–11	1.5 (1.4) 0–5	1.7 (2.1) 0–10
≥ 8	1 (6.2%)	6 (19.4%)	3 (11.5%)	4 (16.7)	0	1 (4.2%)
GHQ score >4	nd	nd	15 (57.7%)	21 (87.5%)	3 (13.0%)	6 (25.0%)

nd = not determined

1 male final year student did not complete the HAD

1 male/1 female final year student and 2 male dentists did not complete the GHQ

Current use of cannabis was reported by 8% of the dental student group in the final year of their degree and by 16% as dentists, compared with 22% of the medical student group in the final year of their degree and 24% as PRHOs. Logistical regression showed that current cannabis use was significantly higher amongst the medical student group as final year students and as PRHOs than the dental student group as final year dental students and dentists ($P = 0.004$).

Other illicit drugs currently used by the dental student group included amphetamines (4% of the cohort as final year students and 4% as dentists); Ecstasy (6% of the cohort as final year students and 13% as dentists); cocaine/crack (6% as final year students and 13% as dentists). The current use of amyl/butyl nitrate (4%) and magic mushrooms (4%) was only reported by the cohort as dentists. Illicit drug use by medics included amphetamines (1% of the cohort as both final year students and PRHOs); Ecstasy (3% as final year students and 4% as PRHOs); cocaine/crack (1% as final year students and 3% as PRHOs). The current use of amyl/butyl nitrate (1%); LSD (1%) and temazepam/diazepam (3%) was reported by the cohort only as PRHOs.

Anxiety, depression and stress

Forty seven per cent of dental students as second year students, 67% as final year students and 16% as dentists, compared with the corresponding values of 47%, 26% and 30% of the medical student group, had a score of ≥ 8 on the anxiety component of the HAD (Table 3). Fifteen per cent of dental students as second year students, 14% as final year students and 2% as dentists scored ≥ 8 for the depression component of the HAD scale, compared with the corresponding values of 4%, 5% and 10% of the

medical student group. The proportion of dentists who scored > 4 on the GHQ decreased significantly from 72% as final year students to 19% as dentists ($P < 0.0001$), with women having a significantly higher score than their male counterparts ($P = 0.032$). In the medical student group, the proportion increased from 32% as final year students to 39% as PRHOs ($P = 0.004$). Like the dental student group, women had significantly higher scores than men ($P = 0.041$).

Associations

For both the dental student ($P = 0.001$) and the medical student ($P = 0.038$) groups, those who were drinking excessively were more likely to be cannabis users. Although in the medical student group there was a significant but weak negative correlation between alcohol consumption and anxiety ($r = -0.198$; $P = 0.002$) and between alcohol consumption and stress ($r = -0.199$; $P = 0.031$); no such correlations were found for the dental student group.

DISCUSSION

The present study showed that a high proportion of dental students in Newcastle are drinking excessively, taking cannabis and experimenting with other illicit drugs which is in keeping with the findings of previous studies in this student population.^{7,10} Of more concern, however, is that they pursue such pleasure seeking behaviours even as dental practitioners.

A greater proportion of the dental student group was drinking at hazardous levels, compared with the medical student group. Also significantly, about a third of the dental student cohort was binge drinking, compared with less than a fifth of the medical student group, over the three time points of the survey. Although a

similar proportion of males as PRHOs and dentists were drinking over the recommended limits, more females as PRHOs were drinking excessively than their dentist counterparts.

A greater proportion of females as PRHOs reported experimental use of illicit drugs, compared with females as dentists. There was also a significantly higher proportion of final year medical students and PRHOs who reported 'current use' of illicit drugs, compared with their dentist counterparts. Those who were drinking excessively were more likely to be cannabis users in both the medical and dental student groups.

The prevalence of smoking in both groups was similar at all three time-points and was lower than in the same age group in the general population (36% men and 36% women).¹⁴ It is encouraging to note that the overall prevalence of smoking in both dental and medical student groups is still lower than that among the young and professional people in the general population.¹⁵

Whilst the prevalence of anxiety and stress in the dental student group was highest during the final year of studies, for the medical student group it was during the pre-registration year. Binge drinking and to a degree, depression, seem to be related to the anxiety pattern (except for women dentists). These patterns probably reflect the apprenticeship nature of the dental undergraduate course, compared with the after-qualification apprenticeship for the PRHOs.

Heavy drinking and illicit drug use are considered to be part of the youth culture today¹⁶ and it appears that both dental and medical students are no exception to this. Indeed the overall levels of alcohol consumption and illicit drug use reported by the two cohorts are similar to those of the same age group in the general population.^{15,17} However, the excessive drinking and the use of illicit drugs in young dentists and doctors are of concern, not only for their own health and well being, but also for the safety of patients who are under their care. There has been a growing emphasis in recent years on the problems related to alcohol and illicit drug consumption by dentists.¹⁸⁻²² The Sick Dentists Trust, currently known as the Dentists Health Support Programme established in 1991, is helping members of the dental profession with matters relating to health. The dental profession, as with the medical profession, has long been reluctant to acknowledge the existence of alcohol and drug abuse and stress amongst dentists. In the wake of recent revelations about the problems of drinking and drug taking among dentists and doctors, the dental²³ and medical²⁴ professional bodies were obliged to make appropriate recommendations to their members about drink and drugs. However, there are no signs to indicate that the current excessive drinking and the use of illicit drugs among students and young dentists and doctors are declining. In view of health risks associ-

ated with excessive drinking, smoking, and substance misuse, it appears that further health education measures at universities are needed. Perhaps it is also time for both the medical and dental professional bodies to take a more proactive role in minimising alcohol and illicit drug use by its members, by introducing random alcohol and drug testing in the workplace.

The authors wish to thank Dr David Walshaw in the Department of Mathematics and Statistics for his statistical advice. Funding for the research was received from the British Medical Association Joan Dawkins Fellowship (young people and alcohol).

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