Cannabis and Mental Health

Priorities for research in Canada

Mental Health Commission of Canada

mentalhealthcommission.ca

About This Document

This report is based on an environmental scan and scoping review by a University of Calgary research team that analyzed existing research into the relationships between cannabis use and mental health outcomes. It aims to guide the development of future research and policy development by drawing attention to knowledge gaps in the cannabis and mental health literature. While it highlights research on the potential risks and benefits of cannabis use, it is not meant to serve as an educational, public health or medical guide.

To request a copy of the full report, email us at cannabis@mentalhealthcommission.ca

Acknowledgements

We would like to acknowledge the land on which the University of Calgary and the Mental Health Commission of Canada operate and our relationship to the Indigenous peoples in these territories and across Canada.

The University of Calgary is located on Treaty 7 territory in southern Alberta. We acknowledge the traditional territories of the people of the Treaty 7 region, which includes the Blackfoot Confederacy (comprising the Siksika, Piikani, and Kainai First Nations), as well as the Tsuut'ina First Nation and the Stoney Nakoda (including the Chiniki, Bearspaw, and Wesley First Nations). Calgary is also home to the Métis Nation of Alberta, Region 3. The university is situated on land adjacent to where the Bow River meets the Elbow River, and the traditional Blackfoot name of this place is "Moh'kins'tsis," which we now call Calgary.

The main offices of the Mental Health Commission of Canada are located on the traditional and unceded territories of the Algonquin people, and these lands are now home to many diverse First Nations, Inuit, and Métis communities. We would like to thank the Elders and caretakers of the land, both past and present, and acknowledge the strength and resiliency of Indigenous peoples across Canada.

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Ce document est disponible en français

Citation information

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SEIZING THE OPPORTUNITY TO LEARN MORE ABOUT CANNABIS AND MENTAL HEALTH

The relationship between cannabis use and mental health has been the subject of a lot of research, especially over the last 15 years. Yet the links between the two are still not fully understood. With cannabis for non-medical use now legal in Canada, the need to identify and address the gaps in our knowledge has taken on new urgency.

To inform research agendas and policy development in Canada, the Mental Health Commission of Canada (MHCC) funded an environmental scan and scoping review of existing research into the relationships between cannabis use and mental health outcomes. The project revealed a number of gaps in the literature that represent valuable opportunities for future research.

The legalization of cannabis for non-medical use represents a big opportunity for Canada's research community. As one of only two nations with legalized cannabis (along with Uruguay), researchers in Canada can tackle questions that would be difficult for other jurisdictions. With proper funding and a multidisciplinary approach, the country can be a world leader in research on the links between cannabis use and mental health outcomes.

The environmental scan and scoping review that this summary report is based on took a systematic approach to synthesizing existing research to identify where greater focus is needed. The project included 1,047 studies across a spectrum of research disciplines, including animal preclinical science, human preclinical science, and community and population health science.

From that assessment, there is a clear need for:

- more high-quality, fit-for-purpose study designs (i.e., ideal for answering the research questions under examination)

- clarity on the complex relationship between cannabis use and mental health

- insight into how the different ways of consuming cannabis affect mental health outcomes

- insight into the experiences of specific populations with regard to cannabis use and mental health outcomes.

Overall, what's needed most can be summed up in a single word: **specificity**.

Future research must be grounded in an understanding of the complex context of cannabis use, which can include existing mental health problems or illnesses, polysubstance use, factors unique to specific populations, and more. There is also a need to look more broadly at the effects of cannabis – to go beyond only studying its possible harms by considering potential benefits outside problematic use patterns. Nuanced approaches to study design and the interpretation of results will be critical in helping us better understand the relationships between cannabis use and mental health outcomes.

Social determinants of health

Family

Culture

Income

Gender

Race

Safe Housing

Education

Access to Healthcare

Clean Environment

HIGH-QUALITY, FIT-FOR-PURPOSE RESEARCH

There is a general need for higher-quality, more nuanced study designs across the methodologies used in cannabis and mental health research. Ultimately, future studies must use the designs best suited to answering the questions they set out to explore. More qualitative research in particular is needed to complement, validate, and provide more subtlety to quantitative findings and those of other approaches.

While quantitative methods are ideal for measuring behaviours, only qualitative methods can offer insight into why people use cannabis, how they understand its connection to their mental health, and what their perception and experience of its benefits are. Qualitative methods are also important for shedding light on the cultural and social factors that may influence cannabis use.

Just 18 of the 1,047 published papers in the scoping review used qualitative methods (see Table 1), either alone or as part of mixed-method research that included quantitative methods. Through interviews, focus groups, and other qualitative data-collection methods, these studies gathered first-hand accounts and perceptions of substance use. Cannabis – used for medical purposes, non-medical purposes, or both – was often part of a broader focus on substance use and mental health rather than the sole subject of study.

The small number of qualitative studies we found underlines a particular need for meaningful engagement with people who use cannabis and experience mental health problems or illnesses. Their perspectives can help contextualize existing research and add to our understanding. Community-based research that uses qualitative methods can support the collection of these perspectives. At the same time, it is critical to take advantage of the full range of research methods and disciplines, being sure to use the ones best suited for answering a particular question.

A holistic view of the effects of cannabis use

Much of the research on cannabis use and mental health outcomes looks at the substance through a harms lens, analyzing its possible negative outcomes – for example, the emergence of mental health problems and illnesses such as schizophrenia, substance use disorders, and symptoms like suicidal ideation. A lot less attention has been paid to its potentially positive effects such as perceptions of improved well-being and quality of life.

