Epidemiology of adolescent substance use in London schools

J. Penney1, P.I. Dargan2,3, J. Padmore1, D.M. Wood2,3 and I.J. Norman1

From the 1Florence Nightingale Faculty of Nursing & Midwifery, King’s College London, London, UK, 2Guy’s and St Thomas’ NHS Foundation Trust and King’s Health Partners, Clinical Toxicology, London, UK and 3Faculty of Life Sciences and Medicine, King’s College London, London, UK

Address correspondence to Professor Paul Dargan, Clinical Toxicology, Guy’s and St Thomas’ NHS Foundation Trust, Westminster Bridge Road, London, SE1 7EH. email: paul.dargan@gstt.nhs.uk

Summary

Background: Alcohol and substance use in adolescence can be associated with a range of health, emotional, social, behavioural and legal problems. There has been a change in the recreational drugs available to users in recent years; however, little is known about how this impacts the youngest and most vulnerable population of substance users.

Aim: To investigate the prevalence of substance use among children aged 15–18 years in London schools.

Design: Questionnaire survey.

Method: Students aged 15–18 years in three London schools self-completed the questionnaire which collected demographic data (age, gender and ethnicity) and data on frequency of use of alcohol, tobacco and classical recreational drugs and novel psychoactive substances.

Results: Completed surveys were available from 533 students (47.8% of those invited to participate). One hundred thirteen (20.4%) students reported lifetime use of at least one recreational drug, cannabis (96, 18.7%) was commonly reported and only 6 (1.1%) reported use of a novel psychoactive substance. A total of 250 (47.8%) reported using alcohol at least once; those from White and Mixed ethnic groups were more likely to report using alcohol than those in other ethnic groups. A total of 382 (74.2%) students reported using tobacco at least once, and students from ethnic minorities were more likely to smoke than their White counterparts.

Conclusion: This study supports previous findings that alcohol and drug use are declining in adolescents in UK. There are different patterns of substance use amongst different ethnic groups; this is important to schools and policymakers planning interventions related to substance use in school-aged children.

Introduction

In recent years, the landscape of recreational drug use has changed with the introduction of novel psychoactive substances (NPS or ‘legal highs’).1,2 In 2014, 101 NPS were reported to the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) Early Warning System, bringing the number of NPS monitored to more than 450.2,3 Other factors that have influenced drug use patterns include increasing use of the internet in the distribution of drugs, the changing legal status of different substances and changes in price, availability and quality of existing drugs.1,4 Studies at both population level and in drug-using subpopulations have confirmed these changing patterns amongst adults.4–7 Although classical drugs such as cocaine remain the most commonly used drugs, there has been a small but significant increase in use of a variety of NPS...
including mephedrone and synthetic cannabinoid receptor agonists.\textsuperscript{4–7} There is, however, limited data on drug use patterns in children and adolescents.

Children and adolescents are amongst the most vulnerable drug/alcohol users. This is because their brains are still developing, they are less aware of their own limits, and they often take higher doses/amounts of alcohol/drugs which can result in significant intoxication putting them in high-risk situations.\textsuperscript{5,6} Previous studies have suggested they may be more likely to engage in 'high risk' drug taking behaviour by trying new or unknown substances and using cheaper and lower purity products\textsuperscript{2}; in a 2009 Scottish school/college survey, 20.3% had tried the NPS mephedrone.\textsuperscript{8}

A number of studies have shown a downward trend in smoking, alcohol and drug use among young people in UK since 2003, although most of this data pertains to young adults rather than adolescents and to classical drugs rather than NPS.\textsuperscript{4,10–12} However, UK and London in particular has one of the highest rates of youth alcohol and drug use in Europe.\textsuperscript{12,13} The aim of this study was to investigate the prevalence of substance use (alcohol, smoking, recreational drugs and NPS) and explore differences in adolescent substance use in terms of gender, age and ethnic groups among children aged 15–18 years in London schools.

