Substance-Related Disorders – Prevalence of Cases Identified Using Administrative Databases, 2001-2016

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This report presents the annual and cumulative prevalence of substance-related disorders (SRDs). It demonstrates the ability of the Québec Integrated Chronic Disease Surveillance System (QICDSS) to allow for the study of SRDs based on health administrative databases. Prevalences were determined based on administrative data from April 1, 2001 to March 31, 2016, for all persons eligible for coverage by the Régie de l'assurance maladie du Québec and aged 12 and older. To be identified as having an SRD, the individual must have had at least one medical visit or hospitalization resulting in a primary or secondary diagnosis of an SRD.

- Over a 15-year period, 40 individuals per 1,000 were diagnosed with an alcohol-related disorder and 39 per 1,000 with a drug-related disorder. Approximately 13 per 1,000 were diagnosed with both an alcohol-related and a drug-related disorder. Thus, 66 individuals per 1,000 were diagnosed with at least one SRD.

- The annual prevalence of SRDs remained stable during the period studied (9 per 1,000 individuals in 2015-2016), with an annual rate of 12 per 1,000 for men and 7 per 1,000 for women.

- The annual prevalence of alcohol use disorders remained stable from 2001-2002 to 2015-2016 for women aged 18 years and older, while it decreased for men aged 25 years and older for the same period.

- The annual prevalence of alcohol dependence decreased slightly from 4 to 3 per 1,000 over the 15-year period, while the prevalence of alcohol abuse remained stable (around 1 per 1,000).

- The annual prevalence of drug use disorders ranged from 3 to 4 per 1,000 from 2001-2002 to 2015-2016. Individuals aged 18-49 years showed the highest prevalence of all age groups. The annual rate appears to have been declining for 18-49-year-old in recent years; in contrast, an increase in the annual prevalence of drug use disorders is observed among adolescents.

- The prevalence of alcohol withdrawal increased until 2010-2011 and was highest among those aged 65 years and older: from 2 per 1,000 women in 2001-2002 to 3 per 1,000 in 2010-2011 and from 2 per 1,000 men (2001-2002) to 4 per 1,000 (2010-2011). Prevalence has remained stable since then.

- The annual prevalence of alcohol-induced physical diseases remained stable and was highest among men (2 per 1,000 men aged 50-64 years and 3 per 1,000 men aged 65 years and older).

- The annual prevalence of drug-induced psychotic disorders increased slightly (from 0.4 to 0.7 per 1,000 individuals over 15 years), especially among men and among persons aged

18-24 and 25-49 years; in contrast, the annual rate remained stable among adolescents for this sub-indicator (around 0.3 per 1,000 adolescents).

- The annual prevalence of alcohol intoxication increased from 0.3 to 0.6 per 1,000 over a 15-year-period. The increase is most notable among 18-24-year old, among whom it increased from 0.3 to 1.0 per 1,000 for men and from 0.2 to 0.8 per 1,000 for women from 2001-2002 to 2015-2016.

- About half of all cases of alcohol intoxication from 2001-2002 to 2015-2016 involved persons presenting or having presented with an alcohol-related disorder.

- The prevalence of drug intoxication ranged from 0.5 to 0.7 during the same period.

The information in this report provides a previously unavailable portrait of SRDs in Québec based on the new surveillance indicators developed with reference to the QICDSS. It could potentially lead to more in-depth analyses, including information about the burden placed by SRDs on the health care system, the physical and psychiatric comorbidities associated with SRDs, and the excess mortality attributable to chronic and problematic use of psychoactive substances.

1   INTRODUCTION

Psychoactive substance use can be associated with multiple health problems. In 2016, alcohol and drug use was ranked as the eighth leading risk factor for death and disability globally (Gakidou et al., 2017). However, the use of psychoactive substances does not systematically prove harmful. The majority of people who use these substances have no associated problems and will probably never develop any. Nevertheless, some individuals may develop a psychoactive substance-related disorder (SRD). Thus, intoxication may occur on a single occasion or on several occasions during their lifetime. Excess use may also occur repeatedly, which can lead to abuse or dependence (both of which constitute a substance use disorder). Other problems, in addition to those associated with manner of use, may also arise: withdrawal, secondary physical diseases, induced mental disorders, etc. Thus, psychoactive substance use represents a vast and heterogeneous phenomenon forming a broad spectrum ranging from non-problematic recreational use to use associated with severe clinical manifestations (Figure 1). It should also be noted that substance use and its consequences are dynamic phenomena that change over time; the same person may be positioned at different points on this spectrum during the course of their lifetime.

Figure 1   The spectrum of substance-related disorders

Intoxications

Non-problematic use

Problematic use

Psychoactive substance use disorder
(abuse or dependence)

Psychoactive substance-induced disorders
(withdrawal, acute or chronic physical diseases, mental disorders)
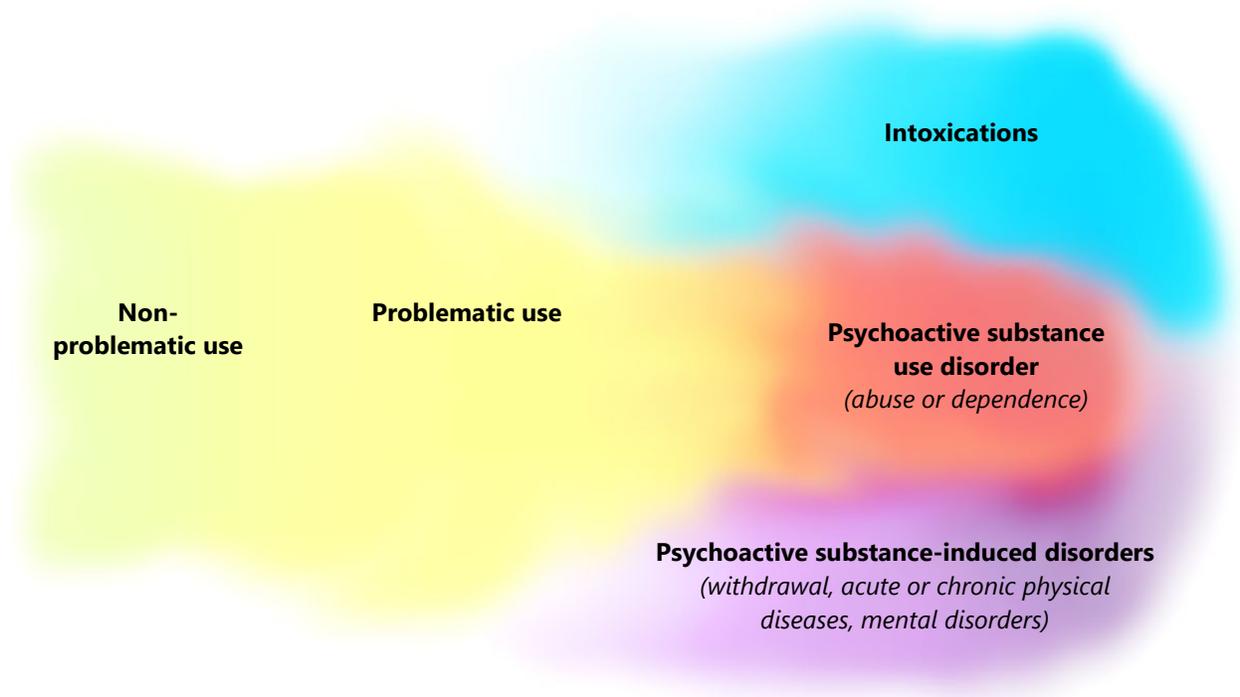
The most recent epidemiological survey data support the assertion that SRDs do not develop in all users. According to the 2015 Canadian Tobacco, Alcohol and Drug Survey (CTADS), 94% of Quebecers aged 15 years and older reported having drunk alcohol, 42% having used cannabis and 16% having used another psychoactive substance[1] in their lifetime. In the previous 12 months, 82% reportedly drank alcohol, 10% used cannabis and 2% used another psychoactive substance (Gouvernement du Canada, 2015b). According to data from the 2012 Canadian Community Health Survey (CCHS) – Mental Health, 13% of Quebecers aged 15 years and older had reportedly had an alcohol use disorder (abuse or dependence), 6% a cannabis use disorder, and 4% another drug use disorder (excluding alcohol and cannabis) in their lifetime. In the previous 12 months, 3% reportedly had an alcohol use disorder, 1.4% had a cannabis use disorder, and 0.5% had another drug use disorder (Baraldi, Joubert, & Bordeleau, 2015). Unfortunately, survey data on the prevalence of SRDs other than abuse or dependence is not collected in Québec.

While not all use leads to harm, SRDs nonetheless represent a significant health burden in terms of prevention and care for individuals and populations (Rehm et al., 2009). In addition to the negative impacts on the individual user, problematic use of psychoactive substances is also associated with impaired social functioning, family, employment and legal problems, and a significant economic burden on society. In Canada, costs tied to alcohol-related and drug-related harms[2] were estimated at $14.6 billion and $11.8 billion, respectively, in 2014; direct health care costs[3] were $4.2 billion for alcohol and $989.8 million for drugs (Groupe de travail scientifique sur les coûts et les méfaits de l'usage de substances au Canada, 2018). These estimates include all health care and social services provided for any psychoactive substance-related condition. Thus, care accounts for less than half of the expenses incurred managing SRDs.

According to the 2012 CCHS, 58% of Quebecers having had a major depressive episode, a bipolar disorder or a generalized anxiety disorder in the previous 12 months consulted health or social service professionals[4] or were hospitalized in the same year. This proportion decreases to only 21% for persons meeting the criteria for psychoactive substance abuse or dependence (in the previous 12 months) (Baraldi et al., 2015). The same survey points out that 38% of

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[1] Cocaine, crack, amphetamine, methamphetamine, crystallized methamphetamine, ecstasy, hallucinogens (excluding salvia), heroin.

[2] In the report of the Canadian Substance Use Costs and Harms Scientific Working Group, drugs include cannabis, opioids, other central nervous system depressants (such as benzodiazepines and barbiturates), cocaine, other central nervous system stimulants (such as amphetamines, methamphetamine and ecstasy), and other psychoactive drugs (such as hallucinogensand inhalants).

[3] These figures exclude costs related to hospitalizations, day surgeries and emergency room visits for Québec.

[4] In the 2012 CCHS, professionals consulted for emotional, mental health, or substance use problems (depending on the person's problem) include general practitioners, psychiatrists, nurses, psychologists, social workers, counsellors, and psychotherapists.

Quebecers who meet the criteria for abuse or dependence had sought help from informal resources.[5]

Currently, knowledge in Québec concerning the prevalence of SRDs and the resulting use of care and services relies primarily on two sources: population-based surveys and clinical research. Thus, although rich in information, these studies cannot provide timely data that allow changes in the prevalence of SRDs or their complications to be monitored. Québec's Integrated Chronic Disease Surveillance System database, known as QICDSS (Système intégré de surveillance des maladies chroniques[6] du Québec) allows for the quantification of individuals diagnosed with an SRD by a physician in Québec. By covering almost the entire Québec population over a 15-year period and by updating data on an annual basis, the QICDSS complements the information obtained from other sources (population-based surveys and clinical research). In brief, the use of an administrative database such as the QICDSS makes it possible to evaluate the extent to which SRDs impact Québec's health system (Kisely et al., 2009) and to monitor desired improvements in the management and treatment of SRDs leading to better health outcomes.

Thus, the main objective of this report is to calculate the prevalence of the various SRDs diagnosed in Québec using the QICDSS and to compare the findings with data from other Québec sources. This paper will also discuss the strengths and limitations of identifying SRD cases based on physician diagnoses extracted from administrative databases

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[5]   Family member, friend, Internet, support group, telephone helpline, co-worker, supervisor, boss, teacher, principal or employee assistance program.

[6]   For some national and international associations and organizations, SRDs constitute chronic conditions, (American Society of Addiction Medicine, 2011) and their related services should be organized in the same manner as for other chronic diseases. In addition, because of their high concomitance with other chronic disorders and diseases, SRDs should be the subject of particular attention in chronic disease surveillance.

2   METHODOLOGY

2.1   Data sources

Prevalence estimates were produced from data derived by combining the administrative databases of the Régie de l'assurance maladie du Québec (RAMQ) and the Ministère de la Santé et des Services sociaux du Québec (MSSS), which compose the Québec Integrated Chronic Disease Surveillance System (Blais et al., 2014). These databases consist of the Fichier d'inscription des personnes assurées à l'assurance maladie (FIPA) (the health insurance registry), the Fichier des services médicaux rémunérés à l'acte (the medical fee-for-service database), the MED-ÉCHO hospitalization database, and the Fichier des décès du Registre des événements démographiques (the vital statistics death database). The FIPA provides information on demographics (age, gender) as well as on periods of eligibility for health insurance. The Fichier des services médicaux rémunérés à l'acte compiles all primary diagnoses made by a physician and paid for by the RAMQ, while the hospitalization database compiles the primary and secondary diagnoses associated with a hospital admission. The International Classification of Diseases, Ninth Revision (ICD-9) codes were used to identify diagnoses in the Fichier des services médicaux rémunérés à l'acte throughout the observation period and, until March 31, 2006, they were also used in the MED-ECHO database. However, the 10th Revision (ICD-10) codes have been used in the MED-ECHO database since April 1, 2006.

