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Prescription medication use among Canadian children and youth, 2012 to 2017

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Abstract

Background—Prescription medications are used throughout the life course, including among children and youth. Prescribing practices may be influenced by emerging medical conditions, the availability of new medications, changing clinical practices, and evolving knowledge of the safety and effectiveness of medications. The Canadian Health Measures Survey (CHMS) provides national-level information to help monitor the use of prescribed medications in the population.

Data and methods—Based on data from the CHMS (2012 to 2017), this article describes prescription medication use in the past month among those aged 3 to 19 years. Information on up to 45 prescription medications was recorded and classified according to Health Canada's Anatomical Therapeutic Chemical classification. Frequencies and bivariate analyses examined medication use by sociodemographic and health-related factors. The most common medication classes were identified for each age group.

Results—An estimated 23% of Canadian children and youth (1.5 million) had used at least one prescription medication in the past month and 9% had used two or more prescription medications.

Prescription medication use was more common among those who reported lower levels of general and mental health, as well as among those with asthma (51%), a mood disorder (71%), attention deficit disorder (60%) or a learning disability (43%). Medications for the respiratory and nervous systems were among those most commonly prescribed. Of youth aged 14 years or older, 4% had misused prescription medications for non-medicinal purposes, for the experience, for the feeling they cause or to get high.

Interpretation—Prescription medication use among children and youth is common in Canada. It is associated with lower levels of self-reported health and the presence of chronic conditions. The estimates provide a benchmark to help monitor prescription drug use in Canada.

Keywords

drugs; pharmaceuticals; prevalence; Canadian Health Measures Survey

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In 2002, the Commission on the Future of Health Care in Canada reported on the growing importance and costs of drugs in the Canadian health care system.[1] At that time, prescribed drug expenditures totalled $14.8 billion and represented 12.8% of total health spending.[2] By 2019, prescribed drug expenditures were projected to be more than double ($34.3 billion), accounting for 13.0% of health care spending in Canada and surpassed only by those associated with hospitals (26.6%) and physicians (15.1%).[2] Prescribed drugs were projected to make up 85.1% of all drug expenditures, with non-prescribed drugs comprising the remaining 14.9%.[3] An international comparison revealed that Canada's per capita drug expenses were high among Organisation for Economic Co-operation and Development countries. For example, in 2016, drug expenses averaged $1,043 per person in Canada, placing it in third place behind the United States ($1,470) and Switzerland ($1,353).[4]

Prescription medications are used throughout the life course, including among children and youth. Data from the Canadian Health Measures Survey (CHMS) from 2007 to 2011 revealed that 12% of those aged 6 to 14 years had used a prescription medication in the previous two days, with boys more likely than girls to have used medications—14% and 9%, respectively.[5] Prescription medication use rose to 26% among those aged 15 to 24 years, at which time medication use was lower among males (13%) than females (40%), with contraceptives contributing to this significant difference. In a U.S. study based on National Health and Nutrition Examination Survey (NHANES) data from 2011 to 2014, Hales et al.[6] reported that 22% of children and adolescents (aged 0 to 19 years) had used at least one prescription medication in the prior 30 days and 9% had used two or more over the same period. Their study showed that the use of prescription medications increased with age, from 17% among infants (birth to 23 months) to 26% among adolescents aged 12 to 19 years.[6] Prescription medications commonly used by children and adolescents included asthma medications (6%), antibiotics (5%), attention deficit hyperactivity disorder (ADHD) medications (4%) and topical agents (4%).

Prescribing practices may be influenced by emerging medical conditions, the availability of new medications, changing clinical practices, and evolving knowledge of the safety and effectiveness of medications.[7] The CHMS provides national-level information on the use of prescribed medications by Canadians in the past month. The objective of this study was to describe past-month prescription medication use among children and youth aged 3 to 19 years, as well as determine the percentage of youth aged 14 years or older who reported ever having misused prescription medication. Combined data from three CHMS cycles spanning 2012 to 2017 will provide a benchmark for comparisons over time and across jurisdictions.

Methods

Data source

The CHMS is an ongoing cross-sectional survey that samples households from five regions across Canada (Atlantic provinces, Quebec, Ontario, the Prairies and British Columbia). Participants provide demographic, socioeconomic, health and lifestyle information through an in-person, computer-assisted household interview, followed by direct physical measurements collected at a mobile examination centre (MEC). The CHMS excludes full-time members of the Canadian Armed Forces, residents of the three territories, people living

on First Nations reserves and other Indigenous settlements in the provinces, residents of institutions such as nursing homes, and residents of certain remote regions. Altogether, these exclusions represent approximately 4% of the target population. Parents or guardians answered questions about their children aged 3 to 11 years; and proxy interviews were accepted for those aged 12 years or older in cases of physical or intellectual impairment.

Data from cycles 3 (2012 to 2013), 4 (2014 to 2015) and 5 (2016 to 2017) were combined for this analysis. At each cycle, data were collected from January (year 1) through December (year 2) at 16 randomly selected sites and two MECs distributed across the five regions. The combined response rates for the household and MEC components were 51.7%, 53.7% and 48.5% for cycles 3, 4 and 5 respectively. The surveys were weighted to account for the sample design and non-response. The weights were divided by three so that the estimates were representative of the Canadian population from 2012 to 2017. Details on the sampling design, data collection and calculation of response rates are available in the CHMS Data User Guides and the Instructions for Combining Multiple Cycles of the CHMS Data.[8]

Study sample

This study sample was composed of 7,892 children and youth (3,950 males and 3,942 females) aged 3 to 19 years from cycles 3 (n=2,601), 4 (n=2,621) and 5 (n=2,670) of the CHMS. Data for all variables were not collected at every cycle or for every age group. Therefore, some analyses were based on subsamples. Information on these limitations are included in the Definitions section and in the table notes.

Definitions

In the Medication use module of the CHMS questionnaire, information on up to 45 medications that were prescribed or administered by a health professional and used in the past month was recorded from the bottles or containers that respondents brought to their interviews. Over-the-counter medications that were prescribed were included as prescription medications. Information was not collected on medications that were prescribed but not used, such as an epinephrine auto-injector. Prescription medications were classified according to Health Canada's Anatomical Therapeutic Chemical (ATC) classification code, a system developed by the World Health Organization that classifies products according to the organ or system on which they act and their chemical, pharmacological and therapeutic properties (Appendix Table A). Medications taken in the month prior to the MEC visit were verified and included in the study. The current study presents estimates for any medication use (i.e., the use of one or more different medications in the past month) and the use of two or more different medications over the same period. Prevalence estimates of medication use were stratified by sex to establish whether sex-related differences existed and were then presented by age group, household income and household education.

