CANADIAN PUBLIC HEALTH ASSOCIATION
ASSOCIATION CANADIENNE DE SANTÉ PUBLIQUE

Cannabasics

A Primer for Health and Social Service Providers

Daniel Bear PhD
for the Canadian Public Health Association

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Canadian Public Health Association

The Canadian Public Health Association (CPHA) is the independent national voice and trusted advocate for public health, speaking up for people and populations to all levels of government. We champion health equity, social justice and evidence-informed decision-making. We leverage knowledge, identify and address emerging public health issues, and connect diverse communities of practice. We promote the public health perspective and evidence to government leaders and policy-makers. We are a catalyst for change that improves health and well-being for all. We support the passion, knowledge and perspectives of our diverse membership through collaboration, wide ranging discussions and information sharing. We inspire organizations and governments to implement a range of public health policies and programs that improve health outcomes for populations in need.

Our Vision

Healthy people and communities thriving in inclusive, equitable, sustainable environments.

Our Mission

To enhance the health of all people and communities in Canada, particularly those who are structurally disadvantaged and to contribute to a healthier and more equitable world.

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Introduction

This is a primer about cannabis for health and social service providers. It provides evidence-based information about cannabis, ways it is consumed and basic information about harm reduction.

This primer is intended to provide an overview in sufficient depth to allow front-line professionals to have conversations with clients who consume cannabis and if needed, offer them appropriate harm reduction information.

Each section provides basic information followed by more detailed content as well as web links and references. The Cannabasics Information Package, initially published in 2018, has been updated by Dr. Daniel Bear, a cannabis researcher with nearly 20 years' experience studying drug policy issues in partnership with the CPHA.

This project was made possible through a financial contribution from Health Canada. The views expressed herein do not necessarily represent the views of Health Canada.

Note from the author:

The launch of CPHA's newly revised Cannabasics tool marks an important addition to the cannabis knowledge base for Canadians who work in public health. The ability to discuss cannabis through a harm reduction lens with people who consume or are considering consuming cannabis should be fundamental knowledge for all healthcare professionals. CPHA has made that a reality by rebuilding the Cannabasics tool. While it is easy to view Cannabasics as simply an educational resource, this work is part of a broader movement to undo the harms wrought by a century of prohibition. This prohibition has left us lacking the essential skills and knowledge needed to have nuanced discussions about cannabis – discussions that aim to minimize potential harms without also stigmatizing those who consume or are considering consuming. Cannabis was legalized before we had developed the tools and trainings to effectively support cannabis consumers, thanks to projects like this one, we are now catching up.

This project builds on my own previous work in drugs education but must pay homage to Dr. Marsha Rosenbaum who opened my eyes to a new way of discussing drugs when she wrote Safety First in 1999. Her work was the first time I'd seen someone talk about drugs plainly, without judgement, and with the information one needed to reduce the potential harms if they chose to consume. Her approach naturally fostered discussion, and it created in me a lifelong desire to try and expand that discussion so that everyone who talked about drugs did so with the openness that Dr. Rosenbaum had shown was possible. Cannabasics is a primer that will help all healthcare professionals navigate the difficult conversations that may arise with clients and patients who consume cannabis. It will help them lay out some tough truths, rebuff some myths, and ensure the cannabis consumers they interact with have the information they need to make informed decisions about their cannabis consumption practices. There is plenty more advanced reading and training that one can undertake to better understand cannabis, but Cannabasics is the starting point that everyone in Canada who engages in the healthcare space should have ready access to. I hope that you find the facts in this resource helpful, but more importantly I hope that you connect with the harm reduction lens we have focused on in the new Cannabasics.

Daniel Bear

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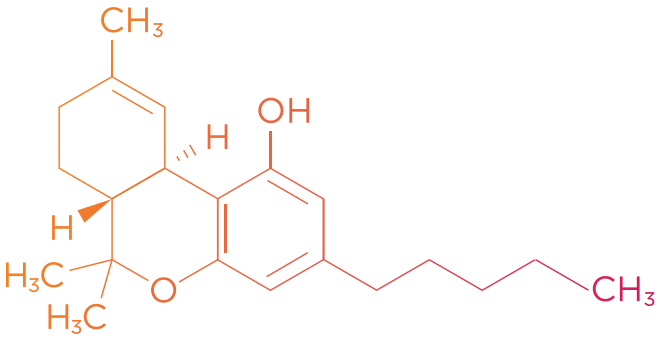
Overview

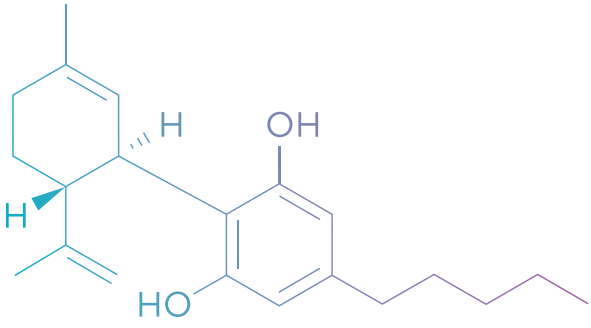
The term cannabis refers to the plant *Cannabis sativa*, also called *weed, dope, pot and marijuana*. Additionally, the term marijuana should be avoided as it was initially coined to stigmatize Mexican farm workers in the US who consumed cannabis. To reduce stigma, it is important for health professionals to be aware of the terminology they and their clients use to refer to cannabis. The term cannabis is preferable as it is more accurate and refers to the scientific name of the plant, as well as the products produced by the plant.