2.2   Identification of cases and measurement of prevalence and incidence

To be considered to have an SRD, an individual has to have received during the fiscal year (April 1 through March 31) a primary or secondary diagnosis of an SRD reported in the Fichier des services médicaux or in the MED-ECHO database. For the cumulative prevalence, the diagnosis can have been made at any time between April 1, 2001 and the year of study. The diagnostic codes associated with SRDs are as follows:

a) **Alcohol use disorder**. This indicator identifies alcohol abuse or dependence, where the disorder consists in the pattern of substance use itself. It comprises codes 303, 305.0 in ICD-9 and F10.1, F10.2 in ICD-10;

b) **Drug use disorder**. This indicator identifies drug abuse or dependence, where the disorder consists in the pattern of substance use itself. It comprises codes 304.0-304.9, 305.2-305.7, 305,9 in ICD-9 and F11.1, F12.1, F13.1, F14.1, F15.1, F16.1, F18.1, F19.1, F11.2, F12.2, F13.2, F14.2, F15.2, F16.2, F18.2, F19.2 in ICD-10;

c) **Alcohol-induced disorder**. This indicator identifies disorders and diseases that result directly and primarily from problematic alcohol use. It includes individuals who have an induced

disorder that is 100% attributable to alcohol,[7] such as withdrawal, delirium tremens, alcoholic cirrhosis of the liver, etc. It comprises the following codes: 291, 357.5, 425.5, 535.3, 571.0-571.3 in ICD-9 and F10.3-F10-9, K70.0-K70.4, K70.9, G62.1, I42.6, K29.2, K85.2, K86.0, E24.4, G31.2, G72.1, O35.4 in ICD-10;

d) **Drug-induced disorder**: This indicator identifies disorders that result directly and primarily from problematic drug use. This includes withdrawal and secondary psychosis. It comprises the following codes: 292 in ICD-9 and F11.3-F11.9, F12.3-F12.9, F13.3-F13.9, F14.3-F14.9, F15.3-F15.9, F16.3-F16.9, F18.3-F18.9, F19.3-F19.9 in ICD-10;

e) **Alcohol intoxication**. This indicator identifies states of physical and cognitive disturbance, such as alcoholic coma, that are the direct consequence of an episode of alcohol use. It comprises the following codes: 980.0, 980.1, 980,8, 980.9 in ICD-9 and F10.0, T51.0, T51.1, T51.8, T51.9 in ICD-10;

f) **Drug intoxication**. This indicator identifies states of physical and cognitive disturbance, such as "bad trips" and overdoses that are the direct consequence of an episode of drug use. It comprises the following codes: 965.0, 965.8, 967.0, 967.6, 967.8, 967.9, 969.4-969.9, 970.8, 982.0, 982.8 in ICD-9 and F11.0, F12.0, F13.0, F14.0, F15.0, F16.0, F18.0, F19.0, T40, T42.3, T42.4, T42.6, T42.7, T43.5, T43.7-T43.9, T50.9, T52.8, T52.9 in ICD-10.

The detailed methodology used to develop the indicators can be found in another publication (Huỳnh, Rochette, Pelletier, & Lesage, 2018). Briefly, the indicators were developed in three main stages: 1) identification of all ICD codes that could define an SRD; 2) selection of relevant codes; 3) clustering of codes to build the algorithms underlying the indicators. At each stage, an initial proposal based on a review of previous scientific publications and grey literature was presented to a working team composed of researchers, psychiatrists, family physicians and an emergency physician, with expertise in SRDs. Team members held discussions until a consensus was reached. Once a proposal was unanimously accepted, the next stage was initiated. It should be noted that all of the codes selected correspond either to diagnoses that reference an SRD or to physical, chronic, or acute illnesses that are entirely attributable to the regular use of a psychoactive substance.

Alcohol has been set apart from other substances because of its pervasiveness in society, its legal and regulated status, and its medico-economic importance. In contrast, the expert panel chose to group all other psychoactive substances together: cannabis, opioids, cocaine and other psychostimulants, sedatives and hypnotics, hallucinogens and volatile solvents. The first reason

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[7] It is understood that many other physical diseases, such as certain types of cancer, can be the result of problematic alcohol use. However, this indicator is designed to include only individuals with a substance-related disorder and not to represent all of the consequences of use. Thus, the wording of the ICD code must explicitly mention the role of the substance in the etiology of the induced disorder. For example, the ICD-10 code "K70.3 *Alcoholic* cirrhosis of liver" is included, while the code "K74.6 Other and unspecified cirrhosis of liver" is excluded, because it can characterize cases that are not at all alcohol-induced.

for this is that claims are frequently submitted to the RAMQ for codes associated with multiple drug use or unspecified drugs. This is because it is difficult for physicians to determine what exactly patients may have consumed; the latter may not know what they actually consumed (e.g., the purity of the product). Moreover, studies show that multiple use is more often the rule than the exception. The second reason is that ICD-9 coding, which is still used for fee-for-service medical procedures, does not always allow specification of which substance was associated with the diagnosed disorder.

Given the potential underdetection of SRDs by health professionals (Marshall & Deane, 2004, Rehm et al., 2015), the group felt it appropriate to expand the definition beyond the clinical diagnoses described in traditional nosographies, such as abuse, dependence, withdrawal, and induced psychotic disorder. The inclusion of intoxication codes allowed for the capture of some chronic problematic use, given that the intoxication was severe enough to lead an individual to use health services. A diagnosis of intoxication may also be preferred over that of another SRD, especially in cases, particularly in the emergency department, where the immediate medical problem to be treated is intoxication and not the overall dependence. On the other hand, intoxication can also be a one-time event that will neither be repeated nor lead to long-term consequences. This choice may result in a decrease in specificity, but an increase in sensitivity.

If SRDs are considered to be chronic conditions, the use of cumulative prevalences, which include diagnoses occurring at any time over a 15-year period from 2001 to 2016, is appropriate for assessing the extent of diagnosed SRDs in the population. This is the choice made for other chronic diseases such as diabetes, hypertension, chronic obstructive pulmonary disease, asthma, Alzheimer's disease and, recently, for autism spectrum disorder and personality disorders. An individual must meet inclusion criteria from a previous year or the current year to be considered a prevalent case of a diagnosed disorder. The method for defining mental disorders or SRDs differs slightly from that used for other chronic diseases in the QICDSS, since one occurrence suffices to define a case, whereas two occurrences within two years are required for other chronic diseases such as diabetes. This choice was guided by the fact that persons with SRDs consult medical professionals less often or it may be difficult to ensure they continue with treatment, and if the definition was based on a minimal continuance of service use, we would fail to identify some cases and to track their progress. The 15-year cumulative prevalence thus includes both recent and long-standing cases.

Annual prevalence was also estimated and included only those individuals who met the case definition during the year considered. This better represents the burden on health services, but makes less evident the chronic and more widespread nature of SRDs in the population. Annual prevalence also more appropriately reflects the impact of SRDs on health services, as related for example to SRD-induced disorders. This represents a change with respect to the first reports on mental disorders published by the INSPQ (Caihol et al., 2015, Lesage, Émond, & Rochette, 2012) and with respect to the first two surveillance reports on mental illness and anxiety disorders of

the Public Health Agency of Canada (PHAC) (Agence de la santé publique du Canada, 2015). However, in its work on autism spectrum disorders, on schizophrenia, and on mortality associated with mental disorders, the PHAC uses both annual prevalence and cumulative prevalence, and prefers using the latter to also estimate the population prevalence of these chronic diseases.

Appendix 1 details all the ICD-9 codes, as well as their approximate correspondence to ICD-10 codes, that are comprised by the six indicators of SRDs. Eleven sub-indicators are also proposed, allowing interested parties to conduct a more detailed analysis of the phenomenon. It is important to note that changes were made in the transition from ICD-9 to ICD-10, resulting in an imperfect correspondence between the two classifications. Some ICD-9 codes are now split into several different ICD-10 codes, which in turn only partially correspond to ICD-9 codes. The transition from ICD-9 to ICD-10 in the hospitalization databases occurred on April 1, 2006, so any abrupt changes in prevalence during that year may reflect the change in the system rather than an actual increase or decrease in the condition's prevalence in the population.

2.3   Periods covered

The estimates were obtained from data compiled over a 15-year period. The period of analysis begins on April 1, 2001 and ends on March 31, 2016. Comparisons over time are made using age-adjusted measures. These measures are obtained using the direct standardization method based on the age structure of the Québec population in 2006. Services rendered outside Québec are not included in the QICDSS data.

3   RESULTS

3.1   All substance-related disorders (SRDs)

Figure 2 illustrates the co-occurrence of multiple SRDs diagnosed for a single individual over a cumulative period of 15 years. For example, about 6 in 1,000 individuals in 2015-2016 had been diagnosed for both an alcohol use disorder and an alcohol-induced disorder in the previous 15 years. In addition, 13 out of every 1,000 individuals had received an alcohol-related diagnosis as well as a drug-related diagnosis between 2001-2002 and 2015-2016.

Figure 2   **Co-occurrence of SRDs among diagnosed individuals aged 12 and older, 15-year cumulative prevalence (per 1,000), Québec, 2015-2016**
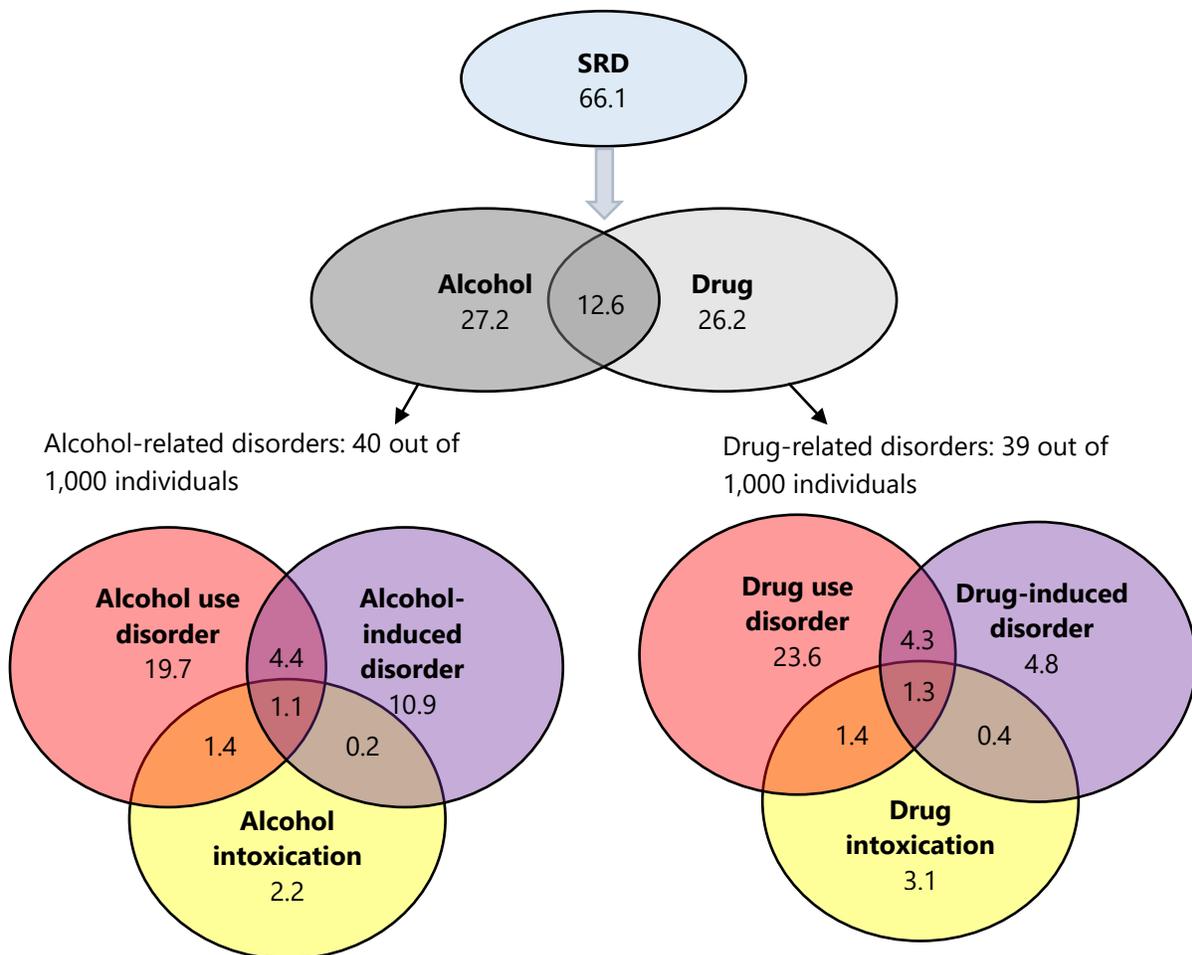
Table 1 indicates the number of individuals aged 12 and older diagnosed with an SRD, as well as the adjusted 15-year cumulative prevalence, for the year 2015-2016. It should be recalled that the same individual may have received more than one diagnosis in the same year or during the previous 15 years. It is worth noting that 14% of persons diagnosed with an SRD in the previous 15 years were seen for an SRD in the final year under study.

Table 1   **Number and adjusted annual and 15-year cumulative prevalences of diagnosed SRDs among individuals aged 12 and older, Québec, 2015-2016**

	Annual prevalence			Cumulative prevalence		
	Number	**Prevalence per 1,000**	**99% CI**	**Number**	**Prevalence per 1,000**	**99% CI**
SUBSTANCE-RELATED DISORDERS	68,520	9.4	9.3-9.5	480,515	66.1	65.8-66.3
1. Alcohol use disorder	22,400	3.0	2.9-3.0	198,465	26.5	26.3-26.6
1a. Alcohol abuse	7,760	1.1	1.1-1.1	81,085	11.5	11.4-11.6
1b. Alcohol dependence	16,400	2.1	2.1-2.1	147,775	19.0	18.9-19.1
2. Drug use disorder	23,845	3.6	3.5-3.7	209,420	30.6	30.4-30.7
2a. Drug abuse	5,070	0.8	0.7-0.8	76,010	11.1	11.0-11.2
2b. Drug dependence	19,965	3.0	3.0-3.0	164,530	24.1	24.0-24.3
3. Alcohol-induced disorder	21,370	2.7	2.6-2.7	128,875	16.5	16.4-16.6
3a. Alcohol withdrawal with or without delirium	7,180	0.8	0.8-0.9	42,915	5.1	5.0-5.1
3b. Alcohol-induced psychotic disorder	6,805	1.0	0.9-1.0	63,285	8.8	8.7-8.9
3c. Other alcohol-induced mental or behavioral disorder	1,725	0.2	0.2-0.2	9,160	1.2	1.2-1.2
3d. Alcohol-induced physical diseases	7,390	0.9	0.9-1.0	34,145	4.1	4.0-4.1
4. Drug-induced disorder	8,405	1.3	1.2-1.3	73,880	10.7	10.6-10.8
4a. Drug withdrawal	1,805	0.3	0.2-0.3	19,900	2.8	2.7-2.8
4b. Drug-induced psychotic disorder	4,645	0.7	0.7-0.7	44,075	6.5	6.4-6.6
4c. Other drug-induced mental or behavioral disorder	2,490	0.4	0.4-0.4	19,080	2.9	2.8-2.9
5. Alcohol intoxication	3,885	0.6	0.5-0.6	34,100	4.8	4.8-4.9
6. Drug intoxication	3,475	0.5	0.5-0.5	44,710	6.2	6.1-6.3

