

A population health bulletin published by the Office of the Chief Medical Officer of Health

Energy drink consumption among youth

Energy drinks are beverages that contain moderate to high concentrations of stimulant drugs, chiefly caffeine. Their consumption has risen steadily in North America in the last decade, particularly popular among young people owing to their purported ability to enhance mental and physical energy [1]. However, unlike sports drinks meant to replenish fluids lost in exercise, energy drinks contain neuroactive substances and offer no therapeutic benefits; they are associated with increased risk of adverse health effects such as anxiety, nausea, headache, insomnia, irregular heartbeat, heart attack and, very rarely, death [1,2]. Health Canada recommends limiting consumption of caffeinated energy drinks, especially for certain populations such as children and teens, pregnant or breastfeeding women and individuals sensitive to caffeine, and avoiding mixing with alcohol [3]. Evidence suggests that risk management measures to address health concerns over energy drink consumption should potentially focus on the adolescent population, notably since energy drinks tend to be marketed to this demographic, which is also a group less likely to adhere to recommended maximum daily intakes of caffeine [2].

Until recently, little was known about adolescents' consumption of caffeinated energy drinks in New Brunswick. New findings from the New Brunswick Student Drug Use Survey (NBSDUS) 2012 help fill data gaps to improve understanding of consumption patterns and risk characterization to support evidence-informed decision making.

Use of energy drinks among adolescent students

The NBSDUS 2012 gathered information on use of alcohol and drugs as well as associated risks and harms among students in middle and high schools across the province [4]. Respondents were aged between 11 and 19 years; the average was 15.2 years. The 2012 survey captured new data on levels of use of caffeinated energy drinks, marketed under names such as Red Bull, Monster, Rockstar and Full Throttle. More than half (57 per cent) of students reported consuming caffeinated energy drinks at least once in the previous 12 months (Figure 1). Twelve per cent reported consuming these drinks frequently, i.e. 13 times or more (at least about once a month).

The survey data highlighted the generalized use of energy drinks among young people across the province. No appreciable differences were found in the consumption rates by health region, which stood between 54 and 61 per cent (Figure 2).

In this issue:

- Levels of energy drink consumption among adolescent students
- Characteristics of energy drink users
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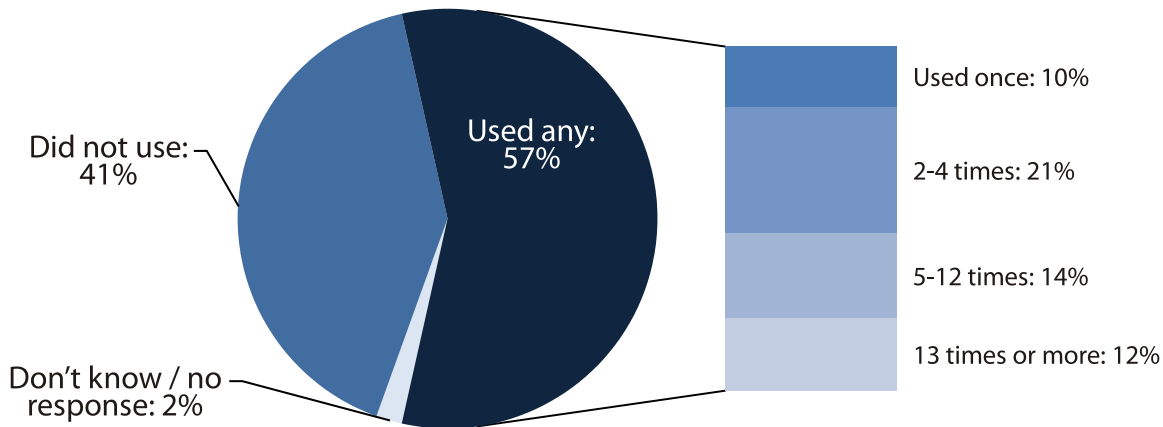
Energy drink consumption among students in New Brunswick (57 per cent) was about the same as in Newfoundland and Labrador, and significantly lower than in Nova Scotia (65 per cent) [4].

Characteristics of energy drink users

The NBSDUS revealed that male and female students are about as likely to consume any caffeinated energy drinks (59 and 55 per cent, respectively) (Figure 3). A lack of gender difference in terms of overall consumption levels has also been found elsewhere in Canada among university students [5].

