

Recent findings from the Ontario Student Drug Use Survey

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Abstract

Background: Every 2 years, the Addiction Research Foundation of Ontario, a division of the Centre for Addiction and Mental Health, sponsors the Ontario Student Drug Use Survey. The results of the surveys conducted in 1995 and 1997 are presented here and compared with results from the early 1990s.

Methods: Questionnaires were completed by 3870 and 3990 Ontario public school students enrolled in grades 7, 9, 11 and 13 in 1995 and 1997 respectively. The outcome measures were prevalence of use of 20 types of drugs and other substances, including alcohol, tobacco and prescription drugs, over the previous 12 months.

Results: For several drugs the prevalence of use in the previous 12 months had increased from 1993 to 1995, but from 1995 to 1997 there was a significant increase for only one type (hallucinogens such as mescaline and psilocybin). The inhalation of glue declined, and the use of the other 18 types of drugs remained stable.

Interpretation: Recent data suggest that increases in adolescent student drug use reported earlier this decade have not continued. However, the stability in rates of drug use is not a justification for complacency in this important area of public health.

Résumé

Contexte : À tous les deux ans, la Fondation de la recherche sur la toxicomanie de l'Ontario du Centre de toxicomanie et de santé mentale parraine le sondage sur la consommation de drogues par les élèves de l'Ontario. On présente ici les résultats des sondages de 1995 et 1997, que l'on compare à ceux du début des années 90.

Méthodes : Des questionnaires ont été remplis par 3870 et 3990 élèves des 7^e, 9^e, 11^e et 13^e années des écoles publiques de l'Ontario, en 1995 et 1997 respectivement. Les mesures des résultats ont été la prévalence de l'utilisation de 20 types de drogues et autres substances, y compris l'alcool, le tabac et les médicaments prescrits, au cours des 12 mois précédents.

Résultats : Dans le cas plusieurs drogues, la prévalence de l'utilisation au cours des 12 mois précédents avait augmenté de 1993 à 1995, mais de 1995 à 1997, on a enregistré une baisse significative de la consommation d'un type seulement de drogue (hallucinogènes comme la mescaline et la psilocybine). L'inhalation de vapeurs de colle a diminué et la consommation des 18 autres types de drogues est demeurée stable.

Interprétation : Des données récentes indiquent que les augmentations de la consommation de drogues signalées au début de la décennie chez les élèves adolescents ne se sont pas maintenues. On ne doit pas pour autant se satisfaire de la stabilité des taux de toxicomanie dans ce domaine important de la santé publique.

After a substantial long-term decline in drug use among adolescents during the 1980s, several epidemiological surveys have recently shown increases in drug use in this segment of the population in Ontario,¹ the Atlantic Provinces² and the United States.^{3,4} For example, among 7th-, 9th-, 10th- and 12th-graders in Nova Scotia, the rate of cigarette use increased from 26.0% in 1991 to 34.9% in 1996, and the rate of cannabis use increased from 17.2% to 32.1%.² Among 8th-, 10th- and 12th-graders in the US, the prevalence of cigarette use over the previous 30 days increased from 14.3%, 20.8% and 28.3% in 1991 to 21.0%, 30.4% and 34.0% in 1996 respectively, whereas the prevalence of marijuana use



Evidence

Études

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over the previous 12 months increased from 6.2%, 16.5% and 23.9% to 18.3%, 33.6% and 35.8% respectively.^{3,4} Given the potential for drug-related sociomedical problems, this increase has attracted the attention of various health care professionals.^{2,5} Increases in adolescent drug use have implications especially for physicians with adolescent patients (e.g., potential for smoking interventions, possibility of interactions with prescribed medications) and for future population health issues related to the coexistence of substance use and other conditions. Although epidemiological surveillance studies are useful for identifying trends in health behaviours, such as the use of alcohol and other drugs, they are less efficacious in identifying the root cause of such change. Indeed, it was not immediately clear whether the recent increase in adolescent drug use was an ephemeral period effect or a more sustained change in drug-use behaviour.¹

In this paper we present the most recent Canadian data on adolescent drug use, which suggest that the increases in reported in the early 1990s have not continued.

Methods

Our data are derived from the Ontario Student Drug Use Survey (OSDUS), a biennial cross-sectional survey of

Ontario students enrolled in grades 7, 9, 11 and 13. This survey, first conducted on a province-wide basis in 1977, is funded by the Addiction Research Foundation of Ontario (now a division of the Centre for Addiction and Mental Health). The sample design, comprising 16 strata, is based on a single-stage cluster sample of classrooms stratified equally by grade level (grades 7, 9, 11 and 13) and proportionally by region (Toronto and western, eastern and northern Ontario).