Figure 3   **Adjusted annual and 15-year cumulative prevalences of diagnosed SRDs among individuals aged 12 and older, by gender, Québec, 2001-2002 to 2015-2016**
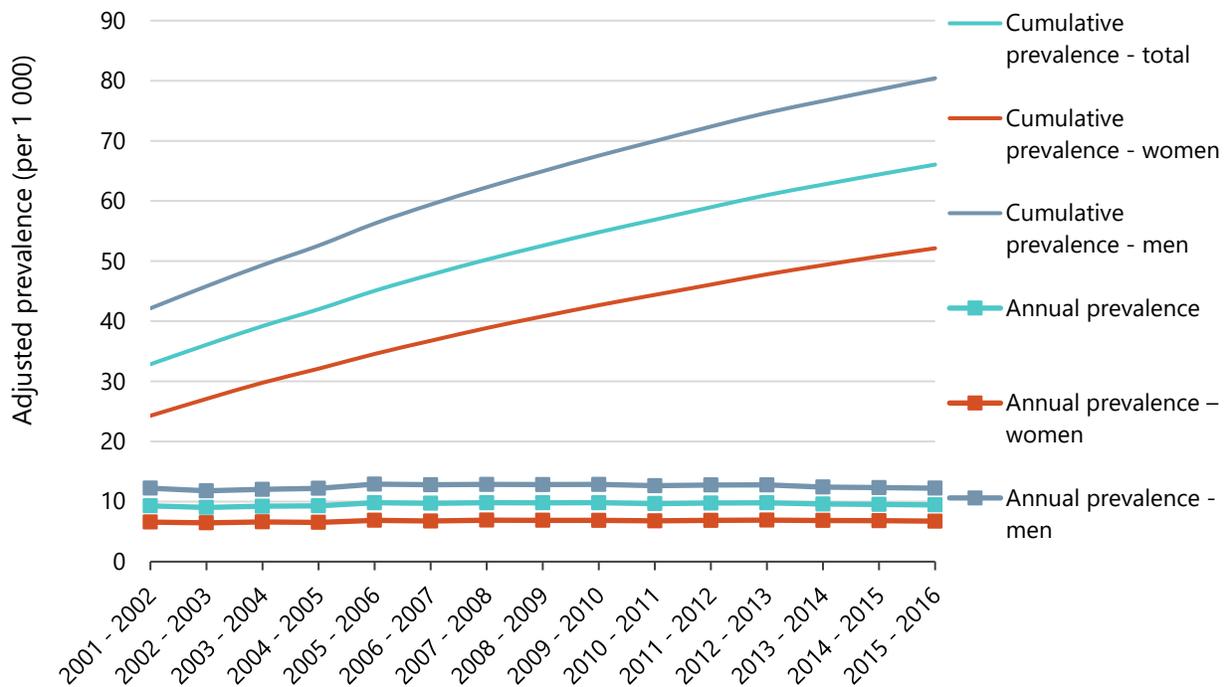
Figure 3 shows the evolution over time of the adjusted annual and 15-year cumulative prevalences of all diagnosed SRDs. Thus, the annual prevalence of SRDs among individuals aged 12 and older remained stable from 2001-2002 to 2015-2016 for both men and women. Twice as many men (n = 41,595) as women (n = 22,940) were diagnosed with an SRD during 2015-2016. In contrast, the cumulative prevalence of all SRDs is steadily increasing over time, year by year, for both women and men. In 2015-2016, it is estimated that 48 out of 1,000 women and 77 out of 1,000 men had been diagnosed with an SRD in their lifetime. This equates to a ratio of almost two men to one woman. The expected plateau within a population does not yet appear to have been reached after 15 years of surveillance.

3.2 Alcohol use disorders

Figure 4 Adjusted annual prevalence of diagnosed alcohol use disorders among individuals aged 12 and older, Québec, 2001-2002 to 2015-2016
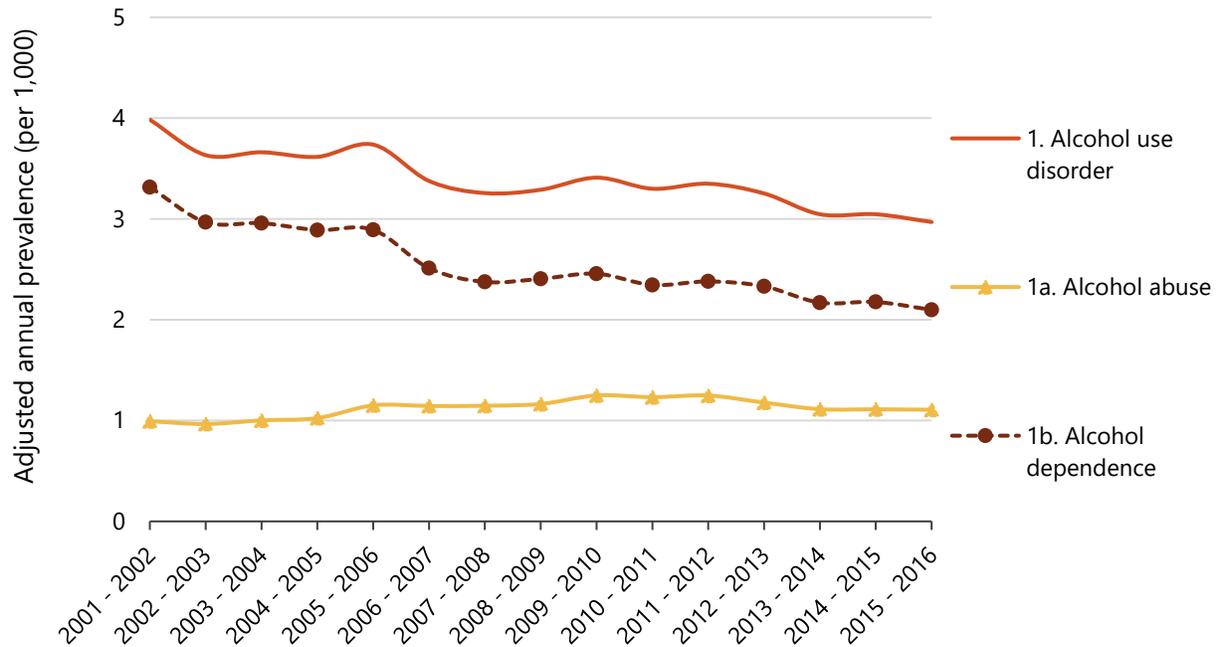
The annual prevalence of diagnosed alcohol use disorders has decreased slightly in recent years (from 4.0 per 1,000 in 2001-2002 to 3.0 per 1,000 in 2015-2016). This trend appears to be explained by a similar observable decline in the alcohol dependence sub-indicator (from 3.3 per 1,000 in 2001-2002 to 2.1 per 1,000 in 2015-2016). With regard to alcohol abuse, the rate of diagnosis has remained relatively stable from 2001 to the present (1.0 to 1.2 per 1,000).

Figure 5   **Annual prevalence of diagnosed alcohol use disorders among individuals aged 12 and older, Québec, 2001-2002 to 2015-2016, by age and gender**
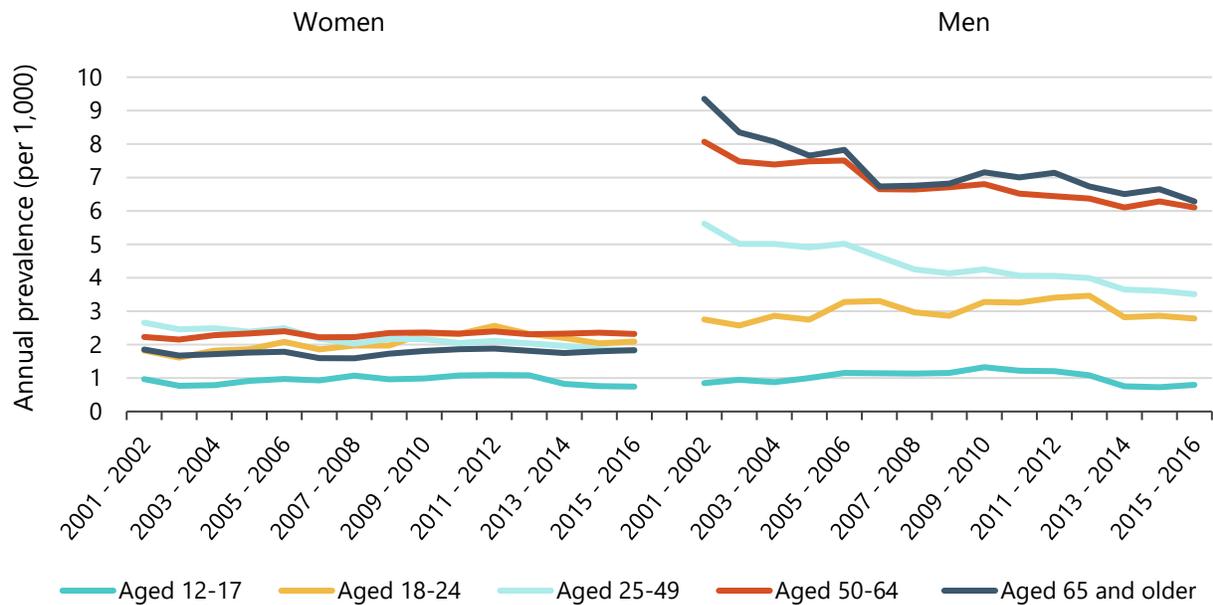
The annual prevalence of diagnosed alcohol use disorders remained stable (around 1 per 1,000) among 12-17-year-old from 2001 to the present and is comparable for both genders. In contrast, in the adult age groups (18 years and older), the annual prevalence rises higher for men than for women. This gap becomes more pronounced with age. In addition, whereas the prevalence among women remained relatively stable, the prevalence among men aged 25 years and older decreased between 2001 and the present (from 5.6 to 3.5 per 1,000 for men aged 25-49, from 8.1 to 6.1 per 1,000 for men aged 50-64, and from 9.3 to 6.3 per 1,000 for men aged 65 and older).

3.3   Drug use disorders

Figure 6   **Adjusted annual prevalence of diagnosed drug use disorders among individuals aged 12 and older, Québec, 2001-2002 to 2015-2016**

The annual prevalence of diagnosed drug use disorders increased between 2004-05 (3.4 per 1,000) and 2007-08 (4.2 per 1,000), and then decreased until 2015-16 (3.6 per 1,000). This trend appears similar to the pattern observed for drug dependence (an increase from 2.6 per 1,000 in 2001-2002 to 3.5 per 1,000 in 2007-2008, followed by a slight decline to 3.0 per 1,000 between 2013-2014 and 2015-2016). With regard to alcohol abuse, the rate of diagnosed disorders remained relatively stable from 2001 to the present (around 1 per 1,000).

Figure 7   Annual prevalence of diagnosed drug use disorders among individuals aged 12 and older, Québec, 2001-2002 to 2015-2016, by age and gender
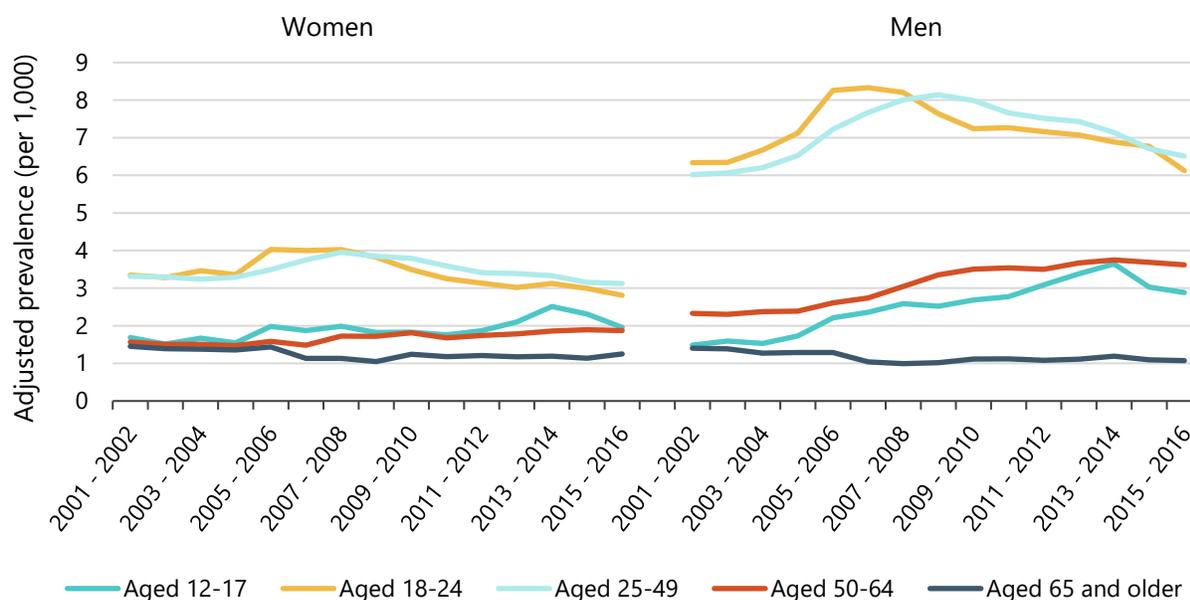
Among 12- to 17-year-olds, the prevalence of diagnosed drug use disorders ranged from 1.5 to 2.0 per 1,000 girls from 2001-2002 to 2011-2012. Among boys of the same age, the prevalence increased linearly over the same period (from 1.5 to 3.1 per 1,000). For both genders, the highest prevalence was observed in 2013-2014 (2.6 per 1,000 girls and 3.8 per 1,000 boys) before declining again (2.0 per 1,000 girls and 2.9 per 1,000 boys). For both men and women, the highest annual prevalences were found among 18-24 year olds and 25-49 year olds, as compared to other age groups. Among women aged 18-49 years, an increase is observable between 2001-2002 (3.3 per 1,000 women) and 2007-2008 (4.0 per 1,000 women), followed by a decrease that continues through until 2015-2016 (2.8 per 1,000 women aged 18-24 and 3.1 per 1,000 women aged 25-49). Among men aged 18 to 24, there was an increase from 2001-2002 (6.3 per 1,000) to 2006-2007 (8.3 per 1,000), followed by a steady decrease through until 2015-2016 (6.1 per 1,000). The same trend can be seen among men aged 25-49 years: increasing from 6.0 per 1,000 in 2001-2002 to 8.1 in 2008-2009 and steadily decreasing to 6.5 per 1,000 in 2015-2016. For ages 50 to 64 years, annual prevalence increased slightly for women (from 1.5 per 1,000 in 2001-2002 to 1.9 per 1,000 in 2015-2016), whereas it increased significantly for men (from 2.3 per 1,000 in 2001-2002 to 3.6 per 1,000 in 2015-2016). Finally, the annual prevalence of drug use disorders is lowest among those 65 years and older and has decreased slightly between 2001 (1.4 per 1,000) and the present (1.0 per 1,000). It is comparable for men and women.
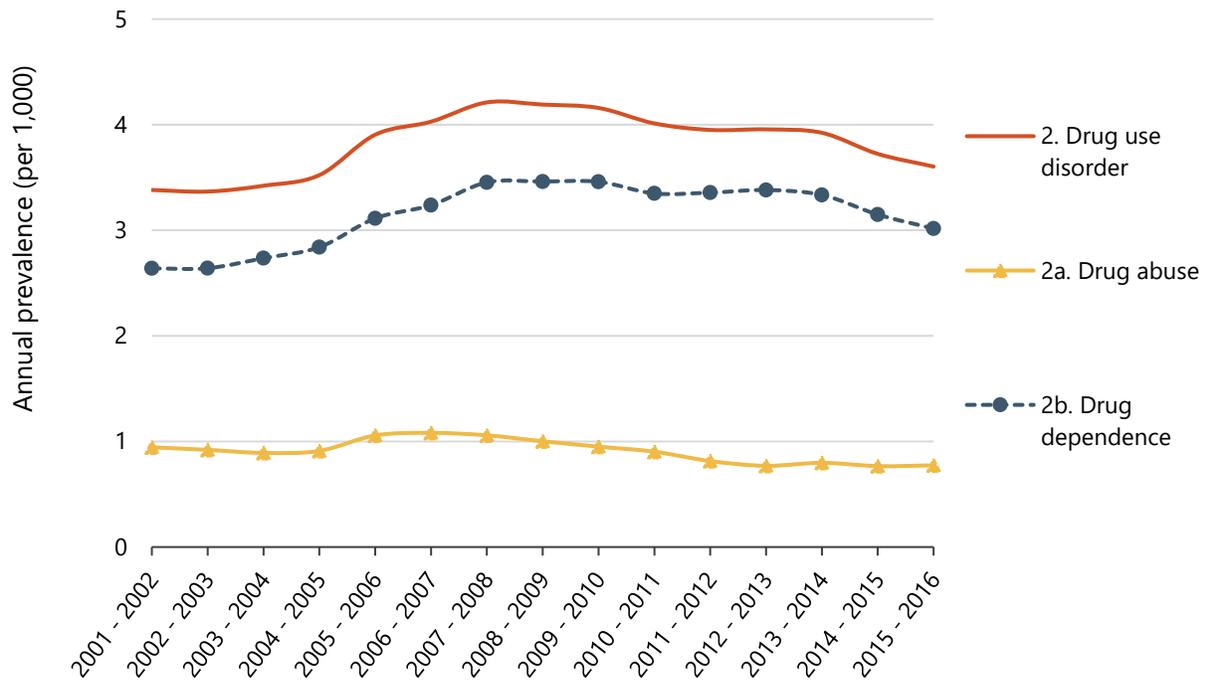
3.4 Alcohol-induced disorders