Methods

Research design

We conducted a cross-sectional survey of secondary school students using a self-report questionnaire adapted from a previous study by our group.\textsuperscript{14} Data collected were (i) basic demographics (age, gender, ethnicity); (ii) whether the student had heard of alcohol, tobacco and a range of 18 recreational drugs; (iii) frequency life-time/last-month use of alcohol, tobacco and these drugs; (iv) whether the student binge drinks (more than 6 units (female) or 8 units (male) in a single session); (v) if students reported use of drug(s) the source of the drug(s).

Sample and research sites

Purposive sampling was used to identify six non-selective state schools in London, which included students from different socioeconomic groups and ethnic backgrounds. The head teachers of these schools were invited to participate in the study and three agreed to do so. School 1 was a mixed academy school with a large proportion of Black students. School 2 was an all-boys school with a mixed sixth form and the majority of students were Asian. Three-year groups were surveyed in these schools (school-years 11–13) from 15–18 years. School 3 was an academy school, in which most students were White and only students 16 years or older were invited to take part (predominantly sixth-form students, age 16–18 years).

Data collection procedure

Questionnaires were self-completed in paper form as part of a health education class or tutor group whilst being supervised by a teacher. Students were informed about the study by their teacher who had been given details of the study and how to administer the questionnaires. A letter was sent to parents of students below 16 years to inform them of the study and that they had an option to request that their child did not participate. Each participant was given a study information sheet and had the option not to participate. Questionnaires were completed anonymously by the students and deposited in a sealed box by the students on completion.

Data analysis

Data were entered into SPSS Version-20 for analysis. Data from the schools were pooled to provide a sample of year 11 (15–16 years) and sixth-form (16–18 years) students. Data are reported as frequencies and percentages of students who answered positively. The chi-squared test was used to examine relationships between two independent variables. Logistical regression was used to identify the main variables influencing substance use.

Ethical approval

The study was approved by the University Research Ethics Committee (ref: PNM 12/13).

Results

Sample and response rate

A total of 1061 students were invited to participate; 14 parents declined consent. Questionnaires were returned by 533 (50.9%) of the remaining 1047 students; 24 of these were invalid (joke answers, unrealistic profiles, blank questionnaires or contradictory information) leaving 509 complete questionnaires (47.8% of whole cohort).

There were 293 (55.1%) males and 117 (23.0%) females; data on gender was not recorded in 143 (27.0%); Table 1. There were more younger respondents (15- to 16-year-olds 209, 37.8%, 16- to 17-year-olds 195, 35.3%, 17- to 18-year-olds 115, 20.3%, unspecified year 12/13 (16- to 18-year-olds) 34, 6.1%). The ethnic breakdown of the respondents was White n = 75 (14.1%); Black 146 (26.3%); Mixed 48 (9.0%); Asian 121 (22.7%); others 36 (6.8%); missing 133 (25.0%).

Table 1. Familiarity with alcohol, tobacco and drugs

<table>
<thead>
<tr>
<th>Overall ranking of most well-known substance</th>
<th>Substances participants have heard of</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alcohol</td>
<td>517 (98.3%)</td>
</tr>
<tr>
<td>2</td>
<td>Tobacco</td>
<td>513 (97.5%)</td>
</tr>
<tr>
<td>3</td>
<td>Cannabis</td>
<td>500 (95.2%)</td>
</tr>
<tr>
<td>4</td>
<td>Heroin</td>
<td>480 (92%)</td>
</tr>
<tr>
<td>5</td>
<td>Crack</td>
<td>480 (91.6%)</td>
</tr>
<tr>
<td>6</td>
<td>Cocaine</td>
<td>464 (88.9%)</td>
</tr>
<tr>
<td>7</td>
<td>Ecstasy</td>
<td>445 (85.1%)</td>
</tr>
<tr>
<td>8</td>
<td>Mushrooms</td>
<td>409 (78.5%)</td>
</tr>
<tr>
<td>9</td>
<td>Acid</td>
<td>349 (66.7%)</td>
</tr>
<tr>
<td>10</td>
<td>Speed</td>
<td>346 (66%)</td>
</tr>
<tr>
<td>11</td>
<td>Crystal methyl</td>
<td>321 (62%)</td>
</tr>
<tr>
<td>12</td>
<td>Solvents</td>
<td>319 (61.2%)</td>
</tr>
<tr>
<td>13</td>
<td>Ketamine</td>
<td>255 (48.9%)</td>
</tr>
<tr>
<td>14</td>
<td>MDMA</td>
<td>220 (42.5%)</td>
</tr>
<tr>
<td>15</td>
<td>Mephedrone</td>
<td>216 (41.6%)</td>
</tr>
<tr>
<td>16</td>
<td>Poppers</td>
<td>176 (34.2%)</td>
</tr>
<tr>
<td>17</td>
<td>Khat</td>
<td>167 (32%)</td>
</tr>
<tr>
<td>18</td>
<td>Spice</td>
<td>143 (27.7%)</td>
</tr>
<tr>
<td>19</td>
<td>Methoxetamine</td>
<td>134 (26%)</td>
</tr>
<tr>
<td>20</td>
<td>GHB/GBL</td>
<td>118 (22.9%)</td>
</tr>
</tbody>
</table>
Tobacco use