The 1995 and 1997 samples consisted of 3870 students from 137 schools and 223 classes and 3990 students from 168 schools and 234 classes respectively. Student participation rates (i.e., eligible students/completed surveys) were 76.7% in 1997 (14.7% of selected students were absent, and 8.7% did not have parental consent) and 75.6% in 1995 (15.5% absent and 8.9% without consent). The study, approved by the Joint University of Toronto Addiction Research Foundation Ethics Committee, involved explicit parental consent for all students less than 18 years of age (older students were assumed to have consented if they participated after being briefed about the survey). For additional context, we also present drug use estimates for 1991 and 1993, which were obtained from surveys with the same design and characteristics (3945 students [response rate 83%] and 3571 students [response rate 77%] respectively).⁶

Table 1: Drug use in the past 12 months reported by Ontario students in grades 7, 9, 11 and 13, 1991–1997

	Year; % of students (and 95% CI)			
	1991 <i>n</i> = 3945	1993 <i>n</i> = 3571	1995 <i>n</i> = 3870	1997 <i>n</i> = 3990
Cigarettes	21.7 (20.3–23.1)	23.8 (21.3–26.3)	27.9 (26.2–29.6)	27.6 (26.0–29.2)
Alcohol	58.7 (55.6–61.8)	56.5 (53.9–59.1)	58.8 (56.7–60.9)	59.6 (57.6–61.6)
Cannabis	11.7 (10.1–13.3)	12.7 (11.4–14.0)	22.7 (20.0–25.4)	24.9 (23.3–26.5)
Glue	1.1 (0.8–1.4)	1.6 (1.2–2.0)	2.4 (2.0–2.8)	1.5 (1.2–1.8)
Other solvents	1.6 (1.2–2.0)	2.3 (1.7–2.9)	2.9 (2.4–3.4)	2.6 (2.0–3.2)
Barbiturates				
Medical use	4.4 (3.8–5.0)	5.6 (4.4–6.8)	4.8 (4.2–5.4)	6.0 (4.8–7.2)
Nonmedical use	2.2 (1.7–2.7)	3.0 (2.5–3.5)	2.7 (2.1–3.3)	2.5 (2.0–3.0)
Heroin	1.0 (0.5–1.5)	1.2 (0.7–1.7)	2.0 (1.4–2.6)	1.8 (1.5–2.1)
Methamphetamine	1.8 (1.1–2.5)	2.0 (1.6–2.4)	4.6 (3.4–5.8)	3.6 (3.0–4.2)
Stimulants				
Medical use	2.6 (2.1–3.1)	4.0 (3.1–4.9)	4.1 (3.4–4.8)	3.7 (2.7–4.7)
Nonmedical use	4.0 (3.1–4.9)	5.4 (4.4–6.4)	6.3 (5.3–7.3)	6.6 (5.8–7.4)
Tranquillizers				
Medical use	2.9 (2.3–3.5)	2.2 (1.9–2.5)	1.8 (1.3–2.3)	2.1 (1.7–2.5)
Nonmedical use	1.6 (1.2–2.0)	1.1 (0.7–1.5)	1.6 (1.1–2.1)	1.7 (1.4–2.0)
LSD	5.2 (4.2–6.2)	6.9 (5.6–8.2)	9.2 (7.1–11.3)	7.6 (6.8–8.4)
Other hallucinogens	3.3 (2.7–3.9)	3.1 (2.3–3.9)	7.6 (5.7–9.5)	10.1 (8.9–11.3)
Cocaine	1.6 (1.2–2.0)	1.5 (1.1–1.9)	2.4 (2.0–2.8)	2.7 (2.4–3.0)
Crack cocaine	1.0 (0.7–1.3)	1.0 (0.7–1.3)	1.7 (1.4–2.0)	2.2 (1.6–2.8)
PCP	0.5 (0.3–0.7)	0.6 (0.3–0.9)	1.7 (0.9–2.5)	2.0 (1.4–2.6)
Crystal methamphetamine	0.8 (0.2–1.4)	1.2 (0.6–1.8)	1.1 (0.6–1.6)	—*
MDMA	—*	0.6 (0.2–1.0)	1.8 (1.0–2.6)	3.1 (1.8–4.4)

Note: CI = confidence interval, LSD = lysergic acid diethylamide, PCP = phencyclidine, MDMA = methylenedioxymethamphetamine.
*Estimate suppressed (less than 0.5%).



