Illicit Substance Use Among Canadian Youth: Trends Between 2002 and 2008

David Hammond, PhD,1 Rashid Ahmed, MSc,2 Wiworn Sae Yang, BSc,1 Robin Brukhalter, MMath,3 Scott Leatherdale, PhD4

ABSTRACT

Background: Substance use among youth is associated with a range of immediate and long-term health risks. The current study sought to characterize early patterns of illicit drug use among Canadian youth.

Methods: Nationally representative surveys were conducted in 2002 (n=11,757), 2004 (n=16,705), 2006 (n=27,030), and 2008 (n=24,752) with students in grades 7 to 9 as part of Health Canada’s Youth Smoking Survey (YSS). In 2008, students in grades 10-12 were also included in the survey (n=20,673).

Results: In 2008, approximately 21% of youth in grades 7-9 reported drinking at least once a month in the past year, 26% reported previous tobacco use, 17% reported trying cannabis, while 13% reported trying another substance, including glue, non-medical use of prescription drugs, hallucinogens, and amphetamines. Compared to 2006, the number of youth in grades 7-9 who reported ever trying glue decreased significantly in 2008, whereas those who reported ever trying MDMA and non-medical use of prescription drugs had increased. Males were significantly more likely to report use for most but not all substances across survey years.

Conclusions: A considerable portion of Canadians aged 13 to 15 reported experimenting with illegal substances. The findings provide the most comprehensive national trends in substance use among young Canadians.

Key words: Drug use; substance use; tobacco use; alcohol use; cannabis use; youth; youth smoking survey

La traduction du résumé se trouve à la fin de l’article.

The prevalence of substance use among Canadian adults has increased over the past decade.1 Cannabis is the most widely used illicit drug in Canada: approximately 45% of Canadians over 15 years old report having used cannabis at least once in their lifetime and 14% report use in the past year. Approximately one in six Canadians also report having used at least one of hallucinogens, cocaine, amphetamines and ecstasy; however, fewer than one percent report using these drugs in the past year.1,2 At present, substance use in Canada is highest among men and young adults.1,3 Patterns of adult substance use are typically established during adolescence and early drug use among youth serves as a useful indicator of future trends among adults.4,5 In the late 1970s, approximately one third of Ontario students reported past-year use of any illicit drug.6 Prevalence of use declined during the 1980s, followed by dramatic increases in the mid-1990s. For example, the prevalence of cocaine and cannabis use among Ontario youth almost tripled between 1993 and 2003, with similar trends in other provinces.5,7 More recently, the use of cannabis and substances such as alcohol, tobacco, and hallucinogens appears to have declined among youth.6,8 One of the few national drug-use studies conducted among Canadian youth found that the prevalence of cannabis use, amphetamines, heroin, cocaine, LSD, steroids, and solvent use showed either no change or modest decreases among students in grades 9 and 10 between 1998 and 2006.9

One challenge in detecting trends in adolescent substance use is the scarcity of national data that allow for comparisons across provinces and regions. Outside of Ontario, few provinces routinely monitor patterns of substance use, particularly among those under 15 years of age. Patterns of use among younger adolescents are particularly important given that early initiation is a strong predictor of subsequent substance abuse and health risk.4,5 Therefore, it is unclear to what extent the recent declines reported among Ontario adolescents and older youth reflect national trends for younger populations. The objective of the current study was to characterize patterns of use for 11 substances among Canadians aged 13 to 15. The study also sought to examine differences by gender, as well as regional differences in substance use.

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METHODS

Participants
The Youth Smoking Survey (YSS) was conducted with Canadian respondents in grades 5 to 9 inclusive in 2002 (n=19,018), 2004 (n=29,243), and with grades 5 to 12 in 2006 (n=71,003) and grades 6 to 12 in 2008 (n=51,922). The current data include youth in grades 7 to 9 who responded to the substance use section of the 2002 (n=11,757), 2004 (n=16,705), and 2006 (n=27,030) surveys. For the 2008 survey, the data include youth in grades 7-9 (n=29,243) and grades 5 to 12 (n=71,003) and with grades 6 to 12 in 2008 (n=51,922).

