CLEARING THE AIR

Informing conversations about cannabis for child and youth mental health and addictions professionals

A SUMMARY OF EVIDENCE

April 2019

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Report context

In this document, we examine the links between mental health and substance use, particularly cannabis use among youth under 25 years of age. We summarize expert opinions as well as the results of a non-systematic search of the research and grey literature available at the time of writing, with the caveat that knowledge on evidence-informed practices will continue to evolve over time. While this report describes best practices or elements of evidence-informed programs, we do not endorse a practice or program. Further, since the literature summarized here represents only one type of evidence, our next steps will integrate these findings with insights from mental health and addictions service providers along with the experiences of children, youth and families into a learning resource.

Project team

The Ontario Centre of Excellence for Child and Youth Mental Health (the Centre) in partnership with Addictions and Mental Health Ontario (AMHO) are collaborating on the broader project: *Clearing the air: Informing conversations about cannabis use for child and youth mental health and addictions service providers* that 1) brings together the evidence on this topic, and 2) uses this as the basis for developing a learning resource for child and youth mental health and addictions service providers supporting youth under age 25 experiencing mental health and/or addictions issues.

An advisory committee comprised of representatives from addictions, mental health, education, justice and public health sectors refined the purpose and direction of the report and provided advice and guidance throughout its development. The funding for this project has been provided by the Government of Ontario.

Background

In April 2017, the federal government introduced the *Cannabis Act (Bill C-45)* to legalize and regulate the non-medical (or recreational) use of cannabis in Canada. The *Cannabis Act* received Royal Assent on June 21, 2018 and created rules for producing, using and selling cannabis across Canada. Cannabis was legalized across Canada as of October 17, 2018. Canada's legal framework takes a federal public health approach to cannabis legalization and regulation; this aims to better prevent youth from accessing cannabis, to displace the illegal cannabis market, and to protect public health and safety with quality and safety requirements for cannabis[1].

In the *Cannabis Act*, there is a clear distinction between medical and non-medical use (which is also referred to as "recreational use"). Cannabis for medical purposes is legal if it is authorized by a healthcare professional and registered with a Health Canada approved licensed producer[2]. No changes to the use of cannabis for medical purposes have occurred, and Health Canada will continue to provide patients with reasonable access to cannabis for medical purposes. Individuals can continue to purchase cannabis directly from a federally licensed producer, register to produce a limited amount of cannabis for their own medical purposes or designate someone to produce it for them[3].

In Ontario, the minimum age to buy, use, possess and grow cannabis is now 19 years. The legalization of cannabis has prompted several legislative changes, including that adults over the age of 19 in Ontario can[4]:

- possess up to 30 grams of legal cannabis
- share up to 30 grams of legal cannabis with other adults (except youth)
- purchase dried or fresh cannabis and cannabis oil from a provincially licensed retailer
- grow from licensed seed or seedlings, up to four cannabis plants per residence for personal use
- make cannabis products, such as food and drinks, at home if organic solvents are not used to create concentrated products

It is important to note that edibles in Ontario will not be legal until Fall 2019. Parameters around the legal minimum age, where cannabis can be purchased and used and how much an individual can possess have been set by each province, territory or Indigenous* community across Canada[2].

The links between child and youth mental health and substance use are complex, and while we have some information, more is needed for a full understanding of how they are related. Since 2014–15, agencies receiving public funds for child and youth mental health programming have been required to screen clients to identify the number of children/youths requiring substance use services. As well, mental health and addictions service providers are required by the funding Ministry to collaborate effectively with other child and youth serving sectors to develop partnerships, protocols and pathways toward care to ensure a coordinated approach to service delivery. Youth experiencing mental health problems are at an increased risk for problematic substance use due to various risk factors. In addition, the use of substances can reveal underlying mental health conditions or worsen them. Awareness of this complex relationship can help mental health and addictions service providers prevent, identify and treat problematic substance use disorders.

Project goals

To support mental health and addictions service providers who provide treatment to children and youth with mental health or addictions issues post-legalization of cannabis, the goal of this project is two-fold:

1. to bring together the latest knowledge on the links between mental health and substance use (particularly cannabis use) among youth under 25 years of age.
2. to use this evidence as the basis for developing learning resources for child and youth mental health and addictions service providers.

This paper presents findings from our review of relevant literature on the factors associated with substance use, mental health and addictions problems. It also provides a scan of developmentally appropriate targeted prevention and harm reduction best practices to address cannabis use and mental health concerns. Specific attention has been paid to information related to experiences and supports for at-risk populations.

* In this paper, “Indigenous” refers to Canadian First Nations, Métis and Inuit peoples.

The information from this paper was used to develop relevant knowledge products and learning resources to enhance the capacity of Ontario's mental health and addictions service providers across sectors (e.g. child and youth mental health and addictions) to prevent and respond to mental health and substance use issues that may occur in children and youth. The specific modality, content and delivery mechanism for these products/resources will be determined based on advice/guidance from the advisory committee, service providers in child and youth mental health and addictions agencies, along with youth and caregivers.

Search strategy

Databases and contacts used to develop this report include: Aboriginal Portal at UBC and Ryerson, Canadian Best Practices Portal, California Clearinghouse, National Aboriginal Health Organization (NAHO), NREPP, PracticeWise, PsycInfo, Proquest, PubMed, SAMHSA.

Search terms

We used the following terms to find relevant literature: cannabis, cannabis use, marijuana, marijuana use, substance use, substance abuse, prevention, intervention, school-based programs, community substance-use prevention, root causes, root cause, correlation to mental health, occurrence of mental health, incidence of mental health, relation to mental health, prevalence of mental health, risk factor, protective factor, assessment, assessment tools, assessment method, screening, screening tool, screening method.

Section 1: Literature review

In this review of literature, we provide an overview of the complex links between mental health and substance use, particularly medical and non-medical use of cannabis among youth. For the purposes of this paper, we define "youth" as individuals aged between 12 to 18 years and "young adults" as individuals aged between 19 and 25 years. Studies in this review were assessed for quality and selected based on the extent to which they are relevant to the goals of this project[†]. In the sections that follow, we:

- provide current estimates related to cannabis use among youth in Ontario.
- describe what cannabis is along with effects on brain development.
- describe the links between cannabis use and mental health.
- discuss factors associated with substance use, specifically the recreational use of cannabis.
- provide evidence on screening and assessment tools for identifying substance use, particularly cannabis.

Introduction to cannabis use and youth

Cannabis is a substance derived from the *Cannabis sativa* and *Cannabis indica* plant that is used for its psychoactive and therapeutic effects. There are various types of cannabis, made up of chemical compounds called "cannabinoids" that are specific to the cannabis plant. The two most widely known cannabinoids are 1) tetrahydrocannabinol (THC) and 2) cannabidiol (CBD). THC is the main psychoactive cannabinoid that is most responsible for the mental and physical effects known as feeling "high". CBD, on the other hand, is a cannabinoid that is known to counteract some of the effects of THC; it has been found to have little or no psychoactive effects where the user does not feel "high"[5].

Cannabis is commonly known as "marijuana". Other street names for cannabis include, "weed", "pot", "herb", "ganja", "grass", "Mary Jane" and "reefer". It is the greenish or brownish dried flowers, fruiting tops and leaves of the cannabis plant. Cannabis can be consumed through a variety of methods, including[6] but not limited to:

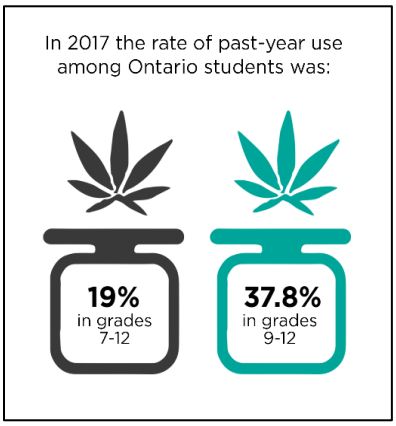
- smoking as a cigarette (also known as a joint, spliff or a blunt) or through a pipe or bong
- vaping through an e-cigarette
- ingesting an edible form that is mixed into a drink or food, such as tea, brownies, gummies and candies
- ingesting a cannabis tincture, which is an alcohol-based extract used on its own or added to food or drinks
- inhaled after heating (also known as dabbing) oil, wax, or a form called shatter that is made from cannabis resin or hashish, which is the dried resinous secretion of the flowering tops of the cannabis plant

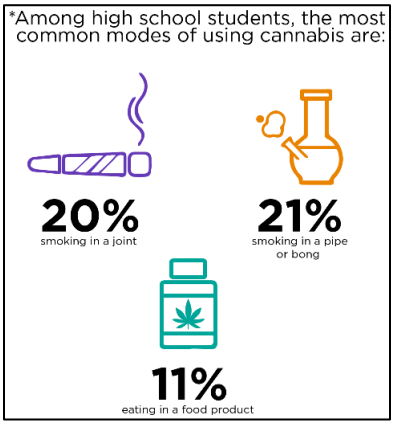
[†] Studies were assessed for their alignment with project objectives. All relevant studies were examined individually and meaningful information from each study was extracted for synthesis. Both strengths and weaknesses were considered. Study flaws and weaknesses were assessed to understand the impact on study findings.

The chronic use of cannabis or other substances has been found to interfere with a young person's achievement of milestones and can adversely affect later mental health[7,8]. In 2012, 41 percent of Ontario's youth and young adults (both males and females) aged 15 to 24 years reported using cannabis or hashish at least once in their lifetime, compared to 44.8 percent Canada wide[9]. In 2015, the **rate of past year cannabis use was 20.6 percent in youth aged 15 to 19 years and 29.7 percent in young adults aged 20 to 24 years**.