Figure 8   **Adjusted annual prevalence of diagnosed alcohol-induced disorders among individuals aged 12 and older, Québec, 2000-2001 to 2015-2016**

The annual prevalence of all diagnosed alcohol-induced disorders increased slightly from 2001-2002 (2.1 per 1,000) to 2015-2016 (2.7 per 1,000). The prevalences of withdrawal, induced psychotic disorders, and physical diseases were similar (between 0.6 and 0.7 per 1,000 in 2001-2002). In 2015-2016, the prevalence of withdrawal had increased to 0.8 per 1,000, psychotic disorders to 1.0, and induced physical diseases to 0.9. For other alcohol-induced mental or behavioral disorders, the rate went from about 0.1 per 1,000 in 2001-2002 to 0.2 per 1,000 in 2015-2016.

Figure 9   Annual prevalence of alcohol withdrawal among individuals aged 12 and older, Québec, 2000-2001 to 2015-2016, by age and gender
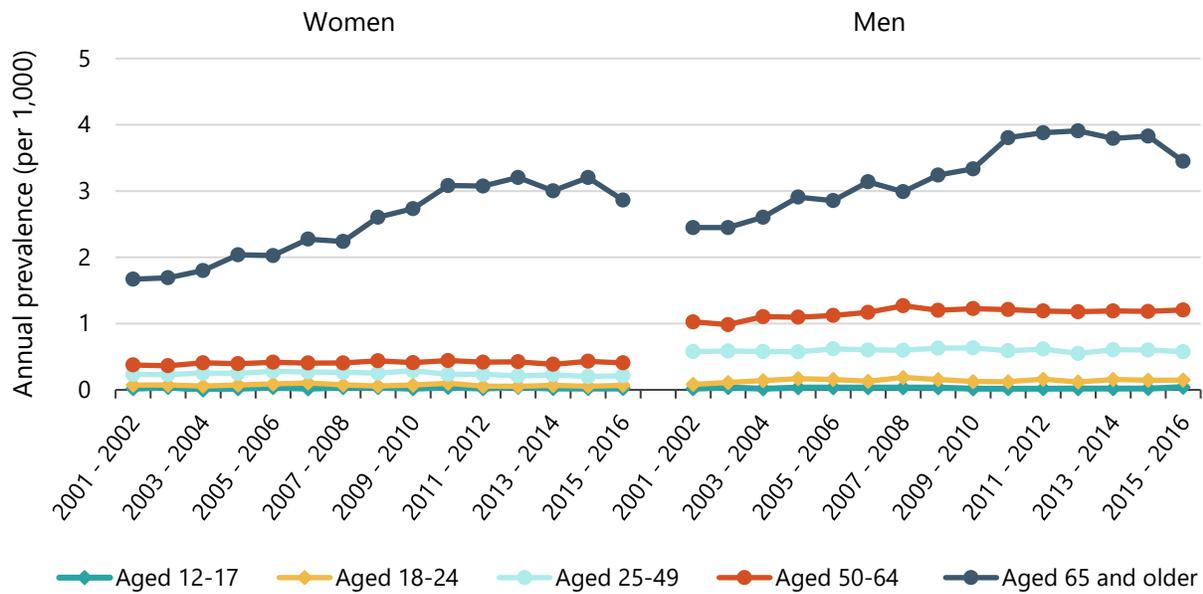
The annual prevalence of alcohol withdrawal increases with age, with the gap being greater among men than among women. Among those 65 years and older, annual prevalence increased from 1.7 women per 1,000 in 2001-2002 to 3.1 women per 1,000 in 2010-2011 and from 2.4 men per 1,000 (2001-2002) to 3.8 men per 1,000 (2010-2011). For both genders in this age group, annual prevalence stabilized in subsequent years through until 2015.

Figure 10   **Annual prevalence of alcohol-induced physical diseases among individuals aged 12 and older, Québec, 2000-2001 to 2015-2016, by age and gender**
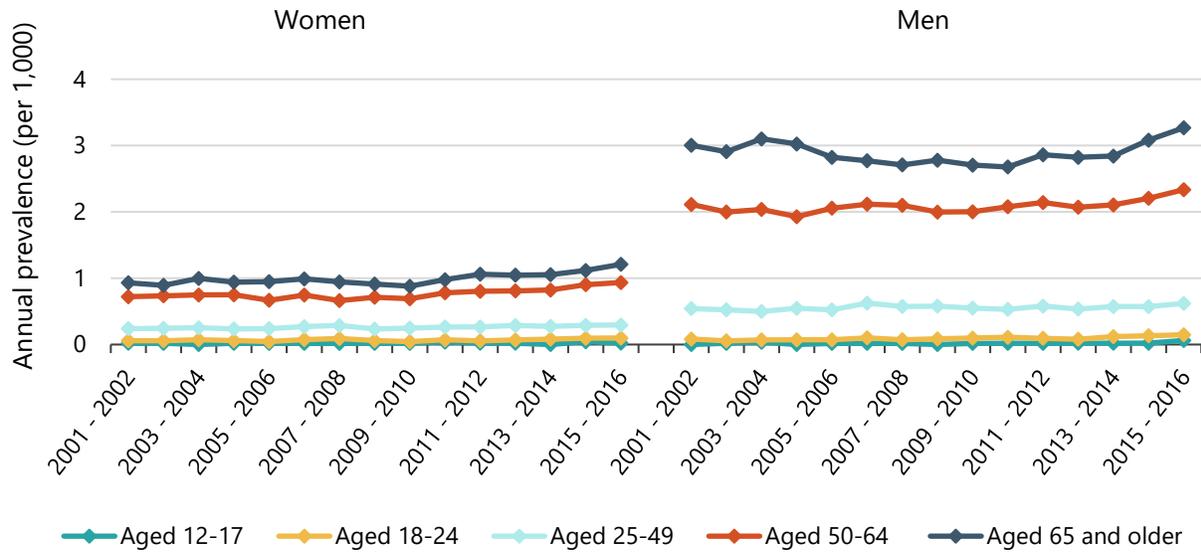
Diagnoses of alcohol-induced physical diseases are relatively rare among women and men aged 24 and younger. Among 25-49 year olds, the annual prevalence is higher among men (0.5 to 0.6 per 1,000) than among women (0.2 to 0.3 per 1,000) and remained relatively stable over the 15-year period. A similar trend can be observed among those aged 50-64 years (1.9 to 2.3 per 1,000 men; 0.7 to 0.9 per 1,000 women), and among those aged 65 years and older (2.7 to 3.3 per 1,000 men; 0.9 to 1.2 per 1,000 women).
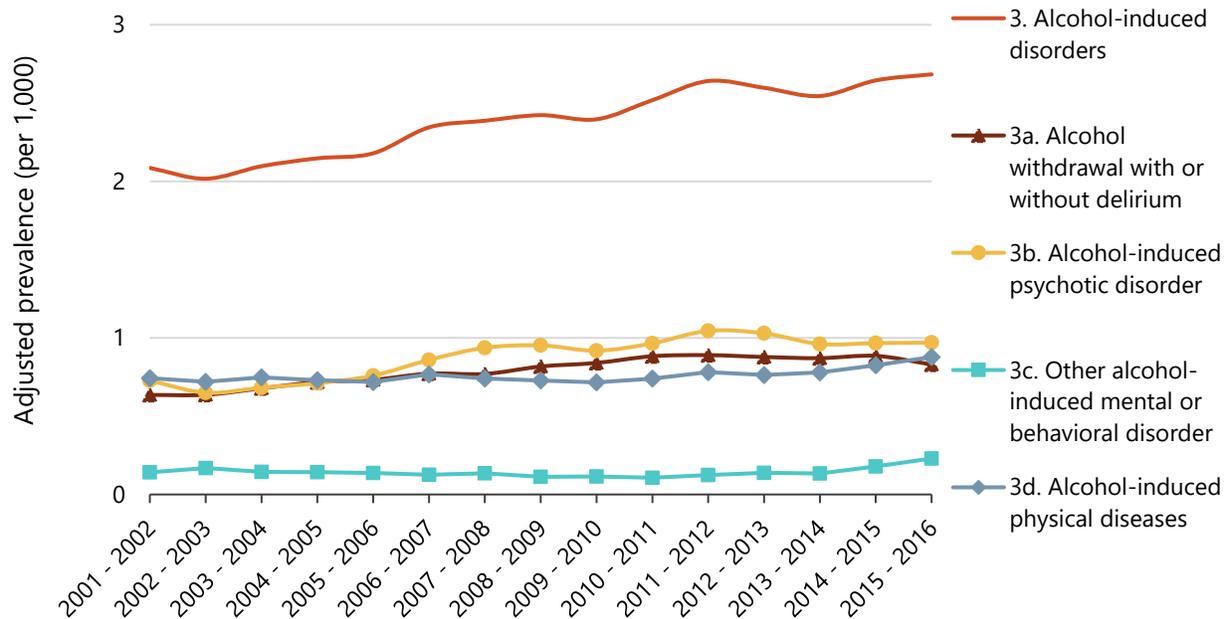
3.5 Drug-induced disorders

Figure 11   **Adjusted annual prevalence of diagnosed drug-induced disorders among individuals aged 12 and older, Québec, 2001-2002 to 2015-2016**

The annual prevalence of all diagnosed drug-induced disorders increased slightly from 2001-2002 (0.7 per 1,000 individuals) to 2015-2016 (1.2 per 1,000). The prevalences of withdrawal and other drug-induced mental or behavioral disorders were similar (0.2 per 1,000 in 2001-2002 and 0.3 per 1,000 in 2015-2016). With regard to drug-induced psychotic disorders, the rate increased slightly over the 15-year period (from 0.4 to 0.7 per 1,000).

Figure 12   **Annual prevalence of drug-induced psychotic disorders among individuals aged 12 and older, Québec, 2000-2001 to 2015-2016, by age and gender**
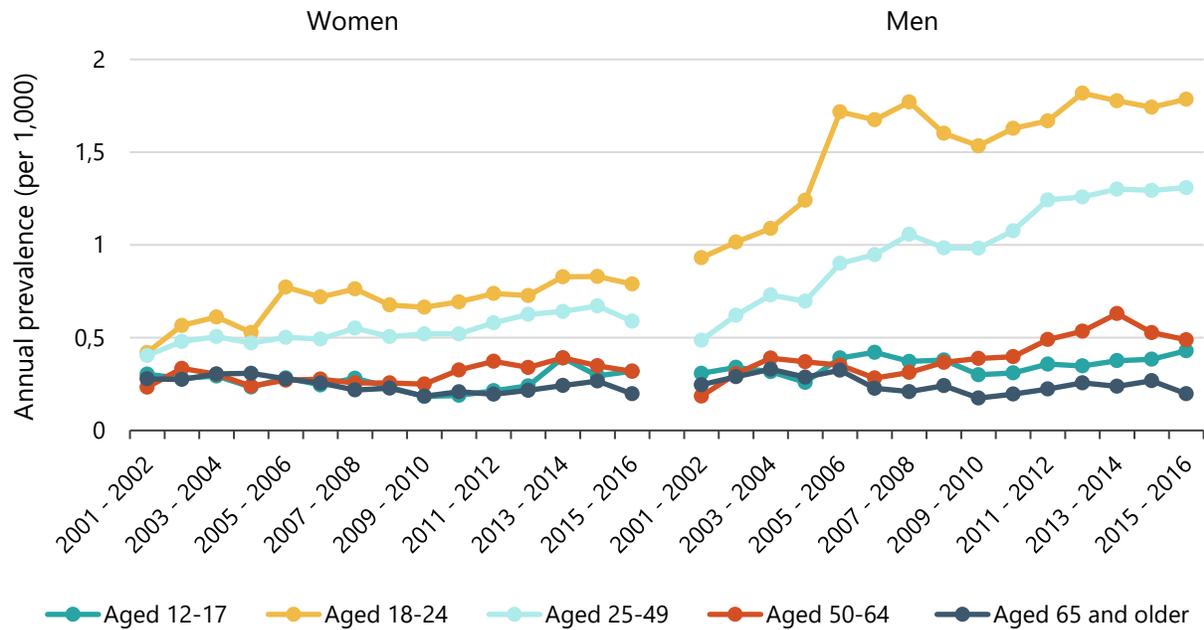
The annual prevalence of drug-induced psychotic disorders was highest among 18-24 year olds (men: 0.9 to 1.8 per 1,000 from 2001 to 2016; women: 0.4 to 0.8 per 1,000 from 2001 to 2016); followed by 25-49 year-olds (0.5 to 1.3 per 1,000 men from 2001 to 2016; 0.4 to 0.6 per 1,000 women from 2001 to 2016). In both age groups, the rate among men is higher than among women; prevalence among men increased more rapidly than among women from 2001-2002 to 2015-2016. A change in prevalence in 2006, especially noticeable among 18-24 year olds, suggests the influence of the switch from ICD-9 to ICD-10 codes in the hospitalization databases.