Age group was based on age at the time of the MEC visit. Estimates of medication use were presented for children and youth aged 3 to 5, 6 to 11 and 12 to 19 years to facilitate comparisons with recent U.S. results.[6]

For CHMS cycles 3 (2012 to 2013) and 4 (2014 to 2015), household income was reported for the previous year in response to the question, "What is your best estimate of your total household income received by all household members, from all sources, before taxes and deductions, during the year ending December 31?" The income questions were not asked in Cycle 5 (2016 to 2017). Instead, respondents were asked for permission to link to tax data for all household members. Total household income was imputed when it was not reported during the interview (cycles 3 and 4) or when the respondent refused permission to link to tax data or a link could not be established. Personal income was imputed as the median revenue of the respondent's imputation class based on their age, sex and collection site.[9] Overall, household income was imputed for 25% of the study sample. The median household income ($88,000) of the study population was used to classify respondents as below the median versus at or above the median.

Household education indicates the highest level of education acquired by any member of the household and was classified as less than postsecondary or a higher level of educational attainment.

Self-reported general health was based on the question, "In general, would you say your health is: (excellent, very good, good, fair, or poor)?" Respondents were classified into three groups: excellent or very good, good, or fair or poor. The self-reported mental health question was limited to those aged 12 years or older with non-proxy interviews. The question and response categories were in the same format and classified for general health.

Body mass index (BMI) was calculated as measured weight in kilograms divided by measured height in meters squared (kg/m^2) and rounded to two decimal places. BMI among children and youth aged 3 to 17 years was classified as underweight, normal range, overweight or obesity based on age- and sex-specific percentiles from BMI growth charts developed by the Centers for Disease Control and Prevention in the United States (Table 1).[10] The BMI values of respondents aged 18 or 19 were categorized according to Health Canada's Canadian Guidelines for Body Weight Classification in Adults.[11]

Respondents reported (yes/no) whether they had a regular medical doctor.

Chronic conditions were described as long-term conditions, which are expected to last or have already lasted six months or more and that have been diagnosed by a health professional. From the range of chronic conditions collected in the CHMS, four were selected for the analysis that a) had sufficient sample sizes and could yield reliable estimates (see Quality of estimates) and b) were relevant for children and youth: asthma, mood disorder (e.g., depression, bipolar disorder, mania or dysthymia), learning disability and attention deficit disorder (ADD). CHMS content is revised periodically and—therefore—the latter two conditions were included only in cycles 3 (2012 to 2013) and 4 (2014 to 2015). It is important to note that the CHMS survey question refers to ADD, while Health Canada's ATC classification code refers to "agents used for attention deficit hyperactivity disorder," i.e., ADHD.

The CHMS includes an illicit drug use module administered to non-proxy participants aged 14 years or older. It includes one question about the misuse of prescription medications:

"Have you ever used or tried prescription drugs for non-medicinal purposes, for the experience, for the feeling they cause or to get high?" Response categories were either yes or no. Information on specific medications that had been misused was not collected. Responses were examined by sex and household income. The sample size was insufficient for analyzing by level of household education.

Analytical techniques

All estimates were weighted at the person level to represent the population after taking into account the sample design as well as non-response at the household interview and MEC.[8] Descriptive statistics were used to estimate the number and percentage of prescription medication users by sociodemographic and health-related characteristics. Except where specified in the Definitions section, estimates were based on pooled data from three CHMS cycles, representing the population from 2012 to 2017. Detailed medication use to the second and third levels of the ATC classification code was presented by age group. Sample sizes and the quality of estimates guided decisions on the number of medication classes presented for each age group (see Quality of estimates). The percentage of youth aged 14 years or older who reported misusing prescription medications was presented by sex. Sample numbers—total and by sex and cycle—are provided (see Study sample). Otherwise, only weighted numbers are presented. The CHMS assumes a Student's t-distribution with the following denominator degrees of freedom: 33 for cycles 3, 4 and 5; 22 for cycles 3 and 4. To account for survey design effects, 95% confidence intervals and significance testing were estimated with the bootstrap technique (500 iterations). Comparisons were done using t-tests, and the significance level alpha was set at 0.05. The data were analyzed using SAS 9.3 (SAS Institute, Cary, North Carolina) and SUDAAN 11.0 (RTI International, North Carolina).

Quality of estimates

Estimates with high sampling variability ($16.6 < $ coefficient of variation [CV] $\leq 33.3\%$) indicating marginal quality are designated with a superscript E and should be used with caution. Estimates with a CV greater than 33.3% are unacceptable for publication. A minimum sample of 10 respondents in the numerator is required for publication.

Results

The weighted CHMS sample (n=7,892) represented 6.5 million children and youth aged 3 to 19 years during 2012 to 2017. Table 2 presents selected demographic and health-related characteristics of the study population.

Prescription medication use

An estimated 23% of Canadian children and youth (1.5 million) had used at least one prescription medication in the past month according to results from the 2012 to 2017 CHMS (Tables 3-1 and 3-2). Individuals aged 12 to 19 years were significantly more likely than those in the younger age groups to have taken medication. Overall, females were more likely than males to have used prescription medication—26% versus 20% respectively. However, when examined by age group, the difference was evident only among those aged 12 to 19

years, where 39% of females had used a prescription medication in the past month compared with 25% of males. Contraceptive use by 18% of females aged 12 to 19 years accounts in large part for this difference (Table 4).

There was no difference in past-month prescription medication use by household income (Tables 3-1 and 3-2). Prescription medication use did not differ by education for males, but females from households with lower educational attainment were significantly more likely to have used prescription medication than those from higher education households—33% versus 24% respectively. At least some of this difference can be accounted for by the higher use of psychoanaleptics among females from lower education households (9%; 95% CI: 5.5 to 15.1) than among higher education households (4%; 95% CI: 2.6 to 5.0, data not shown). Psychoanaleptics include antidepressants and agents used for ADHD (Appendix Table A).

Two or more medications

From 2012 to 2017, 9% of individuals aged 3 to 19 years had used two or more prescription medications in the past month (Tables 3-1 and 3-2). Youth aged 12 to 19 years were twice as likely as those aged 3 to 11 years to have used more than one prescription medication—13% versus 6%. There were no significant differences in the use of two or more prescription medications in the past month by level of household education or income when both sexes of all ages were considered together.

A comparison of males and females in their use of two or more medications revealed no significant difference among 3- to 5-year-olds. Males in the 6 to 11 year age group were more likely than females to have used at least two medications in the past month (7% versus 4%), but the opposite was true for the older age group (12 to 19 years, 9% versus 17%). Females from lower income households were more likely than their male counterparts to have used two or more prescription medications in the past month—11% versus 7%. The differences observed between males and females in the higher household income and household education groups were not significantly different.

Prescription medication and health

There was a gradient of increasing prescription medication use with lower levels of self-perceived general and mental health (Table 5). For example, among children and youth who rated their general health as very good or excellent, 19% had used at least one prescription medication in the past month, increasing to 32% for those whose health was reported as good and to 49% for people with fair or poor self-reported health. There was no difference in prescription medication use by BMI classification. Most children and youth (89%) had a regular medical doctor (Table 2). This was associated with a higher likelihood of prescription medication use for females but not males (Table 5).