One third (33 percent) of Canadians aged 15 years and older reported using cannabis in the past three months. On average, youth reported initiating cannabis use at age 15.4 years, whereas, young adults reported initiating use at 16.5 years[9].

According to the Ontario Student Drug Use and Health Survey (2017), **the average age of first use cannabis among students in grade 12 was 15.3 years**. About 1 percent of students between grades 7 to 12 reported to use cannabis daily, representing approximately 13,100 students in Ontario[10].





Youth aged 13 to 19 years who identified as members of the LGBTQ+ community are more likely than their peers to use substances[11]. In a British Columbia study looking at youth aged 12 to 19 years, rates of cannabis use among the LGBTQ+ community were:

- 40 percent among individuals who identified themselves as gay
- 50 percent among individuals who identified themselves as lesbian
- 53 percent among individuals who identified as bisexual males
- 62 percent among individuals who identified as bisexual females

However, it is important to note that Canadian data is greatly lacking on substance use in the LGBTQ+ community and associated risks, along with prevention and harm reduction strategies. More knowledge is required, since there are unique social, economic and political factors that may affect rates of substance use in among those who identify as members of this group.

As part of this project, we asked mental health and addictions professionals in Ontario's child and youth mental health and addictions sectors to share their experiences and questions about how to address substance use — particularly cannabis — for youth under 25 years. From a voluntary survey that was distributed in May 2018, 18 percent of child and youth mental health agencies and 34 percent of addictions agencies reported having training in place regarding the legalization of cannabis and its anticipated effects on youth; and 26 percent of child and youth mental health agencies and 55 percent of addictions agencies provide training on harm reduction strategies for substance use. Given the recent legalization of cannabis, mental health and addictions professionals had questions about the short- and long-term impacts of cannabis use on mental health; the effects of cannabis on the brain and cognitive development; its interactions with medications and other substances; and risk factors for cannabis use among youth.

Adolescence is a critical developmental stage. It is a transition period in which youth are faced with several challenges and where educational, personal, social and occupational decisions are made. As such, it is important to understand the effects of cannabis use on the developing brain. As the endocannabinoid[‡] system undergoes significant changes during adolescence, this raises the possibility that repeated exposure to cannabinoids (e.g. adolescent use of THC) may have an effect on brain functions and behaviors that can persist into adulthood[9]. This is especially true for young people under 25 years of age where ongoing brain development can be compromised.

Cannabis use during adolescence impacts brain development[12]. Neuroimaging studies show that relative to individuals who never or rarely use cannabis, those who use cannabis chronically and those with problematic cannabis use patterns have lower brain volumes, different folding patterns, thinning cortex, less neural connectivity and lower white matter integrity[7]. Those who use cannabis frequently show more brain activity, especially in frontal regions, when performing computer-based problem-solving tasks[7] which suggests that their brain might have to work harder when completing academic and job-related tasks. This may impact both immediate reaction time and the ability to coordinate, as well long-term problems paying attention, remembering or learning things, and making decisions.

Cannabis use can cause short-term difficulties with memory, attention and executive function[13]; however, the frequency and potency of cannabis use that causes these effects is not known. Short-term cannabis use has also been linked to impaired judgment, poor motor coordination and compromised driving skills[14]. The risk for problematic cannabis use can be increased with early cannabis exposure since this can alter brain reward pathways[15]. Heavy cannabis use also slows processing speed, the ability to focus attention and prefrontal cortex functions[16]. Cannabis use has been found to alter the normal development of the brain dopamine systems, which can increase the risk of schizophrenia[16]. Overall, however, the extent of persistent cognitive deficits from exposure to cannabis are not definitive or clear.

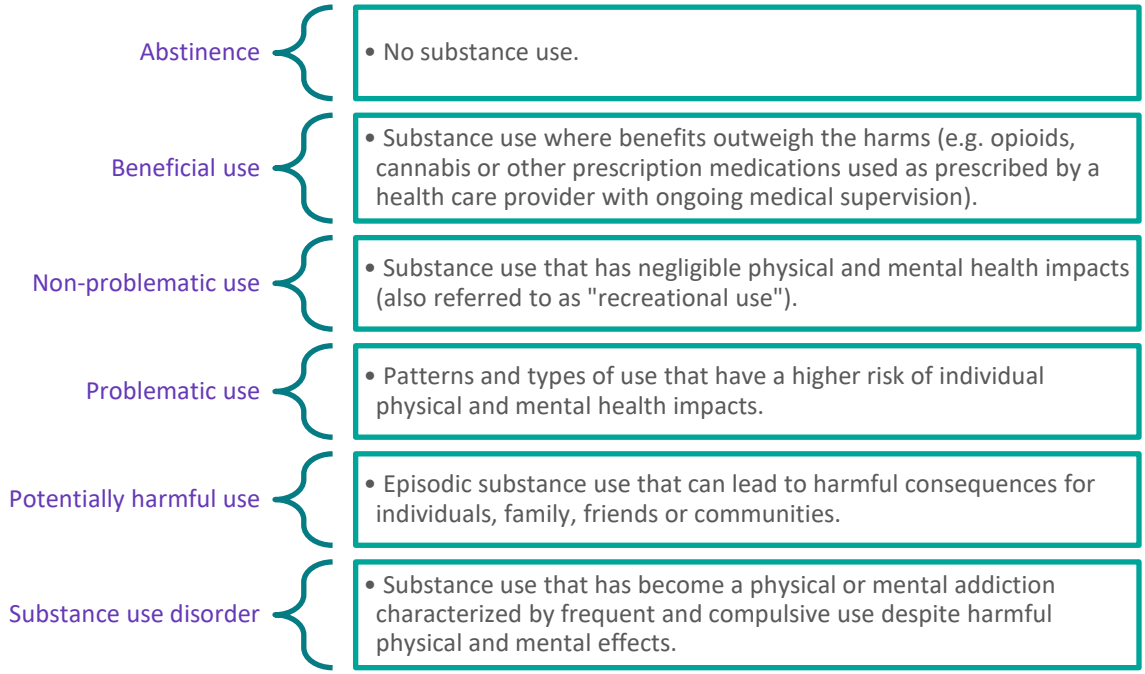
Cannabis use

Cannabis can be used for medical or non-medical purposes, and the reasons for use vary by individual. The **medical use** of cannabis is authorized by healthcare professionals and registered with a Health Canada approved licensed producer[2]. It is typically used to improve quality of life by managing physical and mental health issues, while protecting overall health[17].

Cannabis use for **non-medical** purposes is *not* authorized by a healthcare professional. It is typically used by individuals at their own discretion, in order to improve their quality of life as it relates to physical and mental health issues (e.g. decreased pain symptoms, decreased feelings of anxiety) or in social contexts to make activities more enjoyable[17]. This type of use is also commonly known as “recreational cannabis use”.

[‡] A communication system in the brain and the human body that affects how a person feels, moves and reacts to stimuli.

Cannabis use varies among individuals, both in terms of volume and frequency across the following spectrum[18]:



Medical use of cannabis in child and youth populations

Cannabis has been used in ancient cultures for medical purposes to address several conditions (e.g. headaches, gastrointestinal issues, inflammatory issues, convulsions and pain)[19,20]. In the 18th and 19th centuries, cannabis was used in Western cultures for the treatment of conditions such as asthma, anorexia, insomnia, whooping cough, convulsions, nausea and vomiting and sexual dysfunction[21]. Since the 20th century, cannabis has been used as a sedative or for hypnotic purposes (e.g. to treat insomnia, melancholia, mania, delirium, tetanus, rabies, hay fever, bronchitis, pulmonary tuberculosis, coughs, bladder spams, gonorrhea and neurological disorders), as an analgesic (e.g. for headaches, migraines, eye-strain, menopause, brain tumors, neuralgia, gastric ulcer, indigestion, pain, chronic inflammation, postpartum hemorrhage, acute rheumatism, eczema and relief of dental pain) and a for range of other reasons (e.g. to improve appetite and digestion, dyspepsia, diarrhea, cholera, nephritis, diabetes mellitus, cardiac palpitation and vertigo)[22].

Cannabinoids have physical, mental and cognitive impacts on the human body that vary among individuals. There are many beneficial medical uses for cannabis; however, evidence supporting these uses is not consistent. Cannabis has been found to address symptoms across a range of medical conditions, including:

- muscle spasms, tremors and painful muscle contractions in individuals diagnosed with multiple sclerosis[19,23]
- for cancer-related pain and other types of chronic pain, including fibromyalgia and neuropathic pain related to diabetes mellitus, either independently or with other analgesics[15]
- rheumatoid arthritis, osteoarthritis and various other types of acute and chronic musculoskeletal pain[23]
- in the treatment of seizure disorders and in individuals with cancer who experience vomiting and nausea while undergoing chemotherapy[23]

In Canada, cannabis and individual cannabinoids are approved for[24]:

- relief and prevention of nausea and vomiting caused by anti-cancer and anti-HIV chemotherapy
- stimulation of appetite in AIDS patients with a severe loss of body weight
- relief of neuropathic pain (i.e. pain due to disease of the nervous system), pain and spasticity (muscle stiffness) due to multiple sclerosis, and of severe pain due to advanced cancer

Although there are case studies and reports supporting the benefits of cannabinoids, there are not enough large, well-controlled trials to provide sufficient evidence toward effective clinical outcomes[19,23]. Even in cases where there is evidence to suggest effectiveness for patients with a specific disorder, the results may not be generalizable, as individual patient characteristics vary[15] and the research is not robust. As such, the evidence varies between different applications with respect to the amount and quality of their scientific support[24].

It is important to note that cannabis can also negatively affect the human body. It has acute effects on the cardiovascular system, including increased heart rate and blood pressure, and increased risk of acute ischemic stroke. Smoking cannabis chronically has been associated with respiratory distress, such as airway inflammation, airflow obstruction and symptoms similar to cigarette smoking (e.g. wheezing, cough and increased sputum)[15]. Daily or near daily cannabis use is also associated with cyclical vomiting (which is also known as cannabinoid hyperemesis syndrome)[25].