Design
Data were collected as part of the YSS, conducted on behalf of Health Canada in 2002, 2004, 2006 and 2008. The target population for the YSS consisted of all young Canadian residents in grades 5-9 (grades 5-12 in 2006 and grades 6-12 in 2008), inclusive of public and private schools, in 10 Canadian provinces. Youth residing in the Yukon, Nunavut and the Northwest Territories were not included, nor were youth living in institutions or on First Nation Reserves. Youth attending special schools and schools on military bases were also excluded from the target population.

The YSS 2002 used a sampling design consisting of a two-stage stratified clustered design with schools as primary sampling units and classes as secondary sampling units. All of the students in the selected classes were surveyed. The sample design featured three levels of stratification: province, grade level, and census metropolitan area. The sample of schools was selected systematically with probability proportional to school size. The selection of the secondary sampling units (classes) was conducted by field staff who randomly selected one class in the desired grade per school. The final 2002 YSS sample included 1,070 classes in 982 schools situated in 327 school boards. Data were collected between October and December 2002.

In YSS 2004-05, the sampling of schools was conducted in two stages. At stage 1, school boards were sampled within each province using a stratified sampling design. The school boards were ranked ordered based on their adult smoking rates and each board was assigned to one of the two strata (low vs. high smoking rate) so that approximately half the total student enrolment in any province was assigned to each stratum. From the selected school boards, schools were then sampled. Schools were stratified into two strata, the senior stratum (senior elementary or high school grades) and the junior stratum (junior elementary grades).

The YSS 2006-07 and 2008-09 used a stratified multistage sampling design. Stratification was first based on 15-19 year old smoking rate by health region (low or high) and then school type (elementary or secondary). Four school strata were created for each provincial sampling frame by crossing the two health region strata (low or high) with two school type strata (elementary or secondary). In the YSS 2008-09, at the health-region level, a third stratum, Greater Toronto Area, was created for Ontario to acknowledge the size of the GTA. As a result, Ontario has six strata instead of the four for each of the other provinces. Schools were randomly selected within each stratum in each province with probabilities proportional to the total enrolment in their boards in YSS 2006-07 and based on simple random sampling in YSS 2008-09. Private schools were selected randomly from the list of private schools in each province. The number of private schools selected was pro-

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Table 1. Sample Characteristics for Youth Smoking Survey 2002, 2004, 2006 and 2008*

<table>
<thead>
<tr>
<th>Region</th>
<th>Grade 7</th>
<th>Grade 8</th>
<th>Grade 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Columbia</td>
<td>12.6 (1481)</td>
<td>11.8 (1970)</td>
<td>12.2 (3295)</td>
</tr>
<tr>
<td>Prairie</td>
<td>18.1 (2127)</td>
<td>18.2 (3035)</td>
<td>17.5 (4731)</td>
</tr>
<tr>
<td>Ontario</td>
<td>37.5 (4406)</td>
<td>38.6 (6448)</td>
<td>38.9 (10,522)</td>
</tr>
<tr>
<td>Quebec</td>
<td>24.0 (2823)</td>
<td>23.9 (3999)</td>
<td>24.5 (6614)</td>
</tr>
<tr>
<td>Atlantic</td>
<td>7.8 (921)</td>
<td>7.5 (1254)</td>
<td>6.9 (1868)</td>
</tr>
</tbody>
</table>