A total of 382 (74.2%) reported lifetime tobacco use (Table 1). Males (77.7%) more commonly reported lifetime tobacco use than females (63%) \((P < 0.01)\); there was no differences between year groups. Lifetime tobacco use was more common amongst Black (109, 79.0%), Others (28, 84.8%) and Asian (95, 80.5%) respondents than White (47, 63.5%) and Mixed ethnicity (31, 66%) respondents \((P < 0.05)\).

Alcohol use

A total of 250 (47.8%) reported lifetime use of alcohol; this was more likely \((P < 0.0001, \text{Table } 1)\) in older age groups. There was a non-significant \((P = 0.15)\) trend with a higher proportion of females (54.3%) reporting alcohol use than males (46.4%). Alcohol use was higher in White (59, 79.7%) and Mixed ethnicity (34, 72.3%) than Black (67, 48.2%), Others (10, 27.8%) and Asians (27, 22.9%) \((P < 0.001)\). A total of 376 (70.5%) answered the question about binge drinking: 288 (52.1%) of these reported that they never binge drink. Of those who reported binge drinking, 61 (11.0%) reported binge drinking less than once a month, 19 (3.4%) monthly, 5 (0.9%) weekly and 3 (0.5%) daily. Students from White, Mixed and Black ethnicities were more likely to report binge drinking than Asian or Other ethnic groups, however, this was not statistically significant \((P = 0.112)\).

Familiarity with drugs and NPS

As shown in Table 1, the drugs most commonly heard of (excluding alcohol and tobacco) were cannabis (95.2%), heroin (92.0%), crack cocaine (91.6%), cocaine (88.9%) and ecstasy (85.6%). The least well-known drugs were gamma-hydroxybutyrate (GHB)/gamma-butyrolactone (GBL) (22.9%), methoxetamine (26.0%), spice (27.7%) and khat (32.0%).

Drug use

A total of 113 students (20.4%) reported lifetime drug use. Cannabis was the most commonly used drug (96, 17.4%), followed by magic mushrooms \((n = 10, 1.8%)\) and amphetamine \((n = 10, 1.8%)\). As shown in Table 2, reported cannabis and other drug use increased with age. The prevalence of cannabis use was higher among Black \((n = 32, 23.7\%)\), Mixed \((n = 12, 26.1\%)\) and White \((n = 15, 20.3\%)\) ethnicities compared with Asian \((n = 11, 9.3\%)\) and Others \((n = 3, 8.8\%)\), \(P = 0.01\). The number of respondents reporting use of other drugs was too small to examine differences between subgroups.

The number of respondents reporting NPS use was low (Table 1). The most commonly used NPS were synthetic cannabinoid receptor agonists (‘spice’) \((n = 4, 0.7\%)\), mephedrone \((n = 3, 0.5\%)\) and methoxetamine \((n = 1, 0.2\%)\).

Amongst students reporting drug use, the most common source of supply was from a friend \((n = 49, 60.5\%)\) followed by a dealer \((n = 39, 48.1\%)\) and a shop \((n = 12, 14.8\%)\). Sourcing drugs from the internet was uncommon \((n = 2, 2.4\%)\).