3.6   Alcohol intoxication

Figure 13   **Adjusted annual and 15-year cumulative prevalences of diagnosed alcohol intoxication among individuals aged 12 and older, Québec, 2001-2002 to 2015-2016**
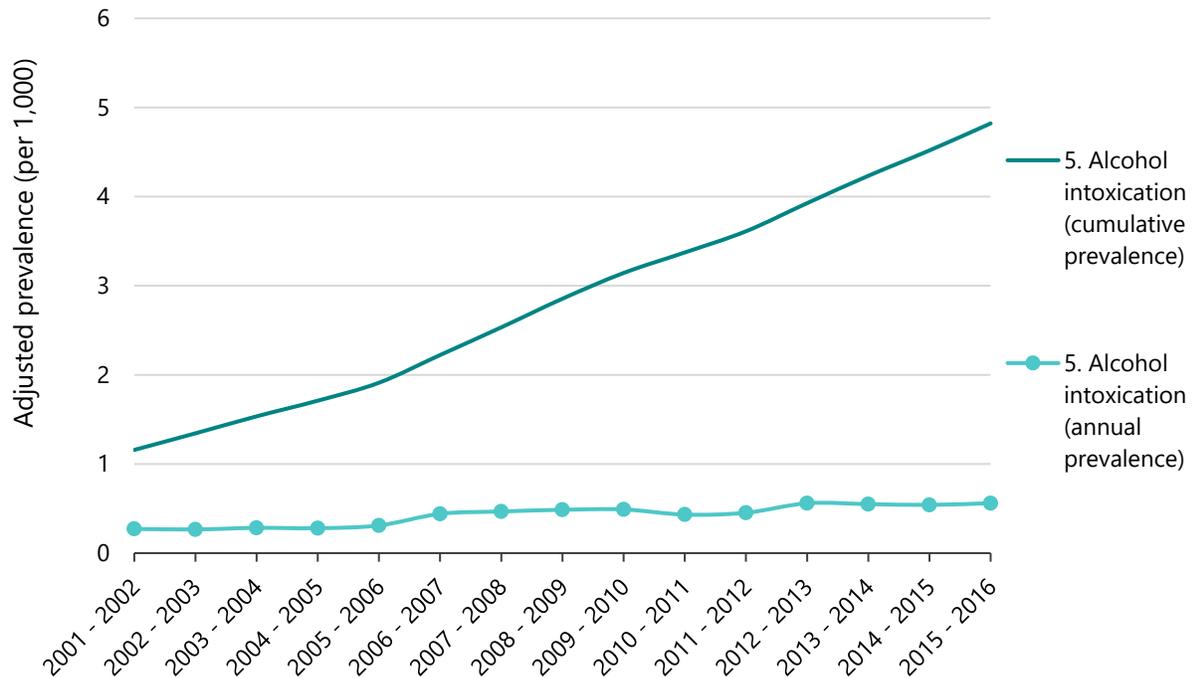
The cumulative prevalence of alcohol intoxication diagnoses increased steadily from 2001-2002 (1.2 per 1,000) to 2015-2016 (4.8 per 1,000). Annual prevalence increased from 0.3 per 1,000 in 2001-2002 to 0.6 per 1,000 in 2015-2016.

Figure 14   **Annual prevalence of alcohol intoxication among individuals aged 12 and older, Québec, 2000-2001 to 2015-2016, by age and gender**
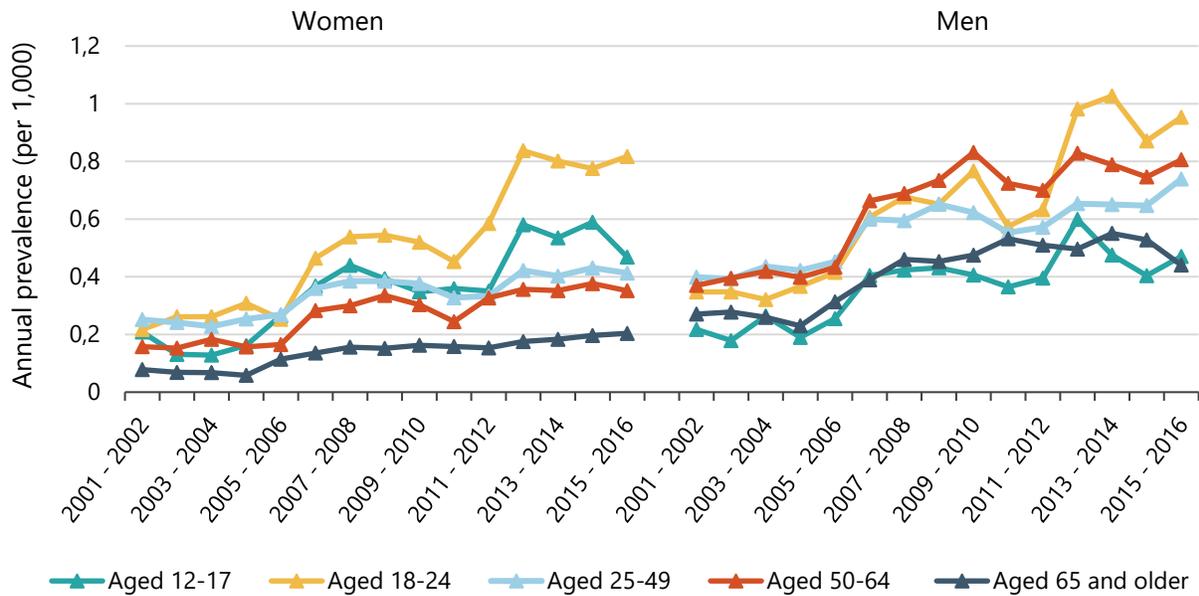
In 2015-2016, the highest rates of alcohol intoxication among women were observed among those aged 18-24, followed by adolescents aged 12-17, and then women aged 25-49. Among men,18-24 year olds again had the highest rates, but men aged 50-64 were next, followed by those aged 25-49; the rates were similar for adolescent males and men aged 65 and older. Among women aged 18-24, annual prevalence increased from 0.2 to 0.8 per 1,000 from 2001-2002 to 2015-2016. Among men in the same age group, the rate increased from 0.3 to 1.0 per 1,000 from 2001-2002 to 2015-2016.

3.7   Drug intoxication

Figure 15   **Adjusted annual and 15-year cumulative prevalences of diagnosed drug intoxication among individuals aged 12 and older, Québec, 2001-2002 to 2015-2016**
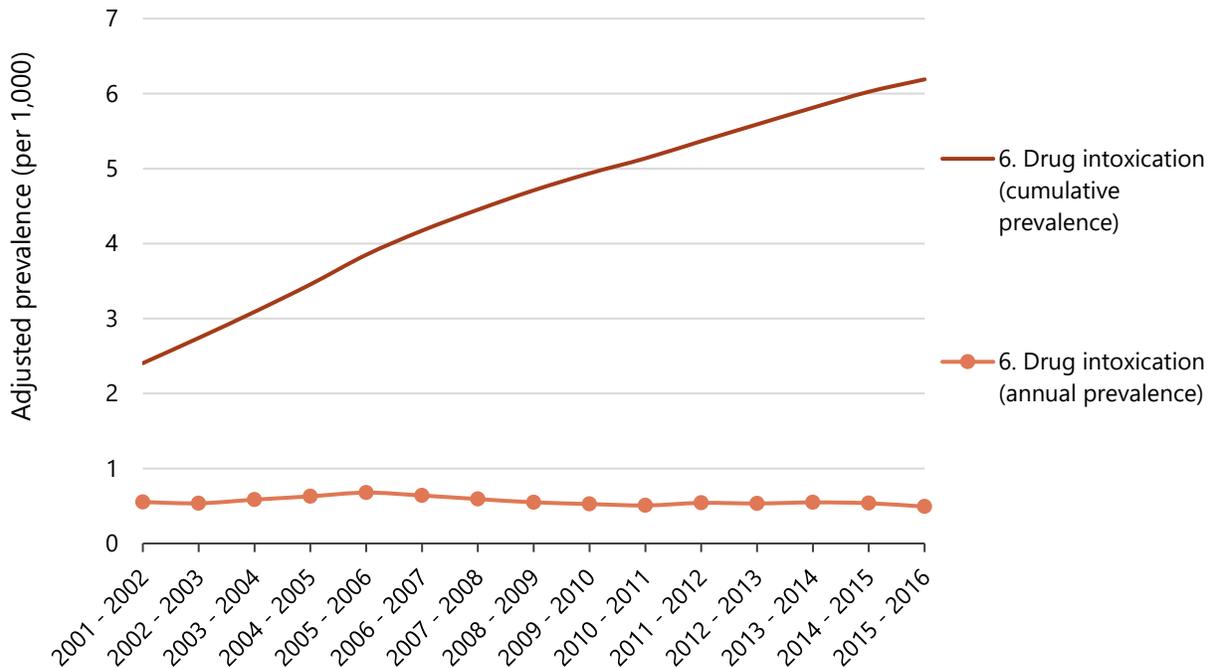
The cumulative prevalence of drug intoxication diagnoses increased steadily from 2001-2002 (2.4 per 1,000) to 2015-2016 (6.2 per 1,000). It increased less rapidly than did alcohol intoxication, but remains higher than the latter. Annual prevalence remained relatively stable from 2001-2002 to 2015-2016, ranging from 0.5 to 0.7 per 1,000.
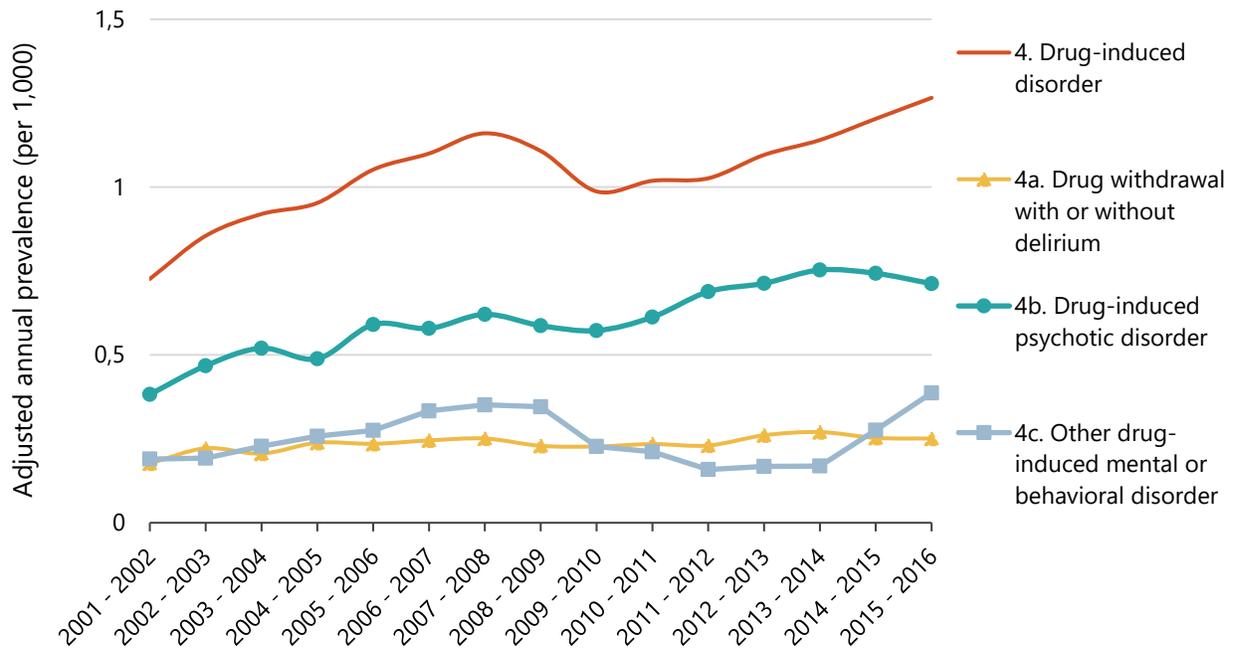
Figure 16   Annual prevalence of drug intoxication among individuals aged 12 and older, Québec, 2000-2001 to 2015-2016, by age and gender
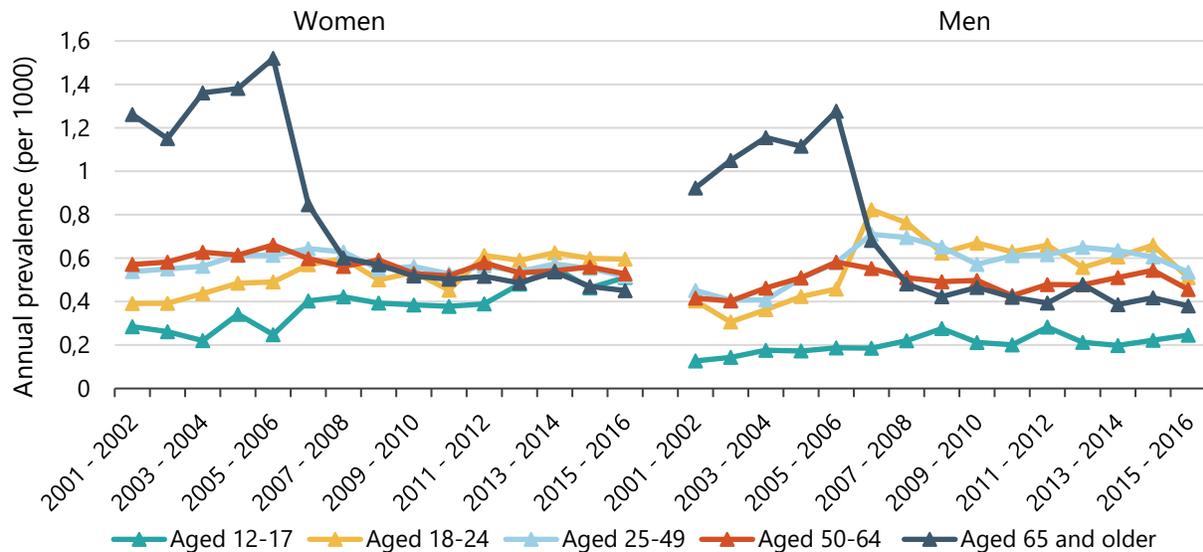
In 2015-2016, the highest rates of drug intoxication among women were observed in the 18-24 age group. Among men, the highest rate was observed instead among 25-49 year olds, but 18-24 year olds followed closely. Among women aged 18-24, annual prevalence increased from 0.4 to 0.6 per 1,000 from 2001-2002 to 2015-2016. Among men in the same age group, the rate increased from 0.4 to 0.8 per 1,000 from 2001-2002 to 2006-2007, returning to 0.5 per 1,000 in 2015-2016. Among men aged 25-49, the rate increased from 0.4 per 1,000 in 2001-2002 to 0.7 per 1,000 in 2006-2007, and then declined to 0.5 per 1,000 in 2015-2016. Among men and women aged 65 and over, high rates were observed until 2005-2006, when prevalences dropped dramatically between 2006 and 2008, and then stabilized in subsequent years. The most plausible explanation would be the 2006 switch from ICD-9 to ICD-10 codes in hospitalization databases. This transition would have eliminated the use of some ICD-9 codes that were predominantly assigned to those aged 65 and older.