Use of prescription medication was at least twice as common for children and youth with the selected chronic conditions. For example, among those with asthma, more than half (51%) reported past-month prescription medication use, compared with 19% of those without asthma (Table 5). The percentages using prescription medication in the past month were significantly higher for children and youth with a mood disorder (71%), ADD (60%) or a learning disability (43%) than for those without each of these conditions. A commonly

used class of medications was psychoanaleptics (Figure 1, Appendix Table A). For example, among those with a mood disorder, 50% had used a psychoanaleptic-class medication in the past month, compared with 4% of children and youth who did not have a mood disorder.

Types of medication (Anatomical Therapeutic Chemical code) by age group

Ages 3 to 5 years—Medications from three classes that were used by 1% or more of young children in the past month were for the respiratory system (R), anti-infectives for systemic use (J) and dermatologicals (D) (Table 4, Appendix Table A). For the respiratory system, an estimated 4% of children (46,000) aged 3 to 5 used drugs for obstructive airway diseases (R03), including asthma. While this class includes inhalants and systemic drugs, only inhalants were commonly reported (R03A and R03B). Approximately 3% had reported systemic use of antibacterials (J01), most of which were penicillin beta-lactam antibacterials (J01C). A third class of prescription medication was corticosteroids, dermatological preparations (D07), most or all of which were corticosteroids, plain (D07A), which were used by just over 1% of children. Less than 1% of individuals aged 3 to 5 years had used drugs for constipation (A06A) in the past month.

Ages 6 to 11 years—Nervous system (N) medications were prescribed and used by children aged 6 to 11 years (Table 4, Appendix Table A). More than 84,000 (4%) were prescribed psychostimulants, agents used for ADHD and nootropics (N06B). Psycholeptics (N05), which include antipsychotics, hypnotics and sedatives, were used by less than 1% of this age group. Drugs for obstructive airway diseases (R03), including asthma, were used by an estimated 4% of those aged 6 to 11 years and, as with the youngest age group, only inhalants were commonly reported (R03A and R03B). Another commonly reported drug used for the respiratory system was nasal preparations (R01), primarily decongestants and other nasal preparations for topical use (R01A), with a past-month use of just over 1%. An estimated 2% of this age group used antibacterials (J01), most of which were penicillin beta-lactam antibacterials (J01C).

Ages 12 to 19 years—The most commonly used prescription medication among this age group was hormonal contraceptives for systemic use, which was reported by approximately 269,000 females (18%) (Table 4, Appendix Table A). A more detailed breakdown shows that 3% (95% CI: 1.5 to 4.9) of females aged 12 to 14 years used hormonal contraceptives for systemic use, compared with 26% (95% CI: 21.9 – 31.5) of those aged 15 to 19 years (data not shown). Nervous system (N) medications that were prescribed and used included antidepressants (N06A) (5%), as well as psychostimulants, agents used for ADHD and nootropics (N06B) (5%). Psycholeptics (N05) were used by approximately 2% of those aged 12 to 19. Past-month use of analgesics (N02), which are also for the nervous system, was reported by an estimated 48,000 youth (2%). As with the younger age groups, youth aged 12 to 19 years used prescription medications for obstructive airway diseases (R03), including asthma (4%), and antibacterials for systemic use (J01) (3%). Prescription dermatologicals (D) used by youth included anti-acne preparations (D10) and corticosteroids (D07).

Misuse of prescription medications

Respondents aged 14 years or older were asked whether they had ever used or tried prescription drugs for non-medicinal purposes, for the experience, for the feeling they cause or to get high. Among youth aged 14 to 19 years, an estimated 97,000 youth (4%; 95% CI: 2.9 to 5.7) stated that they had done so. Although females were more likely than males to have used prescription medications (Tables 3-1 and 3-2), there was no difference by sex in the percentages of those who had ever misused them (data not shown). Prescription medication misuse did not differ significantly by household income (data not shown), and the sample size was insufficient for estimating misuse by level of household education.

Discussion

This study provides details about prescription medication use among children and youth aged 3 to 19 years in Canada's 10 provinces from 2012 to 2017. An estimated 23% of this young population reported recent (i.e., in the past month) prescription medication use, which is comparable with the United States, where—from 2011 to 2014—22% of people aged 19 years or younger reported past-month prescription medication use.[6] Among adolescents in Canada and the United States, females were more likely than males to use prescription medication. In Canada, this can be attributed—at least in part—to the use of contraceptives among adolescent girls. In the United States, the use of antidepressants, antibiotics and analgesics was higher among adolescent females than adolescent males.[12]

According to the CHMS, the percentage of Canadian children and youth who had used two or more medications in the past month was 9%—the same as has been reported for the United States using data from the NHANES for 2011 to 2014.[6] The use of two or more medications differed by age group in Canada and the United States according to the current study and the NHANES by Hales et al.,[6] respectively. The CHMS revealed that, among children aged 6 to 11 years, past-month use of two or more medications was more common among boys than girls. The same was reported in the United States by Qato et al.[12] using NHANES data for 2003 to 2014. Unlike in the United States,[12] Canadian girls aged 12 to 19 were more likely than boys in the same age group to have used two or more medications in the past month. Note that Qato et al.[12] reported on the concurrent use of two or more medications in the past month, whereas results from the CHMS may reflect concurrent or consecutive use. Qato et al.[12] reported that 1 in 12 children and adolescents who were concurrent prescription medication users were at risk of serious drug interactions, which can result in injury or death.

There was no difference in prescription medication use by household income, which is consistent with other studies.[5,6] This is counterintuitive, as having a lower income is generally associated with poorer health[13] and—therefore—higher prescription medication use among members of lower income households might be expected. However, lack of affordability may be a barrier to meeting medication needs.[14,15] Lower income households are less likely to have private drug coverage and an estimated three million Canadians have reported that they could not afford to purchase at least some of their prescribed medications.[16] On the other hand, there are over 100 federal, provincial and territorial drug plans in Canada, as well as catastrophic coverage designed to help ensure that people receive

the medications they require.[16] The lack of association between income and prescription medication use may indicate that public drug plans are compensating for lower incomes, at least for the medication needs of children and youth.

Hales et al.[6] reported that medication use did not differ by household level of education, whereas the current study found that lower household educational attainment was associated with prescription medication use, albeit for females only. The more common use of antidepressants and psychostimulants among females from lower education households accounts for at least part of this difference. Mental health conditions, such as depressed mood and anxiety, commonly emerge in adolescence and early adulthood and have been associated with risk factors including lower socioeconomic status.[17,18] Mood and anxiety disorders tend to be more prevalent among girls, while behavioural disorders such as ADHD are more common among boys.[18] Gender differences in the prevalence of these conditions may reflect real differences, as well as differential diagnoses.[19] Future studies could help establish whether higher medication use among females from lower education households reflects differences in morbidity, diagnoses, help-seeking behaviours, prescribing practices or other factors. Differences in patterns of prescription medication use in Canada and the United States by education and income may reflect differences in the health care systems related to these characteristics, such as public and private health insurance coverage and access to health care.