Cannabis products usually come from two main sub-lineages: sativa or indica, though this often refers to visual differences in the plant structure, not psychoactive properties. While cannabis is most often consumed by smoking the dried buds of the female cannabis plant, those buds can also be transformed into a variety of other products including hashish, oils and other extracts.

Cannabis has over 100 chemical compounds called cannabinoids. Cannabinoids interact with the human endocannabinoid system to produce a broad range of physiological effects. The two most known active ingredients are:



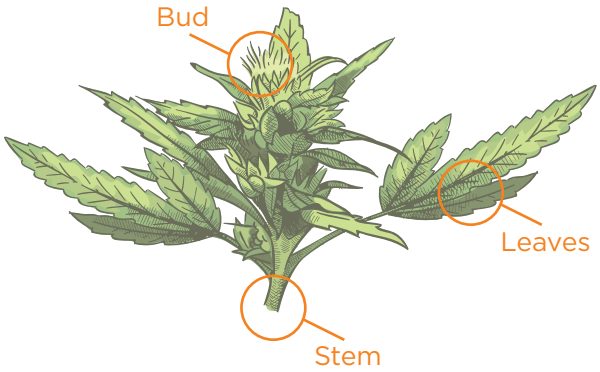
Tetrahydrocannabinol (**THC**) is the cannabinoid primarily responsible for the psychoactive properties of cannabis.



Cannabidiol (**CBD**) is non-psychoactive but can moderate the psychoactive effects of THC[2] and has several important medicinal properties.

Cannabis Plants and Products

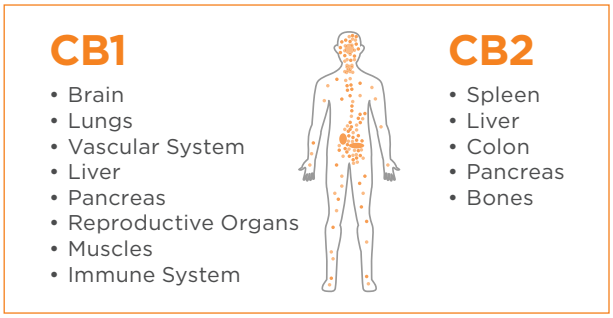
The cannabis plant is comprised of stems, leaves and buds. Most of the cannabinoids are concentrated in the buds. Cannabis products come in several different forms: dried flowers (buds), edibles and concentrates. The most common form of cannabis is the buds, which are usually smoked. 60-72% of Canadians who consume cannabis smoke the dried buds.[3]



Edibles are made by extracting the cannabinoids from the plant matter and adding them to confectionary, drinks or capsules. Edibles are harder to dose because they take longer to produce an effect, but their effect lasts longer than smoked cannabis and they reduce exposure to potentially harmful chemicals created during combustion. Concentrates are more potent because they have higher levels of cannabinoids relative to buds. This can be advantageous for consumers who may need higher levels of THC in a format that is easy to titrate and has a quick onset.

Chemical Compounds

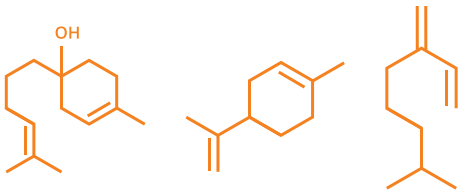
To understand cannabis and its use, one must be familiar with its primary chemical compounds, plant types and products. The cannabinoids found in the cannabis plant interact with the human endocannabinoid system via CB1 and CB2 receptors primarily found in the nervous system. The human endocannabinoid system is responsible for a variety of physiological and pathophysiological processes including: neural development, immune function, inflammation, appetite, metabolism and energy homeostasis, cardiovascular function, digestion, bone development and bone density, synaptic plasticity and learning, pain, reproduction, psychiatric disorders, psychomotor behaviour, memory, wake/sleep cycles and the regulation of stress and emotional state.



Although the cannabis plant contains over 100 different cannabinoids, the two most studied and discussed are Delta9-THC (tetrahydrocannabinol) and CBD (cannabidiol). CBD and other cannabinoids may help to manage pain and mediate the effects of THC on the endocannabinoid system. THC is the cannabinoid largely responsible for the intoxication or high associated with cannabis,[2] but by itself, in medications such as Marinol, it does not provide the same effect experienced when smoking the dried buds of the female cannabis plant.

Chemical Compounds

Terpenes are chemical compounds that impact the taste and smell of cannabis.[4] There are many terpenes commonly found in cannabis. Frequent consumers of cannabis can often discern specific strains of cannabis by their distinct aroma and determine the quality, freshness and potential presence of mould or other contaminants.



When terpenes are inhaled or ingested alongside cannabinoids, they may interact with the endocannabinoid system in what has been called the *entourage effect*. Not all research into the *entourage effect* of terpenes has identified an interactive effect[5] and some believe this interaction only occurs when terpene levels are far beyond what is usually consumed. Nevertheless, terpenes do impact how cannabis products react to different consumption methods and are an important aspect of cannabis consumption decisions.

Cannabis Strains

Consumers will choose cannabis based on what are known as strains, or more accurately, as cultivars. These strains have names like *Purple Haze, Electric Punch, Sour Kush* among others. Each strain is the result of long-term intensive breeding, in some cases over more than 50 years. Consumers may choose a type or strain of cannabis that aligns with their anticipated activities, for example choosing a strain of sativa with energizing effects before doing yard work. Understanding the reasons an individual chooses a particular strain of cannabis can provide insights into the kind of experience they are looking for and expectations they have for their consumption.

While the sativa designation may not by itself ensure a particular experience, different strains contain varied amounts of different cannabinoids and terpenes that may impact their effect. In addition, individual differences in endocannabinoid systems may also impact the effect of certain strains. In other words, the differentiation between sativas and indicas conveys little about the potential effect.