* Weighted data

Table 2. Proportion of “Ever” Drug Use Among Grades 7-9 Students†

<table>
<thead>
<tr>
<th>Drug</th>
<th>2002 (n=11,757)</th>
<th>2004 (n=16,705)</th>
<th>2006 (n=27,030)</th>
<th>2008 (n=24,752)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>57.1 (5,712)</td>
<td>46.9 (4,080)</td>
<td>26.9 (5,500)</td>
<td>30.6 (7,453)</td>
</tr>
<tr>
<td>Tobacco</td>
<td>30.8 (3,228)</td>
<td>25.8 (2,067)</td>
<td>12.6 (2,905)</td>
<td>15.5 (3,739)</td>
</tr>
<tr>
<td>Cannabis</td>
<td>19.5 (2,079)</td>
<td>17.5 (1,306)</td>
<td>15.4 (3,289)</td>
<td>15.2 (3,682)</td>
</tr>
<tr>
<td>Any “other” drug</td>
<td>12.0 (1,277)</td>
<td>12.9 (1,048)</td>
<td>13.0 (2,938)</td>
<td>13.2 (2,938)</td>
</tr>
<tr>
<td>Hallucinogens</td>
<td>4.4 (460)</td>
<td>3.2 (267)</td>
<td>3.2 (643)</td>
<td>3.2 (643)</td>
</tr>
<tr>
<td>Amphetamines</td>
<td>2.1 (217)</td>
<td>2.2 (170)</td>
<td>2.7 (535)</td>
<td>2.7 (535)</td>
</tr>
<tr>
<td>Cocaine</td>
<td>2.0 (209)</td>
<td>2.1 (160)</td>
<td>2.9 (599)</td>
<td>2.9 (599)</td>
</tr>
<tr>
<td>MDMA</td>
<td>1.3 (137)</td>
<td>2.0 (157)</td>
<td>2.3 (491)</td>
<td>2.3 (491)</td>
</tr>
<tr>
<td>Heroin</td>
<td>0.8 (89)</td>
<td>1.0 (109)</td>
<td>0.9 (198)</td>
<td>0.9 (198)</td>
</tr>
<tr>
<td>Glue</td>
<td>6.1 (677)</td>
<td>7.4 (653)</td>
<td>7.5 (1,657)</td>
<td>7.5 (1,657)</td>
</tr>
<tr>
<td>Prescription drugs</td>
<td>3.2 (329)</td>
<td>3.5 (293)</td>
<td>3.9 (793)</td>
<td>3.9 (793)</td>
</tr>
<tr>
<td>Steroids</td>
<td>0.9 (94)</td>
<td>1.8 (157)</td>
<td>1.8 (386)</td>
<td>1.8 (386)</td>
</tr>
</tbody>
</table>

† Asterisks denote difference with previous survey year: *** p<0.001, ** p<0.01, * p<0.05 – Unreportable

Note: Alcohol “ever use” data for 2008 was unreportable due to question change
proportional to the number of students enrolled in private schools compared to the total in public schools. All students in grades 5-12 in YSS 2006-07 and grades 6-12 in YSS 2008-09 of selected schools were eligible for participation in the survey.

Detailed information on the sample design, methods and survey rates is available from Statistics Canada. For the YSS 2006-07, detailed information is available from the YSS website (www.yss.uwaterloo.ca).

Measures

The YSS collected information on age, gender, smoking behaviour, as well as alcohol and non-medical drug use. Tobacco use was defined based on how the respondents answered, “Have you ever tried cigarette smoking, even just a few puffs?” Alcohol use was assessed by asking respondents, “Have you ever had a drink of alcohol; that is, more than just a sip?” Those who answered “yes” were asked, “Have you ever had five drinks or more of alcohol on one occasion?” In the YSS 2008-09, alcohol use was assessed by asking the respondents, “In the last 12 months, how often did you have a drink of alcohol that was more than just a sip?” Those who answered “yes” were asked, “Have you ever had five drinks or more of alcohol on one occasion?”

Analyses

All analyses, with the exception of the regression analyses, were conducted using SAS statistical software, Version 9.1. The regression analyses were conducted using Stata Version 10.1. Descriptive analyses (e.g., proportions by age and gender) were calculated to determine prevalence estimates. Survey weights were used to adjust for non-response between provinces and groups, thereby minimizing any bias in the analyses caused by differential response rates across regions or groups. Any estimate for which the numerator was less than 30 is not reported. Regression analyses were performed to test significant differences over time and between genders.

RESULTS

Sample characteristics are provided in Table 1. Table 2 shows the prevalence of use for 11 substances reported in the 2002, 2004, 2006 and 2008 surveys. Alcohol was the most commonly reported substance, with a significant increase between 2002 and 2004 (+8.4%, p<0.01), but stabilized in 2006. The prevalence of alcohol use was not reported in 2008 because the data were not comparable to previous years due to changes in the question wording. However, comparisons between 2006 and 2008 were possible with regards to proportion of students who reported having at least one drink per month in the previous year. For 2008, 20.6% of Grades 7-9 students surveyed reported having at least one drink per month in the previous year; this showed no significant change from 2006 (21.2%).

Approximately one quarter of respondents reported ever using tobacco in 2008; there have been no significant differences since 2002. The proportion of respondents reporting cannabis use also remained stable between 2004 and 2008, with a modest non-significant decrease between 2002 and 2004. Excluding alcohol, tobacco and cannabis, approximately 13% of Canadian youth reported ever trying at least one “other” drug in 2008.