Poor health was associated with prescription medication use among young Canadians. Some medications are commonly used throughout childhood and adolescence, such as those for obstructive airway diseases, including asthma. Exposure to air pollution and second-hand smoke have been associated with respiratory conditions in children and youth,[20,21] likely contributing to the use of medications starting at an early age. However, the need for respiratory system medications may decline with reductions in antibiotic prescribing. A recent study found lower rates of asthma among children with fewer antibiotic prescriptions in their first year of life.[22] Other medications, such as those for treating acne and depression, were only evident among adolescents. A number of the therapeutic classes of medications prescribed to children and youth in Canada were similar to those prescribed in the United States and elsewhere.[6,23,24] Among the 10 most commonly used medications in the Netherlands, United Kingdom and Italy[23] were those that were also common in Canada, including, antibacterials for systemic use (J01); drugs for obstructive airway diseases (R03); corticosteroids, dermatological preparations (D07); analgesics (N02); anti-acne preparations (D10); and sex hormones and modulators of the genital system (G03). However, psychoanaleptics (N06) used to treat depression and ADHD were not among the top 10 in the 3 European countries, but were common in Canada for those aged 6 to 19 years. A population-based study on individuals aged 17 years or younger from British Columbia found that they were two to five times more likely than those in Europe to have used psychoanaleptics.[25] Hales et al.[6] reported that, in the United States, 6.2% of children aged 6 to 11 years and 3.8% of youth aged 12 to 19 years used medications to treat ADHD from 2011 to 2014. In 2016, an estimated 5.5% of those aged 2 to 17 years in the United States were reported to have used medications for ADHD.[26] Estimates for Canada for 2012 to 2017 did not differ substantially. The use of ADHD medications has increased in the

United States since the 1999 to 2002 period.[6] Further investigation could establish whether the same trend exists in Canada.

Data from the CHMS indicate that 4% of youth aged 14 years or older have used or tried prescription drugs for non-medicinal purposes, for the experience, for the feeling they cause or to get high. Survey respondents were not asked about the specific medications they had misused. One example of prescription medication misuse in Canada is the misuse of fentanyl patches and other opioids.[27,28] The misuse of opioids is of particular concern, as they are highly addictive. There is evidence that younger people and more recent cohorts of youth in particular are at greater risk of developing problems with opioid misuse.[29] In Ontario, 114 youth aged 15 to 24 died from an opioid overdose over an 18-month period ending in June 2018; most were unintentional deaths rather than suicides or undetermined deaths.[30] The 2019 Ontario Agency for Health Protection and Promotion surveillance report[30] indicated that individuals may misuse their own prescription medications or those that have been prescribed to others.

Strengths and limitations

This large, population-based study was representative of prescription medication use among children and youth in Canada's provinces from 2012 to 2017. Detailed information was collected directly from medication containers, eliminating the need for individuals to recall this information accurately. Product information numbers were recorded and, if they were not available, interviewers searched the MedSearch database using the product name, manufacturer, active ingredients, route of administration, form and/or product strength. ATC classification codes were assigned and the information was presented at three- and four-digit levels from the main anatomical or pharmacological groups to the pharmacological or therapeutic subgroups.

There are a number of limitations. It was not established whether the use of more than one medication in the past month signified concurrent or consecutive use, which has implications for drug–drug interactions. The chronic conditions—asthma, learning disability, mood disorder and ADD—were self-reported and not verified by another source. The relatively small CHMS sample size limited the number of reportable estimates for medication classes, especially among children aged 3 to 5 years. Many estimates of medication use by class were of marginal quality because of high sampling variability and need to be viewed with caution, as noted in the tables. The analysis is limited to one period in time, and there is no indication of whether the estimates have been stable over time. Information on the use of over-the-counter medications and other health products, including natural health remedies, was collected in the CHMS but not included in this study unless the product was prescribed.

Conclusion

Medications are an important component of Canada's health care system. Nearly one-quarter of children and youth use prescription medications, particularly those indicated for diseases of the respiratory and nervous systems, such as asthma and ADHD. Prescribing practices may be influenced by the development of new medications, evidence of drug safety and effectiveness, and the emergence and diagnosis of conditions. This study contributes

benchmarks of prescription medication use among Canadians aged 3 to 19 years, including an estimate of misuse among those aged 14 to 19 years.

Appendix Table A

Anatomical Therapeutic Chemical classification codes

A - Alimentary track and metabolism	A02	Drugs for acid-related disorders
	A02A	Antacids
	A02B	Drugs for peptic ulcer and gastro-oesophageal reflux disease (GORD)
	A02X	Other drugs for acid-related disorders
	A06	Drugs for constipation
	A06A	Drugs for constipation
	A11	Vitamins
D - Dermatologicals	D07	Corticosteroids, dermatological preparations
	D07A	**Corticosteroids, plain**
	D07B	Corticosteroids, combinations with antiseptics
	D07C	Corticosteroids, combinations with antibiotics
	D07X	Corticosteroids, other combinations
	D10	Anti-acne preparations
	D10A	**Anti-acne preparations for topical use**
	D10B	Anti-acne preparations for systemic use
G - Genitourinary system and sex hormones	G03	Sex hormones and modulators of the genital system
	G03A	**Hormonal contraceptives for systemic use**
	G03B	Androgens
	G03C	Estrogens
	G03D	Progestogens
	G03E	Androgens and femaile sex hormones in combination
	G03F	Progestogens and estrogens in combination
	G03G	Gonadotropins and other ovulation stimulants
	G03H	Anti-adrogens
	G03X	Other sex hormones and modulators of the genital system
J - Anti-infectives for systemic use	J01	Antibacterials for systemic use
	J01A	Tetracyclines
	J01B	Amphenicols
	J01C	**Beta-lactam antibacaterials, penicillins**
	J01D	Other beta-lactam antibacaterials
	J01E	Sulfonamides and trimethoprim
	J01F	Macrolides, lincosamides and streptogramins
	J01G	Aminoglycoside antibacterials
	J01M	Quinolone antibacterials
	J01R	Combinations of antibacterials
	J01X	Other antibacterials
M - Musculo-skeletal system	M01	Anti-inflammatory and antirheumatic products
	M01A	**Anti-inflammatory and antirheumatic products, non-steroids**