Did you know?

Female-only production is known as sinsemilla, meaning *without seeds* and was a major factor in raising THC levels above the 2% average seen in the 1970's.[7]

Plant Types

Sativa and indica are the most common types of cannabis. Most plants today are a hybrid of these two types, though each is marketed as having different psychoactive effects.

Although there is little evidence that either type of cannabis produces unique effects, sativa plants are said to create a more thoughtful, creative and mindful high, while indica types create a more relaxed and sedated high (commonly said to put you *in-da-couch* in reference to these effects).

Indica

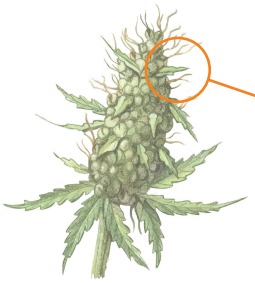
Perceived attributes: Relaxed and sedated, "In-da-couch" high

Sativa

Perceived attributes: Thoughtful, creative, mindful high

Cannabis plants are grown from seeds produced when male and female plants are allowed to pollinate, however in commercial growing operations, most plants are clones cut from a mother plant. Cloning is beneficial for three key reasons:

01. Clones ensure a consistent product because each plant is genetically identical to every other plant in that strain.
02. Clones reduce the growing time because the plant does not have to sprout.
03. Clones taken from a female plant will always be female and only female plants produce the buds that contain high concentrations of cannabinoids. When male plants are allowed to pollinate a female plant, the female will still produce buds with cannabinoids, but it will produce much lower levels of cannabinoids as much of the plant's energy is being directed to seed production.



Trichomes

Small, hair-like fibres

Once a plant has matured, growers trim the flowers and dry them to produce dried flower (buds). The buds are coated with hair-like structures called trichomes which protrude from the plant material. Trichomes are the heart of everything that happens next in the cannabis production process.

Hemp

Non-intoxicating, used in clothes, body care products, food and plastics

In addition to its recreational and medicinal uses, cannabis is used to form hemp, which is created from the long and durable fibres found in the stalk of the cannabis plant. Hemp is not intoxicating, as it is very low in THC (less than 0.3%) and can be used in the production of cars, body care products, clothing, construction, food products and plastic.

Producing Cannabis Products

Although other parts of the cannabis plant can be consumed, buds are most commonly used because their trichomes contain a high concentration of cannabinoids. Dried buds can be smoked, vaped or infused in lipids or alcohol and consumed as edibles.

Cannabis concentrates are procured during an extraction process that separates cannabinoids and terpenes from plant matter. This results in a product that contains high levels of cannabinoids and is even more potent than the bud. Some examples of concentrates include hashish, shatter and tinctures.

Cannabis concentrates are categorized as either solvent or non-solvent based.

- Non-solvent concentrates are extracted naturally (using water, scraping the resin off the bud or drying the resin) to produce hash (cannabis resin) and kief (resin glands).
- Solvent concentrates are extracted using carbon dioxide, butane, ether or alcohol.[8] They produce many forms and textures known as shatter, wax or oil.

The solvents used in the extraction process are removed or evaporated before the final product is produced.

Did you know?

Cannabis must be heated (decarboxylated) to activate the THC and other cannabinoids. For example, eating raw cannabis buds will not produce intoxicating effects. In other cases, some oils and tinctures are already activated and do not need to be heated. The THC in commercial edibles is pre-activated and can be consumed as prepared.

Form	Description	THC potency
Fresh or dried herb material	Flowers and leaves from the cannabis plant	Up to 30%
Cannabis oil	Cannabis extract dissolved in oil. Can be used to make other forms (ex., edibles)	Up to 30%
Chemically concentrated extracts (ex., hash oil/shatter/budder/wax)	Highly concentrated cannabis extract dissolved in petroleum-based solvent (ex., butane). Shatter, budder and wax most highly concentrated.	Up to 90%
Physically concentrated extracts (ex., hash/kief)	Loose trichomes or pressed resin from the cannabis plant	Up to 60%
Edibles	Foods and drinks containing extracts of cannabis	Depends on the amount of extract added
Tinctures/sprays	Cannabis extract dissolved in a solvent, often alcohol. Can be used to make other products (ex., edibles).	Varies
Creams/salves/liniments	Cannabis extract preparation prepared with alcohol, oil or wax and applied to the skin.	Varies

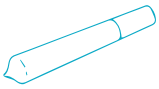
Figure 1. Different forms of cannabis[2]

Cannabis Consumption

Overview

There are four basic cannabis delivery methods: inhalation, ingestion, topical application and oral-mucosal use.

Each method employs different forms of cannabis, uses varying tools/devices, and results in different psychological effects. These effects can be influenced by the levels of THC, CBD and other cannabinoids present in a specific plant, as well as the way the plant is processed.



Inhalation

Inhalation is the most common way cannabis is consumed. The onset of effects is rapid and usually occurs within minutes of inhalation. This rapid onset allows consumers to self-titrate their dose more effectively than other forms of consumption.

Oral-Mucosal Use

Cannabis products (usually tinctures) are applied under the tongue or sprayed into the mouth and absorbed through the oral-mucosal lining. This allows for a more rapid onset of effects than ingestion or topical products and allows consumers to better titrate their dose.

Ingestion

Cannabis can be consumed by ingesting food or beverages that contain a fat or oil infused with cannabis. These products are known as edibles. When consumed in this way, cannabinoids are absorbed through the digestive tract and metabolized by the liver. Because the digestive system takes a while to break down the compounds, the onset of effects can take from one to two hours. This can result in over-consumption.