This imbalance between harms- and benefits-focused research is true for both community (see Figure 1) and clinical population (see Figure 2) research and has led to a significant gap in the general understanding of cannabis use and its relation to mental health. Qualitative research that includes participants with lived experience of cannabis use will be essential for improving knowledge in this area.

Getting the full picture of cannabis use outcomes is especially important given Canada's legalization for its non-medical use. While a subset of people will experience problematic use patterns and cannabis use disorder, casual or moderate use may be the most common pattern (as with alcohol). It will be important to understand how this pattern might affect people's health – positively and negatively.

Table 1. Characteristics of qualitative studies captured in the scoping review

| AUTHOR ID	YEAR	LOCATION	TOPIC	METHOD
Mikuriya	1970	United States	Cannabis substitution in alcohol addiction	Single interview (case report)
Way	1994	United States	Substance use in adolescence	Mixed methods
Ali	1998	Malawi	Marijuana use and "traditional" cultural beliefs	Focus groups
Labigalini	1999	Brazil	"Therapeutic" use of cannabis, other substance use	Interviews
Nappo	2001	Brazil	User-reported changes in modes of cocaine use	Interviews
Page	2006	Canada	Medical cannabis and multiple sclerosis	Interviews
Bucher	2012	United States	Steroid, substance use among military personnel	Interviews
Sehularo	2012	South Africa	Cannabis use and psychosis	Interviews
Thornton	2012	Australia	Substance use and psychotic disorders	Mixed methods, interviews
Okello	2014	Uganda	Mental health literacy among high school students	Focus group
Elliott	2015	United States	Cannabis use and PTSD among veterans	Interviews, focus group
Pederson	2015	Norway	Cannabis users and ADHD	Interviews
Rebgetz	2015	Australia	Spontaneous cannabis cessation and psychosis	Interviews
Robinson	2015	Canada	Bisexuality, anxiety, and cannabis use among women	Mixed methods, focus groups
Mitchell	2016	Online forums	Discussions of ADHD and cannabis online	Textual analysis of user posts
Rebgetz	2016	Australia	Cannabis cessation and psychosis	Interviews
Mitchell	2018	United States	Substance use and emotional functioning	Mixed methods, interviews
Wagstaff	2018	United Kingdom	Substance use and schizophrenia	Interviews

Figure 1. Outcomes assessed within community populations by type and timing
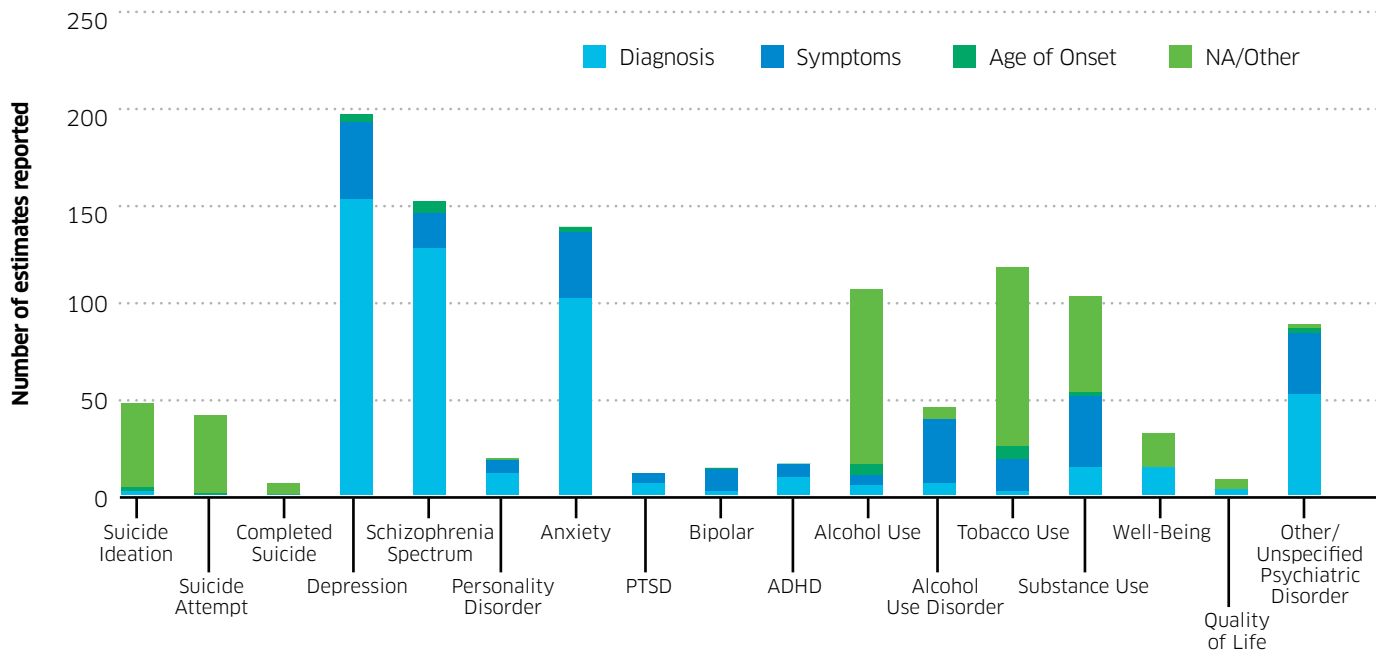
Figure 2. Outcomes assessed within clinical populations by type and timing
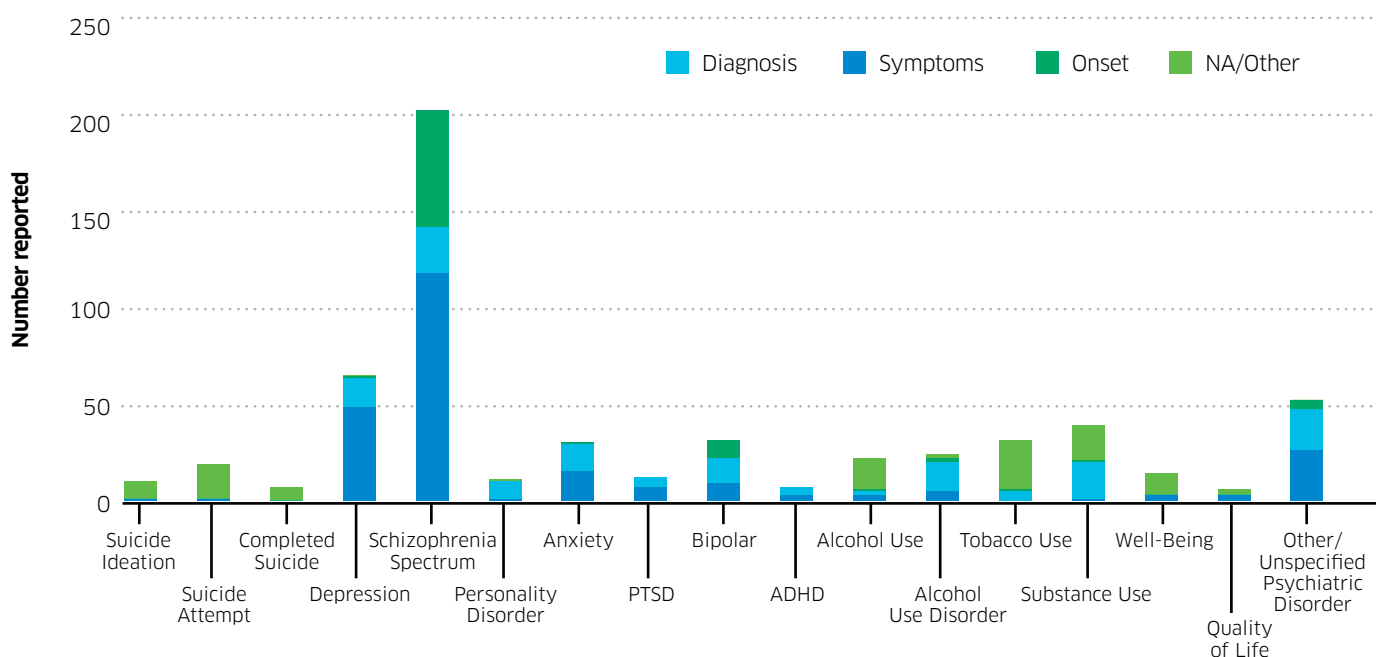
CLARITY ON THE RELATIONSHIPS BETWEEN CANNABIS USE AND MENTAL HEALTH OUTCOMES