		M01B	Anti-inflammatory and antirheumatic agents in combination
		M01C	Specific antirheumatic agents
N - Nervous system	N02		Analgesics
	N02A		Opioids
	N02B		**Other analgesics and antipyretics**
	N02C		Antimigraine preparations
	N03		Anti-epileptics
	N03A		Anti-epileptics
	N05		Psycholeptics
	N05A		**Antipsychotics**
	N05B		Anxiolytics
	N05C		Hypnotics and sedatives
	N06		Psychoanaleptics
	N06A		**Antidepressants**
	N06B		**Psychostimulants, agents used for ADHD and nootropics**
	N06C		Psycholeptics and psychoanaleptics in combination
	N06D		Antidementia drugs
R - Respiratory system	R01		Nasal preparations
	R01A		**Decongestants and other nasal preparations for topical use**
	R01B		Nasal decongestants for systemic use
	R03		Drugs for obstructive airway diseases
	R03A		**Adrenergics, inhalants**
	R03B		**Other drugs for obstructive airway diseases, inhalants**
	R03C		Adrenergics for systemic use
	R03D		Other systemic drugs for obstructive airway diseases
	R06		Antihistamines for systemic use
	R06A		Antihistamines for systemic use

Notes: Medications in bold were the most often reported within the three-digit classification. ADHD = Attention deficit hyperactivity disorder.

Source: Anatomical Therapeutic Chemical classification system and the Defined Daily Dose (http://www.whocc.no/ atc_ddd_index/).

Appendix Table A

Anatomical Therapeutic Chemical classification codes

A - Alimentary track and metabolism	A02		Drugs for acid-related disorders
		A02A	Antacids
		A02B	Drugs for peptic ulcer and gastro-oesophageal reflux disease (GORD)
		A02X	Other drugs for acid-related disorders
	A06		Drugs for constipation
		A06A	Drugs for constipation
	A11		Vitamins
D - Dermatologicals	D07		Corticosteroids, dermatological preparations

	D07A	**Corticosteroids, plain**
	D07B	Corticosteroids, combinations with antiseptics
	D07C	Corticosteroids, combinations with antibiotics
	D07X	Corticosteroids, other combinations
	D10	Anti-acne preparations
	D10A	**Anti-acne preparations for topical use**
	D10B	Anti-acne preparations for systemic use
G - Genitourinary system and sex hormones	G03	Sex hormones and modulators of the genital system
	G03A	**Hormonal contraceptives for systemic use**
	G03B	Androgens
	G03C	Estrogens
	G03D	Progestogens
	G03E	Androgens and femaile sex hormones in combination
	G03F	Progestogens and estrogens in combination
	G03G	Gonadotropins and other ovulation stimulants
	G03H	Anti-adrogens
	G03X	Other sex hormones and modulators of the genital system
J - Anti-infectives for systemic use	J01	Antibacterials for systemic use
	J01A	Tetracyclines
	J01B	Amphenicols
	J01C	**Beta-lactam antibacaterials, penicillins**
	J01D	Other beta-lactam antibacaterials
	J01E	Sulfonamides and trimethoprim
	J01F	Macrolides, lincosamides and streptogramins
	J01G	Aminoglycoside antibacterials
	J01M	Quinolone antibacterials
	J01R	Combinations of antibacterials
	J01X	Other antibacterials
M - Musculo-skeletal system	M01	Anti-inflammatory and antirheumatic products
	M01A	**Anti-inflammatory and antirheumatic products, non-steroids**
	M01B	Anti-inflammatory and antirheumatic agents in combination
	M01C	Specific antirheumatic agents
N - Nervous system	N02	Analgesics
	N02A	Opioids
	N02B	**Other analgesics and antipyretics**
	N02C	Antimigraine preparations
	N03	Anti-epileptics
	N03A	Anti-epileptics
	N05	Psycholeptics
	N05A	**Antipsychotics**
	N05B	Anxiolytics
	N05C	Hypnotics and sedatives

	N06	Psychoanaleptics	
	N06A	**Antidepressants**	
	N06B	**Psychostimulants, agents used for ADHD and nootropics**	
	N06C	Psycholeptics and psychoanaleptics in combination	
	N06D	Antidementia drugs	
R - Respiratory system	R01	Nasal preparations	
	R01A	**Decongestants and other nasal preparations for topical use**	
	R01B	Nasal decongestants for systemic use	
	R03	Drugs for obstructive airway diseases	
	R03A	**Adrenergics, inhalants**	
	R03B	**Other drugs for obstructive airway diseases, inhalants**	
	R03C	Adrenergics for systemic use	
	R03D	Other systemic drugs for obstructive airway diseases	
	R06	Antihistamines for systemic use	
	R06A	Antihistamines for systemic use	

Notes: Medications in bold were the most often reported within the three-digit classification. ADHD = Attention deficit hyperactivity disorder.

Source: Anatomical Therapeutic Chemical classification system and the Defined Daily Dose (http://www.whocc.no/atc_ddd_index/).

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What is already known on this subject?

- Prescribing practices may be influenced by emerging medical conditions, the availability of new medications, changing clinical practices, and evolving knowledge of the safety and effectiveness of medications.

- Data from 2007 to 2011 revealed that, in Canada, 12% of 6- to 14-year-olds and 26% of those aged 15 to 24 years had used a prescription medication in the previous two days.

- Among Canadians aged 15 to 24 years, prescription medication use was significantly higher among females (40%) than males (13%), with prescribed contraceptives contributing to this significant difference.

What does this study add?

- Over the 2012 to 2017 period, an estimated 23% (1.5 million) of Canadian children and youth aged 3 to 19 years had used at least one prescription medication in the past month and 9% had used two or more.

- Prescription medication use was more common among those who reported lower levels of general and mental health, as well as among those with asthma (51%), a mood disorder (71%), attention deficit disorder (60%) or a learning disability (43%).

- Among youth aged 14 years or older, 4% had used misused prescription medications for non-medicinal purposes, for the experience, for the feeling they cause or to get high.
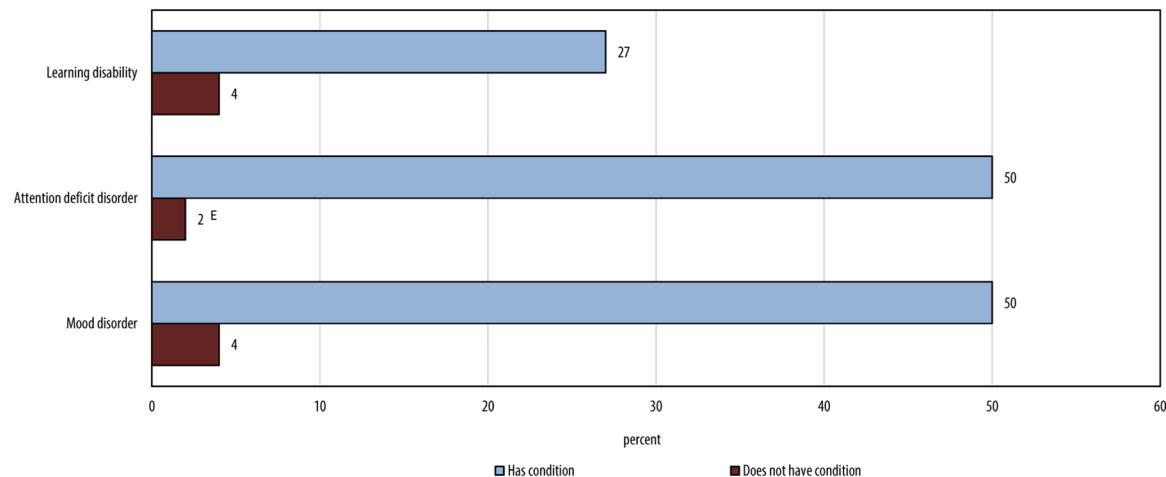
Figure 1. Prevalence of past-month use of psychoanaleptic class medications, by selected conditions, household population aged 3 to 19 years, Canada excluding the territories, 2012 to 2017