Topical Application

Topical cannabis products are applied and absorbed through the skin using a thick oil extract that contains active cannabinoids. The effects of the cannabinoids are generally localized, and this method is used to provide localized relief from pain or inflammatory conditions (some exceptions apply).

Inhalation

Inhalation is the most common way people consume cannabis products and they do so using a variety of methods outlined below. Common inhalation methods include pipes, bongs, dabs, and joints, all of which involve the combustion of cannabis. A similar intoxication profile can be achieved through non-combustion routes of administration such as a dry herb vape or vape pen with oil. Non-combusted forms of cannabis are an important alternative to smoking, particularly for frequent consumers.

Through inhalation, cannabinoids are absorbed into the body by inhaling combusted or vaporized cannabis. The onset of effects is rapid with most people feeling its effects within a few minutes, though the level of intoxication may vary depending on individual genetic and physiological differences. While inhalation is the most common form of consumption, it also poses the most potential physical health risks, especially for frequent consumers.[9]

The combustion of cannabis in any form can generate potentially harmful chemicals and cause respiratory issues for regular consumers. Evidence is not conclusive about whether cannabis alone, without the presence of tobacco, leads to lung cancer.[10] While cannabis smoke does contain higher levels of tar than cigarette tobacco, consumers of cannabis typically consume a far lower quantity of plant matter than tobacco consumers. Cannabis smoke contains many potentially harmful chemicals, but the long-term risk for infrequent consumers is quite small. Daily or near-daily consumers are most at risk of respiratory and mental health issues and alternative, non-combustion methods of consuming cannabis should be encouraged.

It is important to understand why people choose to inhale cannabis. One of the most common reasons is that this method allows self-titration because intoxication usually happens very quickly. Inhalation allows consumers to manage the level of intoxication that suits their current situation or activity. There is also an important ritual aspect to cannabis consumption that can take place with inhalation, particularly when using bongs and joints.

Pipes

Pipes are made from glass, metal, wood, bamboo and other unique materials that can even include cored apples or partially crushed soda cans. Pipes are one of the simplest ways to consume cannabis. They are popular because they are portable, affordable and easy to purchase.

Every pipe consists of a bowl where the shredded or torn up cannabis is placed and a mouthpiece to draw out the smoke. Since whole buds do not light effectively or burn as fully, cannabis is usually grinded or torn up into pieces to provide more surface area. Pipes are usually lit with a butane lighter, but hemp wicks, magnifying glasses and heated metal tools (e.g., a knife) can be used to combust the plant matter.

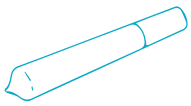
Bongs

Bongs (or waterpipes) consist of a water-filled base that has a vertical tube measuring from a few inches to a few feet in length and a down-stem that includes a small removable bowl filled with dried cannabis. The herb product is lit in the bowl while it is seated in the down-stem and the consumer breathes in while forming a seal with their mouth at the top of the vertical tube. The smoke is pulled through the down-stem, through the water and up into the vertical tube. Once enough cannabis smoke has been drawn through the water, the bowl is removed from the down-stem and the consumer inhales the now cooled smoke.

Many cannabis consumers believe that bongs are less harmful to their health because the smoke is thought to be cooler, and contaminants are filtered through water. Bongs do remove some tar and other gases from the smoke; however, they can also remove THC and other cannabinoids, reducing their viability as a harm reduction tool.[11]

The indoor use of bongs may significantly increase the presence of fine particulate matter containing toxic chemicals.[12] People who primarily use bongs display higher dependence symptoms and consume more cannabis than those who primarily use other inhalation methods.[13]

Bongs range in price and are often considered art objects. Small, mass-produced bongs can be purchased for less than $20 while handblown bongs with intricate designs may cost several thousand dollars. While bongs are more complicated than pipes and far less portable, they can be an important part of the ritual of sharing cannabis.

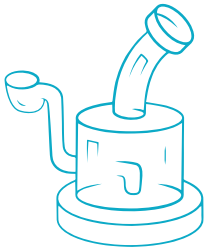


Joints

Joints are paper-wrapped shredded cannabis that resemble a hand-rolled cigarette. To create a joint, the consumer usually shreds or grinds the cannabis by hand or using small scissors or a cannabis grinder. The ground cannabis is placed in the paper, rolled and sealed.

The intoxicating effect of a joint is influenced by several factors including its shape, consistency, the way it burns and the tightness of the packed cannabis inside. Joints typically contain between 0.3-1.0g of cannabis and pre-rolled joints can be purchased in cannabis shops. Joints are often preferred because they are portable (though fragile) and are easily shared. Joints can be relit if not fully consumed and the amount of cannabis they contain can be adapted.

Joints have a greater impact on the respiratory system due to the presence of additional combusted material that enters the lungs. Furthermore, the type of rolling paper may inadvertently introduce toxic substances.[14] Tobacco can be mixed with cannabis in a joint, however, this practice is rare in North America and less than 10% of Canadians who smoke joints regularly mix in tobacco.[15] Blunts are a type of joint that uses an emptied cigar that is refilled with cannabis. Commonly sold cheap cigars, often with a plastic mouthpiece, are often used for blunts.



Dabbing

Dabbing is the process of heating up cannabis extracts such as shatter, budder, wax or sugar in what is known as a dab-rig. There are several types of dab-rigs. Their general setup is similar to a bong, with the addition of a nail that protrudes from the bowl. This nail can be made of many different types of material, (e.g., quartz, ceramic or titanium).

To smoke with a dab-rig, consumers heat the nail with a high-powered butane torch until it is red-hot. Next, they take a small dome to cover the nail as it cools slightly. Finally, a small dabber is used to transfer the cannabis extract onto the hot nail and the consumer breathes in the smoke.