Despite the vast number of studies on cannabis use and mental health outcomes, few clarify the direction of this relationship. To what extent does cannabis use contribute to mental health problems and illnesses, and vice versa? Do they affect each other simultaneously? More longitudinal studies are needed to answer important questions like these.

Longitudinal studies measure specific conditions in the same groups of people across multiple points in time. The longitudinal approach makes it possible to identify changes, which can inform conclusions about the direction of relationships between the conditions a study is measuring. This is not the case with cross-sectional studies, which measure specific conditions in groups of people at a single point in time. Studies using the cross-sectional approach made up the majority of those in the environmental scan.

For example, in 2002 and 2012, Statistics Canada included questions about cannabis use in its Canadian Community Health Survey – Mental Health (CCHS-MH). The 2012 results showed that mental disorders[1] were twice as prevalent among participants who reported two or more instances of cannabis use in the past 12 months than among those who reported one instance or no use (see Table 2). Yet such results cannot help us determine whether cannabis use increases the prevalence of mental disorders, eases symptoms for people who are living with them, or if other factors are at work.

The Canadian Tobacco, Alcohol and Drugs Survey (CTADS) offers another example of how cross-sectional designs make it difficult to draw causal conclusions. Statistics Canada conducts this national survey every two years to measure the prevalence, frequency, and outcomes of smoking, alcohol, and drug use (including cannabis). Participants in 2013, 2015, and 2017 who used cannabis at least once in the past year reported poorer mental health than those who never used cannabis (see Figure 3). Such results might suggest that cannabis use contributes to poor mental health, that it is used more often by people with poor mental health, or even that social factors are contributing to both cannabis use and perceived mental health – but they cannot help us conclusively determine whether any of these hypotheses are true.

More longitudinal studies will help clarify the complex relationship between cannabis use and mental health outcomes. Animal studies can also add to this understanding by enabling methods that offer greater insight into biological mechanisms tied to cannabis use. For example, researchers working with animals can directly observe the effects of cannabis use on brain structures. High-quality study designs are essential for ensuring that the results of animal work can inform our understanding of its effects on humans.

A clearer picture of the links between cannabis use and mental health outcomes will give public health authorities and policy makers in Canada better information for developing initiatives, protocols, and legislation that protect and promote population health.

1   "Mental disorders" was the language used in the CCHS-MH surveys.

