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BRIEF REPORT

DRUG USE AND DRINKING AMONG STUDENTS IN 36 COUNTRIES

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Abstract — This article summarizes data on alcohol and drug use from studies of high school students in 36 countries. Drug use levels varied greatly among countries, but alcohol and cannabis were used most often, followed by amphetamines, ecstasy, and cocaine. In countries having high levels of cannabis use, the use of other drugs was also more common but there were no consistent differences for alcohol. Use of various drugs was correlated except for alcohol use, which was related to cannabis use only when some countries with low alcohol use levels were removed. In general, the studies show that drug use priorities for studies are mainly the same in the countries studied.

Key Words. Drug use, Students, Alcohol, International.

During the past few decades, numerous studies have examined drug use and drinking by students. The earliest and perhaps best known are those conducted in the United States (Johnston, O'Malley, & Bachman, 1998) and Canada (Adlaf, Iris, Smart, & Walsh, 1996). These studies provided guidelines for student studies established by the World Health Organization (Smart et al., 1980). In the past decades, many student drug use studies have been made in countries outside North America using those guidelines and other methodologies. Recently, two cross-national studies have been reported for some countries in Europe (European Monitoring Centre of Drugs and Drug Addiction, 1997; Hibell et al., 1997). However, no study summarizes student drug use on a worldwide basis and draws conclusions about the state of student drug use. The purpose of this article is to compile published data on student drug use for as many countries as possible and to examine the overall picture of drug use presented.

International studies of drug use are of interest for several reasons. Drugs move readily from one country to another, and drug fads in one area of the world move to another area. For example, crack use moved from North America to Europe in the 1980s, and ecstasy use moved through Europe and then North America in the 1990s (European Monitoring Centre of Drugs and Drug Addiction, 1997). Much international effort to control drug use occurs through international drug control treaties and United Nations agencies. Comparisons of drug use rates in different countries offer insights as to the popularity of drugs in different countries, how their use relates to each other, and the factors involved in drug use.

Many studies have shown that users of illicit drugs tend to be multiple users (Robinson et al., 1987; Single, Kandel, & Faust, 1974; Whitehead, Smart, & Laforest, 1972). Users of marijuana are much more likely than nonusers to be drinkers of alcohol and to use other licit and illicit drugs (Whitehead et al., 1972; Yamaguchi & Kandel, 1984). These studies are of individual drug users in North America. We have been unable to find any studies examining how the use of various drugs correlates with each other

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within different countries. However, we expected that use of various drugs would correlate in the 36 countries studied here; countries with high levels of cannabis use were expected to have high levels of use of alcohol and other illicit drugs.

This article includes only high school students, as the majority of the available studies focus on them. The age range in such studies is from about age 13 to 17, with 15–16 being near the average. This article includes only published studies; although unpublished reports may be available in many different formats, they are difficult to find and evaluate. Also, where possible, studies with a national sampling plan are used in preference to those with more limited sampling. An effort was also made to report data on lifetime use of drugs because that seems to be the time period included in most studies. Not all studies asked about the same drugs, but the great majority asked about the use of alcohol, cannabis, amphetamines or stimulants, LSD or other hallucinogens, and ecstasy. Only studies done in the 1990s are included, and where possible data collected in 1995 was used in preference to other years. Data on per-capita alcohol consumption in the country of the survey was also gathered to have some measure of overall drinking levels.

The purpose of this article was to see how many student drug use studies have been published and to determine the most popular drugs, whether alcohol and drug use by students are correlated, and whether student drug use correlates with per-capita alcohol consumption in the country as a whole.

METHOD

A literature review of high school student drug use studies was done using the library resources of the Addiction Research Foundation (ARF). This included a search using Medline, ETOH, and the ARF library file system. Several hundred papers were found fitting some of the criteria; however, almost all were studies from the United States and Canada. Many were based on small samples, students other than those in high school, or did not cover the drugs of interest. However, usable data on high school students were found for 36 countries. Data for 26 European countries were found in the study by Hibell et al. (1997); data for Belgium, France, Luxemburg, The Netherlands, and Spain were found in the European Monitoring Centre of Drugs and Drug Addiction (1997) study; and data for Canada (Adlaf et al., 1996), Australia (Odgers, Houghton, & Douglas, 1997), Mexico (Berenzon, Medina-Mora, Carreno, Inarez, & Villatoro, 1996), the United States (Johnston et al., 1998), and Zimbabwe (Eide & Acuda, 1995) were found in published papers or reports. Data on per-capita alcohol consumption (litres of pure alcohol per person) were derived from World Drink Trends (1997) for the country as a whole in the year of the student survey. Almost all of the studies used national samples. However, the sample for Mexico included only students from Mexico City, the sample for Belgium only Flemish students, the sample for Canada only Province of Ontario students, the sample for Turkey only students in Istanbul, and the Zimbabwe sample included only two provinces.