Dabbing delivers very high amounts of THC very quickly and is not recommended for novice consumers. Although consumers inhale less burning plant matter, the high levels of THC delivered by dabbing may introduce different psychological risks. Research shows that consumers who dab do not show increased problems with their acute experiences with cannabis but report greater withdrawal symptoms if they stop consuming.[16]

Cannabis vape pens

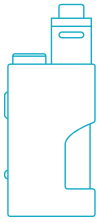
Many consumers choose to vape cannabis because they are aware that the frequent use of combusted cannabis increases the risk for pulmonary irritation, emphysema and bronchitis.[17]

Cannabis vape pens are similar to nicotine vape pens and are usually the size of a normal pen. They contain a mouthpiece, chamber for the cannabis extract, heating element and battery. They are activated either by breathing in via the mouthpiece or by a button on the cartridge.

There are two main types of vape pens, known either as 510-threads or PAX cartridges. These simply refer to the type of connection between the cartridge and the battery pack.

A vape pen usually uses prepackaged cannabis oils or extracts, and their cartridges are usually not refillable. Cannabis-infused oil is contained inside the chamber and when the heating element is triggered, the cannabis is heated and atomized so it can be inhaled. Some pens allow for temperature adjustments.

Most cannabis oil vape pens produce minimal odours, especially if the oil is not full spectrum, meaning that terpenes have been removed from the oil during processing. Vape pens are becoming more popular due to their compact size, absence of a flame and immediate accessibility.



Dry herb vaping

Dried cannabis flower is placed in a device that heats the cannabis to a temperature below that of combustion, but high enough to release and activate the cannabinoids. This is typically in the range of 160-210°C, which is considerably lower than the 800°C of a burning joint. Since vaporizing does not involve combustion, the vapour produced contains substantially less polycyclic aromatic hydrocarbons, less carbon monoxide and a reduced tar-to-cannabinoid ratio compared to other inhalational methods.[18]

The benefits of dry herb vaping extend beyond health considerations. Because the terpenes are not burned off or masked by combustion, the result is more flavourful and less smoky. Dry herb vaporizers range from stationary units the size of a dinner plate that weigh 2-3kgs to small portable units that are anywhere from the size of a large smart phone to that of a glue stick.

Oral-Mucosal Use

This method involves applying the cannabis product under the tongue or spraying it into the mouth to be absorbed through the oral-mucosal lining. The most common oral-mucosal delivery methods are sprays or tinctures. Because of its rapid onset, this method is preferred for many serious medical conditions such as epilepsy and nervous system disorders.

This method may gain more popularity in the future for recreational consumers because of its quick onset and because it allows them to discreetly consume cannabis in public. Its primary benefit is that it does not impact the respiratory system; however, it lacks some of the key rituals and communal aspects of smoking cannabis that many consumers identify as an important part of cannabis consumption.

Ingestion

Cannabis can be ingested by consuming food, drink or oil-based products often referred to as edibles. These products are infused with high fat ingredients such as butter or olive oil that enable the extraction of fat-soluble cannabinoids. When produced crudely, cannabis edibles can have a very earthy taste, but refined methods eliminate this flavour. Many classic edibles, such as brownies, are preferred by consumers because the taste of chocolate masks the cannabis flavour. In addition, they are sometimes preferred because they can be consumed discretely and avoid stigmatization.[19]

The cannabis used in products containing THC must undergo a decarboxylation process before being added to the edible. When consumed as part of an edible, cannabinoids are absorbed through the digestive tract and metabolized by the liver. Because the digestive system takes time to break down the compounds, the effects may not be felt for between 45 minutes to up to two hours.

Ingestion *cont.*

Digested cannabis tends to create higher levels of the potent THC metabolite, 11-Hydroxy-9-tetrahydrocannabinol, commonly referred to as 11-hydroxy-thc which can have an intense effect on consumers.[20] Factors that may affect the onset and effect of edibles include whether they have eaten recently, the amount of cannabis they consume, their comfort level with cannabis and the potency of the product ingested.

Edibles eliminate the need for inhalation, which is generally considered the riskiest method of consuming cannabis, however ingesting cannabis poses unique challenges. Due to its delayed onset, edible cannabis is hard to titrate. Many inexperienced consumers mistake this delay and the slow onset as a lack of potency and consume additional products before their initial dose takes effect. For this reason, a common phrase with edibles is “start low, go slow”. The intoxicating effect of edibles also lasts much longer than inhaled cannabis; usually between four to ten hours. While this can be beneficial for people who desire longer-term reduction in pain or anxiety, it can be an uncomfortably long period of intoxication for other consumers.

Unlike homemade edibles, professionally produced edibles that contain a set amount of THC and CBD provide a more consistent dose. Examples of edibles include baked goods, infused chocolate, savoury snacks, gummies, and hard candy. Due to their similarity to commonly consumed snack foods, legally produced edibles are required to use plain containers with child-resistant packaging and should be stored out of reach of children. As a result of these regulations, non-legal edibles can be easily identified if they have packaging that mimics well-known brands, feature attractive designs, or contain levels of THC above the legal limit.

Topical Application

Topical cannabis products are applied and absorbed through the skin using a thick oil extract that contains active cannabinoids. Examples of topical cannabis products include balms, oils, rubs, personal lubricants, suppositories, salves and creams. These products claim to offer relief from pain, muscle aches, soreness and eczema. Most topicals contain CBD, however some may also include THC.

Topical products are most often used by consumers seeking localized relief from pain or inflammatory conditions. The effect of the cannabinoids is generally localized and usually not intoxicating. Even though the localized engagement of peripheral CB1 and CB2 receptors limits the intoxicating effects of topical products, consumers should be aware that they may test positive on drug tests.