Table 2. Prevalence of mental disorders in Canada by cannabis use, 2012

MENTAL DISORDER[3]	CANNABIS USE [2]		
	NEVER/ONE-TIME (%)	EVER (%)	PAST 12 MONTHS (%)
Major depressive episode 12 months[4]	3.3	7.5	11.1
Generalized anxiety disorder 12 months[4]	2.0	3.8	4.5
Bipolar disorder 12 months[4]	0.9	2.8	4.9
Hypomania 12 Months[4]	0.5	1.6	2.6
Mania 12 Months[4]	0.6	1.8	3.0
Suicide ideation 12 Months[5]	2.3	5.4	8.5
Has PTSD[6]	1.2	2.6	4.1
Has a mood disorder[7]	5.3	10.3	12.8
Has an anxiety disorder[8]	3.5	7.5	9.5

Source: Public File of the Canadian Community Health Survey—Mental Health 2012. Population 15 years or older.

Figure 3. Self-reported mental health by frequency of cannabis use in Canada, 2013–2017
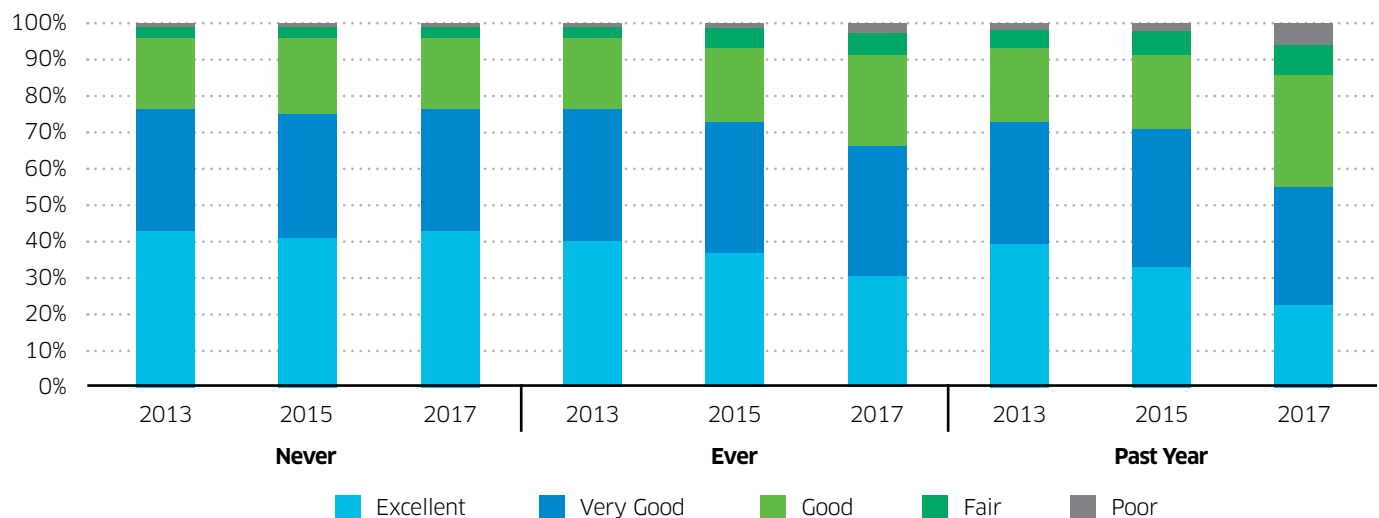
2   "Ever" and "Past 12 months" excludes participants who reported using cannabis only once.

3   The disorders included in the analyses are those available in the CCHS-MH's public use microdata file. Analyzing the association between cannabis use and schizophrenia and between cannabis use and other psychosis is possible using the microdata file at Statistics Canada's Research Data Centres, made available to researchers.

4   Based on meeting the 12-month criteria in the World Health Organization's Composite International Diagnostic Interview (modified for the needs of the CCHS-MH).

5   derived variable

6   self-reported

7   A self-reported condition that had been diagnosed by a doctor and is supposed to last at least six months; includes depression, bipolar disorder, mania, or dysthymia.

8   self-reported; includes phobia, obsessive-compulsive disorder, or panic disorder

FOCUS ON SPECIFIC MODES OF CANNABIS CONSUMPTION

How cannabis is taken into the body can significantly affect a person's experience. Yet most cannabis studies don't specify the mode of consumption. Those that do study cannabis consumption are using methods that don't reflect typical use (e.g., experiments on animals that use injection versus inhalation or ingestion). More research is needed to clarify how the different ways of consuming cannabis affect mental health outcomes.

Research into the effects of other substances, such as nicotine and alcohol, typically involves administering them in ways that mirror common use (e.g., inhaling vapour for nicotine, drinking for alcohol). This is good practice since the mode of consumption changes the effects of a drug – including cannabis.

The human body processes tetrahydrocannabinol (THC) – one of the primary cannabinoids – differently depending on whether it is inhaled, ingested, or injected. When THC is inhaled, it bypasses the hepatic metabolism.[9] But when it's ingested, it goes through the hepatic metabolism and is converted into the active metabolite, 11-hydroxy-THC. Studies suggest that this metabolite produces an effect that is much stronger, longer lasting, and more likely to trigger adverse reactions than THC.[10]

Inhaled THC has been shown to produce a rewarding effect in preclinical animal studies,[11] but this is not the case when THC is injected. Injected THC hits the brain all at once and produces an aversive response.[12]

Most studies do not account for these important differences. In addition, the human brain studies and preclinical animal studies in our review had further drawbacks. The main problem with the human brain studies – which measure the effects of cannabis on brain structure, activity, and function through fMRIs, EEGs or other imaging techniques – was a lack of specificity. Nearly 80 per cent of the 229 human brain studies we reviewed did not specify the mode of administration or type of cannabis extract used (see Figure 4). This was most often the case with observational designs (the majority we reviewed), which usually used questionnaires or urine screenings to determine participants' cannabis consumption. Neither technique captures the type of cannabis extract used or the mode of administration. This lack of specificity limits the conclusions that can be drawn from the research.