To promote a setting of anonymity and privacy, a factor related to validity of reporting of drug use,⁷⁻⁹ self-administered questionnaires were distributed by staff of the Institute for Social Research, York University (rather than the students' teachers) in a classroom setting. The questionnaire, consisting of about 175 multiple-choice items, was printed as a booklet (9 double-sided pages in a 2-column format). It had an estimated reading level of grade 7 or 8 according to the Flesch Reading Ease score, and took on average 33 minutes to complete. Drug-use questions were based on prior reliability and validity studies¹⁰ and were similar to those used in other large-scale surveys such as the Monitoring the Future study in the United States.³ Although we must accept that drug-use reports typically underestimate actual use, this underestimation should not bias estimates of trends if underreporting remains stable.¹¹

The prevalence of use in the past 12 months was our primary measure of interest and was defined as follows: for tobacco, use of more than one cigarette; for alcohol, any use excluding a sip; and for other drugs, any use at least once. For the use of stimulants, tranquilizers and barbiturates, we distinguished medical from nonmedical use, the former being defined by use with a prescription

or by direction of a physician. Further details about the survey are available from the authors.⁶

The following features characterized our analysis. First, because the rate of missing data did not exceed 1.7% for any drug-use item, we did not impute missing data, and all estimates exclude the missing data. Second, given that estimates based on a small number of cases can be unreliable and unstable, we suppressed any percentage less than 0.5% (i.e., representing a coefficient of variation of 22.3). Third, because our sample design employed unequal probabilities of selection, we weighted all estimates and calculated confidence intervals using SUDAAN software (Version 7.0; Research Triangle Institute, Research Triangle Park, NC) to adjust for the effects related to the sample design. Fourth, to assess the statistical significance of differences in percentages (P) between years, we calculated the 95% confidence interval (CI) around each difference ($P_1 - P_2$). Thus, differences were significant ($p < 0.05$) if the CI did not include the value zero.¹²

Results

Table 1 presents prevalence estimates for the past 12

Table 2: Use of cigarettes, alcohol and cannabis during the past 12 months reported by Ontario students, by sex and grade, 1991-1997

Substance, sex and grade	Year; % of students (and 95% CI)			
	1991 <i>n</i> = 3945	1993 <i>n</i> = 3571	1995 <i>n</i> = 3870	1997 <i>n</i> = 3990
Cigarettes				
<i>Sex</i>				
Male	21.5 (19.6-23.4)	22.5 (19.7-25.3)	28.2 (25.8-30.6)	26.4 (23.5-29.3)
Female	21.9 (19.3-24.5)	25.2 (21.7-28.7)	27.5 (24.9-30.1)	28.7 (27.5-29.9)
<i>Grade</i>				
7	6.1 (4.9-7.3)	9.4 (7.6-11.2)	10.3 (7.1-13.5)	10.2 (8.1-12.3)
9	21.3 (19.0-23.6)	23.6 (18.7-28.5)	27.5 (25.9-29.1)	26.0 (23.6-28.4)
11	31.9 (29.4-34.4)	34.8 (29.1-40.5)	41.7 (37.2-46.2)	43.4 (39.6-47.2)
13	30.6 (28.9-32.3)	27.5 (21.8-33.2)	31.4 (28.4-34.4)	30.9 (28.6-33.2)
Alcohol				
<i>Sex</i>				
Male	58.1 (54.1-62.1)	56.7 (53.5-59.9)	60.0 (57.5-62.5)	59.5 (56.1-62.9)
Female	59.4 (56.0-62.8)	56.4 (53.1-59.7)	57.6 (54.8-60.4)	59.7 (56.7-62.7)
<i>Grade</i>				
7	30.1 (27.8-32.4)	31.8 (29.1-34.5)	30.5 (27.9-33.1)	31.9 (26.4-37.4)
9	55.7 (48.1-63.3)	52.0 (45.9-58.1)	57.8 (54.8-60.8)	55.3 (48.2-62.4)
11	75.0 (72.9-77.1)	73.2 (68.4-78.0)	75.9 (70.5-81.3)	80.6 (77.0-84.2)
13	84.1 (81.1-87.1)	77.8 (73.7-81.9)	77.1 (73.4-80.8)	78.7 (74.3-83.1)
Cannabis				
<i>Sex</i>				
Male	13.2 (10.9-15.5)	14.8 (12.7-16.9)	25.7 (22.9-28.5)	25.7 (23.1-28.3)
Female	9.9 (7.9-11.9)	10.7 (8.9-12.5)	19.8 (16.6-23.0)	24.1 (22.6-25.6)
<i>Grade</i>				
7	0.7 (0.1-1.3)	1.7 (1.0-2.4)	2.8 (0.9-4.7)	3.4 (0.7-6.1)
9	8.1 (4.2-12.0)	8.7 (6.7-10.7)	19.6 (14.1-25.1)	23.9 (21.6-26.2)
11	20.2 (18.4-22.0)	22.3 (20.3-24.3)	40.7 (34.4-47.0)	42.0 (37.8-46.2)
13	21.5 (17.8-25.2)	21.6 (14.0-29.2)	27.5 (22.2-32.8)	31.9 (29.7-34.1)