RESULTS

Table 1 shows the data for 36 countries expressed as percentages of high school studies reporting lifetime use of alcohol, cannabis, amphetamines, LSD or other hallucinogens, cocaine, and ecstasy. It also reports per-capita alcohol consumption in litres of absolute alcohol per person in the total population. The countries are arranged in

three groups according to the level of cannabis use—high (more than 15% users), medium (10–15% users), and low (less than 10% users).

It is clear from the table that in all countries alcohol was by far the most popular drug among students, although the percentage of students who reported using alcohol varied considerably among countries (from 32% in Zimbabwe to 99% in Wales). In all countries except Greece and Luxemburg, the next most popular drug was cannabis, but again there were large differences between countries (from 2% in Greece to 53% in Scotland). In most countries hallucinogens were a distant third in popularity and on a par with amphetamines. Exceptions were in the United States where more than twice as many students reported using amphetamines than hallucinogens, and in Ireland three times as many reported using hallucinogens than amphetamines. The reported use of amphetamines was noticeably higher in the United Kingdom and its member states (Scotland, Ireland, and Wales) than for any other countries except the United States and Luxemburg. The reported use of hallucinogens and, to a lesser ex-

Table 1. Thirty-six countries with high, medium, and low rates of cannabis (lifetime) use among students in the 1990s: Percentage reporting use of various drugs and national per-capita alcohol consumption (data shown for same year as the survey)

	n	Cannabis	Alcohol	Amphetamines	LSD or other hallucinogens	Cocaine	Ecstasy	Per-capita alcohol consumption
High (>15%) for ever use of cannabis								
Australia (West)	1,394	31	44	4	6	1	NA	7.6
Canada (Ontario)[a]	3,870	23	60	6[b]	9	2	1	6.1
Czech Republic	2,962	22	92	2	3	1	0	10.0
Denmark	2,439	17	94	2	0	0	1	10.0
Ireland	1,849	37	85	3	13	2	9	9.2
Italy	1,555	19	78	3	5	3	4	8.0
The Netherlands	7,591	22	NA	3	NA	2	5	8.2
United Kingdom	7,722	41	90	13	14	3	8	7.3
Northern Ireland	530	23	79	6	11	2	7	NA
Scotland	1,209	53	92	22	21	2	12	NA
Wales	302	33	99	11	13	4	6	NA
United States	16,876	32	64	17[b]	8	5	NA	6.6
Mean	—	29.4	80	7.7	9.4	2.3	5.3	7.4
Medium (10–15%) for ever use of cannabis								
Belgium	10,414	15	NA	4	3	1	5	9.6
Iceland	3,814	10	73	3	1	1	2	3.6
Slovenia	3,306	13	71	0	1	1	1	NA
Ukraine	2,193	14	76	0	1	0	0	1.6
France	12,391	12	—	2	1	1	—	11.4
Spain	21,094	15	—	2.	3	1	2	9.5
Zimbabwe	2,783	10	32	NA	NA	NA	NA	NA
Mean	—	12.7	63.3	1.8	1.7	.6	2.0	7.1

(continued)

Table 1. (Continued)

	n	Cannabis	Alcohol	Amphetamines	LSD or other hallucinogens	Cocaine	Ecstasy	Per-capita alcohol consumption
Low (less than 10%) for ever use of cannabis								
Croatia	2,815	9	65	1	1	1	2	NA
Cyprus	632	5	80	1	2	2	2	7.9
Estonia	3,118	7	85	0	1	0	0	2.3
Finland	2,300	5	86	0	1	0	0	6.8
Hungary	2,571	4	80	0	1	0	0	9.4
Lithuania	3,196	1	78	0	0	1	0	NA
Latvia	2,179	5	89	0	1	0	0	NA
Luxemburg	1,341	6	NA	11	1	1	1	12.4
Malta	2,832	8	92	1	2	2	2	NA
Norway	3,900	6	73	1	1	1	2	3.9
Poland	8,940	8	77	2	2	1	1	6.3
Portugal	2,033	7	73	2	0	0	1	11.0
Slovak Republic	2,376	9	86	1	1	1	0	9.0
Sweden	3,472	6	72	1	1	1	1	5.2
Turkey (Istanbul)	2,636	4	48	1	1	1	1	1.0
Mexico	10,879	4	74	1	1	2	NA	3.3
Greece	2,617	2	71	4	1	0	NA	8.8
Mean	—	5.7	71.9	1.6	1.1	0.8	0.9	6.7

Note. All 1995 studies except for Zimbabwe 1991, Mexico 1993, Belgium 1994, and The Netherlands and Luxemburg 1992. NA = not applicable.
[a]Use in past 12 months only.
[b]LSD only.

tent, of ecstasy was also higher in the United Kingdom than elsewhere. Except for the United Kingdom, the United States, and Luxemburg, less than 6% of students reported using amphetamines, and only in the United Kingdom did more than 10% report using hallucinogens. Cocaine was reportedly used by no more than 5% of students in any one country and was the least popular drug except in Canada where it was slightly more popular than ecstasy.