Gender differences

In 2008, males were significantly more likely than females to report tobacco (p<0.001), cannabis (p<0.001), hallucinogens (p<0.001), cocaine (p=0.004), heroin (p<0.001) and steroid use (p<0.001). Changes between 2006 and 2008 were generally consistent across genders. Males were more likely than females to report alcohol use in past month in 2008, and males were significantly more likely to report “ever” drinking alcohol in each of the previous surveys except 2002, where no significant differences were observed between males and females. Gender differences were generally stable across survey years.

Differences across geographic regions

Significant differences were observed across geographic regions in the prevalence of each substance. Table 3 shows prevalence esti-
mates within each region in 2006 and 2008. Comparison between 2006 and 2008 for alcohol use was only possible for proportion of students reporting drinking at least once a month in the previous years (not shown in Table 3). In 2008, those who reported drinking at least once a month in the previous year was highest in Quebec at 28.5%, followed by BC at 26.0%, Atlantic at 18.5%, Ontario at 16.6% and lowest in the Prairies at 15.7%. Quebec also had the highest reported use of tobacco at 42.0% while Ontario had the lowest at 16.4%. BC had the highest reported use of cannabis at 27.3% while Ontario had the lowest at 12.1%. BC youth also reported the highest use of all “other drugs.”

Current estimates of “ever” drug use among Grades 7-12

Table 4 shows changes in the prevalence of ever drug use between Grades 7-12 in 2008. Drug use increased significantly at each grade for tobacco, cannabis and “other drugs” among males and females with very few exceptions. However, the opposite pattern was observed for glue, which had the highest prevalence of use in Grade 8 for males and Grade 9 for females, with declines in later grades. Amphetamine use also peaked in Grade 10 for males and females. Figure 1 illustrates changes for tobacco, cannabis, alcohol and “other drugs” across grades.

DISCUSSION

Main findings of this study

The findings indicate that a substantial proportion of Canadian youth in Grades 7 to 12 reported using an illicit substance. As expected, alcohol, tobacco and cannabis continue to be the most commonly used drugs. However, approximately 13% of Canadian youth in Grades 7 to 9 reported using at least one illicit drug other than alcohol, tobacco and cannabis in 2008.

Self-reported rates of illicit substances remained stable between 2006 and 2008, and showed little change since 2002 for most substances. The only significant changes in 2008 were a decrease in the use of glue among Grades 7-9 students and an increase in the use of MDMA and non-medical use of prescription drugs. Indeed, non-medical use of prescription drugs has more than doubled since 2002. These results are consistent with reports in the rise of non-medical use of Oxycontin – a highly addictive painkiller containing the opiate oxycodone.6,12 In contrast, rates of “ever using” tobacco and cannabis fell from 2002 to 2004 (non-significant changes) but remained stable in 2006 and 2008. The decrease in tobacco use reflects a steady and substantial decline in smoking among youth, particularly in provinces such as British Columbia, which has achieved historical lows in recent years.13 Ever use of alcohol decreased significantly from 2004 to 2006. Comparison of the prevalence of alcohol use at least once in the past month between 2006 and 2008 indicated that the rate of alcohol use has stabilized. Data collected in Canada since 2004 suggest that illicit substance use has decreased among youth, at least among Ontario students where data are available.6 For example, use of cigarettes and LSD among Ontario students was recently found to be at an all-time low, while only non-medical use of Oxycontin showed an increase between 2004 and 2006 but stabilized in 2008. As expected, substance use increased with grade, with the notable exceptions of glue and amphetamines.

The data also highlight considerable differences across regions in the prevalence of drug use among youth. In particular, Quebec youth were significantly more likely to report having used alcohol and tobacco while BC youth were significantly more likely to report having used cannabis and any “other” drug. These findings are generally consistent with regional patterns of use among adults, which indicate higher rates of substance use among adults in Quebec, Alberta and British Columbia, and lower rates in the Atlantic.
provinces. In addition, the significantly lower rates of tobacco use among Ontario youth are consistent with the lower rates among adults. Potential reasons for the regional differences in substance use include different provincial access laws for substances such as alcohol and cigarettes. For example, the legal drinking age is lower in Quebec, Alberta and Manitoba – provinces with higher rates of alcohol use. Youth education and prevention initiatives are also mainly implemented at the provincial level and may vary across regions. Differences in youth substance use may also reflect regional differences in economic conditions and the availability of illicit substances.