4 DISCUSSION

This report based on QICDSS data marks the first use of a surveillance system in Canada to propose SRD indicators based on ICD-9 and ICD-10 codes for the purpose of obtaining annual and cumulative prevalences of diagnosed cases in the general population. The first part of the discussion will compare the annual and cumulative prevalences presented in this report with those found in the literature. The second part will address various issues related to the identification of SRD cases based on diagnoses extracted from administrative databases.

4.1 How do the prevalences obtained using the proposed indicators compare with those reported in the scientific literature?

4.1.1 Psychoactive substance use disorders

According to the 2012 CCHS, 2.7% of Quebecers presented with an alcohol use disorder and 1.9% from a drug use disorder in the previous 12 months (Baraldi et al., 2015). Considering that, according to the same survey, only 21% of those presenting diagnostic criteria for these disorders reported having sought professional services, one would expect the annual prevalence of physician-diagnosed cases of alcohol use disorders to be 0.6% and that of drug use disorders to be 0.4% (Baraldi et al., 2015). According to the QICDSS, in 2015-2016, 4 individuals per 1,000 (or 0.4%) had presented with a drug use disorder in the previous 12 months. Thus, the annual prevalence obtained from the proposed algorithms does not diverge from the value estimated based on epidemiological surveys. In contrast, only half of the expected annual prevalence for alcohol use disorders was observed for the year 2015-2016, or 3 individuals per 1,000 (0.3%). Alcohol use disorders alone are being considered here, so it is likely that cases identified as alcohol abuse or dependence in population-based surveys are included under another category of SRD in our health administrative databases, such as induced disorders and intoxication. Because the rates are equivalent to or lower than the values estimated based on the percentage of individuals who consult primarily for abuse or dependence problems, it can be assumed that the diagnosed cases represent those whose primary reason for consulting was specifically use itself. This would be especially true when it is not possible to add a secondary diagnosis, as is the case in the medical fee-for-service database.

With regard to alcohol use disorders specifically, the proportion of diagnosed cases in an age group increases with age. This finding appears to contradict data from the 2012 CCHS, which reports a decrease in annual prevalence of alcohol use disorders as age increases in the general Québec population, with rates of 9% for those under 25 years of age, 2.1% for those aged 24-44, 1.8% for those aged 45-64, and 0.5% for those aged 65 and older (Baraldi et al., 2015). However, since the QICDSS data represent the population that has been treated, this finding could therefore be explained by a lower proportion of emerging adults seeking help for alcohol use disorders; with the proportion of those seeking treatment increasing subsequently with age.

Indeed, excessive drinking is often perceived as less problematic when individuals are in their early twenties than when they are older, since there is a normalization of this behaviour among emerging adults in our North American societies (Lee, Geisner, Patrick, & Neighbors, 2010, Roberson, McKinney, Walker, & Coleman, 2018). In other words, because of the festive opportunities that often arise during college and university, the marketing that targets this age group, and the reduced burden of family and work responsibilities associated with this phase of adult development, alcohol-related harms are more likely to go unnoticed during emerging adulthood, whereas they appear more significant among older adults (Arnett, 2014, Gates, Corbin, & Fromme, 2016, Roberson et al., 2018). In addition, emerging adults are less likely to seek help for mental health problems than older adults (Huỳnh, Caron, & Fleury, 2016, Huỳnh, Caron, Pelletier, Liu, & Fleury, 2017, Pottick, Bilder, Vander Stoep, Warner, & Alvarez, 2008). When younger adults do seek help, this often involves brief contacts in the emergency department for a related reason, where the use disorder is not the primary problem. In such situations, the substance use disorder will often not be identified as such in administrative databases. Because the effects of alcohol on the body, such as cirrhosis and gastrointestinal cancers, can take years to manifest, it is likely that individuals wait until problems reach this level of severity before consulting, or that physicians detect abuse or dependence late in a patient's life, only once physical complications become manifest (Levola et al., 2014, World Health Organization, 2014). More generally, aging brings its own set of chronic physical diseases to older adults, increasing their likelihood of being in regular contact with the medical system and thus the likelihood of being diagnosed with an SRD when one indeed exists. Also, after the age of 65, the risk of finding oneself in a long-term care facility increases. Screening for SRDs is then carried out more easily, either based on the observations of caregivers or simply through diagnosis upon admission.

With regard to drug use disorders, these are more prevalent among emerging adults (18-24 years) and young adults (25-49 years). Unlike alcohol, drugs are associated with a less well known and more marginalized world, which restricts their use to individuals who are more inclined toward exploration and experimentation, traits that are more pronounced among younger persons than older ones (Arnett, 2005). Notably, annual use of cannabis in 2015 can be seen to drop from 29.4% among Canadians aged 20-24 to 9.0% among those aged 25 and older; similarly, use of other drugs drops from 8.8% among 20-24 year olds to 1.5% among those aged 25 and older (Gouvernement du Canada, 2015b). Because drug-related complications quickly become manifest, such as infectious diseases transmitted by sharing paraphernalia or psychotic break, drug use disorders would be detected at a younger age (Caton, Drake, Hasin, & et al., 2005, Roy et al., 2008).

4.1.2   Psychoactive substance-induced disorders

Cases of delirium tremens during withdrawal tend to occur after several years of chronic excessive alcohol use. Thus, it is not surprising to see that the reported data indicate a significant increase in the rate of alcohol withdrawal among older adults. In contrast, the progressive increase from 2001 to 2016 among both men and women aged 65 and older may seem surprising. The explanation may be related to the implementation of integrated services for the elderly population, which has brought more fee-for-service physicians in contact with this clientele.

Several physical diseases are also known to be induced by chronic alcohol use extended over a period of many years (Cargiulo, 2007). According to QICDSS data, this situation applies to approximately 7,000 patients in Québec each year. This number may seem very low, but this is because the sub-indicator for alcohol-induced physical diseases includes only diagnoses where alcohol is specifically mentioned in the wording of the code. For example, if a patient with alcohol dependence and cirrhosis of the liver is specifically diagnosed with "alcoholic cirrhosis of the liver," they are counted among SRD cases; conversely, if they are diagnosed with "unspecified cirrhosis of the liver," they are not identified as having an SRD. Throughout Canada, archivists are obliged to code exactly what physicians enter as a diagnosis on the claim or record and cannot make any necessary correction even if alcohol is mentioned in the more detailed reports in the medical file (Tang, Lucyk, & Quan, 2017).

A worrisome observation is that many such individuals will have been diagnosed with an alcohol-induced disorder without ever having received a diagnostic code for an alcohol use disorder or intoxication in the previous 15 years. As suggested above, it is likely that the alcohol problem was only detected once physical complications arose, especially in cases where the patient had not previously accessed medical services specifically for an SRD, had denied having alcohol-related problems, had refused help or treatment, or had not been diagnosed for this problem by their physician during annual follow-ups.

With regard to alcohol-induced psychotic disorders, our data suggest a cumulative prevalence of 8.8 per 1,000 for the entire population considered; the sparse data available from previous studies, on the other hand, report cumulative prevalences of from 0.4% to 0.7% among hospitalized individuals with alcohol dependence, a reference population that is smaller and more clinically severe than ours (Musalek, Scheibenbogen, & Schuster, 2016, Soyka, 2008). With regard to drug-induced psychotic disorders, it is likely that our indicator does not capture all drug-induced psychotic disorders, as some could be classified as schizophrenic disorders or other psychotic disorders, given the difficulty of distinguishing a drug-induced psychotic disorder from a psychotic disorder co-occurring with an SRD (Caton et al., 2005).

4.1.3 Intoxications

The annual and cumulative prevalences of alcohol or drug intoxication represent the smallest proportion of all SRDs. Previous studies have found that the proportion of alcohol intoxication cases seen in emergency departments ranges from 0.6% to 40% of all visits (Pletcher, Maselli, & Gonzales, 2004, Vardy et al., 2016, Verelst, Moonen, Desruelles, & Gillet, 2012). This wide range is explained by methodological differences, including the very definition of what constitutes intoxication. It should be noted that intoxication is often a secondary reason for consultation. The consequence of the intoxication, for example a fracture, is the primary reason and therefore the injury will be the diagnosis recorded and coded in the databases. When the annual prevalence of alcohol intoxication is broken down by age, it appears to be highest among 18-24 year olds as compared to other age groups. This is consistent with previous studies that report that the highest rate of excessive alcohol use is observed in this age group, particularly given the context of party culture in college and university settings (Arnett, 2005, Joubert & Baraldi, 2016, Weitzman, Nelson, & Wechsler, 2003). In addition, again among 18-24 year olds, the annual prevalence of alcohol intoxication appears to have doubled since 2012. One interpretation would be to posit a cohort effect, that is, to presume that the last generation of emerging adults drank more than previous generations. According to CCHS data for Québec, a statistically significant increase was observed between 2007-2008 and 2013-2014 in regular and excessive alcohol use over the previous 12 years for this same age group (Joubert & Baraldi, 2016). A supplementary explanation points to success in increasing awareness about the health problems associated with excessive alcohol use over the last five years, which would prompt the companions of an intoxicated person to take them to the emergency room more quickly. Indeed, Éduc'Alcool launched its major awareness campaign concerning moderate use and the effects of excessive use in 2012; their 2017 survey revealed that the Quebecers surveyed felt better informed than they had been five years prior about the risks associated with excessive use, including its impact on health (Éduc'Alcool, 2017).

4.1.4 Higher prevalences for men than for women: general remarks

For each of the indicators examined, both annual and cumulative prevalence was higher for men than for women, with the ratio going as high as two men to one woman. According to epidemiological surveys, in the general population, a greater proportion of men than women use alcohol or drugs, with the exception of psychotropic medications, (Camirand, Traoré, & Baulne, 2016, Gouvernement du Canada, 2015a), and there is a male predominance in both annual and lifetime prevalences of use disorders such as abuse or dependence (Goldstein, Dawson, Chou, & Grant, 2012). In addition, male clients are over-represented in addiction rehabilitation services (Montanari et al., 2011). One explanation for this finding resides with social perceptions and norms surrounding substance use (Hunt & Antin, 2017). Whereas the use of alcohol or other substances, particularly if excessive, allows men to affirm and assert their masculinity (de Visser & Smith, 2007, Peralta, 2007), this same type of use by women is

perceived negatively, although this gender norm has been diminishing in recent decades (Hutton, Griffin, Lyons, Niland, & McCreanor, 2016). The higher prevalence of SRDs among men may also be partly explained by "statistical discrimination" resulting from physician training that makes physicians more likely to query men about possible substance use problems (Smith, Mouzon, & Elliott, 2018). Notably, men tend to express psychological distress and respond to negative or stressful situations with externalizing behaviours, including substance abuse (Dawson, Grant, & Ruan, 2005), leading to more frequent assessment of the problem in men than in women (Smith et al., 2018).

4.2 Do the indicators identify only a minority of individuals who actually have an SRD?

At present, these indicators do not yet represent the true prevalence in the general population, but they nevertheless allow cases of SRDs diagnosed through health systems and services to be monitored over time. From the outset, the prevalences based on the proposed indicators were expected to be lower than those obtained from epidemiological surveys. On the one hand, 31% of Quebecers did not consult a physician in 2016 (Statistique Canada, 2017) and, of the small proportion of individuals with an SRD who made use of professional services (21%), not all of them necessarily consulted a physician (Baraldi et al., 2015). With regard to annual prevalences, this means that a significant proportion of individuals with an SRD will not be "detected" by the indicators because they did not have any contact with a physician in a given year. On the other hand, the cumulative prevalence observed could be more closely aligned with epidemiological survey data, since the proportion of individuals having had no contact with a physician over a 15-year period is potentially very small.

On the other hand, having consulted a physician does not necessarily guarantee the detection and diagnosis of an SRD. Indeed, SRDs may go undetected if problematic use is not the primary reason for the consultation or if it is not considered a known risk factor for the disease or disorder being treated. In fact, only 18% of Québec patients reported having discussed their alcohol use with a physician or another member of their medical team in the previous two years (Institut canadien d'information sur la santé, 2017). It should be noted that the lack of a formal discussion does not mean that the physician did not perceive the presence of problematic use. Also, although the majority of patients think that alcohol use should be assessed during a medical consultation, many admit to denying or distorting the reality if they feel the physician is pushing the issue too hard or adopting a judgemental attitude (Tam, Leong, Zwar, & Hespe, 2015). From a physician's perspective, detection of substance use is also less likely to occur or is undesirable under certain circumstances: lack of time, difficult periods of patients' lives when the assessment of anxiety or depression takes precedence over that of problematic use, patient denial, the perception that addressing the issue will not change the patient's habits, fear of provoking the patient's anger, and fear of damaging the therapeutic alliance (Lid & Malterud,

2012, Mules et al., 2012). There may be other reasons for non-detection, but it is important to understand that certain consultation contexts effectively prevent the physician from performing a thorough and systematic screening.