E use with caution

Note: The groups are not mutually exclusive. Data on learning disability and attention deficit disorder were collected only in cycles 3 and 4 of the Canadian Health Measures Survey.

Source: 2012 to 2013, 2014 to 2015 and 2016 to 2017 Canadian Health Measures Surveys, combined.

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Table 1

Body mass index (BMI) classification for individuals aged 3 to 17 and 18 to 19 years

Classification	Aged 3 to 17 years: percentile	Aged 18 or 19 years: BMI value
Underweight	5th percentile and below	Less than 18.50
Normal range	6th percentile up to and including the 85th percentile	18.50 to 24.99
Overweight	86th percentile up to and including the 94th percentile	25.00 to 29.99
Obesity	95th percentile and above	30.00 or higher

Sources: Centers for Disease Control and Prevention (ages 3 to 17 years), Health Canada (ages 18 and 19 years). BMI for children and youth aged 3 to 17 years: BMI growth charts developed by the Centers for Disease Control and Prevention in the United States. (Ogden CL, Flegal KM. Changes in terminology for childhood overweight and obesity. *National Health Statistics Report* 2010; (25): 1–5). BMI for respondents aged 18 or 19: Health Canada's *Canadian Guidelines for Body Weight Classification in Adults*. (Health Canada. *Canadian guidelines for body weight classification in adults*. Ottawa: Health Canada, 2003. Adapted from: Obesity: Preventing and managing the global epidemic. *Report of a WHO consultation*. Geneva: World Health Organization, 1999. Available at: www.canada.ca/en/health-canada/services/food-nutrition/healthy-eating/healthy-weights/canadian-guidelines-body-weight-classification-adults/body-mass-index-nomogram.html.)

Table 2

Percentage distribution of children and youth, by sociodemographic and health-related characteristics, household population aged 3 to 19 years, Canada excluding the territories, 2012 to 2017

Characteristics	Number '000	%	95% confidence interval	
			from	to
Total	6,505	100.0	…	…
Sociodemographic characteristics				
Sex				
Male	3,340	51.3	51.3	51.4
Female	3,165	48.7	48.6	48.7
Age group (years)				
3 to 5	1,121	17.2	17.0	17.4
6 to 11	2,224	34.2	33.9	34.4
12 to 19	3,160	48.6	48.4	48.8
Household income				
Below median	3,238	49.8	46.4	53.2
At or above median	3,267	50.2	46.8	53.6
Household education				
Less than postsecondary	985	15.9	14.2	17.8
Postsecondary or higher	5,203	84.1	82.2	85.8
Health-related characteristics				
Regular medical doctor				
Yes	5,794	89.4	87.5	91.1
No	686	10.6	8.9	12.5
Self-perceived general health				
Excellent/very good	4,823	74.1	71.6	76.6
Good	1,368	21.0	19.0	23.3
Fair/poor	313	4.8	3.9	5.9
Self-perceived mental health				
Excellent/very good	2,196	71.1	68.1	73.8
Good	646	20.9	18.7	23.3

Characteristics	Number '000	%	95% confidence interval	
			from	to
Fair/poor	249	8.1	6.4	10.1
BMI classification				
Underweight	278	4.6	3.8	5.6
Normal range	4,196	69.7	67.8	71.5
Overweight	833	13.8	12.6	15.2
Obesity	714	11.9	10.4	13.5
Asthma				
Yes	720	11.1	10.0	12.2
No	5,784	88.9	87.8	90.0
Mood disorder				
Yes	216	3.3	2.6	4.3
No	6,289	96.7	95.7	97.4
Attention deficit disorder				
Yes	466	7.2	5.6	9.2
No	6,022	92.8	90.8	94.4
Learning disability				
Yes	403	6.2	5.1	7.5
No	6,080	93.8	92.5	94.9

… not applicable

Notes: BMI = body mass index. Self-perceived mental health was asked of respondents aged 12 to 19 years. Data for attention deficit disorder and learning disability were collected only in cycles 3 (2012 to 2013) and 4 (2014 to 2015) of the Canadian Health Measures Survey.

Table 3-1

Prevalence of prescription medication use in the past month, by selected sociodemographic characteristics, household population aged 3 to 19 years, Canada excluding the territories, 2012 to 2017 — Part 1

	One or more medication											
	Both sexes				Males				Females			
			95% confidence interval				95% confidence interval				95% confidence interval	
Characteristics	Number '000	%	from	to	Number '000	%	from	to	Number '000	%	from	to
Total	1,495	23.0	21.3	24.8	667	20.0 §	18.2	21.8	828	26.2	23.6	28.9
Age group (years)												
3 to 5	159	14.2 *	12.1	16.5	74	12.8 *	10.4	15.8	85	15.6 *	12.5	19.3
6 to 11	344	15.5 *	13.2	18.0	193	17.0 *	14.2	20.2	151	13.9 *	11.1	17.4
12 to 19 †	991	31.4	28.5	34.4	400	24.6 §	22.0	27.4	591	38.6	33.5	44.0
Household income												
Below median †	722	22.3	19.8	25.0	313	19.0 §	16.0	22.3	409	25.8	22.7	29.1
At or above median	773	23.7	21.0	26.5	353	21.0 §	18.2	24.0	419	26.5	22.1	31.5
Household education												
Less than postsecondary †	266	27.0	22.4	32.2	109 E	21.6 §	15.3	29.7	157	32.7	27.6	38.3
Postsecondary or higher	1,153	22.2	20.4	24.0	525	19.9 §	18.2	21.7	628	24.5 *	21.8	27.3

*
significantly different from reference category (p < 0.05)

§
significantly different from females (p < 0.05)

†
reference category

E
use with caution

Source: 2012 to 2013, 2014 to 2015 and 2016 to 2017 Canadian Health Measures Surveys, combined.