Predictors of drug use

Students in School 1 were more than twice as likely to have used any drug (40%) than students from Schools 2 (17.5%) and 3 (16.7%) \((P < 0.001)\); they were more than twice as likely to report lifetime alcohol use (75%) than students in Schools 2 (37.3%) and 3 (43.8%) \((P < 0.001)\). Logistic regression was performed to assess the impact of a number of variables on the likelihood that respondents would report of any drug use. The model contained five independent variables (school, gender, year group, ethnicity, use alcohol). The full model containing all predictors was statistically significant, \(\chi^2 (5, N = 374)=69.01, P < 0.001\), indicating that the model was able to distinguish between respondents who reported and did not report drug use. The model as a whole explained between 16.8% (Cox Snell R-square) and 26.5% (Nagelkerke R-squared) of the variance in reported drug use and correctly classified 80.2% cases. Two of the independent variables (school and used alcohol) made a statistically significant contribution to the model. The strongest predictor of reporting drug use was using alcohol (odds ratio 6.47).

Discussion

This is one of a small number of recent studies to investigate prevalence of alcohol, tobacco and drug use among adolescents in the UK and the only study from London. Tobacco use was higher than in previous UK studies of adolescent substance use.11,12 A total of 113 school survey.12 Previous reports that 0.7% of students had used mephedrone in 2012; it did not report any drug use. The model contained five independent variables (school, gender, year group, ethnicity, use alcohol). The full model containing all predictors was statistically significant, \(\chi^2 (5, N = 374)=69.01, P < 0.001\), indicating that the model was able to distinguish between respondents who reported and did not report drug use. The model as a whole explained between 16.8% (Cox Snell R-square) and 26.5% (Nagelkerke R-squared) of the variance in reported drug use and correctly classified 80.2% cases. Two of the independent variables (school and used alcohol) made a statistically significant contribution to the model. The strongest predictor of reporting drug use was using alcohol (odds ratio 6.47).
Table 2. Lifetime prevalence of substance use across year groups

<table>
<thead>
<tr>
<th>Most commonly used substances</th>
<th>Year 11 (15–16 years) N (%)</th>
<th>Year 12 (16–17 years) N (%)</th>
<th>Year 13 (17–18 years) N (%)</th>
<th>Unspecified sixth form (16–18 years) N (%)</th>
<th>Total N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco</td>
<td>149 (77.6%)</td>
<td>140 (76.1%)</td>
<td>76 (71.0%)</td>
<td>17 (53.1%)</td>
<td>382 (74.2%)</td>
</tr>
<tr>
<td>Alcohol</td>
<td>84 (43.5%)</td>
<td>78 (41.5%)</td>
<td>64 (58.2%)</td>
<td>24 (75.0%)</td>
<td>250 (47.8%)</td>
</tr>
<tr>
<td>Cannabis</td>
<td>23 (12.2%)</td>
<td>36 (19.5%)</td>
<td>26 (24.1%)</td>
<td>11 (34.4%)</td>
<td>96 (17.4%)</td>
</tr>
<tr>
<td>Any drug*</td>
<td>29 (13.9%)</td>
<td>42 (21.5%)</td>
<td>29 (25.2%)</td>
<td>13 (38.2%)</td>
<td>113 (20.4%)</td>
</tr>
<tr>
<td>Any drug excluding cannabis</td>
<td>9 (4.3%)</td>
<td>14 (7.2%)</td>
<td>7 (6.1%)</td>
<td>8 (23.5%)</td>
<td>38 (6.9%)</td>
</tr>
<tr>
<td>Any NPS*</td>
<td>1 (0.5%)</td>
<td>2 (1.5%)</td>
<td>1 (1.7%)</td>
<td>0 (0%)</td>
<td>6 (1.1%)</td>
</tr>
</tbody>
</table>

*NPS, includes use of spice, mephedrone and methoxetamine.

Crime Survey for England and Wales (CSEW) 2012/2013 reported that for young adults (16- to 24-year olds), use of mephedrone in the last year had fallen from 3.3% in 2011/12 to 1.6% in 2012/13.