There is limited research on the efficacy of topical products, but there are studies that indicate they can decrease pain with no harmful side effects.[21,22] There have been some claims that ingesting cannabis oil or using it topically over a malignant tumour may help treat cancer, but research has not supported this.[23]

Topical products are rarely used by recreational consumers. In Canada only 7% of cannabis consumers report using topical products.[24]

Understanding Consumption

Overview

People consume cannabis for many different reasons. For some individuals, substances including cannabis offer a way to escape from reality, to cope with physical or emotional pains, stress, anxiety or to simply fit in with their peers.[25] In other cases, people consume cannabis because they enjoy being high.[26] It is important to recognize that enjoyment alone can be a sufficient explanation for why individuals consume cannabis.

Even at doses as low as 2mg of THC, cannabis can induce feelings of euphoria and provide anxiolytic, sedative, analgesic and psychedelic properties[27] that exceed the effect of other legal substances such as alcohol, caffeine or nicotine. Many consumers report feeling relaxed after consuming cannabis[28] and this may be their primary motivation for consuming.[29] When individuals consume cannabis, they may experience enhancements in their overall mood, which can increase the enjoyment of activities such as sex, socializing and eating.[30] Conversely, some people experience negative feelings or feelings of anxiety after consuming cannabis, even at low doses. This does not suggest that there is anything wrong with either the individual or the cannabis, but rather that cannabis affects people differently.

Feelings of well-being, relaxation and pleasure

In many cases, people consume cannabis to boost their feelings of well-being or simply because they enjoy its intoxicating effects. Many people believe that cannabis products help them feel relaxed, more satisfied and happier. In addition, cannabis may serve as a means for socialization or as a platform to enhance spiritual and cultural expression.

Physical and mental health benefits

The medical benefits of cannabis are well supported, and many additional advantages are being investigated.[31] Medical benefits include pain relief,[32] reduction of intraocular pressure[33], enhancement of appetite in cancer and AIDS patients,[34] improvements in outcomes for multiple sclerosis patients[35] and anxiety reduction[36]. Many people also consume cannabis to self-medicate, to reduce social anxiety or stress, to improve their sleep or reduce symptoms associated with trauma or depression.

Exploration, performance and discovery

Individuals may consume cannabis to be more productive or perform better in certain tasks. Some people believe that cannabis helps them be more creative or offers them new experiences, feelings or insights.

Physical and Mental Health Benefits

The medical use of cannabis to treat pain and other physical ailments has been well documented and includes a variety of self-reported reasons.[37] The most common medical reason people consume cannabis is to treat pain.[38]

In Canada the medical use of cannabis is officially limited to patients authorized by their healthcare provider. Prior to 2018, this was regulated under the Access to Cannabis for Medical Purposes Regulations, which has since been replaced with the Cannabis Act.

As of 2023, there are 224,474 registered medical cannabis patients in Canada.[39] Registration provides reduced taxation, allows patients to possess greater amounts of cannabis and grow more live plants. However, most people who cite medical benefits (such as increased relaxation) as part of the reason they consume cannabis are not registered with the Access to Cannabis for Medical Purposes Program. This bifurcation may be related to a range of factors, including stigma, legalization of recreational use, barriers to medical cannabis, or the complex registration processes for the medical access program.

As such, when engaging with people who consume cannabis, it is important to consider the medical, physical or psychological benefits they may be seeking, even when they are discussing their use in recreational terms.

Performance and Self-Exploration

Cannabis may provide individuals with the opportunity to experience new insights or creative output. Famed scientist Dr. Carl Sagan once wrote that "Cannabis brings us an awareness that we spend a lifetime being trained to overlook and forget and put out of our minds".[40]

Many people consume cannabis because they believe it improves their performance in various tasks and enhances their experiences, offering new pathways to approach those tasks and experiences. For example, there is a community of people who consume cannabis before engaging in intense workouts because they believe it improves their physical and mental performance.[41]

Others may use cannabis because they are seeking to reduce anxiety and better manage difficult situations such as public speaking or dull and repetitive tasks. Just as one office worker might choose to consume caffeine to reduce fatigue at work, another might choose to consume THC to enliven their experience or stay on task despite the distractions of ringing phones and office chit chat. If that is the case, it is important that they understand the impact that cannabis can have on their safety and the safety of those around them.[42]

Cannabis is a mild entheogen. While it differs significantly from more well-known drugs in that category, such as psilocybin or LSD, some people consume cannabis to enhance or engage in spiritual practices or support their exploration of self.[43] Cannabis has a long history of use in religious and spiritual activities around the world, and though current laws discuss the drugs in a recreational context, many consumers report spiritual benefits from their use of cannabis.[44]

Consumption Patterns

The frequency of cannabis use ranges along a continuum that includes people who occasionally consume cannabis, to daily consumers, to those who are dependent on cannabis.[45] Consumption may move back and forth along this continuum, shifting from abstinence to increased consumption and back again over time. Changes in consumption patterns may be the result of changes in stress level, health, free-time, childcare responsibilities, work commitments, social contacts or simply out of a desire to consume more or less cannabis.

Daily or near-daily (DND) consumption of cannabis poses the highest risk for physical and mental concerns. DND use does not guarantee that these issues will arise and, in some cases, potential risks can be mitigated without reducing the frequency of consumption. In other cases, decreasing the risk of potential harms associated with cannabis consumption may require reducing consumption or changing the method of consumption.