Table 3-2

Prevalence of prescription medication use in the past month, by selected sociodemographic characteristics, household population aged 3 to 19 years, Canada excluding the territories, 2012 to 2017 — Part 2

	Two or more medications											
	Both sexes				Males				Females			
			95% confidence interval				95% confidence interval				95% confidence interval	
Characteristics	Number '000	%	from	to	Number '000	%	from	to	Number '000	%	from	to
Total	589	9.1	8.1	10.2	261	7.8 §	6.6	9.3	328	10.4	9.0	11.9
Age group (years)												
3 to 5	62	5.5 *	4.3	6.9	30 ^{E}	5.3 ^{E,} *	3.7	7.6	31 ^{E}	5.7 ^{E,} *	3.7	8.7
6 to 11	126	5.6 *	4.8	6.6	83	7.3 §	5.9	8.9	43	3.9 *	2.9	5.4
12 to 19 †	402	12.7	10.8	14.9	148	9.1 §	7.2	11.5	254	16.6	13.7	20.0
Household income												
Below median †	289	8.9	7.6	10.5	113	6.8 §	5.3	8.8	177	11.1	9.3	13.3
At or above median	300	9.2	7.9	10.7	149	8.8	7.2	10.8	152	9.6	7.8	11.8
Household education												
Less than postsecondary †	103	10.5	7.8	14.0	40 ^{E}	7.9 ^{E}	4.9	12.5	63 ^{E}	13.2 ^{E}	9.0	18.9
Postsecondary or higher	461	8.9	7.8	10.0	213	8.1	6.8	9.5	248	9.7	8.1	11.4

*
significantly different from reference category (p < 0.05)

§ significantly different from females (p < 0.05)

† reference category

^{E} use with caution

Source: 2012 to 2013, 2014 to 2015 and 2016 to 2017 Canadian Health Measures Surveys, combined.

Table 4

Most common prescription medications used in the past month, by age group and medication class, household population aged 3 to 19 years, Canada excluding the territories, 2012 to 2017

Age group (years), ATC code and medication class	Number '000	%	Prevalence	
			95% confidence interval	
			from	to
3 to 19				
N06 - Psychoanaleptics	363	5.6	4.7	6.6
N06A - Antidepressants	150	2.3	1.8	3.0
N06B - Psychostimulants, agents used for ADHD and nootropics	233	3.6	2.8	4.6
G03 - Sex hormones and modulators of the genital system	276	8.7	7.1	10.7
G03A - Hormonal contraceptives for systemic use	269	8.5	6.9	10.4
R03 - Drugs for obstructive airway diseases	265	4.1	3.4	4.9
R03A - Adrenergics, inhalants	222	3.4	2.8	4.2
R03B - Other drugs for obstructive airway diseases, inhalants	141	2.2	1.7	2.8
J01 - Antibacterials for systemic use	168	2.6	2.0	3.3
J01C - Beta-lactam antibacterials, penicillins	98	1.5	1.1	2.1
D10 - Anti-acne preparations	76	1.2	0.9	1.5
D10A - Anti-acne preparations for topical use	64	1.0	0.7	1.4
D07 - Corticosteroids, dermatological preparations	70	1.1	0.8	1.5
D07A - Corticosteroids, plain	55	0.9	0.6	1.2
N05 - Psycholeptics	69	1.1 [E]	0.8	1.5
N05A - Antipsychotics	39	0.6 [E]	0.3	1.1
R01 - Nasal preparations	68	1.0 [E]	0.7	1.6
R01A - Decongestants and other nasal preparations for topical use	68	1.0 [E]	0.7	1.6
N02 - Analgesics	67	1.0 [E]	0.7	1.5
N02B - Other analgesics and antipyretics	38	0.6 [E]	0.3	1.1
M01 - Anti-inflammatory and antirheumatic products	55	0.8	0.6	1.2
M01A - Anti-inflammatory and antirheumatic products, non-steroids	55	0.8	0.6	1.2

Age group (years), ATC code and medication class	Number '000	%	95% confidence interval	
			from	to
A02 - Drugs for acid-related disorders	38	0.6 [E]	0.4	0.9
A02B - Drugs for peptic ulcer and gastro-oesophageal reflux disease (GORD)	38	0.6 [E]	0.3	1.0
R06 - Antihistamines for systemic use	31	0.5 [E]	0.3	0.8
R06A - Antihistamines for systemic use	31	0.5 [E]	0.3	0.8
3 to 5				
R03 - Drugs for obstructive airway diseases	46	4.1	3.0	5.6
R03A - Adrenergics, inhalants	36 [E]	3.2 [E]	2.2	4.7
R03B - Other drugs for obstructive airway diseases, inhalants	36 [E]	3.2 [E]	2.1	4.8
J01 - Antibacterials for systemic use	33 [E]	2.9 [E]	2.0	4.2
J01C - Beta-lactam antibacterials, penicillins	26 [E]	2.3 [E]	1.5	3.5
D07 - Corticosteroids, dermatological preparations	14 [E]	1.3 [E]	0.7	2.2
D07A - Corticosteroids, plain	14 [E]	1.3 [E]	0.7	2.3
A06 - Drugs for constipation	4 [E]	0.4 [E]	0.2	0.7
A06A - Drugs for constipation	4 [E]	0.4 [E]	0.2	0.7
6 to 11				
N06 - Psychoanaleptics	86 [E]	3.9 [E]	2.7	5.5
N06B - Psychostimulants, agents used for ADHD and nootropics	84 [E]	3.8 [E]	2.6	5.5
R03 - Drugs for obstructive airway diseases	82	3.7	2.9	4.6
R03A - Adrenergics, inhalants	68	3.1	2.3	4.1
R03B - Other drugs for obstructive airway diseases, inhalants	49	2.2	1.5	3.1
J01 - Antibacterials for systemic use	48 [E]	2.1 [E]	1.5	3.1
J01C - Beta-lactam antibacterials, penicillins	34 [E]	1.5 [E]	0.9	2.5
R01 - Nasal preparations	26 [E]	1.2 [E]	0.7	1.9
R01A - Decongestants and other nasal preparations for topical use	26 [E]	1.2 [E]	0.7	2.0