As for the preclinical animal studies, nearly 90 per cent of the 177 we reviewed used injection as a mode of THC administration. Injection greatly limits how applicable study results are to human populations, where cannabis is only consumed through smoking, vaporizing, or ingesting. We can still learn a lot about the potential effects of THC from cannabis on humans through animal studies that use injection. But such studies would benefit significantly by using methods that make the results of THC effects from cannabis use in humans easier to replicate.

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9   The hepatic metabolism mainly involves the liver.

10   Barrus, D. G., Capogrossi, K. L., Cates, S. C., Gourdet, C. K., Peiper, N. C., Novak, S. P., . . . Wiley, J. L. (2016). Tasty THC: Promises and challenges of cannabis edibles. *Methods Report RTI Press*, 1-23. doi:10.3768/rtipress.2016.op.0035.1611

11   Manwell, L. A., Charchoglyan, A., Brewer, D., Matthews, B. A., Heipel, H., & Mallet, P. E. (2014). A vapourized Δ^9 tetrahydrocannabinol (Δ^9-THC) delivery system part I: Development and validation of a pulmonary cannabinoid route of exposure for experimental pharmacology studies in rodents. *Journal of Pharmacological and Toxicological Methods, 70*,120-127. https://doi.org/10.1016/j.vascn.2014.06.006

12   Ibid.

Figure 4. Mode of administration and type of cannabis in human brain studies, stratified by study design
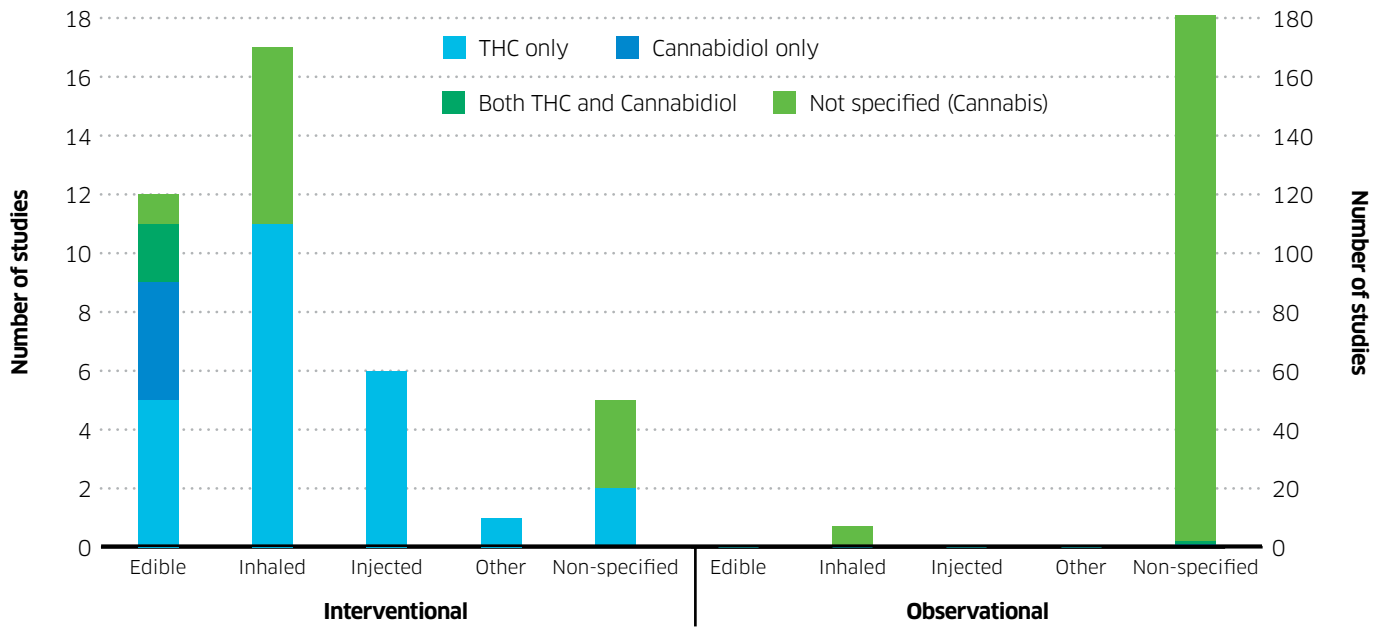
More research is needed to understand the differences between the effects of inhaling versus ingesting cannabis – a priority that's all the more pressing as Canada prepares to legalize edible cannabis products in October 2019.

Capturing the full effects of cannabis

While THC and cannabidiol (CBD) are the main chemicals of interest in cannabis, dozens of terpenes, flavonoids, and minor cannabinoids are also present that could influence their effects. Future studies would benefit from using whole cannabis extracts (that include all these chemical compounds) to more accurately reflect the biological impacts of its use.

For research, synthetic cannabinoids (e.g., synthetic cannabinoid agonist WIN55212-2) should be avoided because their properties and effects may not be comparable to those in cannabis. Based on this understanding, we excluded a vast number of studies (identified during our preliminary search through the literature) that used synthetic cannabinoids from our environmental scan and scoping review.