Setting aside undetected cases, it should be noted that the absence of an SRD diagnosis in administrative databases does not necessarily mean that a disorder was not detected, but rather that it was a secondary reason for the consultation. In the case of the RAMQ fee-for-service database, which includes emergency room visits that did not lead to hospitalization, only the principal diagnosis is coded. For example, a skull fracture with hemorrhage will be the only diagnosis made during an emergency visit, since it was the main reason the person came to the emergency room, even if they arrived under the influence of a substance. Improving the method for coding diagnoses, for example by allowing secondary diagnoses to be entered, could bring the prevalence observed in the databases closer to that actually observed by physicians. Also, in the case of an emergency room visit, physicians often encounter patients they do not know and will only see during a brief intervention. Thus, some physicians may be reluctant to label an individual with a diagnosis of problematic substance use unless it is a blatant reality. Recording an SRD in a patient's file after seeing them for a few minutes for a minor injury may have consequences for the individual (e.g., insurance, etc.). The preference is to exercise caution before making these diagnoses based on a single contact. Thus, the recording of an actual diagnosis is strongly influenced by the context of the medical consultation.

4.3 Do the proposed indicators adequately categorize the different concepts related to SRDs?

The results indicate that alcohol-related disorders are just as prevalent as drug-related disorders, both in terms of use disorders (abuse/dependence) and induced physical and psychiatric illnesses; this speaks to the relevance of dissociating alcohol from other psychoactive substances when analyzing QICDSS data. With regard to the ratio between alcohol-related and drug-related disorders, this is convergent with the CCHS 2012 data: during their lifetime, about 13% of Quebecers met the criteria for an alcohol use disorder and nearly 12% for a drug use disorder. This significant proportion of medical diagnoses for alcohol use disorders, as compared to other drug use disorders, demonstrates that alcohol is not a harmless substance, despite its legal status and social acceptance. In fact, although alcohol is the most consumed psychoactive substance in Québec and is readily available (Gouvernement du Canada, 2015a), it was also responsible for 5.9% of deaths worldwide in 2012 and ranks among the substances that cause the most harm to those who use it (Nutt, King, & Phillips, 2010, World Health Organization, 2014). Furthermore, this high proportion of alcohol-related disorders, as compared to drug-related disorders, can also be explained by the fact that the former are more easily detected by physicians due to the myriad physical diseases that can result from problematic alcohol use, which heightens physicians' perception of having the knowledge and authority to intervene

appropriately (Edelman & Fiellin, 2016, Wilson et al., 2011). Regarding the proportion of all SRDs represented by other substances, some physicians report having fairly superficial knowledge relating to illegal drugs; others report being disinclined to treat drug-related disorders, because these patients are perceived as difficult and manipulative (Fucito, Gomes, Murnion, & Haber, 2003). The perception among physicians that they have the necessary knowledge, as well as the confidence, to intervene in cases of acute intoxication, is even lower with respect to new psychoactive substances, such as cathinones, piperazines and synthetic cannabinoids, as compared to so-called classical drugs such as cannabis, cocaine or amphetamines (Wood, Ceronie, & Dargan, 2016). It is therefore more difficult to recognize a drug-related disorder than an alcohol-related disorder. Another explanation for the similar rates of alcohol-related and drug-related disorders may concern what patients are willing to admit. According to an American study conducted in emergency wards, despite the fact that testing was carried out, a significant difference was observed between the prevalence based on patient statements and the prevalence based on toxicological tests (performed on the same individuals) for cannabis, opioids and benzodiazepines, whereas the difference was minimal for alcohol (Rockett, Putnam, Jia, & Smith, 2006). Thus, the diagnosis of a drug disorder is more difficult to make if the patient denies use and no toxicology test has been performed.[8]

The creation of two broad indicators for use disorders, one for alcohol use and one for drug use, that encompass both abuse and dependence, was proposed as a way of taking into account the fluid boundary between these two concepts, which was recently recognized in the Diagnostic and Statistical Manual of Mental Disorders 5th Edition, the DSM-5 (American Psychiatric Association, 2013). However, because the distinction between abuse and dependence was present in the literature and in psychiatric nosographies well before publication of the DSM-5, two sub-indicators have nevertheless been proposed to take this practice into account. Considering that dependence, by definition, is considered a more severe disorder than abuse on the spectrum of use disorders, it was expected that the observed rates of abuse would be higher than those of dependence. However, the QICDSS data suggest the opposite for both alcohol use disorders and drug use disorders. One possible explanation is that individuals do not consult their physician specifically for problems of abuse because they do not feel that their use is sufficiently problematic or requires medical intervention. It is also likely that physicians will only detect the problem when a significant level of severity has been reached, signified by dependence. In addition, persons with an SRD may be followed by health professionals other than physicians in non-medical centres: in Québec, there are 16 addiction rehabilitation centres, 91 certified private or community centres, more than 200 psychologists/psychotherapists who treat alcohol-related disorders and more than 300 psychologists/psychotherapists who treat

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8   It should be noted that, depending on the reason for consultation, it is not always appropriate to perform toxicological tests. In addition, the tests usually available for illegal drugs are urine screens. This type of testing is not recommended, as it was developed decades ago and targets substances that do not correspond to the new substances available. In addition, these tests generate a large number of false positives and false negatives.

drug-related disorders, not to mention self-help groups (Fleury, Perreault, Grenier, Imboua, & Brochu, 2016). One additional explanation requiring verification would be that physicians who are not specialized in treating SRDs fail to properly distinguish abuse from dependence. Thus, these physicians could record the code for dependence, when they are in the presence of a case of abuse. It should also be noted that, in Québec, the term "dependence" is often used to describe a range of substance-related problems other than dependence per se, as evidenced by the names given to several of our public institutions and services (e.g., centres de réadaptation en dépendance, the Institut universitaire sur les dépendances, the Direction des services en dépendance et en itinérance within the MSSS, etc.). In short, creating a broad indicator for use disorders, which encompasses both abuse and dependence, is preferable to using specific sub-indicators, particularly given the likelihood of misclassifications in administrative databases resulting from the failure to distinguish between abuse and dependence.

With regard to induced disorders, withdrawal and physical diseases are the principal alcohol-related disorders. These findings are consistent with the medical consequences of alcohol use. Indeed, alcohol withdrawal, unlike withdrawal from some other substances, is potentially a very severe condition that is accompanied by several physical problems (convulsions, nausea, tachycardia, electrolyte imbalance, etc.) and requires medical supervision (Perry, 2014). Another point to be made is that, according to the data in this report, a significant proportion of individuals were diagnosed with withdrawal without having been diagnosed with dependence. This could be attributed to the care context in which the physician treated the patient. For example, a patient with a dependence disorder might be treated for withdrawal, and because this is the primary reason for consultation, this is the diagnosis that will be recorded. Withdrawal also implies the existence of a dependence, so making this explicit may seem redundant to physicians. The presence of a specific sub-indicator for induced psychotic disorders is explained by the fact that several drugs, such as amphetamines, cocaine, hallucinogens and cannabis, can produce psychotic states (Fiorentini et al., 2011, Thirthalli & Benegal, 2006). A previous study has reported that more than half of persons with a dependence on any of these substances had previously experienced psychotic symptoms during use or withdrawal (Smith, Thirthalli, Abdallah, Murray, & Cottler, 2009).

The inclusion of indicators for intoxication in this report may be subject to criticism, given that the QICDSS fits within the context of work focused on chronic health problems. It can be argued that an episode of intoxication could be a "red flag" for a more severe problem; indeed, our analyses show that about half of the individuals diagnosed with intoxication had also been diagnosed with substance abuse or dependence over a 15-year period. It should also be noted that the same individual may be repeatedly diagnosed with alcohol intoxication over a period of several years, each time they visit the emergency department, despite the problem having been discussed repeatedly with the patient and help having been offered. In theory, a diagnosis of abuse or dependence might have been more appropriate in certain cases. However, due to a

limitation of the data collection system, the diagnosis assigned and recorded will be the one that led specifically to the visit, i.e. intoxication. Returning to a language-related aspect, it seems likely that some "real" cases of intoxication are classified as abuse due to linguistic slippage. In Québec, physicians refer to the DSM's conception of SRDs, and the DSM uses the terms "abuse" and "dependence" more often than "intoxication." Thus, the term "abuse" actually corresponds to the definition of intoxication. According to the standards of the Canadian Institute for Health Information, medical archivists must use the exact terms chosen by the physician to code and cannot make any necessary corrections, even when an error seems obvious and easy to correct (Tang et al., 2017).

Although the proposed indicators for SRDs have several limitations, they appear to be successful at identifying a good majority of persons with SRDs who sought medical attention. Indeed, the prevalences calculated in this report closely approach the estimates derived from epidemiological surveys, although they probably still underestimate the true rate of SRDs attributable to treated patients. Nevertheless, the indicators proposed in this report could be used for purposes of monitoring, while keeping in mind that they have some limitations, as is the case with any indicator.

4.4 What are the benefits of considering SRDs as chronic diseases?

When a condition is managed in the same way that chronic diseases are managed, the risks of complications and relapse can be reduced through standardized screening, regular assessments over the long term, and ongoing care that varies in intensity. Former U.S. Surgeon General Dr. Vivek Murthy contended in 2016 that "it's time to change how we view addiction, not as a moral failing but as a chronic illness that must be treated with skill, urgency and compassion." This view is shared by the *American Society of Addiction Medicine* and the *National Institute on Drug Abuse*. Although this view is not shared by everyone, the literature demonstrates that, at the very least, many cases of SRDs share the same characteristics *as* chronic diseases (Fleury, Djouini, et al., 2016). In seeking to improve the condition of individuals, SRDs should be treated in the same way as chronic diseases. Indeed, they can often follow a trajectory similar to that of hypertension or diabetes, with problems that recur over the course of a lifetime, and that, without proper management, can lead to significant medical and social complications.

We are hypothesizing that this approach could have a positive impact on SRD screening and detection. In support of this assertion, a parallel can be drawn with hypertension. In 1992, 43% of Canadians with hypertension were unaware that they had this condition because they had not been diagnosed; by 2007-2009, this number had fallen to 17% as a result of intensive efforts to treat hypertension, as it should be, like a chronic disease (McAlister et al., 2011). At the same time, the prevalence of diagnosed individuals in the administrative databases of the PHAC's National Chronic Disease Surveillance System increased from 14% in 1998-1999 to 23% in 2006-2007, becoming equivalent to the rate of hypertension measured in the general

population[9] (Agence de la santé publique du Canada, 2010). As with hypertension and other chronic conditions captured by the QICDSS, SRD prevalences represent persons diagnosed within the observation period. Narrowing the gap between the prevalence of diagnosed SRDs and their prevalence in the general population would require efforts equivalent to those involved in managing a chronic disease. Thus, there is a need to educate physicians as to the need to persistently screen for SRDs and to manage them as they would a chronic disease, if the societal goal is to reduce the harm that results when problematic use is neither managed nor monitored over the long term. Detection is not the only issue related to using administrative databases to identify cases. It is also necessary to set up a system whereby front-line responders, as well as emergency departments, can record more than one diagnosis or can specify that the primary diagnosis was made in a context of substance use. This would also likely increase the quality of the data collected and provide a more accurate reflection of reality.

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[9]   The prevalence of hypertension measured in the Canadian adult population was 22% in 1992, 21% in 2006 and 20% in 2009 (McAlister et al., 2011).

5   CONCLUSIONS

The use of linked administrative databases makes it possible to gain a portrait of the representation of diagnosed SRDs in the Québec health care system. The prevalences calculated in this report closely approach the estimates derived from epidemiological surveys, but they still underestimate the true rate of SRDs attributable to treated patients. The quality of these data depends, in part, on increasing physician awareness of the importance of explicitly coding for SRDs, because these disorders impact the diagnosis, prognosis, and treatment of other health problems. Nonetheless, the proposed indicators appear to capture a good majority of patients with SRDs who have consulted a physician. The next steps toward consolidating this initial study are to examine the use of the indicators in other Canadian jurisdictions, including Ontario, Manitoba and Nova Scotia, and to compare results across provinces. Although these indicators only identify persons having received a diagnosis, they will prove useful for eventually developing a more accurate picture of physical and psychiatric comorbidities that manifest themselves over time, for better understanding the excess mortality associated with certain SRDs, for assessing how well the current functioning of the care system reflects best practice recommendations for SRDs, and for analyzing their medical service use trajectories.