The potential benefits of cannabis use can also be weighed against the possible harms. For example, cannabis has been found to be beneficial for alleviating side effects (nausea and vomiting) caused by chemotherapy in individuals diagnosed with cancer [15]. But, at the same time, cannabis smoke contains many of the same cancer-causing chemicals found in tobacco smoke[25]. More research using robust methods is needed to determine under which conditions the benefits of cannabis use can be maximized, while the harms are minimized.

Non-medical use of cannabis in child and youth populations

The use of cannabis as self-medication (without indication by a healthcare professional) also needs to be considered as it is associated with several short- and long-term health risks, especially for young people who choose to use initiate cannabis use at a younger age[26]. It has been found to make the individual using cannabis feel various psychological states such as happy, relaxed, drowsy, panicked, confused and forgetful. As well, the use of cannabis can result in delusions and altered perceptions. The onset of recreational cannabis use has found to be most common during adolescence, where the risk of cannabis addiction is 1 in 6 for those who start using cannabis as an adolescent[26].

Health impacts from non-medical use of cannabis vary depending on several factors such as, the age of the individual choosing to use cannabis, THC level in type of cannabis used, consumption method and frequency of use[26]. Smoking cannabis is the most common method of recreational cannabis consumption, and has been found to trigger cardiovascular problems, asthma, cancers and many respiratory conditions. Recreational cannabis use has also been found to have short- (i.e. inattentiveness, impaired judgement, impaired decision making and challenges in processing and retaining information) and long-term (i.e. challenges with problem solving and learning, challenges with memory and challenges with processing complex information) negative effects on cognition. However, more evidence on the cognitive impacts of cannabis is needed[26].

Cannabis use in relation to mental health conditions

There is a growing body of research exploring the link between cannabis use and mental health outcomes, as frequent cannabis consumption over an extended period of time has been associated with several psychological and substance use disorders[16,27,28]. It is important to note that given the correlational nature of most of the current research, it is not possible to make causal conclusions about the link between cannabis use and mental states in youth.

The relationship between frequent cannabis use and the presence of mood disorders is particularly strong among individuals who begin using cannabis early in life (17 years of age or younger)[15,16,29,30]. Similarly, frequent cannabis use has been linked to anxiety disorders, especially among individuals who use cannabis heavily during adolescence[16,31,32]. In those who have a diagnosed mood or anxiety disorder, continuous cannabis exposure can worsen these conditions. A large proportion of individuals who use cannabis frequently do not have depression and anxiety, and not all individuals with mood and anxiety disorders use cannabis. However, cannabis use has been found to trigger the onset of depression and anxiety disorders among youth who may already have predisposing personality, biological, social or environmental factors[31].

Cannabis use has also been linked to the onset of psychotic symptoms and schizophrenia[13]. Several cohort studies across the world have found an association between cannabis consumption in youth and a later diagnosis of schizophrenia or schizophreniform disorder[13,15]. It is not yet clear whether cannabis use influences the onset of psychosis or whether psychosis may be a direct consequence of heavy cannabis use. There is also little information available on the specific amount of cannabis use or the potency of cannabis strain(s) required to trigger the onset of psychosis[15,33]. However, evidence indicates that cannabis can precipitate the onset of psychosis in individuals who are genetically at an increased risk for developing schizophrenia[34]. In fact, 25 percent of those diagnosed with schizophrenia meet the criteria for cannabis use disorder, making it one of the most commonly used substances among this patient population[34]. Cannabis has also been found to be the most widely used drug among patients with first-episode psychosis. Cannabis use may be a risk factor that influences the age at onset of psychosis[35]. Individuals using cannabis also experience more psychotic symptoms, respond poorly to neuroleptic medications and have poorer treatment compliance and poorer clinical outcomes while experiencing more relapses and more hospital admissions than those who do not use cannabis[34].

Collectively, current evidence suggests that heavy consumption of cannabis or the regular use of cannabis products with high THC content (compared to cannabis products with high CBD content) can increase the risk of developing psychosis and schizophrenia, especially among individuals with pre-existing risk for these conditions. More research, however, is needed to understand how individual characteristics (e.g. genetic, biological, environmental) interact with cannabis use (in each of its forms) to increase susceptibility to psychosis and schizophrenia.

Factors associated with substance use, specifically non-medical use of cannabis

There are several factors in a child or youth's social and physical environment that can increase the likelihood of substance related harm (i.e. risk factors) and others that may mediate these risks (i.e. protective factors). Below, we summarize risk and protective factors for cannabis use at the level of the individual and the family/peer context, where evidence was available. This is a general summary of findings with no specific account for sex, gender or age ranges. Other factors such as race, stigma, discrimination and family violence were considered but not included, as sufficient evidence was not available. Over time, we aim to invest in further study of how these factors are related to cannabis use.

INDIVIDUAL LEVEL FACTORS	
RISK FACTOR	**DESCRIPTION OF KEY FINDINGS**
Socioeconomic status (SES)	• youth with low SES are 22% more likely to engage in cannabis use[7,36] • adolescents with a higher familial SES were found to be more likely to experiment with cannabis than those with a lower familial SES, likely because of the high cost of cannabis relative to tobacco[28] • individuals who are unemployed were found to be more frequent consumers of cannabis than those with steady employment[37] • individuals born or raised in a family experiencing extreme economic deprivation may have experienced harm associated with substance use[38]
Education	• early cannabis use can interfere with educational attainment[37] • individuals who have not achieved a high school diploma or who have *only* achieved a high school diploma were found to be more frequent consumers[34] • individuals who have not achieved a high school diploma were found to be at a greater risk for regular cannabis use than those with a high school diploma or post-secondary education credentials[39] • poor grades, low attachment to secondary school or not completing secondary school have may result in early adult substance use problems[38]
Individual mental health and behaviours	• emotional disturbances can increase the likelihood of substance use in adolescents[40] • aggression in youth has been found to be related to the initiation of early substance use[38,41] • youth with affect regulation difficulties are more likely to express aggressive behaviour, which can make them susceptible to substance use initiation[40] • attention deficit hyperactive disorder (ADHD) can be a risk factor for cannabis use disorder; the prevalence of ADHD is disproportionately high among young people with cannabis and other substance use disorders[42] • delinquency in adolescence has been found to be a risk factor for problematic alcohol and other substance use[38]
Potency	• cannabis products with higher doses of THC along with a rapid method of ingestion (e.g. smoking or vaporizing) were found to be associated with repeated cannabis use and the development of cannabis use disorder (CUD)[43]

PROTECTIVE FACTOR	DESCRIPTION OF KEY FINDINGS
Religion	• being religious was found to protect an individual against cannabis use — this has been found to stem from most religions' disapproval of psychotropic substance use[44]
Temperament and early behaviour	• an easy-going temperament in early childhood is a protective factor for positive child adjustment and reduces the influence of other risk factors, which in turn can lead to lower rates of involvement in harmful substance use[38] • a shy and cautious temperament in childhood has been found to reduce the influence of risk factors for early adolescent multiple and illegal substance use in early adulthood[38]
Social and emotional competence	• social and emotional competence has been found to reduce the influence of risk factors for alcohol and other substance use[38]
FAMILY AND PEER RELATIONSHIPS	
RISK FACTOR	**DESCRIPTION OF KEY FINDINGS**
Peer networks	• peer networks have been found to have a strong influence on the initiation and continued use of cannabis[7,27,36,45,46] • having a social connections with cannabis-using peers can lead to youth seek new friendships with other cannabis-using youth, which in turn promotes initiation and increases the risk for continued use[36] • relationships with peers who are involved in substance use in late childhood or adolescence have been associated with problematic alcohol and other substance use[38]
Family structure	• non-traditional family structures (i.e. parents who are separated, divorced or raising their child as a single parent) can increase the probability of cannabis use by 67% for youth growing up in these settings[36,45] • a low level of parent-child attachment can increase the likelihood for more frequent substance use in adolescence[38]
Family dynamics	• low levels of parental supervision, poor familial communication, poor parenting styles, poor parent-child relationships, increased family socio-emotional problems and parental substance use can increase family conflict and result in low family bonding, which in turn can lead to early substance use[7,36,44] • child neglect and abuse are risk factors for impaired child development, which has been found to potentially lead to poor child adjustment and subsequent harmful substance use[38] • parental rules permitting substance use in childhood or early adolescence is a risk factor for early age substance use[38]
Parental use	• parental use of cannabis has been associated with adolescent cannabis use[28] • the use of legal recreational and prescription psychoactive substances by parents has been linked to adolescent marijuana use[47]
Parental monitoring	• lack of parental monitoring has been found to be a risk factor for early adolescent cannabis use, since this creates increased opportunities for association with cannabis or substance using peers[36]
Parental mental health	• parental psychiatric illness and family dysfunction have been associated with cannabis use disorders and common mental disorders[36]
PROTECTIVE FACTOR	**DESCRIPTION OF KEY FINDINGS**
Family dynamics	• good parental communication in early adolescence can reduce the influence of risk factors for harmful youth substance use[38]
Marital status	• being married has can be a protective factor for cannabis use or substance use in young women[38]
Religion	• religious involvement in adolescence can reduce the influence the risk factors for harmful substance use[38]

Factors influencing decisions to use (or not use) cannabis

Some youth report cannabis to be the easiest substance to access and the safest among all other substances to consume, believing that it has fewer side effects compared to other substances as it "just makes you happy"[48]. A range of perceptions influence young people's decisions to use or not use cannabis. For example, in a 2017 study, students in grades 7 and 8 reported believing that regular cannabis use is associated with the greatest risk of harm, while students in grades 9 to 12 reported believing that cannabis use is least harmful when compared to other substances[10]. Youth report feeling more in control and better able to function under the influence of cannabis relative to other substances, and some also use cannabis for medical purposes through a prescription from a physician or as self-medication to cope with their individual mental health challenges[49]. However, many youth choose not to use cannabis, citing fears of parental and legal consequences, negative effects on the mind and body, and the stigma of being perceived as an individual who uses substances[49].