FOCUS ON SPECIFIC POPULATIONS

Factors like age, sex and gender, background, and socio-economic status can all have an impact on an individual's life experiences – and in turn contribute to cannabis use and its outcomes. This impact raises the possibility that there are differences in the relationship between cannabis use and mental health outcomes across populations. More research that is focused on the lived experience of specific populations and grounded in the full context of their lives is needed to close the significant gaps in clinical and community-based research.

The environmental scan and scoping review included 493 community-based studies that examined the effects of cannabis on mental health. These studies reported a total of 1,141 mental health outcomes – either a symptom, diagnosis, or an age of onset. Eighty-seven per cent of the outcomes reported were from adolescent (age 10 to 18), young adult (19 to 25) or general adult populations (18 or over). Very little research focused on outcomes in specific groups such as seniors, Two-Spirit, lesbian, gay, bisexual, trans and/or queer (2SLGBTQ+)[13] individuals, or immigrant, refugee, ethnocultural, and racialized (IRER) populations.[14]

Comparing outcomes by population (see Table 3) clearly shows where the gaps are. The many studies of general adult populations offer little insight into specific populations. Common experiences within certain populations, for instance, might shape or influence cannabis use and affect related mental health outcomes. Such factors would be missed by research that overlooks the unique needs of specific populations.

Given the historical oppression many of these populations have faced, there's a particular need for research led by individuals within them.

A note about Indigenous peoples within this literature

Our review found little research into the mental health outcomes of cannabis use by First Nations, Inuit, and Métis in Canada. This is a crucial research gap that needs attention. It is important to note that research involving Indigenous peoples in Canada has historically been harmful and extractive. Today, many Indigenous researchers, organizations, and communities are leading important work in mental health services and research. For these reasons, First Nations, Inuit, and Métis researchers, organizations, and communities are in the best position to review and contextualize the research that does exist and to carry out the research required.

Accounting for differences between disorders

Just as specific populations are understudied in community-based research, so are certain mental health diagnoses in clinical research (see Table 4). Of 247 studies examining the relationship between cannabis use and mental health outcomes in clinical populations (those with mental illness diagnoses), most focused on people with schizophrenia spectrum disorder. These studies investigated the relationships between cannabis use and diagnosis, symptoms, and participant age at onset. Yet, for other clinical populations, age at onset is rarely examined, making it impossible to identify a potential relationship between diagnosis, symptoms, and cannabis use.

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13   The "+" in 2SLGBTQ+ reflects the infinite variety of identities not represented in this initialism.

14   Just eight outcomes were reported for IRER populations versus 560 for the general adult population.

Nearly 30 per cent of the mental health outcomes assessed were in populations in an "other mental health" category. Bringing greater specificity is important: cannabis could have varying relationships with different mental health problems and illnesses. Ultimately, research into populations with "other mental health" diagnoses and outcomes has limited generalizability and relevance.

Table 3 illustrates disparities in research volume between populations across the community-based literature. The vast majority of research assessed individuals in adolescent, young adult, and general adult populations. Very little assessed individuals in senior, Indigenous, IRER, and 2SLGBTQ+ populations or individuals with adverse childhood experiences (ACEs).

Table 3. Number of studies included in this environmental scan and scoping review by clinical population

OUTCOMES	POPULATION										
	Children (<10)	Adolescent (10-18)	Young Adult (19-25)	Adult (18+)	Senior (65+)	Indigenous (International)	IRER	2SLGBTQ+	ACE	Other	**Total**
Suicide Ideation and/or Attempt and/or Death by suicide	0	44	9	28	1	2	2	1	0	7	**94**
Depression	1	48	34	87	0	5	4	1	0	16	**196**
Schizophrenia Spectrum	0	18	23	93	0	2	0	0	3	12	**151**
Personality Disorder	0	5	1	11	0	1	0	0	0	1	**19**
Anxiety	2	27	21	69	1	2	0	2	0	15	**139**
PTSD	0	1	1	7	0	0	0	1	0	1	**11**
Bipolar	0	2	3	9	0	0	0	0	0	0	**14**
ADHD	0	6	4	6	0	0	0	0	0	0	**16**
Substance Use and/or Disorder	0	79	66	193	0	2	2	0	0	28	**370**
Well-Being	1	3	5	19	0	0	0	1	0	3	**32**
Quality of Life	0	0	1	3	1	0	0	0	0	3	**8**
Other/ Unspecified Psychiatric Disorder	1	20	19	35	0	3	0	0	0	13	**91**
Total	**5**	**253**	**187**	**560**	**3**	**17**	**8**	**6**	**3**	**99**	

Table 4 illustrates disparities in research volume between mental illness diagnoses across the clinical literature. Most of the research assessed individuals diagnosed with schizophrenia spectrum disorders. A significant proportion of the studies assessed "other mental health" populations.