Age group (years), ATC code and medication class	Number '000	%	Prevalence 95% confidence interval	
			from	to
N05 - Psycholeptics	15 ^{E}	0.7 ^{E}	0.4	1.2
A11 - Vitamins	14 ^{E}	0.6 ^{E}	0.3	1.1
D07 - Corticosteroids, dermatological preparations	12 ^{E}	0.6 ^{E}	0.3	1.0
D07A - Corticosteroids, plain	7 ^{E}	0.3 ^{E}	0.2	0.5
12 to 19				
G03 - Sex hormones and modulators of the genital system	276	18.3	14.7	22.0
G03A - Hormonal contraceptives for systemic use	269	17.6	14.3	21.5
N06 - Psychoanaleptics	271	8.6	7.1	10.3
N06A - Antidepressants	145	4.6	3.5	6.0
N06B - Psychostimulants, agents used for ADHD and nootropics	143	4.5	3.3	6.1
R03 - Drugs for obstructive airway diseases	138	4.4	3.3	5.8
R03A - Adrenergics, inhalants	118	3.7	2.7	5.2
R03B - Other drugs for obstructive airway diseases, inhalants	56	1.8 ^{E}	1.0	3.0
J01 - Antibacterials for systemic use	88	2.8	2.0	3.8
J01C - Beta-lactam antibacterials, penicillins	38 ^{E}	1.2 ^{E}	0.7	2.2
D10 - Anti-acne preparations	75	2.4	1.8	3.1
D10A - Anti-acne preparations for topical use	64	2.0	1.5	2.8
N05 - Psycholeptics	52 ^{E}	1.6 ^{E}	1.1	2.5
N05A - Antipsychotics	31 ^{E}	1.0 ^{E}	0.5	2.0
N02 - Analgesics	48 ^{E}	1.5 ^{E}	0.9	2.6
D07 - Corticosteroids, dermatological preparations	43 ^{E}	1.4 ^{E}	0.8	2.3
D07A - Corticosteroids, plain	34 ^{E}	1.1 ^{E}	0.6	1.9
M01 - Anti-inflammatory and antirheumatic products	40 ^{E}	1.3 ^{E}	0.8	1.9
M01A - Anti-inflammatory and antirheumatic products, non-steroids	40 ^{E}	1.3 ^{E}	0.8	2.0
R01 - Nasal preparations	35 ^{E}	1.1 ^{E}	0.6	2.0

Age group (years), ATC code and medication class	Prevalence			
	Number '000	%	95% confidence interval	
			from	to
R01A - Decongestants and other nasal preparations for topical use	35 [E]	1.1 [E]	0.6	2.1
A02 - Drugs for acid-related disorders	26 [E]	0.8 [E]	0.5	1.5
A02B - Drugs for peptic ulcer and gastro-oesophageal reflux disease (GORD)	26 [E]	0.8 [E]	0.4	1.5
R06 - Antihistamines for systemic use	22 [E]	0.7 [E]	0.4	1.3
R06A - Antihistamines for systemic use	22 [E]	0.7 [E]	0.4	1.4
N03 - Anti-epileptics	19 [E]	0.6 [E]	0.3	1.1
N03A - Anti-epileptics	19 [E]	0.6 [E]	0.3	1.2

[E]
use with caution

Notes: ATC = Anatomical Therapeutic Chemical, ADHD = Attention deficit hyperactivity disorder. Estimates for medication subclasses (four-digit) may not sum to the estimate for medication class (three-digit) when individuals were prescribed more than one medication within the same three-digit class. Estimates for sex hormones and modulators of the genital system (G03) are for females only.

Source: 2012 to 2013, 2014 to 2015 and 2016 to 2017 Canadian Health Measures Surveys, combined.

Table 5

Prevalence of prescription medication use in the past month, by selected health-related characteristics, household population aged 3 to 19 years, Canada excluding the territories, 2012 to 2017

Characteristics	Both sexes				Males				Females			
	Number '000	%	95% confidence interval		Number '000	%	95% confidence interval		Number '000	%	95% confidence interval	
			from	to			from	to			from	to
Total	1,495	23.0	21.3	24.8	667	20.0 §	18.2	21.8	828	26.2	23.6	28.9
Regular medical doctor												
Yes	1,367	23.6	21.7	25.7	603	20.4 §	18.5	22.4	764	27.0 *	24.1	30.0
No †	127	18.5	14.2	23.7	63 E	17.4 E	11.6	25.3	64 E	19.7	14.1	26.7
Self-perceived general health												
Excellent/very good	899	18.6 *	16.7	20.7	416	16.8 §, *	14.8	18.9	483	20.6 *	17.9	23.7
Good †	443	32.4	27.8	37.2	190	26.2 §	21.0	32.2	253	39.2	32.4	46.5
Fair/poor	153	48.7 *	38.4	59.2	61 E	45.7 E, *	30.3	61.9	92 E	50.9	39.2	62.6
Self-perceived mental health												
Excellent/very good	573	26.1 *	23.4	28.9	261	21.8 §	18.5	25.5	312	31.2 *	25.6	37.5
Good †	248	38.5	32.4	44.9	68	24.6 §	18.2	32.4	180	48.9	40.5	57.3
Fair/poor	155	62.0 *	49.4	73.2	61 E	56.6 E, *	34.6	76.3	93 E	66.2 *	51.0	78.7
BMI												
Underweight	66	23.7	18.3	30.1	37 E	23.6	16.6	32.4	29	23.8 E	15.1	35.5
Normal range †	858	20.5	18.9	22.1	364	17.1 §	15.2	19.3	495	23.9	21.0	27.0
Overweight	201	24.1	20.1	28.6	90 E	22.6 E	15.7	31.4	111	25.4	20.5	31.1
Obesity	183	25.6	21.1	30.7	92	22.5	16.8	29.5	91 E	29.7	22.0	38.8
Asthma												
Yes	367	51.0 *	45.1	56.9	177	47.3 *	39.7	55.0	190	55.0 *	45.8	63.8
No †	1,127	19.5	17.9	21.2	490	16.5 §	14.7	18.5	638	22.6	20.2	25.2
Mood disorder												

Characteristics	Both sexes				Males				Females			
	Number '000	%	95% confidence interval		Number '000	%	95% confidence interval		Number '000	%	95% confidence interval	
			from	to			from	to			from	to
Yes	153	70.7 *	54.8	82.8	62 E	67.2 *	44.6	83.9	90	73.4 *	56.4	85.5
No†	1,341	21.3	19.7	23.0	604	18.6 §	17.0	20.4	737	24.2	21.8	26.8
Attention deficit disorder												
Yes	280	60.1 *	50.8	68.8	195	60.3 *	49.7	70.1	85 E	59.7 *	48.3	70.2
No†	1,127	18.7	16.9	20.6	445	14.8 §	13.2	16.6	682	22.7	19.2	26.5
Learning disability												
Yes	173	43.0 *	34.9	51.6	116 E	46.6 *	35.8	57.7	57 E	37.3 *	26.6	49.4
No†	1,231	20.2	18.2	22.5	523	17.0 §	14.9	19.2	708	23.6	20.1	27.6

*
significantly different from reference category ($p < 0.05$)

§
significantly different from females ($p < 0.05$)

†
reference category

E
use with caution

Notes: BMI = body mass index. Self-perceived mental health was asked of respondents aged 12 to 19 years. Data for attention deficit disorder and learning disability were collected only in cycles 3 (2012 to 2013) and 4 (2014 to 2015) of the Canadian Health Measures Survey.

Source: 2012 to 2013, 2014 to 2015 and 2016 to 2017 Canadian Health Measures Surveys, combined.