One of the most common reasons youth choose to use cannabis is to fit in with their peers[23]. For youth struggling to find their identity, the use of substances can help them feel included in peer groups and social events. A young person's family can also influence their decision to use cannabis, as youth are more inclined to use cannabis if parents or siblings are also using. Other reasons for cannabis use include doing so with the goal of rebelling against overly strict parents, boredom (especially for youth living in rural areas who do not have as many entertainment options as those in urban areas) and ease of access (e.g. at parties or via someone who distributes street drugs).

As information related to cannabis is widely available through videos, memes, articles and statistics, youth report that cannabis is represented in the media (e.g. news, movies, songs) as being used by people who are happy and fun, and face no physical or mental harm from its use[49]. Public images depicting the negative or legal consequences of cannabis possession or use are rare. Using social media as a platform to promote cannabis use may cause youth to form an overly positive opinion about cannabis, which in turn can increase the likelihood of its use.

Despite knowing the risks of cannabis in general, many young people report not attending to these since they believe there are no immediate negative or permanent consequences related to use. For example, while youth understand that cannabis use can slow reaction times and reflexes, impair cognitive functions and motor skills, distort perceptions of time and space, and cause confusion, disorientation, hallucinations and sleepiness, they continue to use cannabis believing the effects to be temporary. As well, given that specific strains of cannabis have varying effects that can impact each person differently, youth are willing to take the chance that they will not experience any or all possible negative consequences of cannabis consumption. Overall, youth understand that while some can function well under the influence of cannabis, others cannot[49]. As such, public health messaging around the delayed effects of cannabis use and the risks associated with various methods of consumption needs to be developed and implemented in this post-legalization era.

Prevention and harm reduction approaches

Youths' opinions about cannabis typically develop through conversations with friends, those who deal in street drugs, or their own personal experiences with substance use. Youth believe that they are competent to make decisions around cannabis use because of the ease of access to online resources discussing both the harms and benefits of cannabis. Despite the enormous volume of information available online, much of it is contradictory. Youth, therefore, sometimes struggle to make an informed choice about use since they question which sources are credible and which are not. Some strategies youth found to be beneficial to inform their decision on cannabis use are[49]:

- Information delivered by someone with experience: Youth believe that both the benefits and harms of cannabis should be presented to them by an individual with lived experience of cannabis use, especially someone close to their age. This would provide them with an opportunity to ask questions without the fear of being judged or getting in trouble.

- Unbiased, evidence-based information: Simply telling youth to not use cannabis is not effective. Youth want facts supported by strong research evidence to support their decision-making. Evidence on how the various amounts, frequency and strains of cannabis along with related risks (e.g. increased risk for psychosis) might affect them should be shared with youth, along with information about legal implications of use (for both those under 18 years of age and those 19–25 years old).

- Harm reduction: A harm reduction approach appears to be most effective with youth populations, since preaching non-use is generally unlikely to work.

- Early education with consistent follow up: Beginning to inform youth before being faced with the opportunity to use substances is preferred (through health class, driver education courses, school assemblies, etc.), with ongoing follow up at key points over time.

- Targeted approaches: Different approaches for educating/informing youth should be considered for low- and high-risk individuals. Differences related to gender, ethnicity, peer and family relationships, along with previous level of knowledge and substance use practices should be considered, and information should be tailored to particular audiences.

Jenkins et al. (2017) examined youth perspectives on harm reduction approaches and found that youth experiences, beliefs and strategies related to substance use are dependent on geographical, social and cultural contexts. In the urban context, many youth participants reported that they do not consume alcohol or engage in substance use, and those who do use substances described using alcohol or cannabis only occasionally or infrequently. Youth reported that a strategy for managing substance use was to stay away from events and peer groups where young people were likely to engage in consumption. Knowledge about specific harms tended to come from witnessing individuals in the community being negatively impacted by substance use, rather than receiving formal drug education in school or community settings.

In the suburban context, there was a clear division between those who reported substance use as widespread in the school, and others who reported that they "don't really know anybody who uses" or described themselves as "sheltered". Interactions between those who did use substances and those who did not were limited. Many suburban youth made efforts to minimize potential harms by avoiding individuals and social gatherings where substances were being used, and by limiting or avoiding friendships with individuals who used substances. In the rural environment, youth participants described substance use to be common among their peers, with boredom being the main reason for use since the environment had few services, activities or spaces for young people. In these contexts, then, young people viewed substance use as an activity itself. Similar to youth in the suburban context, youth living in rural areas also described harm reduction the result of witnessing or experiencing negative effects of substance use[48].

Evidence shows that many cannabis use-related harms and their severity are influenced by modifiable behavioural factors (i.e. individual choices). Based on scientific evidence, *The Lower-Risk Cannabis Use Guidelines* have been developed by a group of international experts to reduce physical and mental health harms related to cannabis use[50]. These 10 recommendations target youth who have decided to use cannabis, in order to lower their risk of harm[50]:

1. The most effective way to avoid any risk of cannabis use is to not use cannabis at all.
2. If you choose to use cannabis, avoid starting as an adolescent. Cannabis-related health problems can be lowered if youth delay its use until later in life.
3. Inform yourself about various compositions of cannabis products and their individual effects, since high THC-content products are associated with greater risks of various mental health problems.
4. Avoid using synthetic cannabinoids as they are associated with more acute and severe adverse health effects.
5. Inform yourself about the various modes of cannabis use and their individual impacts, since smoking cannabis, for example, can cause adverse respiratory health outcomes compared to vaping.
6. Avoid practices such as "deep inhalation or "breath holding" when smoking cannabis, since this increases the absorption of toxic material.
7. Limit and reduce your intake of cannabis, since frequent use (i.e. daily or near-daily) is associated with higher risks of adverse effects.
8. Do not drive or operate heavy machinery or any mobility devices under the influence of cannabis (no matter how small the amount used).
9. Know yourself and your individual risk factors — some populations (e.g. pregnant women, individuals with a family history of mental health problems) are at a greater risk for cannabis-related adverse effects and should avoid using cannabis.
10. Avoid combining the risky behaviours mentioned above — the "riskier" behaviours you engage in, the higher your risk of harm.

Although evidence suggests that substance use prevention strategies may reduce frequency or amount of substance use, youth report that abstinence and prevention programs are ineffective[48]. Specifically, they believe that much of the prevention programming currently used presents information in a didactic format, which can be boring and ineffective. Further, these approaches do not resonate with the youth audience since the focus on potential consequences is seen as using a scare tactic[48]. Such prevention programs fail to acknowledge that youth frequently use substances for pleasure and the enjoyment of intoxication, and instead frame substance use as a sign of distress or poor judgement. Focusing on the social and interpersonal context of substance use, and educating and equipping youth with skills and strategies to mitigate harms relating to substance use, are the preferred approaches[48].

Screening and assessment tools for substance use, inclusive of cannabis

To prevent patterns of problematic cannabis use from being established, early screening can be effective in identifying those at high risk for substance-related harms[51]. While we do not fully know the extent to which these tools contribute to a reduction in substance use and associated challenges, there is good evidence to suggest that screening tools are effective in detecting potential problems and guiding early interventions. Below, we describe the range of tools that are available for this purpose and share evidence on their validity and reliability where available.

TOOL	DESCRIPTION	CURRENT EVIDENCE	ESTIMATED TIME TO ADMINISTER
Adolescent Alcohol and Drug Involvement Scale (AADIS)	• screens for alcohol and other substance use problems among adolescents[52] • is a combination of two tools: the Adolescent Drug Involvement Scale (ADIS) and the Adolescent Alcohol Involvement Scale (AAIS)[52] • enables differentiation among those who do not have any substance use disorders and those who have at least one [52]	• no literature explicitly discusses the psychometric properties of this tool	• no literature explicitly defines this element
Alcohol, Smoking and Substance Involvement Screening Test (ASSIST)	• identifies problematic substance use (including cannabis) and determines individuals in need of intervention[53] • enables the distinction between occasional and problematic substance use[54] • revised version of ASSIST (V3.1 or V3.0) contains 8 questions covering tobacco, alcohol, cannabis, cocaine, amphetamine-type stimulants (including ecstasy), inhalants, sedatives, hallucinogens, opioids and "other substances"[55]	• reported to have good discriminative validity for many substances including cannabis[54] • reported to have 91% sensitivity and 90% specificity[56]	• approximately 7 to 10 minutes for paper/pencil version; approximately 5 minutes for the electronic version[55]