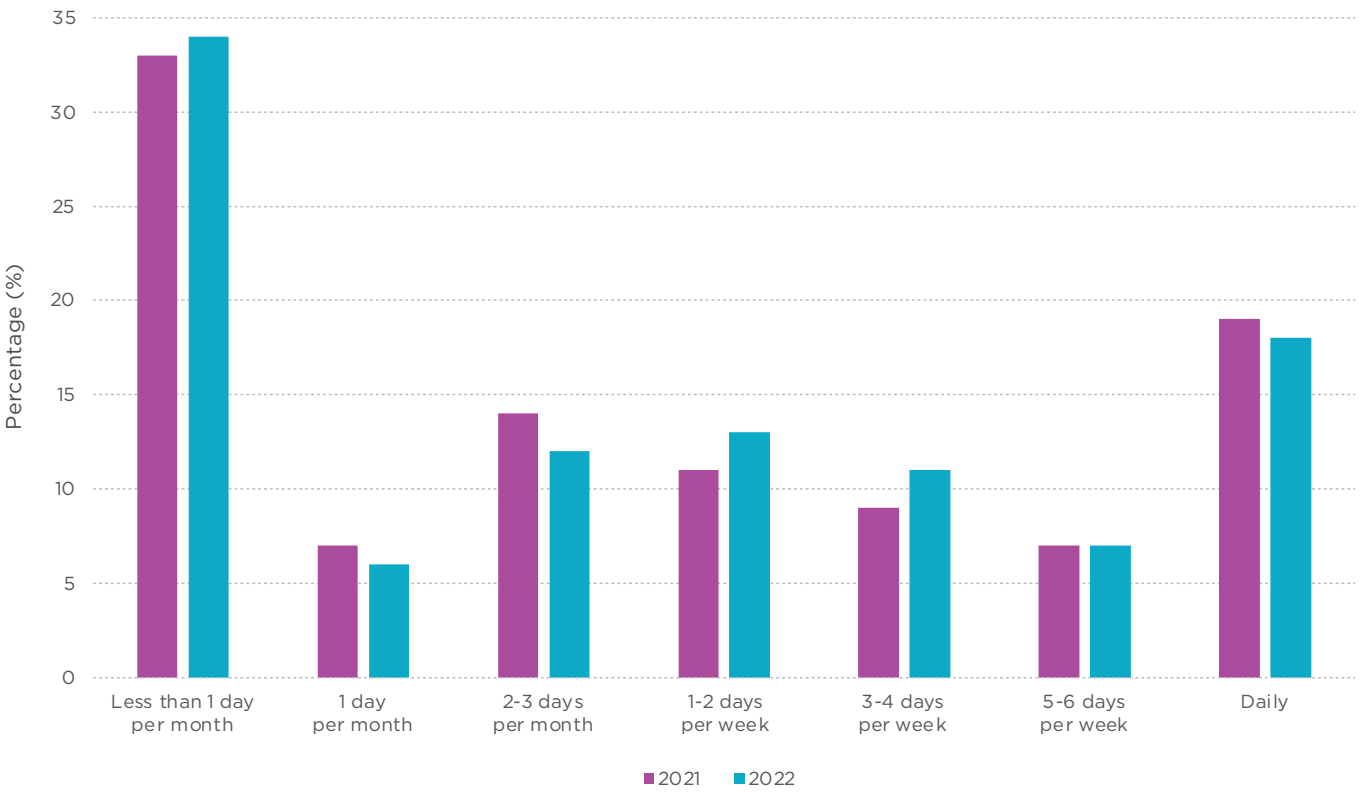


Figure 2. Frequency of cannabis use 2022[3]

Potential Harms

The use of cannabis can lead to negative outcomes stemming from interactions with the criminal justice system, that may subsequently lead to insecure housing, trauma and job instability. Despite the legalization of cannabis in Canada in 2018, over 13,000 cannabis incidents were reported by police in 2021. At 35 incidents per 100,000 population, it remains the highest police-reported drug offence by rate.[46] In the years prior to legalization, evidence showed disproportionate rates of policing and arrests of Black, Indigenous and people of colour (BIPOC) for cannabis-related offences. There is currently no data supporting claims that these patterns of over-policing have disappeared since recreational legalization.[47]

Racialized persons, those with low incomes and mental health comorbidities, as well as people who have experienced trauma, structural violence and harms caused by systems and social institutions disproportionately bear the burden of harm associated with cannabis consumption.[48] Structural violence can compound the stress of social marginalization and result in poorer outcomes for Canadians.

It is important to be sensitive to possible stigma and reframe language from *user* to *consumer* to encourage conversation and reduce harms.

Cannabis Use Disorder (CUD)

Approximately 10% of people who consume cannabis may meet the clinical characterizations for Cannabis Use Disorder (CUD).[49] Men are more likely than women to develop CUD, and in both groups, comorbidity with mental illness is common.[50]

While the number of individuals in treatment for CUD is high, there are two important contextualizing issues. The first is the widespread use of cannabis compared to illicit substances like cocaine or methamphetamine. While those drugs have higher rates of dependency, they are used by very few people. Secondly, data from the United States shows that the majority of people in treatment for CUD are there as part of a drug court diversion plan.[51]

Individuals who experience CUD may benefit from abstinence, but alternative options focused on harm reduction and decreased consumption may also be viable.