months for the 20 drug types assessed in 1995 and 1997, as well as data for 1991 and 1993. The 95% CIs for the differences in percentages between 1993 and 1995 indicated significant increases in the use of 9 drugs: cannabis (95% CI_{diff} 7.0 to 13.0), glue (0.2 to 1.4), heroin (0.2 to 1.6), methamphetamines (1.3 to 3.9), hallucinogens such as mescaline and psilocybin (2.4 to 6.6), cocaine (0.3 to 1.5), crack cocaine (0.3 to 1.1), PCP (phencyclidine) (0.2 to 2.0) and MDMA (methylenedioxyamphetamine, also known as "Ecstasy") (0.3 to 2.1). There was no significant decline in the use of any drug between 1993 and 1995. The increase in the prevalence of cannabis use, from 12.7% to 22.7%, was especially notable.

In contrast, between 1995 and 1997, only the use of hallucinogens such as mescaline and psilocybin increased significantly, from 7.6% to 10.1% (95% CI_{diff} 0.3 to 4.7); the inhalation of glue dropped significantly, from 2.4% to 1.5% (95% CI_{diff} -1.4 to -0.4). Although the use of only 1 of the 20 substances increased significantly between 1995 and 1997, it is noteworthy that the use of MDMA increased from 0.6% in 1993 to 3.1% in 1997 (95% CI_{diff} 1.1 to 3.9) and the use of hallucinogens increased from 3.1% to 10.1% (95% CI_{diff} 5.5 to 8.4) in the same period. Also disconcerting has been the increase in the prevalence of smoking, from 21.7% in 1991 to more than 27% in 1995 and 1997 (95% CI_{diff} 3.2 to 7.4).

In addition to changes in total sample estimates, several subgroup changes were evident as well (data not shown). First, in addition to an overall decline in the inhalation of glue, the use of this substance also declined among 9th-graders (from 3.4% to 1.5%, 95% CI_{diff} -2.7 to -1.1) and those from western Ontario (from 2.9% to 1.5%, 95% CI_{diff} -2.1 to -0.7). Second, the use of hallucinogens such as mescaline and psilocybin increased significantly among female students (from 5.9% to 9.3%, 95% CI_{diff} 1.1 to 5.7), 9th-graders (from 4.7% to 9.9%, 95% CI_{diff} 1.6 to 8.8), 13th-graders (from 7.2% to 12.9%, 95% CI_{diff} 1.7 to 9.7) and those from western Ontario (from 7.3% to 12.1%, 95% CI_{diff} 1.6 to 8.0).

The total population trends described here are also applicable for cigarette and cannabis use by sex and grade subgroups (Table 2). The use of these substances increased among both male and female students between 1991 and 1995, whereas the estimates of use were stable between 1995 and 1997. A similar pattern was observed by grade level. Although the overall prevalence of substance use varied significantly during the period 1991 to 1997, the prevalence of alcohol use remained relatively stable.

Interpretation

The findings presented here must be considered within the limitations of the data. First, the estimates are based on

self-reporting of drug use and, in an absolute sense, cannot be readily verified. However, we did employ conditions intended to maximize anonymity. As well, there is no compelling evidence that underreporting errors change with time. Thus, estimates of change should be unbiased. Second, our findings cannot be generalized to adolescents who are not attending school, a group in which the extent of drug use and related changes can be appreciably different from those in the mainstream student population.

Our findings serve as a reminder that we must be cautious when interpreting aggregate social change on the basis of only 2 time points. The recent data (1995 and 1997) suggest that earlier increases in adolescent student drug use have not continued, although this stability could be as short-lived as the previously reported increase.

Still, this recent stability in rates of drug use is hardly justification for complacency. Indeed, the findings for cigarette and alcohol use in particular raise questions about the state of our public health goals. In 1991 the Ontario Premier's Council on Health Strategy¹³ set the following objectives for the year 2000: to reduce to 10% the percentage of young people aged 12–19 who smoke and to 50% the percentage of young people aged 12–18 who use alcohol. The 1997 findings indicate that health care professionals have much work but little time to meet these goals.

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