TOOL	DESCRIPTION	CURRENT EVIDENCE	ESTIMATED TIME TO ADMINISTER
CAGE – Adapted to Include Drugs (CAGE-AID)	• modified version of CAGE questionnaire that is designed to detect problematic alcohol use[57] that enables a screening for substances[58] • contains 4 items[58]	• reported to have good validity among adult patients in hospital; however, evidence supporting the tool's sensitivity and reliability among youth is not adequate [58]	• less than 1 minute[58]
CRAAFT Screening Tool for Adolescent Substance Abuse	• screens for alcohol and other substance use in adolescents[59,60] • questions are designed to be developmentally appropriate for adolescents, specifically those in hospital settings[60] • contains 6 items[59]	• results from a pilot study report this tool to have promising concurrent validity[60]	• no literature explicitly defines this element
Cannabis Abuse Screening Test (CAST)	• identifies problematic cannabis use[61,62] • assesses the following aspects of cannabis consumption in the past 12 months: non-recreational use, memory disorders, reproaches from family or friends, unsuccessful attempts to quit and problems linked to cannabis consumption[63]	• reported to be an accurate tool for screening for cannabis-related problems in the adolescent population[63]	• no literature explicitly defines this element
Cannabis Use Disorders Identification Test (CUDIT) **Cannabis Use Disorders Identification Test – Revised (CUDIT-R)**	• screens for current cannabis use disorders according to DSM-IV[62] • differentiates between various levels of cannabis use and cannabis use disorders[64] • useful in clinical settings to screen cases *and* rates problem severity, which enables accurate prognosis and treatment[64] • contains 10 items[64] • CUDIT-R is the revised version of the CUDIT tool which contains 8 items, comprising 4 items from the original 10-item CUDIT and 4 new items[64]	• reported to have adequate psychometric properties[64]	• no literature explicitly defines this element

TOOL	DESCRIPTION	CURRENT EVIDENCE	ESTIMATED TIME TO ADMINISTER
Drug Abuse Screening Test (DAST) **DAST-28** **DAST-20** **DAST-10** **DAST-A**	• measures problematic substance use[65] • assesses drug use within a variety of groups including people with alcohol and substance use problems, psychiatric patients and outpatients and adolescents[65] • DAST contains 28 items[65] • DAST-10 is the condensed version of the DAST tool that contains 10 items[66]	• reported to have high face validity and good reliability[65]	• less than 8 minutes[66]
Global Appraisal of Individual Needs (GAIN) **GAIN-I** **GAINS** **GAIN-SS** **GAIN-Q3**	• screens for psychiatric and substance use disorders[67] • contains 8 main sections (background, substance use, physical health, risk behaviours, mental health, environment, legal, vocational)[68]	• reported to have poor internal consistency and validity[67]	• no literature explicitly defines this element
Marijuana Adolescent Problem Inventory (MAPI)	• assesses severity of problematic cannabis use[69] • contains 23 items[69]	• reported to have good reliability[69]	• no literature explicitly defines this element
Problem Oriented Screening Instrument for Teenagers (POSIT)	• identifies problems that require further in-depth assessment and the potential need for services in 10 functional areas, including substance use[70] • contains 139 items total with a 17-item substance use subscale[71]	• reported to have good validity [71] • reported to have 86% accuracy, 95% sensitivity and 79% specificity[56]	• approximately 20 to 30 minutes[71]
Severity of Dependence Scale (SDS)	• measures the degree of dependence on cannabis[72] • contains 5 items[62]	• reported to have 64% sensitivity and 94% specificity in non-clinical young people	• less than 1 minute[72]

Section 2: Environmental scan of best practices

As part of this project, we asked mental health and addictions service providers in Ontario's child and youth mental health and addictions sectors to share their experiences and questions about how to address substance use — particularly cannabis — for youth under 25 years of age. Findings from this survey showed that 18 percent of child and youth mental health agencies and 34 percent of addictions agencies reported having training in place regarding the legalization of cannabis and its anticipated effects on youth; and 26 percent of child and youth mental health agencies and 55 percent of addictions agencies provide training on harm reduction strategies for substance use[§]. Given the recent legalization of non-medical use of cannabis, mental health and addictions service providers had questions about the short- and long-term impacts of cannabis use on mental health, the effects of cannabis on the brain and cognitive development, its interactions with medications and other substances, and risk factors for cannabis use among youth.

There are a number of prevention and intervention programs that address substance use in youth populations. Programs that promote the mental health of young people may reduce the prevalence of substance use[34] by enhancing knowledge about substances and strengthening social-cognitive skills toward enabling resistance to recreational substance use. Generic skills training programs teach general life skills such as decision-making, problem-solving, communication, assertiveness and coping skills; these have been found to have mixed results in reducing substance use to prevent problematic substance use[73]. On the other hand, social influence programs reduce substance use by informing individuals about substance use influences and promoting skills for resisting these, while also increasing youth awareness of the immediate negative consequences of problematic cannabis use[74]. There are also targeted interventions for illicit substances that include various psychosocial components; those that adopt a social competence/social influence approach have been found to be effective. However, to ensure effectiveness, interventions must go beyond simply sharing information or providing education[28].

In many cases, despite promising evidence to support their use, there is no single agreed upon set of criteria to identify model programs. Even when considered exemplary, programs are not guaranteed to work in multiple contexts. Further, there is limited research to demonstrate that the effects of a program are sustained over time and across various periods of a child's development. A deep review of every program or intervention is beyond the scope of this work. Rather, in this section we provide an overview of core elements that are understood to contribute to program success. This scan includes information from: literature on common frameworks, core competencies for training mental health and addictions service providers, programs and approaches including parents and family, community, school, peers, and individual, as well as programs offered through an online platform.

[§] Unfortunately, information about funding sources for each responding agency was not obtained. As well, respondents were not asked to identify whether they provide specialized or general community mental health or addictions support to transition-aged youth. The findings shared here, then, may not apply to the broader sector and range of service providers within it.

Program type

Programs and interventions can be categorized according to the location, target audience and focus of each type of program (e.g. schools, families, community or peers). Most effective programs require a combination of elements to ensure success, including those aimed at the individual (e.g. sharing drug knowledge, supporting enhanced resistance and social-cognitive skills)[74]. While a deep review of each program and its elements is beyond the scope of the present work, below we provide an overview of what works, what does not work and what we still do not know about this range of programs, organized by setting.

School-based programs

WHAT WORKS

- programs based on social-influence models[**] which promote the following elements to reduce cannabis use among youth between 12 and 19 years[75]:
  - endorsing abstinence role models
  - accepting that not using cannabis is an option
  - building confidence to resist peer pressure against substance use
  - educating youth on the consequences of cannabis use and benefits of abstinence
- high levels of interactivity, small-group exercises and role playing[75]
- having someone other than a teacher (such as a mental health clinician who has specialized knowledge, experience and training) deliver the programs[40]
- programs targeting older, high-school aged youth (over 14 years of age) are typically more effective than those targeting younger students (under 14 years of age)[75]

WHAT DOES NOT WORK

- focusing *only* on knowledge and awareness of harms caused by substance use[41]
- lecture-based formats[75]

WHAT WE DO NOT KNOW

- the ideal length or duration of a program is not clear:
  - evidence regarding optimal program length is mixed, with some reviews reporting no significant difference between short and long programs, while others report greater effectiveness for longer programs than shorter ones (i.e. a mean of 16 delivery hours versus 6)[75]
  - little evidence exists to show effectiveness of school-based universal substance use prevention programs in general[76,77]
- zero-tolerance policies[††] are loosely enforced, fail to address the root of substance use and their impact on substance use reduction is unclear[43]

KEY MESSAGES

- school-based programs are the most common drug prevention method for adolescents because of the ease of program delivery and access to young people[41]
- teachers most often deliver school-based programs, which limits the success of these programs because:
  - not enough time is set aside to adequately train teachers to deliver these programs[75]
  - teachers are not viewed as a credible source of information by students[40]
- program success depends on teachers being adequately trained to deliver content in a way that is engaging, interactive and not lecture-based[40]
- school-based programs only have the potential to reach youth who attend school; therefore, those who are frequently absent from school, those who have left school (a high-risk group), and those who or are home-schooled are not reached by these programs[41]

[**] Programs that motivate adolescents to avoid drug use while helping them identify specific strategies to resist them

[††] In some jurisdictions, frequent use of cannabis by students during school hours has resulted in a five-day suspension for any youth attending class under the influence of a substance

Family-based programs

WHAT WORKS

- programs that emphasize the way parenting practices and family interaction patterns can impact adolescent substance use[78]
- program components that focus on developing[42,79]:
  - positive family relations
  - problem solving skills
  - tactics for resisting peer pressures
  - future goals orientation
  - strict rules against under-age substance use
  - better parent–child communication
  - monitoring of a child's/youth's activities when not under direct parental supervision
- parent training (using cognitive behavioural therapy), family skills training and structured family therapy can prevent illicit substance use in low- and high-risk young individuals[41]
- programs that provide information about substance use, develop rules and parameters for potential substance use and encourage parental monitoring and supervision to improve parent–child communication[51]

WHAT DOES NOT WORK

- educating parents only and not including youth as a part of the training program[41]

WHAT WE DO NOT KNOW

- specific information on which areas require additional focus in cases where there are conflicting studies that show inconsistent results

KEY MESSAGES

- family-based programs that focus on the parenting practices and patterns of family interaction can affect adolescent substance use[78]
- clinicians can work with family members to modify and manage each family member's emotions, cognitions and behaviours to create positive changes in the way family members relate to one another[42]
- to produce positive changes in a young person's behaviour, parents should:
  - ensure that they monitor the youth's activities
  - engage in constructive parent–youth problem-solving
  - increase their involvement in the young person's day-to-day life[42]
- integrating youth, parent and family curricula can produce better outcomes when compared to targeting youth or parents separately[42]

Community-based programs

WHAT WORKS
• combining two or more elements of different types of programs, such as family- and school-based programs, can be more effective than a single program alone (Spoth, Redmond, Shin, & Azevedo, 2004)[81] • providing consistent, community-wide messaging across various settings[82]
WHAT DOES NOT WORK
• no literature explicitly identified factors that were ineffective
WHAT WE DO NOT KNOW
• specific factors to avoid or which could be detrimental/harmful
KEY MESSAGES
• literature on community-based programs tends to refer mainly to *where* the programs are based, not necessarily the *content* of the programs themselves[82] • community prevention programs can reach populations in multiple settings — for example, schools, clubs, faith-based organizations and the media[82] • programs tend to be versions of previously mentioned programs such as family or peer-based programs[79,80]