Analysis of variance showed that there are no differences among countries in the high, medium, and low cannabis using groups in per-capita alcohol consumption of percentage of students using alcohol. However, the high cannabis using group has higher rates of use of amphetamines, cocaine, and ecstasy (Table 2).

Table 3 shows bivariate correlations between log-transformed percentages for alcohol, other drugs, and per-capita alcohol consumption. Transformations were performed to correct for the highly skewed distributions of the raw percentages. The ta-

Table 2. Analysis of variance results for differences (log transformed) in alcohol and drug use for countries with different levels of cannabis use

	df	*F*	*p*
% Use alcohol and cannabis groups	2, 28	2.13	.139
% Use amphetamines and cannabis groups	2, 31	23.52	.0001
% Use cocaine and cannabis groups	2, 31	6.79	.0035
% Use ecstasy and cannabis groups	2, 27	8.18	.0017
Per-capita alcohol consumption cannabis groups	2, 24	0.93	.4083

Table 3. Bivariate correlations for percentages of students reporting use of various drugs in 36 countries

	Alcohol	Amphetamines	Hallucinogens	Cocaine	Ecstacy	PCAC
Cannabis	.084	.662**	.814**	.542**	.712**	.245**
Alcohol	—	.009	.064	.026	.147	.358
Amphetamines		—	.731**	.632**	.763**	.402*
Hallucinogens			—	.709**	.777**	.149
Cocaine				—	.741**	.082
Ecstacy					—	.242

Notes. All variables were log transformed. Pairwise exclusion of countries with missing data. PCAC = per-capita alcohol consumption.
*$p < .05$; **$p < .001$.

ble shows that, between countries, the percentage of students who had ever used alcohol was unrelated to per-capita alcohol consumption or to the percentages ever using other specific drugs. However, percentages for the lifetime use of other drugs were all highly correlated and statistically significant. Only one correlation involving a drug and alcohol was statistically significant. This was between per-capita alcohol consumption and the percentage of students who reported that they have ever used amphetamines ($r = .401, p < .05$).

The finding that cannabis use and alcohol use were unrelated was unexpected. We therefore examined the scatter plot of the relationships between these two variables. It was obvious that overall there is no correlation. However, there were six countries as outliers, all of which have low rates of alcohol use (Australia, Canada, Croatia, Turkey, the United States, and Zimbabwe). When the correlation was redone with the outliers removed, it was positive and significant ($r = .512; p < .009$).

DISCUSSION

Student use of alcohol and drugs varied considerably among the 36 countries. Alcohol was by far the most popular drug in all countries, followed by cannabis, amphetamines, ecstasy, and cocaine. Countries with the highest level of cannabis use also had the highest levels of use of amphetamines, ecstasy, and cocaine but not higher rates of alcohol use. Use of various drugs was highly correlated except for alcohol, which correlated with drug use only when certain outlier countries were removed.

Of all drugs other than alcohol, cannabis was used most often. Among the 36 countries, the rates of use for other drugs were highly correlated with the rate of cannabis use. This finding was expected given the studies of individual users of drugs in North America. This may not indicate any causal relationship between the use of cannabis or other drugs. However, it is possible that, within school populations, high rates of cannabis use are associated with the availability of other drugs and contribute to a climate in which the use of other drugs becomes more acceptable.

More detailed cross-national surveys are needed to show the relative prevalence of alcohol and drug use and related problems in school-age populations, the relationships between alcohol and drug use and other factors, and the comparative effectiveness of national prevention efforts.

We did not find that alcohol and drug use were correlated overall unless six outlier countries were dropped from the analysis. These countries were all relatively low in terms of alcohol use by students. Further analyses with more countries are needed to

clarify these results, as they conflict with the findings at the individual level where illicit drug use and alcohol use are related (e.g., Yamaguchi & Kandel, 1984). At the country level, alcohol and cannabis use may be related only among certain heavy-drinking countries.

Studies of this type have many limitations. Only 36 countries could be included—mostly developed countries in Europe. Very few countries are included where alcohol or drug use is frowned upon for religious reasons. Also, the studies from various countries employ different methodologies and a variety of sample sizes. Nevertheless, certain tentative but expected conclusions are possible while we await the opportunities to do larger and better studies.

In general, the results show that drug use priorities for students are similar throughout the 36 countries. Alcohol and cannabis are the first choices. The result support the development of national and international preventive programs that pay special attention to alcohol and cannabis and recognize the interconnectedness of all types of drug use among students.

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