The prevalence of lifetime substance use among Canadian youth appears to be generally similar to patterns among youth in the US and Europe. Lifetime prevalence of illicit substances other than marijuana were similar among US youth in 2006 (12.2%) and 2008 (11.2%). Use of tobacco, ecstasy and cocaine were similar, although slightly lower among US 8th graders in 2006 and 2008, with the exception of cocaine. Likewise, US 8th graders reported a similar but declining use of cannabis between 2006 (15.7%) and 2008 (14.6%), down from peak levels in the late 1990s. Cannabis use in Canada, on the other hand, remained relatively stable between 2006 and 2008. Furthermore, alcohol use among US youth appears to be significantly lower than in Canada, although heading in the same direction. Thirty-nine percent of US 8th graders reported ever trying alcohol use in 2008 – a 2% decrease from 2006. This compares to 21% of Canadian youth in the same year who reported having at least one drink once a month in the past year – unchanged from 2006. European youth also report similar levels of lifetime prevalence for cannabis and other illicit drug use as those for Canadian youth, although far higher levels of alcohol use: close to 90% of youth aged 15 to 16 reported trying alcohol in two thirds of the European countries surveyed in 2007. It should be noted, however, that the average across European countries obscures substantial differences in substance use between countries. For example, approximately 46% of Czech students reported trying cannabis, compared to 4% in Armenia.

The current findings indicate that males are consistently more likely than females to report trying illicit substances. The current findings are generally consistent with adult drug use pattern where males are more likely than females to report trying illicit substances. The current survey does not provide information on consumption amounts or frequency of substance use. Differences between “ever” and “regular” use can be significant: for example, although 26% of Ontario secondary students reported trying cannabis, only 2.5% reported daily use in the week prior to the survey. Without accurate data of the frequency of use, it is difficult to estimate the social and economic harms from substance use, and to predict future risk. Furthermore, change in the question wording for alcohol use in YSS 2008-09 did not allow a direct comparison of alcohol ever use with the previous survey years. Although rates of drinking once a month were reported for 2006 and 2008, they may not accurately reflect the change in the pattern of ever use.

CONCLUSIONS

The current findings suggest that a considerable proportion of Canadians between the ages of 12 and 15 are experimenting with substances: trying different drugs – particularly alcohol, tobacco and cannabis – appears to be a relatively common experience for many Canadian youth. This suggests that the goal of abstinence may be somewhat unrealistic for drug prevention programs, at least on a population level. Although abstinence should remain an important objective, interventions might also consider strategies that acknowledge experimentation and target the progression of use.

REFERENCES

RÉSUMÉ

Contexte : L’usage de substances chez les jeunes est lié à un éventail de risques immédiats et à long terme pour la santé. Cette étude a pour objectif de caractériser les trajectoires précoces de consommation de drogues illicites chez les jeunes Canadiens.


Résultats : En 2008, environ 21 % des jeunes de la 7e à la 9e année ont déclaré avoir bu de l’alcool au moins une fois par mois au cours de la dernière année, 26 % ont fait usage de produits du tabac, 17 % ont essayé du cannabis, tandis que 13 % ont déclaré avoir fait l’essai d’une autre substance (colle, médicaments prescrits à des fins non thérapeutiques, hallucinogènes, amphétamines). Comparativement à 2006, le nombre de jeunes de la 7e à la 9e année qui avaient déjà essayé la colle a décliné de façon significative en 2008, tandis que la consommation de médicaments prescrits à des fins non thérapeutiques a augmenté. Les garçons étaient significativement plus nombreux à déclarer avoir consommé la plupart de ces substances, mais pas toutes, au cours des années d’enquêtes.

Conclusions : Une proportion considérable de jeunes Canadiens âgés de 13 à 15 ans a déclaré avoir fait l’expérience de substances illicites. Ces résultats représentent la description la plus complète des tendances nationales en ce qui a trait à l’usage de substances chez les jeunes Canadiens.

Mots clés : consommateurs de substances à des fins non thérapeutiques; tabac; consommation d’alcool; consommation de marijuana; adolescent; enquêtes de santé