CUD is characterized by a recurrent pattern of consumption where **at least two** of the following situations occur in a 12-month period:

- Increased tolerance
- Withdrawal
- Consuming more than intended
- Unsuccessful attempts to quit
- Productive time lost consuming or recovering
- Reduced activities
- Strong urges or cravings to consume
- Continued consumption despite physical complications due to consumption
- Failure to fulfill major roles at work, school or home
- Use in physically hazardous situations
- Continued consumption despite personal complications due to consumption

Note: Please consult the DSM-5 for diagnostic criteria for Cannabis Use Disorder.[52]

Cannabis Use Disorder (CUD)

It should be noted that many medical cannabis patients may meet this definition without experiencing problems with their cannabis use. For example, a person undergoing chemotherapy might experience increased tolerance, strong cravings to consume and spend a great deal of time consuming cannabis. However, if this behaviour is caused by the antiemetic properties of cannabis, it is a qualitatively different situation to the more stereotypical presentations of CUD in recreational cannabis consumers.

While research about harms associated with cannabis consumption is still evolving, the likelihood of developing a CUD depends upon four factors:

LENGTH AND INTENSITY OF CONSUMPTION

longer, more intense consumption increases risk

POTENCY OF THE PRODUCT

consuming high levels of THC is more addictive

INDIVIDUAL FACTORS

genetic factors or individual vulnerabilities, such as personality or experiences of trauma, can impact whether a person experiences harm

AGE OF INITIATION

people who begin to consume cannabis at a young age (under 16 years old) at a high frequency are at greater risk

Cannabis Hyperemesis Syndrome

Cannabis Hyperemesis Syndrome (CHS) is a condition that tends to affect chronic cannabis consumers (e.g., consuming multiple times per day, for many years) and causes intense and persistent nausea and vomiting. CHS is a condition caused by long-term cannabis use and is different from situations where individuals have over-consumed cannabis. Research on CHS treatment is limited and the only known cure for CHS is the complete cessation of cannabis consumption. In acute situations, there has been some success with topical application of capsaicin, hot water hydrotherapy (hot showers), haloperidol, benzodiazepines and several other pharmaceutical options.[53]

Harm Reduction

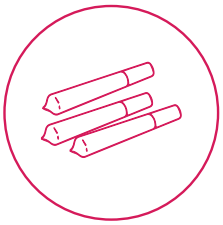
Overview

Harm reduction includes a wide range of pragmatic and evidence-informed approaches that seek to reduce the health and social harms of certain behaviours without requiring individuals to abstain from or stop these behaviours. Harm reduction approaches minimize stigma and center the voices and perspectives of people with lived and living experience.

In general, the long-term negative outcomes associated with cannabis are low, especially for infrequent consumers. However, risks increase with the level of consumption and therefore, not all harm reduction strategies are suitable for every type of cannabis consumer.

There are five key areas related to cannabis that are commonly emphasized as part of a harm reduction approach:

Respiratory problems



Overconsumption

Mental illness

Brain development

Safety while high

Harm reduction approaches for infrequent cannabis consumers

Infrequent consumers are most at risk of overconsumption of cannabis and negatives outcomes while consuming cannabis. Overconsumption, or greening out, occurs when people inadvertently consume too much cannabis. This happens more frequently when individuals ingest cannabis products because of the slow onset and the increased production of 11-Hydroxy-THC.

The common refrain, “start low, go slow” can be useful for new cannabis consumers as well as those who have expressed concerns or had previous negative experiences. This advice emphasizes the importance of beginning with low doses of cannabis and then holding off for a longer time than one may feel they need to before consuming more.

Infrequent consumers should also consider inhaled products with lower amounts of THC as this will make titrating their dose easier. A more balanced THC:CBD ratio may make for a more pleasant experience, while mixing cannabis with other substances can magnify the perceived effects of both. Finally, though both infrequent and frequent consumers may not feel intoxicated after a few hours, driving performance may continue to be impaired for several more hours.

Harm reduction approaches for frequent cannabis consumers

Frequent cannabis consumers are most at risk of respiratory, mental health and brain development issues. Switching to non-combusted forms of cannabis is advisable for these consumers to reduce the risk of respiratory issues. While it is a rare practice in Canada, some consumers mix tobacco with their cannabis, and this should be strongly discouraged.

The Lower-Risk Cannabis Use Guidelines (LRCUG)[56] provide evidence-based recommendations to minimize the harms of cannabis. These include reducing frequency of consumption, refraining from consumption before 16 years of age, avoiding combustible and synthetic cannabis and avoiding driving while under the influence.

When discussing alternative methods of consumption, it is important for healthcare providers to understand consumers’ motivations, expectations and goals in order to help them determine the most appropriate method.

Stigma

Cannabis has long been stigmatized and even though it is now legal in Canada, many consumers continue to hide their consumption and/or feel stigmatized by non-consumers and healthcare or social service providers. Effective harm reduction efforts require that healthcare professionals remove stigmatizing language from their vocabulary, offer pragmatic ways to navigate potential problems consumers encounter, and meet consumers where they are at.

The Set and Setting Method

To reduce stigma, health professionals must take the time to understand the reasons why people consume cannabis and encourage thoughtful discussion about the ways they choose to consume. The set and setting method encourages the consumer to consider using cannabis when their set (internal environment) and setting (external environment) are appropriate.[57,58]

Set refers to many variables that are internal to the consumer, such as mindset, personality, expectations, intention, mood and fears. Setting refers to the physical, cultural and social/emotional environment where consumption happens. Physical settings are the locations where consumption happens (e.g., at home).

Everyone will have their own ideas about what set and setting are right for their cannabis consumption. Cultural beliefs and past experiences may also influence these views. For example, the racialization and criminalization of BIPOC communities can influence what set and setting are preferred or deemed safe.[59]

Encouraging consumers to consider set and setting when planning their consumption may help reduce negative experiences with cannabis and promote safer consumption practices. Here are some areas to consider:

Consume with people you trust

Use cannabis in safe and comfortable locations

Consume when you are in a positive mindset

Be prepared for the effects of consumption (what to expect, potential risks, plan ahead)

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