Male students are significantly more likely than females to be frequent users of energy drinks (15 versus 8 per cent) (Figure 3). This pattern is consistent with results from the New Brunswick Student Wellness Survey 2009-2010, which suggested that at least twice as many male students in grades 6-12 had used energy drinks the day before the survey compared to females [6].

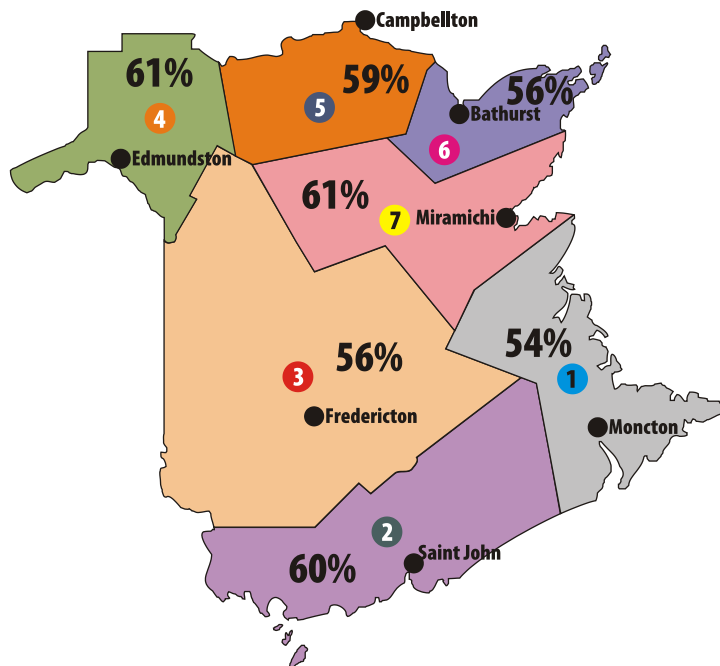
Figure 1: Percentage of adolescent students reporting use of caffeinated energy drinks in the past 12 months, by frequency of use, New Brunswick, 2012



Note: Data captured self-reports from a representative sample of students in grades 7, 9, 10 and 12. Don't know / no response = does not know what are caffeinated energy drinks / did not respond to the survey question.

Source: Office of the Chief Medical Officer of Health, using data from the New Brunswick Student Drug Use Survey 2012 (sample size: 3,507).

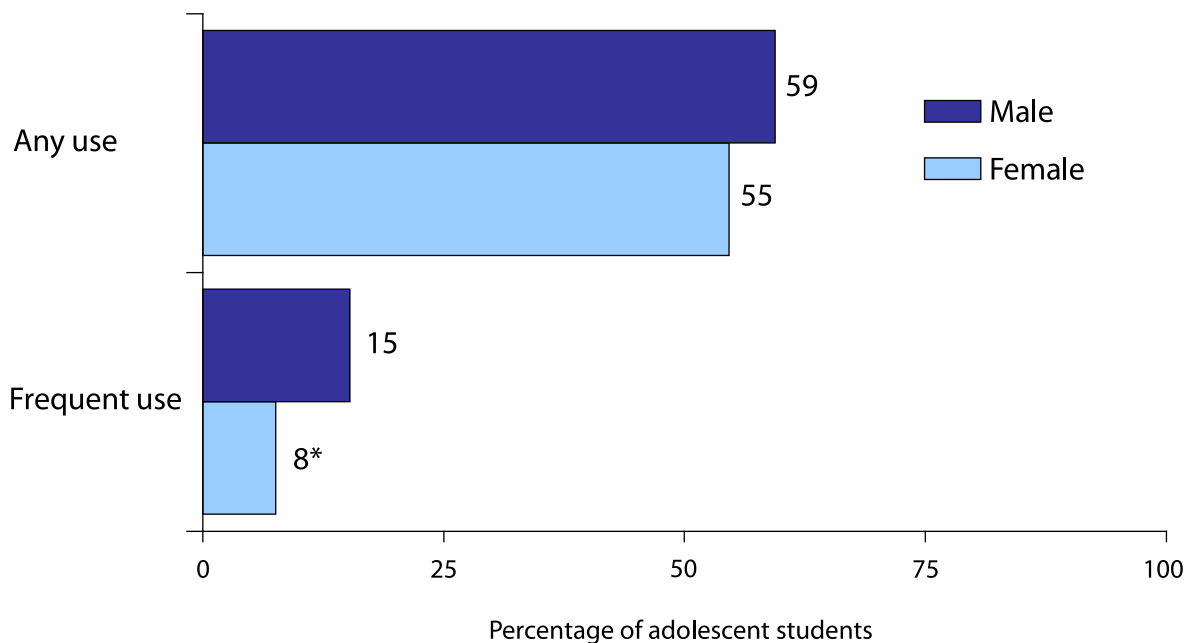
Figure 2: Percentage of adolescent students using caffeinated energy drinks in the past 12 months, by health region, New Brunswick, 2012



Note: Rates by health region not statistically different from the provincial average (57%; $p < 0.05$). Data captured self-reports of consuming any caffeinated energy drinks in the past 12 months.