Peer-based programs

WHAT WORKS
• involving youth in the development of initiatives and allowing youth to deliver programming to their peers[49] • if peer facilitators appear to be unsupportive of cannabis, youth may be more likely to reject the substance and abstain from use[76] • consulting with diverse youth to shape peer-based interventions for substance use is a critical step in ensuring program effectiveness[83] • youth engagement in development has been associated with improved efficacy of drug prevention programs as it provides insights into how their lives are impacted by race, class, gender, age and sexual orientation, and how this in turn affects decisions to use or not use substances; this ensures drug education is relevant to their unique needs[83] • youth involvement can lead to participation in the delivery of programs, which have shown some promising results in drug prevention, specifically related to improved comprehension and behaviour change[83] • drug prevention programs led by peers can be as effective as programs led by adults, with proper training and support[75]
WHAT DOES NOT WORK
• simply providing information without proper tailoring for the peer audience[83]
WHAT WE DO NOT KNOW
• no literature explicitly identified factors that were ineffective
KEY MESSAGES
• peer-led programs create a comfortable environment for youth to discuss their experiences with a trained youth facilitator and without judgement[49] • peers are viewed as more credible than adults since they share a common understanding of peer culture and youth norms; this in turn helps messages to resonate across peer groups and results in greater effectiveness[83]

Online programs

WHAT WORKS
• targeting students aged 13 to 14 years old to reach them before they have significant exposure to alcohol and substances[34,84,85] • online cartoon-based modules can hold the attention of youth and are easy to understand[34,84] • online, on-demand programs are easy to access and convenient to use[82]
WHAT DOES NOT WORK
• sustained enrollment and continued use of the program[41]
WHAT WE DO NOT KNOW
• there are some concerns about the poor quality of the evaluations that are done on these types of programs[41] • evidence suggests that peer-to-peer program via social media may be an effective strategy, but more research is needed to monitor over time[78]
KEY MESSAGES
• certain online, school-administered programs are effective in reducing the use of alcohol and cannabis in adolescents in Australia and the United Kingdom[85‡‡,] • online programs are appealing since they allow users to manage the pace of the intervention, ensure their privacy, tailor content to their needs, use engaging multimedia and potentially have a wide reach at a relatively low cost[41] • these interventions are typically short and involve computerized tasks that include various tailored interventions and feedback on consumption; however, adherence to these programs is typically poor with low uptake and poor evaluations[41]

‡‡ One example of such a program is the Climate Schools: Alcohol and Cannabis, and the Climate Schools Plus program. Details about this program can be found in Appendix C.

Program design considerations for vulnerable populations

In order to ensure program effectiveness, targeted prevention programs should be tailored to address health equity and risks specific to population or audience characteristics (such as age, gender and ethnicity)[86]. In this section, we summarize literature that focuses on cannabis use in a few vulnerable youth populations. Aside from studies on individuals with Autism Spectrum Disorder (ASD) or Attention Deficit Hyperactivity Disorder (ADHD), evidence is limited or weak when it comes to understanding the link between one specific population identified below and its associated cannabis use. Furthermore, there is little research on programs targeting these specific populations and, if in cases where they are available, evidence on which programs are most effective is not consistent. Given the importance of providing service to these specific at-risk populations, research on specific considerations when providing cannabis treatment and engaging in prevention efforts should be prioritized.

POPULATION	CONSIDERATION
Rural or remote	• youth living in rural areas are more likely to use cannabis because there are few other options for entertainment[49] • from our search, there is little research exploring the availability of cannabis prevention and treatment resources in a rural Canadian context
Concurrent disorder including (ASD and ADHD)	• an early childhood diagnosis of ADHD has been found to be associated with an increased risk for substance use, misuse or dependence in adolescence and adulthood[87] • individuals not receiving early treatment for ASD or ADHD are at an increased risk for substance use and addiction • cannabis is the most commonly used substance amongst individuals with ADHD[80] • rates of substance use disorder have been shown to be generally lower in ASD samples, but the difference is not statistically significant across studies[88] • from our search, few studies have explored the relationship between ASD and substance use, and even fewer have addressed the characteristics of individuals with a dual diagnosis of substance use disorder and ASD
Youth in transition/ Transition-aged youth	• according to Statistics Canada (2013), young people aged 15 to 24 years are more likely to report mental health and substance use or abuse problems than any other age group; prevention programs are aimed at general populations at key transition points, such as the transition to middle school • programs aimed at general populations at key transition points (such as transition into middle school) have been shown to produce beneficial effects even among high-risk families and children[89]
Varying social and cultural contexts (e.g. ethnic minorities, refugees, recent immigrants)	• the odds of using cannabis have been shown to be lower among first- and second-generation immigrant youth to Canada when compared with third and later generations • second-generation immigrant youth abstain from cannabis use for reasons rooted in their cultural beliefs, greater family bonds and their focus on academic and career success[90] • university-educated parents may protect the second-generation immigrant youth from using cannabis[91] • in Ontario, youth who are South Asian or East/Southeast Asian have lower odds of using cannabis than those who are of White, Black, or mixed race[92] • in Ontario, youth who are of mixed race have higher odds of cannabis use compared to youth who are White[92] • foreign-born youth are less likely to use cannabis than Canadian-born[92]

Considerations for vulnerable populations

Despite our knowledge of the links between the social determinants of health and cannabis use, the research evidence that unpacks these relationships among vulnerable populations is weak. The Canadian Paediatric Society reports regional variations in the frequency of cannabis use across Canada, specifically reporting Atlantic and Western provinces having higher use of cannabis than other regions[8]. Although there is evidence on the prevalence of cannabis use among the LGBTQ+ community, considerations targeting their unique needs are lacking.

The rates of cannabis use among Indigenous communities have been found to be significantly higher than the general population[93]. Cannabis is the number one substance used among First Nations youth, with 89 percent reporting frequent use[91]. In Indigenous communities, cannabis can be used in two main ways[94]:

1. as a topical agent to treat pain for conditions such as arthritis
2. in a ceremony to decrease symptoms of undiagnosed psychosis in conditions such as schizophrenia

Elders within these communities report that cannabis is not ingested nor smoked; it is used for medical purposes[94]. When the medicine is misused, it is made less effective. As such, it is important that the spirit of the cannabis plant is respected in the preparation and use[94].

Within Indigenous communities, cannabis is the most prevalent substance used by youth[95], and the rates of cannabis use are four times greater in Nunavik compared to southern Quebec (at 16 percent) and the rest of Canada (at 14 percent). According to the Nunavik Inuit Health Survey there was an increase in cannabis use among 15- to 19-year-old Inuit youth from 38 percent in 1992 to 78 percent in 2004. The Canadian Paediatric Society has found Indigenous youth to be particularly at risk for cannabis use with nearly two-thirds of 15- to 19-year-old Inuit participants in Nunavik, Quebec reporting use in the past year[8]. According to one study, in a cross-sectional sample of 340 people, First Nations males reported greater cannabis use than females[93], making it clear that a gendered approach to understanding and preventing cannabis use in this population is essential.

With cigarette smoking as an ongoing public health concern in the First Nations population, evidence shows that co-occurring tobacco and cannabis use increases the risk for cannabis use disorders as well as psychosocial problems[93]. As such, prevention strategies in this population should also focus on concurrent tobacco and cannabis use[93] and include messaging around the increased risk of tobacco addiction when smoking cannabis. More programs and services managing substance use issues should be made available for Indigenous youth, as this is a concern for this population[93].

Developmental considerations

Responses to substance use should be tailored to a young person's developmental stage. In this section, we summarize various evidence-informed strategies for preventing or reducing substance use in developmentally appropriate ways[96,97].

Early childhood (under 5 years)

Young children with parents who struggle with mental health and substance use issues are sometimes removed from the family home in cases where safe and effective care is not provided. Public health approaches that focus on strengthening parenting behaviours have been found to be effective in improving both child and family outcomes[98]. The Attachment and Biobehavioral Catch-up (ABC) program, for example, is an attachment-based intervention for the caregivers of young children at high risk of being exposed to maltreatment and neglect that focuses on increasing parental sensitivity and nurturance while enhancing the child's capacity for self-regulation[99].

Middle childhood (5 to 10 years)

During this age range children develop the ability to think logically and concretely. They learn how to coordinate actions, develop problem-solving skills and understand the difference between right and wrong. Their primary sources of reinforcement are parents and teachers. They begin to learn about, and adjust to, the needs of others while trying to achieve mutual interests and form friendships that centre around loyalty and intimacy[97]. Given that substance use in this age range is not common, rather than addressing the risks of substance use, programs should focus on teaching children basic skills that can help them succeed in academic and social settings (e.g. social skills, self-control, healthy behaviours, effective problem-solving skills)[97].

Early adolescence (11 to 12 years)

In early adolescence the main developmental task is the re-evaluation of self and the emergence of identity. Early adolescents go through many biological, cognitive and psychosocial changes, and their primary goals during these years are focused on adapting to their changing bodies and reflecting on their own thoughts and behaviours. Preteens become more concerned with peer relationships, where social acceptance is critical. Programs that use the social influence approach ensure that students are aware of social pressures to use substances and enable them to be prepared to resist the influence. Using social norm strategies (such as normative feedback) can prompt students to make a public commitment to not use substances[97]. While mentoring and peer education have been linked to positive results among early adolescents, there is no guarantee that these interventions will enable youth to resist substance use in relation to peer pressure. Refusal skills training was found to be an ineffective approach; however, an enhancement of basic skills, such as self-control and positive decision-making, was found to be beneficial for preventing substance use in young adolescents[99]. Parental involvement can also be an effective substance use prevention strategy in early adolescence. By supporting parental behaviour management skills and building strong parent–child relationships, problem behaviour and substance use in early adolescence may be reduced[89].