Table 4. Number of studies included in this environmental scan and scoping review by clinical population

| OUTCOMES	POPULATION								
	ADHD	Anxiety	Bipolar Disorder	Depression	PTSD	Schizophrenia Spectrum	Substance Use Disorder	Other Mental Health	**Total**
Suicide Ideation and/or Attempt and/or Death by suicide	0	2	3	8	0	8	2	13	**23**
Depression	1	2	6	11	0	24	11	10	**55**
Schizophrenia Spectrum	2	0	2	1	0	174	7	15	**186**
Personality Disorder	1	1	1	2	0	2	1	3	**8**
Anxiety	1	2	2	3	0	7	9	6	**24**
PTSD	1	1	0	1	1	0	6	2	**10**
Bipolar	1	1	20	0	0	3	3	3	**28**
ADHD	1	0	1	1	0	0	2	2	**5**
Substance Use and/or Disorder	3	3	12	5	2	48	20	23	**93**
Well-Being	1	1	1	3	0	3	1	4	**10**
Quality of Life	0	0	0	0	0	4	0	2	**4**
Other/Unspecified Psychiatric Disorder	1	2	4	2	0	12	4	27	**25**
Total	**13**	**15**	**52**	**37**	**3**	**285**	**66**	**110**	

Applying an equity lens

Reading hundreds of studies that assess the relationship between cannabis use and mental health outcomes reveals a general lack of nuance in the ways findings are interpreted. This is true for both clinical and community populations. Cannabis use does not exist in isolation. It is often intertwined with the use of other substances, and patterns of use may be influenced by income, education level, or other social determinants of health – either individually or in combination. Future research will need to consider these and many other factors in the broader context of cannabis use.

Sex and gender in particular require much greater emphasis to understand their role in cannabis use and related mental health outcomes. The scoping review examined whether each study applied a sex and/or gender lens, based on Canadian Institutes of Health Research definitions (see below), and found that only a small number of studies considered sex and/or gender across all categories of research on human populations (see Figure 5).

In many cases, it was impossible to determine if sex and/or gender were included in the analysis because the studies did not distinguish these concepts from one another. Specificity is critical here, too, because sex and gender are distinct concepts, and they could therefore affect the connections between cannabis use and mental health outcomes differently.

Figure 5. Number of studies with a sex and/or gender lens (in blue) per research category

Changes in the Human Brain — 53 / 175

Community Populations — 115 / 376

Clinical Populations — 29 / 218
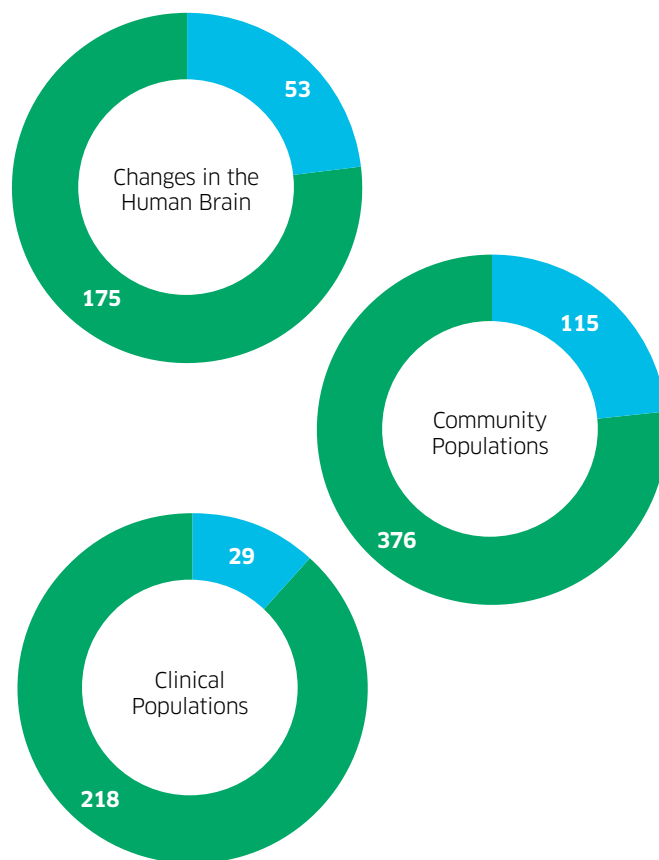
CANADIAN INSTITUTES OF HEALTH RESEARCH DEFINITIONS OF SEX AND GENDER[15]

SEX refers to a set of biological attributes in humans and animals. It is primarily associated with physical and physiological features including chromosomes, gene expression, hormone levels and function, and reproductive/sexual anatomy. Sex is usually categorized as female or male but there is variation in the biological attributes that comprise sex and how those attributes are expressed.

GENDER refers to the socially constructed roles, behaviours, expressions and identities of girls, women, boys, men, and gender diverse people. It influences how people perceive themselves and each other, how they act and interact, and the distribution of power and resources in society. Gender is usually conceptualized as a binary (girl/woman and boy/man) yet there is considerable diversity in how individuals and groups understand, experience, and express it.

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15   Canadian Institutes of Health Research. (2015). *Definitions of Sex and Gender*. Retrieved from http://www.cihr-irsc.gc.ca/e/47830.html

HOW CANADA CAN LEAD THE WAY

Our examination of the existing literature exploring relationships between cannabis use and mental health outcomes revealed a need for more studies that:

- collect longitudinal data to clarify the relationships between cannabis use and mental health

- explore specific modes of consumption and cannabinoids to determine how these affect outcomes

- Centre the insights from people with lived experience of cannabis use through qualitative methods, including research into the potential benefits of casual and moderate cannabis use

- focus on specific populations and take into account social determinants of health, including age, sex and gender, income, education level, and past experiences of trauma.

Closing these gaps is critical for shedding light on the connections between cannabis use and mental health outcomes, determining how distinct or overlapping social factors influence those connections, and answering many other questions that remain.

Making use of existing data

Future research should take full advantage of the rich, publicly available data assets in Canada and the 12 other jurisdictions that have legalized cannabis for non-medical use. By charting the prevalence of cannabis use and mental health outcomes over time, these assets will help clarify the relationships in an environment where cannabis for non-medical use is legal.