Source: Office of the Chief Medical Officer of Health, using data from the New Brunswick Student Drug Use Survey 2012.

Figure 3: Percentage of adolescent students using caffeinated energy drinks in the past 12 months, by sex, New Brunswick, 2012



Note: * = statistically lower than the rate for males ($p < 0.05$). Any use refers to consuming any caffeinated energy drinks in the past 12 months. Frequent use refers to consuming energy drinks at least about once a month.

Source: Office of the Chief Medical Officer of Health, using data from the New Brunswick Student Drug Use Survey 2012.

High school students (Grades 9, 11 and 12) are significantly more likely to consume these beverages compared to middle school students (Grade 7), in terms of any use or frequent use (Figure 4). Within the high school level, consumption rates are similar across grades.

Energy drinks and alcohol

The effects of energy drinks may be exacerbated when they are combined with alcohol, especially among youth [1,2]. While there is limited evidence of harmful toxicological interaction, users who combine energy drinks and

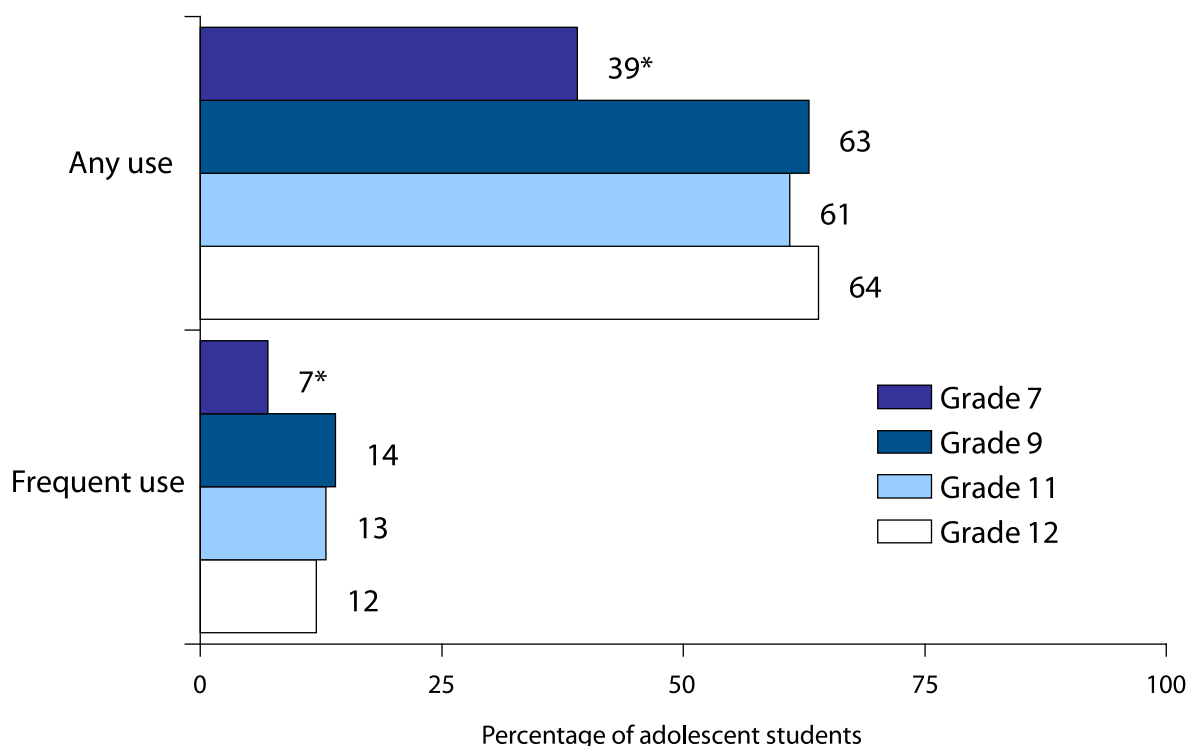
alcohol may not feel the symptoms of alcohol intoxication as readily, thereby increasing the potential for negative alcohol-related consequences (e.g. drinking and driving, being hurt or injured) [2,5]. Alcohol is widely consumed among New Brunswick's adolescent population: 48 per cent of students reported in the NBSDUS 2012 having consumed alcohol at least once in the previous year, with about 12 per cent drinking frequently (on a weekly basis) [4]. The survey results also indicate that alcohol use among teens is significantly associated with energy drink consumption (Figure 5). The rate of energy drink