Middle adolescence (13 to 14 years)

In this age range the main developmental task is achieving independence and autonomy. Adolescents begin to develop a greater understanding of others' feelings and perspectives. Through their peers, adolescents become increasingly aware of potential benefits of cannabis use and less convinced of risks. Substance use prevention is extremely difficult in this developmental stage since adolescents are typically not open to adult views. As peers are the primary source of reinforcement, the best results for substance use prevention are achieved through peer education[97]. Students who are at high risk for using

substances benefit the most from programs that are based on the principles of cognitive behavioural therapy, which can teach students to cope with stress and anxiety. However, such treatments may be difficult to access as they are typically reserved for individuals with higher and complicated identified needs. Although behavioural change in middle adolescence is possible, this appears only achievable when youth are already demonstrating potential substance use problems and a willingness to change[99].

Late adolescence (15 to 17 years)

In this age range the main developmental task for youth is to explore their identity and prepare themselves for a successful transition into adulthood. It is in these years that youth are increasingly likely to use substances and alcohol. Evidence suggests that programs targeting students in grades 7 to 10 are slightly more effective than those targeting students up to grade 6 or grades 11 and 12[41]. Between ages 15–17 years, youth tend to benefit from universal programs that use a social influence approach and teach refusal skills. Health education on how substance use can interfere with personal goals is an effective substance use prevention strategy. Training on specific skills, such as self-control, problem-solving and decision-making, have been found to be effective in this developmental stage[10]. The involvement of parents can also help to produce positive outcomes, especially for at-risk youth[99].

Early adulthood (17 to 25 years)

In this age range the main developmental task is for young people to develop an understanding of their identities and relationships, take on new responsibilities and define themselves as young adults. During this stage, young people experience frequent life changes, such as transitioning in and out of living with families, dating or marital relationships, cohabitating with partners or living independently, entering the labour force or changing jobs and moving into and out of college or university[10]. Using harm reduction principles with counselling to help emerging adults understand substance use has been found to be effective. For example, The Umbrella Project uses a harm reduction approach to address mental health and substance use issues faced by emerging adults within a postsecondary institution[100]. This program aims to train members within the institution (e.g. professors, counsellors, security guards, students) on how to use and apply harm reduction measures in relation to substance use[100].

In this evidence paper, we have reviewed the latest information available on both medical and non-medical use of cannabis in youth and focused our discussion on its relationship to mental health conditions in those under 25 years of age. To support professionals working with youth either in a child and youth mental health or addictions context, we also described various approaches and screening and assessment tools available for use. In the latter part of this document, we conducted an environmental scan of best practices in working with youth who may be using cannabis while also experiencing a mental health issue and have concluded by sharing specific considerations for particularly vulnerable populations and developmental stages. This information forms the basis of a complementary set of resources intended to support child and youth mental health and/or addictions workers as they deliver services to youth populations. For more information, please see www.excellenceforchildandyouth.ca.

Glossary

Abstinence: Refraining from substance use (i.e. "no use")[18].

Addiction: Patterns of heavy, compulsive use of psychoactive substances and an inability to stop substance use despite severe, clinically relevant problems in multiple domains of an individual's life (e.g. when substance use becomes physically hazardous; causes failure to fulfill obligations at work, school or home; or creates legal, social or interpersonal problems). The term "addiction" refers not only to substance use disorder — the topic of this report — but also to non-substance-related behavioural addictions like gambling disorder[96].

Beneficial substance use: Substance use where benefits outweigh the harms (e.g. opioids, cannabis or other prescription medications used as prescribed by a healthcare provider with ongoing medical supervision)[18].

Cannabis use disorder: A problematic pattern of cannabis use leading to clinically significant impairment or distress, as manifested by at least two of the following occurring within a 12-month period[101]:

- cannabis is often taken in larger amounts or over a longer period than was intended
- there is a persistent desire or unsuccessful efforts to cut down or control cannabis use
- a great deal of time is spent in activities necessary to obtain cannabis, use cannabis or recover from its effects
- craving or a strong desire or urge to use cannabis
- recurrent cannabis use resulting in a failure to fulfill major role obligations at work, school or home
- continued cannabis use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of cannabis
- important social, occupational or recreational activities are given up or reduced because of cannabis use
- recurrent cannabis use in situations in which it is physically hazardous
- cannabis use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by cannabis
- tolerance, as defined by either a (1) need for markedly increased cannabis to achieve intoxication or desired effect; or (2) markedly diminished effect with continued use of the same amount of the substance
- withdrawal, as manifested by either (1) the characteristic withdrawal syndrome for cannabis; or (2) cannabis is taken to relieve or avoid withdrawal symptoms

Child: A person 0 to 11 years of age (Ministry of Children, Community and Social Services).

Concurrent disorders: Refers to the existence of simultaneous *Diagnostic and Statistical Manual Fifth Edition* diagnoses of a mental illness and a substance use disorder[102].
Note: Although at times, concurrent disorders can refer to other combinations of co-occurring disorders (e.g. intellectual disability and a mental disorder), the use of the term "concurrent disorders" in this paper is limited to mental illnesses and substance use disorders.

Harm reduction: Refers to policies, programs and practices that aim to reduce adverse health, social and economic consequences of use of legal and illegal psychoactive substances without necessarily reducing substance consumption. Harm reduction strategies respect the rights of individuals to use substances at their discretion[18].

Medical cannabis use: The use of cannabis for specific medical purposes that is therapeutic in nature. It is authorized by a health care practitioner by providing a medical document (i.e. a prescription) for the relief of symptoms associated with a variety of disorders which have not responded to conventional medical treatments. The symptoms or conditions may include[103]:

- severe refractory nausea and vomiting associated with cancer chemotherapy
- loss of appetite and body weight in cancer patients and patients with HIV/AIDS
- pain and muscle spasms associated with multiple sclerosis
- chronic non-cancer pain (mainly neuropathic)
- severe refractory cancer-associated pain
- insomnia and depressed mood associated with chronic diseases (HIV/AIDS, chronic non-cancer pain)
- symptoms encountered in the palliative and end-of-life care setting

Non-problematic substance use: Substance use that has negligible physical and mental health impacts (also referred to as "recreational use")[18].

Potentially harmful substance use: Episodic substance use that can lead to harmful consequences for individuals, family, friends or communities (e.g. use at an early age, binge consumption, impaired driving under the influence of substances, harmful modes of substance use)[18].

Prevention: An approach that focuses on reducing factors that increase the risk of developing substance use problems. These interventions aim to delay substance use in general or increase protective factors related to substance use[18].

Problematic substance use: Refers to patterns and types of use that have a higher risk of individual physical and mental health impacts[18].

Protective factors: Characteristics associated with a lower likelihood of negative outcomes or that reduce a risk factor's impact. Protective factors may be positive countering events[104].

Risk factors: Characteristics at the biological, psychological, family, community or cultural level that precede and are associated with a higher likelihood of negative outcomes[104].

Substance use disorder: Substance use that has become a physical or mental addiction characterized by frequent and compulsive use despite harmful physical and mental effects[18]. It is also characterized as a problematic pattern of using a substance that results in an impairment in daily life or noticeable distress as displayed by at least two of the following symptoms within a 12-month period[101]:

- consuming a larger dose of a substance than originally planned
- worrying about stopping or consistently failed efforts to control one's use
- spending a large amount of time using substances or doing whatever is needed to obtain them
- consuming a substance to the point where it results in failure to fulfill responsibilities and obligations such as at home, work or school
- "craving" the substance
- continuing the use of a substance despite health problems caused or worsened by it
- continuing the use of a substance despite its having negative effects on relationships with others
- repeated use of the substance in a dangerous situation (e.g. driving a car)
- giving up or reducing activities in a person's life because of the substance
- building up a tolerance to the substance
- experiencing withdrawal symptoms after stopping use

Substance use: The use of a psychoactive substance. It ranges from a spectrum of abstinence, beneficial use, non-problematic use, problematic use, potentially harmful use and substance use disorder[18].

Transition aged youth: Young adults between 16–24 years of age. The term "transition aged youth" has connotations, though, as it includes the difficulties that these youth encounter in shifting from the child and youth mental health and addictions sectors to the adult health care sector (Ontario Centre of Excellence for Child and Youth Mental Health).

Youth: Persons aged 12 to 18 years old.

Young adult: Youth between 19–24 years of age who bridge late adolescence into early adulthood.

Vulnerable populations: Reflective of specific risk factors and based on available prevalence data, particular groups of youth who, due to their unique experiences with addiction, are proposed as vulnerable population groups: street-involved (homeless/marginalized/street-involved youth), child welfare-involved (youth who have been involved in child welfare), justice-involved (youth who have been involved in the justice system), Indigenous (First Nations/Inuit/Métis youth), LGBTQ2+ youth, newcomer and ethnic minority youth, Francophone youth[105].