Factors associated with substance use

Identification of factors associated with drug use is one of the most promising routes to effective prevention of adolescent alcohol and drug problems. Our study identified demographic factors that were associated with drug and alcohol use. Previous research has shown that the normative sequence of drug use initiation usually involves using legal substances such as alcohol/tobacco before moving onto illegal drugs and early onset alcohol use is a strong determinant of later illicit drug use.

Smoking was more common in Black, Asian and Other ethnic groups. Greater tobacco use may therefore be associated with ethnic diversity and deprivation; other factors may also be important, including recently migration from countries where smoking is more common (although we don’t have data to substantiate this). These findings suggest that education about the harms of tobacco use and smoking prevention programmes should target London schools and the most at risk students.

The comparatively low proportion of students reporting lifetime alcohol use may be due to a number of factors including ethnicity, culture, religion and peer influence. Respondents from White and Mixed ethnic groups were more likely to use alcohol. Previous studies based in London have shown similar ethnic differences. In a 2001 study of 1777 eleven- to 14-year-olds in southwest London, Asian, Black and Other boys and Black and Asian girls were less likely than White counterparts to report drinking and drug taking. In another study exploring ethnic variation in substance use, 132 twelve- to 13-year-olds from four ethnic groups attending secondary schools in inner London were interviewed; this study suggested that ethnic differences in substance use may relate to factors such as stronger familial ties and religiousness among ethnic minority groups and stronger peer influences on White adolescents.

Differences in drug use between the schools in our study may relate to differences in the ages (only students age 16 and over were recruited from School 3) and/or ethnic profile of the students; it is likely that other factors not studied including the culture of the school and peer influences also played a role. Membership of certain ethnic groups is associated with higher substence use, and peer influence is one of the main influences on substance use. Therefore, if there is a culture of drinking/drug taking in a particular area, individuals in this area are more likely to be exposed to drinking/drug taking and there is the potential that these behaviours will be seen as more socially desirable in their peer group.

Khat was used most frequently in School 3 (2.9%), which had the lowest rates of overall substance use. However, this school had the highest proportion of Black students; previous studies have shown that khat use is most common in East African communities, and this may explain this finding.

Sources of supply of drugs

Our study showed limited use of the internet to source drugs. This is similar to previous school surveys (10.7% in a Scottish survey of 1006 school/college students) but lower than adult studies (22.1% of 2014 Global Drugs Survey respondents). This may relate to parental controls on internet use and/or children not having access to a credit/debit card to enable internet purchases.

Limitations

There was variation in the age, gender and ethnicity of the children in the three schools. This provided data from a diverse population of London adolescents; however, these differences limited data aggregation and comparisons between schools. Inclusion of an all-boys school resulted in a greater proportion of males in the dataset. In future studies, a proportional representative sample of the target population might be preferred to ensure a more representative sample of students from different groups. Completed questionnaires were only available from just below half (47.8%) of the students—it is not possible to know whether data from the non-participants would have significantly affected the findings. We relied on recruiting a link person in the schools to distribute guidance and questionnaires to teachers and collect questionnaires after completion. In the most part this worked successfully; however, in School 3 some sixth-form questionnaires were mixed together, and so it was uncertain which year group the questionnaires were collected from. These were labelled as ‘unspecified sixth-form’, and it was not possible to include these data in some of the age distribution analysis.

Conclusion

We have shown that more school-aged students in London report tobacco use and fewer report alcohol use than samples in other comparable studies across the UK. A total of 20.1% reported lifetime drug use; this is in line with the downward trend in drug use found in recent school surveys. As with tobacco and alcohol use, drug use varied significantly by school, age and ethnicity, suggesting that London adolescent substance use is mediated by factors including culture, family, religion and peer influences.
There is a large gap in available data on substance use in children/adolescents due to the constantly changing trends in substance use and time taken to recruit and carry out large-scale surveys into adolescent substance use. Despite the difficulties in conducting this type of research, it is important that reliable and up-to-date data are available to inform education, prevention, practice and policy in this area; to direct resources effectively; and meet the needs of those at greatest risk of developing substance misuse and related harms.

Conflict of interest: None declared.

References