consumption among frequent alcohol users is three times higher compared to those who do not use alcohol (86 per cent versus 27 per cent). The rate of frequent energy drink consumption is more than ten times higher among those who use alcohol frequently compared to those who do not use alcohol (30 per cent versus 2 per cent). Similar correlations between frequency of energy drink consumption with heavy alcohol drinking among youth have been found elsewhere [7]. The NBSDUS did not specifically capture mixing of energy drinks with alcohol. Results from across Canada (excluding New Brunswick) suggest

For more information:

- **Information for parents on caffeine in energy drinks**, including daily maximum caffeine intakes for children and teens (Health Canada): http://www.hc-sc.gc.ca/ahc-asc/media/nr-cp/_2011/2011-132bk-eng.php
- **Information on consumer protection in marketing of energy drinks**, including labelling requirements that these products are "not recommended for children, pregnant/breastfeeding women, individuals sensitive to caffeine" and warning "do not mix with alcohol" (Health Canada): <http://www.hc-sc.gc.ca/fn-an/prodnatur/caf-drink-boissons-eng.php>

Figure 4: Percentage of adolescent students using caffeinated energy drinks in the past 12 months, by grade, New Brunswick, 2012



Note: * = statistically lower than the rate for students in grade 12 ($p < 0.05$).

Source: Office of the Chief Medical Officer of Health, using data from the New Brunswick Student Drug Use Survey 2012.

that about 20 per cent of high school students consumed alcohol mixed with energy drinks in the last year [1]. Caffeinated energy drinks containing alcohol are not allowed to be sold in Canada.

Public health considerations

Energy drinks often contain at least as much caffeine as a cup of coffee, and even levels well above the recommended maximum daily caffeine intake for most children and teens [3]. Adverse drug reactions relating to drinks containing caffeine stimulants have been reported to Health Canada, many serious reactions involving the cardiovascular system (e.g. increased heart rate, palpitations, chest pain), and with a disproportionately high number in adolescents [8].

In New Brunswick, based on findings

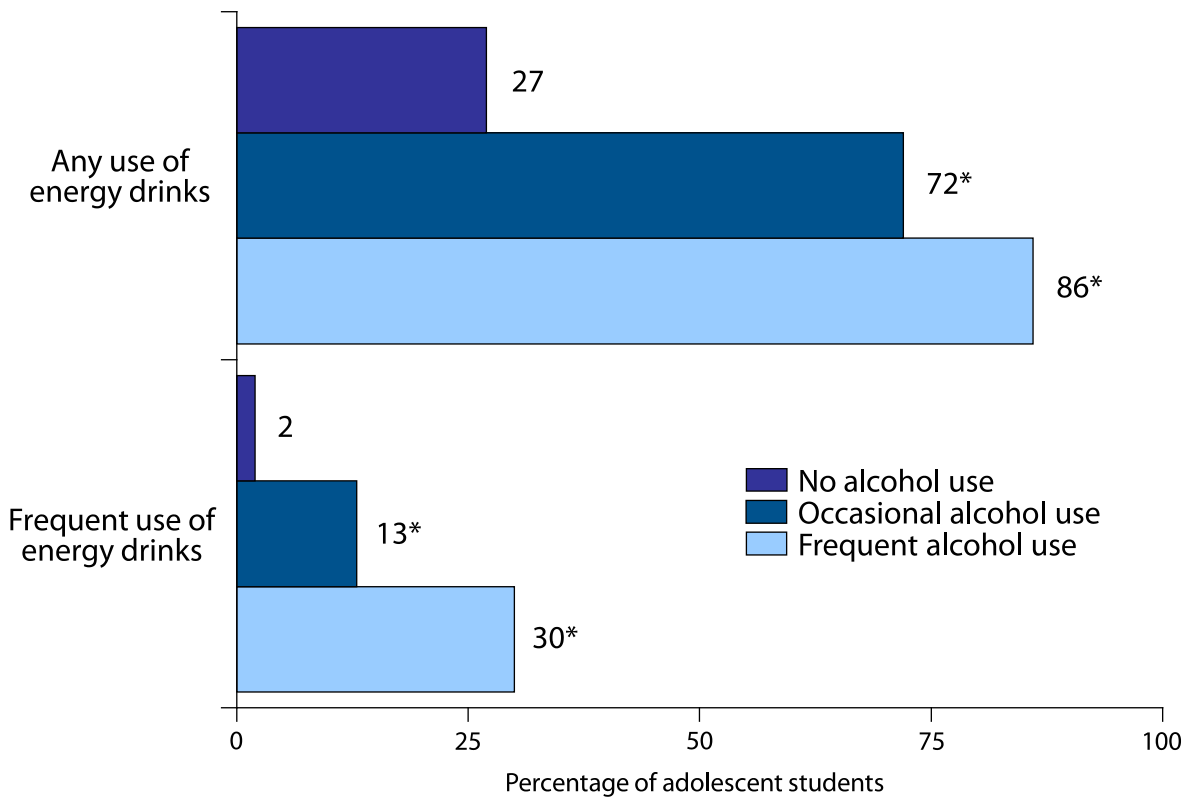
from the NBSDUS 2012, about one-fifth of adolescent students report often or always having restless sleep, being fatigued (“too tired to do things”) or having trouble concentrating [4]. The increasing popularity of caffeinated energy drinks among middle and especially high school students might lead to an increased number who suffer from sleep problems, emotional fatigue and other side effects of caffeine consumption.