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APPENDICES

Appendix A – Youth and family survey summary

Table 1.0: Respondent characteristics

ETHNICITY	FAMILY (% OF RESPONDENTS)	YOUTH (% OF RESPONDENTS)
White (e.g. European Canadian)	72	45
Aboriginal or Indigenous (i.e. First Nations, Native, Indian, Metis, Inuit)	2	1
Arab	0	0
Asian – East (e.g. Chinese, Korean, Japanese, etc.)	0	1
Asian – South-East (e.g. Vietnamese, Cambodian, Malaysian, Laotian, etc.)	0	2
Asian – South (e.g. East Indian, Pakistani, Sri Lankan, etc.)	0	2
West Asian (e.g. Iranian, Afghan, etc.)	0	1
Black – Caribbean (e.g. Jamaican, Trinidadian)	0	0
Black – African (e.g. Ethiopian, Somali, Nigerian)	0	1
Filipino	0	1
Hispanic or Latin American	1	1
Prefer not to answer	0	2
Other: (please specify)	2	1
More than one ethnicity	8	8
Blanks	14	35

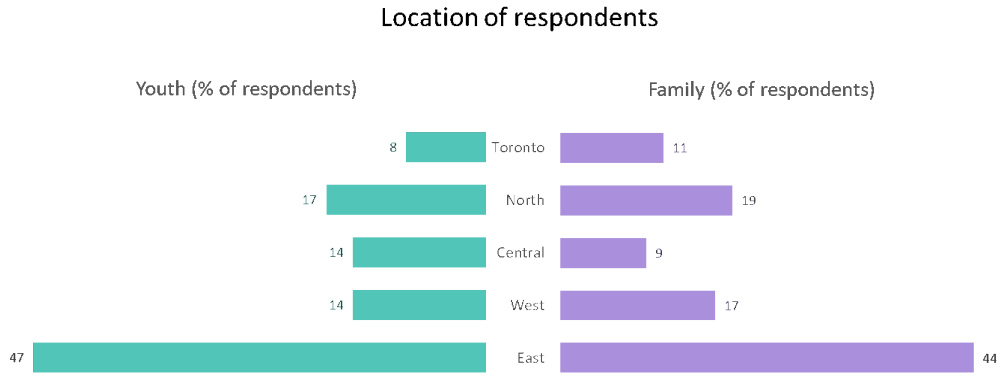

Figure 1.0: Location of respondents

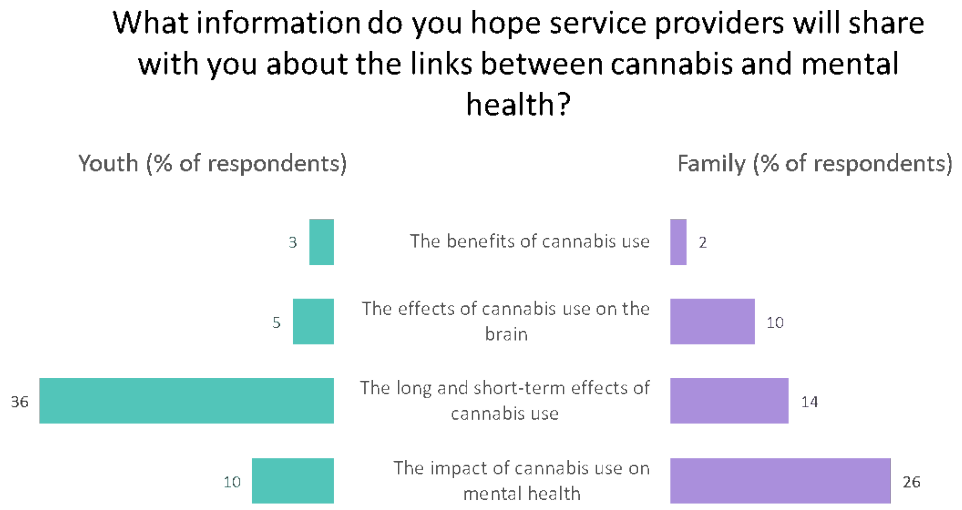

Figure 1.1: Knowledge needs of service providers on the links between cannabis and mental health

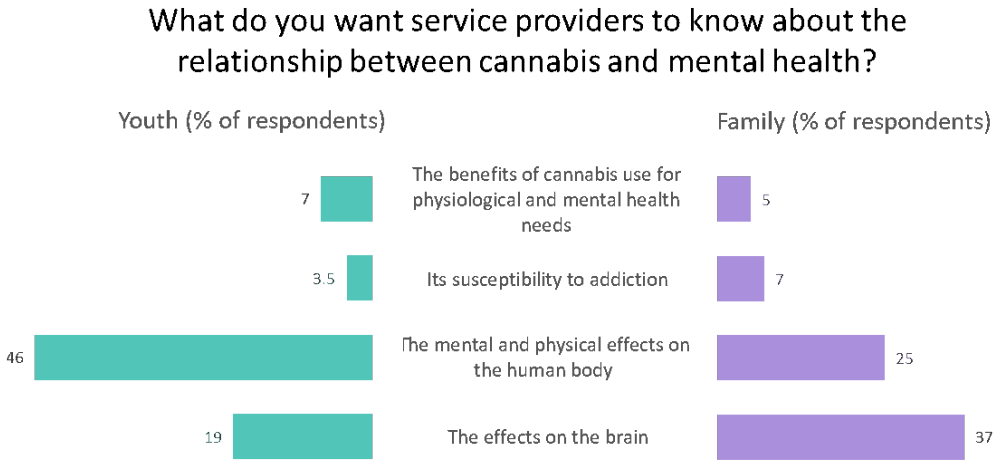

Figure 1.2: Knowledge needs of service providers on the relationship between cannabis and mental health

Appendix B – Youth and family focus group results

Theme: Accessing services

GOAL: Learn about how families access mental health or addictions services.

HOW DID YOU GO ABOUT GETTING HELP FOR YOUR MENTAL HEALTH AND/OR ADDICTIONS NEEDS?	
Youth Youth think first of their family doctor but explore a range of treatments from community agencies, doctors, psychologists and private clinics	**Families** Private counselling and US-based treatment. Mostly all residential treatments.
WHAT KINDS OF SUPPORTS WERE YOU HOPING TO GET OUT OF THAT ENCOUNTER (E.G., DIAGNOSIS, REFERRAL, EMOTIONAL SUPPORT, EDUCATION)? DID YOU END UP RECEIVING THESE?	
Youth Accurate diagnosis is important and sought after. Age-appropriate therapy and having options in addition to medication that build skills then wellbeing.	**Families** Support that takes seriously the notion of cannabis as an addictive substance, treatment that integrates substance use and mental health, support for the family

Theme: Knowledge

GOAL: Learn about the expectations from families around the competency of service providers around this topic.

WHAT DO YOU HOPE YOUR SERVICE PROVIDER KNOWS ABOUT THE RELATIONSHIP BETWEEN CANNABIS AND MENTAL HEALTH?	
Youth Focus should be on educating youth rather than taking a stance. Explore reasons for usage.	**Families** That cannabis can be an addictive substance for some, honest disclosure of what we know and do not know regarding cannabis and its medical uses, not to use fear-based tactics with youth, and that waiting until 14 or 15 to talk to youth is too late
WHAT INFORMATION DO YOU WANT YOUR SERVICE PROVIDER TO SHARE WITH YOU?	
Youth • **Key questions:** ○ Is it safe to take with other medication? ○ How much is safe to drive? Legal Limits? ○ Where it is safe to purchase? • **Key Knowledge points:** ○ be an expert on everything from a-z ○ be aware of the precise legalities	**Families** Want to be told that a lot of dealing with this is self-care as, once child reaches a certain age, there is very little (practically and legally speaking) you as a parent can do. Share lived experience if any to serve as an aspirational figure.

Theme: Service delivery

GOAL: Learn about the expectations from families around receiving information/education/care from service providers.

WHAT DO YOU THINK ARE THE BIGGEST BARRIERS, CHALLENGES OR PROBLEMS AROUND SERVICE DELIVERY FOR CHILDREN AND YOUTH MANAGING, OR AT RISK OF, SUBSTANCE USE ISSUES?	
Youth • Stigma • Culturally taboo to accept mental health as legitimate. • Fear of (forced) hospitalization. • Fear of legal/custody battle	**Families** • Consent barrier/lack of information coming back to the parents about their child/youth • Navigating the system and finding supports or a case manager
WHAT WOULD MAKE IT EASIER FOR YOU TO ACCESS THE HELP YOU NEED AROUND SUBSTANCE USE?	
Youth • Service provider giving options • educational workshop inviting local youth to come and learn about mental health and where they can go to access more information • Reduce cost barrier • Grants for certain people to access certain therapy	**Families** • Considering impacts at the family level • Having the idea of cannabis as an addictive substance taken seriously • Some sort of system navigator or case manager
WHAT WOULD AN IDEAL EXPERIENCE FROM A SERVICE PROVIDER LOOK LIKE?	
Youth Going through someone at the community level (possible online) who can speak openly and frankly about marijuana and addictions and take the issue seriously	**Families** Some sort of immediate assessment and intake mechanisms to address the issue and an honest admittance of not knowing how to proceed but putting the family in touch with someone who can help on the part of the family doctor

Appendix C – Details of the Climate Schools: Alcohol and Cannabis and Climate Schools Plus program

This is an internet-based intervention used in schools that draws on cartoons to prevent alcohol and cannabis use among adolescents[106]. Its target audience are students aged 13 to 14 years old; the hope is that these youth will be reached before they have significant exposure to alcohol and drugs[34,84,85]. The online program consists of two sets of six lessons delivered approximately six months apart over the academic year. A pilot study examining the effectiveness of this intervention was well received by adolescents as they reported being able to recall the information that was taught in the online programs and found that it was easy to understand. Teachers noted that students found the cartoons captured their attention but felt the module was lengthy and lacked an interactive component. Regardless, teachers found it was an easy program to implement at school. Students generally enjoyed learning through an online cartoon-based module that held their attention, while being easy to learn and understand[34,84].

There is also a Climate Schools Plus Program targeted at parents. It is an online module learning platform for parents to learn about the harm reduction approaches to alcohol and cannabis use[106]. The content from the lessons delivered to students is summarized to produce parent lesson summaries. The summaries are emailed to the parents every week, while the students work on the lessons during class. They are made available to parents in a webinar format. They address key information about adolescent substance use and highlight parenting factors, while emphasizing the importance of rule-setting to prevent adolescent substance use. These summaries teach parents about the prevalence, patterns of use and short- and long-term effects of alcohol and cannabis use, which run parallel to the student program. Overall, the program was well received by parents. Parents found the program easy to use as they found that the content was relevant[82].