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APPENDIX 1 THE ICD-9/ICD-10 CODES THAT COMPOSE THE SIX BROAD INDICATORS

Indicator 1: Alcohol use disorder

ICD-9 description	ICD-9 code	ICD-10 description	ICD-10 code
Nondependent alcohol abuse	305.0	Mental and behavioural disorders due to use of alcohol, harmful use	F101
Acute alcoholic intoxication in alcoholism	303.0	Mental and behavioural disorders due to use of alcohol, dependence syndrome	F102
Alcohol dependence syndrome	303.9		

Indicator 1 encompasses two (2) sub-indicators:

       1.1. Alcohol abuse:
       305.0, F101

       1.2. Alcohol dependence:
       303.0, 303.9, F102

Indicator 2: Non-alcohol drug use disorder

ICD-9 description	ICD-9 code	ICD-10 description	ICD-10 code
Drug dependence, Morphine type	304.0	Mental and behavioural disorders due to use of opioids, dependence syndrome	F112
Drug dependence, barbiturate type	304.1	Mental and behavioural disorders due to use of sedatives or hypnotics, dependence syndrome	F132
Drug dependence, cocaine	304.2	Mental and behavioural disorders due to use of cocaine, dependence syndrome	F142
Drug dependence, cannabis	304.3	Mental and behavioural disorders due to use of cannabinoids, dependence syndrome	F122
Drug dependence, amphetamine/other psychostimulants	304.4	Mental and behavioural disorders due to use of other stimulants including caffeine, dependence syndrome	F152
Drug dependence, hallucinogens	304.5	Mental and behavioural disorders due to use of hallucinogens, dependence syndrome	F162
Other drug dependence	304.6	Mental and behavioural disorders due to use of volatile solvents, dependence syndrome	F182
Drug dependence, combination of morphine type drug with any other substance	304.7		
Drug dependence, combination excluding morphine type drug	304.8	Mental and behavioural disorders due to multiple drug use and use of psychoactive substances, dependence syndrome	F192
Drug dependence, unspecified	304.9		
Non-dependent cannabis abuse	305.2	Mental and behavioural disorders due to use of cannabinoids, harmful use	F121
Nondependent hallucinogen abuse	305.3	Mental and behavioural disorders due to use of hallucinogens, harmful use	F161
Nondependent barbiturate/tranquillizer abuse	305.4	Mental and behavioural disorders due to use of sedatives or hypnotics, harmful use	F131
Nondependent morphine-type abuse	305.5	Mental and behavioural disorders due to use of opioids, harmful use	F111
Nondependent cocaine type abuse	305.6	Mental and behavioural disorders due to use of cocaine, harmful use	F141
Nondependent amphetamine-type abuse	305.7	Mental and behavioural disorders due to use of other stimulants including caffeine, harmful use	F151

Indicator 2: Non-alcohol drug use disorder (continued)

ICD-9 description	ICD-9 code	ICD-10 description	ICD-10 code
Nondependent other/ mixed/NOS drug abuse	305.9	Mental and behavioural disorders due to use of volatile solvents, harmful use	F181
		Mental and behavioural disorders due to multiple drug use and use of psychoactive substances, harmful use	F191
		Abuse of non-dependence-producing substances	F55

Indicator 2 encompasses two (2) sub-indicators:

2.1. Non-alcohol drug abuse:
305.2, 305.3, 305.4, 305.5, 305.6, 305.7, 305.9, F111, F121, F131, F141, F151, F161, F181, F191, F55

2.2. Non-alcohol drug dependence:
304.0, 304.1, 304.2, 304.3, 304.4, 304.5, 304.6, 304.7, 304.8, 304.9, F112, F122, F132, F142, F152, F162, F182, F192

Indicator 3: Alcohol-induced disorders

ICD-9 description	ICD-9 code	ICD-10 description	ICD-10 code
Delirium tremens	291.0	Mental and behavioural disorders due to use of alcohol, withdrawal state with delirium	F104
Korsakov's psychosis, alcoholic	291.1	Mental and behavioural disorders due to use of alcohol, amnesic syndrome	F106
Other alcoholic dementia	291.2	Mental and behavioural disorders due to use of alcohol, other mental and behavioural disorders	F108
Pathological drunkenness	291.4		
Alcoholic jealousy	291.5		
Other alcoholic hallucinosis	291.3	Mental and behavioural disorders due to use of alcohol, psychotic disorder	F105
		Mental and behavioural disorders due to use of alcohol, residual and late-onset psychotic disorder	F107
Other alcoholic psychoses (include alcohol withdrawal syndrome)	291.8	Mental and behavioural disorders due to use of alcohol, withdrawal state	F103
Unspecified alcoholic psychoses, NOS	291.9	Mental and behavioural disorders due to use of alcohol, unspecified mental and behavioural disorder	F109
		Alcohol-induced pseudo-Cushing's syndrome	E244
		Degeneration of nervous system due to alcohol	G312
Alcoholic polyneuropathy	357.5	Alcoholic polyneuropathy	G621
		Alcoholic myopathy	G721
Alcoholic cardiomyopathy	425.5	Alcoholic cardiomyopathy	I426
Alcoholic gastritis with/without hemorrhage	535.3	Alcoholic gastritis	K292
Alcoholic fatty liver	571.0	Alcoholic fatty liver	K700
Acute alcoholic hepatitis	571.1	Alcoholic hepatitis	K701
		Alcoholic fibrosis and sclerosis of liver	K702
Alcoholic cirrhosis of liver	571.2	Alcoholic cirrhosis of liver	K703
		Alcoholic hepatic failure	K704
Alcoholic liver damage, unspecified	571.3	Alcoholic liver disease, unspecified	K709
		Alcohol-induced acute pancreatitis	K852
		Alcohol-induced chronic pancreatitis	K860
		Maternal care for (suspected) damage to fetus from alcohol	O354

Indicator 3 encompasses four (4) sub-indicators:

3.1. Alcohol withdrawal (with or without delirium):
291.0, 291.8, F103, F104

3.2. Alcohol-induced psychotic disorder:
291.3, 291.5, 291.9, F105, F107

3.3. Other alcohol-induced mental or behavioral disorder (excluding withdrawal and psychotic disorders):
291.1, 291.2, 291.4, F106, F108, F109

3.4. Alcohol-induced physical diseases:
357.5, 425.5, 535.3, 571.0, 571.1, 571.2, 571.3, K700, K701, K702, K703, K704, K709, G621, I426, K292, K852, K860, E244, G312, G721, O354

Indicator 4: Non-alcohol drug-induced disorders

ICD-9 description	ICD-9 code	ICD-10 description	ICD-10 code
Drug withdrawal syndrome	292.0	Mental and behavioural disorders due to use of opioids, withdrawal state	F113
		Mental and behavioural disorders due to use of opioids, withdrawal state with delirium	F114
		Mental and behavioural disorders due to use of cannabinoids, withdrawal state	F123
		Mental and behavioural disorders due to use of cannabinoids, withdrawal state with delirium	F124
		Mental and behavioural disorders due to use of sedatives or hypnotics, withdrawal state	F133
		Mental and behavioural disorders due to use of sedatives or hypnotics, withdrawal state with delirium	F134
		Mental and behavioural disorders due to use of cocaine, withdrawal state	F143
		Mental and behavioural disorders due to use of cocaine, withdrawal state with delirium	F144
		Mental and behavioural disorders due to use of other stimulants including caffeine, withdrawal state	F153
		Mental and behavioural disorders due to use of other stimulants including caffeine, withdrawal state with delirium	F154
		Mental and behavioural disorders due to use of hallucinogens, withdrawal state	F163
		Mental and behavioural disorders due to use of hallucinogens, withdrawal state with delirium	F164
		Mental and behavioural disorders due to use of volatile solvents, withdrawal state	F183
		Mental and behavioural disorders due to use of volatile solvents, withdrawal state with delirium	F184
		Mental and behavioural disorders due to multiple drug use and use of psychoactive substances, withdrawal state	F193
		Mental and behavioural disorders due to multiple drug use and use of psychoactive substances, withdrawal state with delirium	F194

Indicator 4: Non-alcohol drug-induced disorders (continued)

ICD-9 description	ICD-9 code	ICD-10 description	ICD-10 code
Paranoid and/or hallucinatory states induced by drugs	292.1	Mental and behavioural disorders due to use of opioids, psychotic disorder	F115
		Mental and behavioural disorders due to use of opioids, residual and late-onset psychotic disorder	F117
		Mental and behavioural disorders due to use of cannabinoids, psychotic disorder	F125
		Mental and behavioural disorders due to use of cannabinoids, residual and late-onset psychotic disorder	F127
		Mental and behavioural disorders due to use of sedatives or hypnotics, psychotic disorder	F135
		Mental and behavioural disorders due to use of sedatives or hypnotics, residual and late-onset psychotic disorder	F137
		Mental and behavioural disorders due to use of cocaine, psychotic disorder	F145
		Mental and behavioural disorders due to use of cocaine, residual and late-onset psychotic disorder	F147
		Mental and behavioural disorders due to use of other stimulants including caffeine, psychotic disorder	F155
		Mental and behavioural disorders due to use of other stimulants including caffeine, residual and late-onset psychotic disorder	F157
		Mental and behavioural disorders due to use of hallucinogens, psychotic disorder	F165
		Mental and behavioural disorders due to use of hallucinogens, residual and late-onset psychotic disorder	F167
		Mental and behavioural disorders due to use of volatile solvents, psychotic disorder	F185
		Mental and behavioural disorders due to use of volatile solvents, residual and late-onset psychotic disorder	F187
		Mental and behavioural disorders due to multiple drug use and use of psychoactive substances, psychotic disorder	F195
		Mental and behavioural disorders due to multiple drug use and use of psychoactive substances, residual and late-onset psychotic disorder	F197

Indicator 4: Non-alcohol drug-induced disorders (continued)

ICD-9 description	ICD-9 code	ICD-10 description	ICD-10 code
Pathological drug intoxication	292.2	Mental and behavioural disorders due to use of opioids, amnesic syndrome	F116
Other drug-induced psychoses	292.8	Mental and behavioural disorders due to use of opioids, other mental and behavioural disorders	F118
Unspecified drug-induced psychoses	292.9	Mental and behavioural disorders due to use of opioids, unspecified mental and behavioural disorder	F119
		Mental and behavioural disorders due to use of cannabinoids, amnesic syndrome	F126
		Mental and behavioural disorders due to use of cannabinoids, other mental and behavioural disorders	F128
		Mental and behavioural disorders due to use of cannabinoids, unspecified mental and behavioural disorder	F129
		Mental and behavioural disorders due to use of sedatives or hypnotics, amnesic syndrome	F136
		Mental and behavioural disorders due to use of sedatives or hypnotics, other mental and behavioural disorders	F138
		Mental and behavioural disorders due to use of sedatives or hypnotics, unspecified mental and behavioural disorder	F139
		Mental and behavioural disorders due to use of cocaine, amnesic syndrome	F146
		Mental and behavioural disorders due to use of cocaine, other mental and behavioural disorders	F148
		Mental and behavioural disorders due to use of cocaine, unspecified mental and behavioural disorder	F149
		Mental and behavioural disorders due to use of other stimulants including caffeine, amnesic syndrome	F156
		Mental and behavioural disorders due to use of other stimulants including caffeine, other mental and behavioural disorders	F158
		Mental and behavioural disorders due to use of other stimulants including caffeine, unspecified mental and behavioural disorder	F159

Indicator 4: Non-alcohol drug-induced disorders (continued)

ICD-9 description	ICD-9 code	ICD-10 description	ICD-10 code
		Mental and behavioural disorders due to use of hallucinogens, amnesic syndrome	F166
		Mental and behavioural disorders due to use of hallucinogens, other mental and behavioural disorders	F168
		Mental and behavioural disorders due to use of hallucinogens, unspecified mental and behavioural disorder	F169
		Mental and behavioural disorders due to use of volatile solvents, amnesic syndrome	F186
		Mental and behavioural disorders due to use of volatile solvents, other mental and behavioural disorders	F188
		Mental and behavioural disorders due to use of volatile solvents, unspecified mental and behavioural disorder	F189
		Mental and behavioural disorders due to multiple drug use and use of psychoactive substances, amnesic syndrome	F196
		Mental and behavioural disorders due to multiple drug use and use of psychoactive substances, other mental and behavioural disorders	F198
		Mental and behavioural disorders due to multiple drug use and use of psychoactive substances, unspecified mental and behavioural disorder	F199

Indicator 4 encompasses three (3) sub-indicators:

4.1. Non-alcohol drug withdrawal (with or without delirium): 292.0, F113, F114, F123, F124, F133, F134, F143, F144, F153, F154, F163, F164, F183, F184, F193, F194

4.2. Non-alcohol drug-induced psychotic disorder: 292.1, 292.8, 292.9, F115, F117, F125, F127, F135, F137, F145, F147, F155, F157, F165, F167, F185, F187, F195, F197

4.3. Non-alcohol drug-induced other mental or behavioral disorder (excluding withdrawal and psychotic disorders): 292.2, F116, F118, F119, F126, F128, F129, F136, F138, F139, F146, F148, F149, F156, F158, F159, F166, F168, F169, F186, F188, F189, F196, F198, F199

Indicator 5: Alcohol intoxication

ICD-9 description	ICD-9	ICD-10 description	ICD-10
		Mental and behavioural disorders due to use of alcohol, acute intoxication	F100
Toxic effect of ethyl alcohol	980.0	Toxic effect of ethanol	T510
Toxic effect of methyl alcohol	980.1	Toxic effect of methanol	T511
Toxic effect of other alcohols, specified	980.8	Toxic effect of other alcohols	T518
Toxic effect of alcohol, unspecified	980.9	Toxic effect of alcohol, unspecified	T519

Indicator 6: Intoxication with a psychoactive substance or substance with abuse potential (other than alcohol)

ICD-9 description	ICD-9	ICD-10 description	ICD-10
Poisoning by opiates and related narcotics	965.0	Mental and behavioural disorders due to use of opioids, acute intoxication	F110
		Poisoning by opium	T400
		Poisoning by heroin	T401
		Poisoning by other opioids	T402
		Poisoning by methadone	T403
Poisoning by other specified analgesics and antipyretics	965.8	Poisoning by other synthetic narcotics	T404
		Poisoning by other and unspecified narcotics	T406
		Mental and behavioural disorders due to use of sedatives or hypnotics, acute intoxication	F130
Poisoning by barbiturates	967.0	Poisoning by barbiturates	T423
Poisoning by mixed sedatives, not elsewhere classified	967.6		
Poisoning by other sedatives and hypnotics	967.8	Poisoning by other antiepileptic and sedative-hypnotic drugs	T426
Poisoning by unspecified sedative or hypnotic	967.9	Poisoning by antiepileptic and sedative-hypnotic drugs, unspecified	T427
Poisoning by benzodiazepines	969.4	Poisoning by benzodiazepines	T424
Poisoning by other tranquilizers	969.5		
		Mental and behavioural disorders due to use of cocaine, acute intoxication	F140
Poisoning by psychostimulants	969.7	Poisoning by cocaine	T405
Poisoning by other specified central nervous system stimulants	970.8	Mental and behavioural disorders due to use of other stimulants including caffeine, acute intoxication	F150
		Poisoning by psychostimulants with abuse potential	T436
		Mental and behavioural disorders due to use of cannabinoids, acute intoxication	F120
		Poisoning by cannabis (derivatives)	T407

ICD-9 description	ICD-9	ICD-10 description	ICD-10
Poisoning by psychodysleptics (hallucinogens)	969.6	Mental and behavioural disorders due to use of hallucinogens, acute intoxication	F160
		Poisoning by lysergide [LSD]	T408
		Poisoning by other and unspecified psychodysleptics [hallucinogens]	T409
Poisoning by other specified psychotropic agents	969.8	Mental and behavioural disorders due to multiple drug use and use of psychoactive substances, acute intoxication	F190
Poisoning by unspecified psychotropic agent	969.9	Poisoning by other and unspecified antipsychotics and neuroleptics	T435
		Poisoning by other psychotropic drugs, not elsewhere classified	T438
		Poisoning by psychotropic drug, unspecified	T439
		Poisoning by other and unspecified drugs, medicaments and biological substances	T509
		Mental and behavioural disorders due to use of volatile solvents, acute intoxication	F180
Toxic effect of benzene and homologues	982.0	Toxic effect of other organic solvents	T528
Toxic effect of other nonpetroleum-based solvents	982.8	Toxic effect of organic solvent, unspecified	T529