Many of these drinks also contain large amounts of sugar. The sugar content varies among products but may be similar to that of carbonated soft drinks [2]. Energy drink consumption is often associated with a high caloric intake, which can make it challenging to maintain a healthy body weight. The sale of energy drinks and other sugar-

sweetened beverages is prohibited in New Brunswick’s schools.

The recognized increased risks of health and behavioural problems among young people when consuming caffeine, particularly in combination with alcohol, are of concern. There is no “safe” amount for caffeinated energy drinks for children or adolescents [8]. Given the limited safety data available, it is recommended that children and youth should not consume these products. The Office of the Chief Medical Officer of Health is engaging with policy makers, health professionals, educators, industry and consumer groups and other stakeholders to share knowledge and solutions to protect the young population and other vulnerable groups from the adverse health risks of caffeinated energy drinks.

Figure 5: Rates of energy drink consumption by frequency of alcohol use, New Brunswick, 2012



Note: * = statistically higher than the rate for students who did not use any alcohol (p<0.05). Occasional alcohol use refers to consuming beer, wine or hard liquor about once a month or less in the past 12 months. Frequent use refers to consuming alcohol on a weekly basis.

Source: Office of the Chief Medical Officer of Health, using data from the New Brunswick Student Drug Use Survey 2012.

Key points:

- Energy drinks are beverages that contain stimulant drugs and are associated with adverse health risks such as anxiety, insomnia, irregular heartbeat and heart attack. These products are an emerging public health issue that warrant further research to better understand the effects on children and youth.
- New data highlight that more than half of students aged 11-19 in New Brunswick have used energy drinks in the past year.
- Males are more likely than females to use energy drinks frequently.
- Teens who use energy drinks frequently are significantly more likely to use alcohol frequently.
- Given the lack of safety data for energy drinks, children and adolescents should not consume these products.

Technical notes

The New Brunswick Student Drug Use Survey 2012, part of an ongoing Atlantic Canada initiative, gathered information regarding substance use and associated risks and harms among a representative sample of the student population enrolled in public middle and high schools. The survey was administered across the province's seven health regions in the spring of 2012 [4]. Two-stage cluster sampling was used to randomly select schools and classes for inclusion in the survey. A total of 3,507 students Grades 7, 9, 10 and 12 were surveyed in 217 classes across 110 schools. Participation was voluntary, anonymous and confidential. Students attending private school, street or homeless youth, school drop-outs, and those who were suspended or absent from school on the day of the survey were not represented in the results. The NBSDUS 2012 was the result of a joint collaboration between the Department of Health, the Department of Education and Early Childhood Development, Horizon Health Network and Vitalité Health Network, in partnership with the Nova Scotia Health Research Foundation and Dalhousie University. This report presents findings from the survey on self-reported use of energy drinks, weighted to represent New Brunswick's middle- and high-school student population. For key measures of energy drink use, 95 per cent confidence intervals were calculated to ascertain the degree of variability associated with the rates and help in reaching conclusions about whether the observed differences reflect a true pattern, rather than an effect driven by sampling variability, coincidence or chance.

References

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