A look through the available data assets also offers clues about research gaps for specific populations, since every asset excludes certain populations (see the Excluded Population column in Appendix A). These include military personnel, people in foster homes and other institutions, people experiencing homelessness, and those who do not have a landline or cellphone.

The opportunity in front of us

The legalization of cannabis for non-medical use has put Canada in a position to become a global leader in cannabis and mental health research. But the window to seize that opportunity is closing as more jurisdictions legalize cannabis and increase their efforts in this area.

To maximize their impact, research agendas in Canada over the next several years should focus on high-quality, fit-for-purpose studies that add vital understanding to the connections between cannabis use and mental health outcomes. A coordinated approach to research and knowledge mobilization will be a key success factor – one that the findings of the environmental scan and scoping review support.

Appendix A: Canadian cannabis use surveys

For additional tables on legalization models for non-medical cannabis use and on cannabis use in the United States, see the full report.

Table A-1. Overview of Canadian surveys available

SURVEY	SURVEY TIMELINE FIRST DATE	SURVEY TIMELINE LAST DATE	FREQUENCY	SURVEYOR	PUBLIC USE MICRODATA FILE AVAILABLE	TARGET POPULATION	EXCLUDED POPULATION	CANNABIS VARIABLES EVER USE	PAST YEAR USE	CURRENT USE	FREQUENCY OF USE	AGE FIRST USE	RISK LEVEL OF CONSUMPTION (SELF-RATED)	MENTAL HEALTH SELF-RATED MENTAL HEALTH	MENTAL HEALTH DISORDERS	SUBSTANCE USE DISORDERS	UNIQUE FEATURES
General Social Survey: Victimization	1999	Ongoing	Every 5 years	Statistics Canada	X	15+ years old living in the provinces and territories	Living in institutions[a]		X	X	X						Self-report victimization; childhood experiences
Canadian Addictions Survey	2004	2004	Once	Montreal-based research firm Jolicoeur & Associés	X	Canadians 15+ years old	No telephone	X	X	X	X	X	X	X			Harms and consequences of using; attitudes and belief
Canadian Tobacco Use Monitoring Survey	1999	2012	Annual	Statistics Canada	X	15+ years old living in the provinces	Living in the territories or in institutions[a]	X	X		X	X					
Canadian Alcohol and Drug Use Monitoring Survey	2008	2012	Annual	Jolicoeur & Associés	X	15+ years old living in the provinces in household with landline	Living in the territories; institutions[a]; households with no landline	X	X	X	X	X		X			Drug use and harms

SURVEY	SURVEY TIMELINE FIRST DATE	LAST DATE	FREQUENCY	SURVEYOR	PUBLIC USE MICRODATA FILE AVAILABLE	TARGET POPULATION	EXCLUDED POPULATION	CANNABIS VARIABLES EVER USE	PAST YEAR USE	CURRENT USE	FREQUENCY OF USE	AGE FIRST USE	RISK LEVEL OF CONSUMPTION (SELF-RATED)	MENTAL HEALTH SELF-RATED MENTAL HEALTH	MENTAL HEALTH DISORDERS	SUBSTANCE USE DISORDERS	UNIQUE FEATURES
Canadian Tobacco Alcohol and Drugs Survey	2013	2017	Every 2 years	Statistics Canada	X	15+ years old living in the provinces	Living in the territories; institutions[a]; households with no landline or cellphone	X	X	X	X	X	X	X			Replaced CTUMS and CADUM; starting in 2019 CTADS will become 2 surveys: tobacco and nicotine; the Canadian Alcohol and Drugs Survey
Canadian Community Health Survey - Mental Health and Well-being	2002	2012	Twice (for MH)	Statistics Canada	X	15+ years old living in the provinces	Living in the territories; on reserve; institutions[a]; members of the Canadian Forces	X	X					X	X	X	Mental health and health service utilization
Ontario Child Health Study	1983	2014	Twice	Statistics Canada		4-17 years old residing in Ontario	Household in reserves or in collective dwellings	X			X	X		X			Parent/teacher questionnaires about child emotions/ behaviours; mental health service utilization; victimization; 2 followups for 1983 study participants

SURVEY	SURVEY TIMELINE (FIRST DATE)	SURVEY TIMELINE (LAST DATE)	FREQUENCY	SURVEYOR	PUBLIC USE MICRODATA FILE AVAILABLE	TARGET POPULATION	EXCLUDED POPULATION	CANNABIS VARIABLES: EVER USE	PAST YEAR USE	CURRENT USE	FREQUENCY OF USE	AGE FIRST USE	RISK LEVEL OF CONSUMPTION (SELF-RATED)	MENTAL HEALTH: SELF-RATED MENTAL HEALTH	MENTAL HEALTH DISORDERS	SUBSTANCE USE DISORDERS	UNIQUE FEATURES
Aboriginal Peoples Survey	1991	Ongoing	5 cycles from 1991 to 2017	Statistics Canada	X	First Nations people living off reserve, Métis and Inuit aged 15 years and over	Living on reserve, or in settlements (as defined by Statistics Canada), or in certain First Nations communities in the Yukon and Northwest Territories	X			X			X	X		Only 2017 cycle has question on cannabis use
National Cannabis Survey	2018	Ongoing	Quarterly	Statistics Canada		15+ years old living in the provinces	Living in the territories; institutions[a]	X		X	X			X			Monitors consumption behaviours, post non-medical cannabis legalization
Canadian Health Survey on Children and Youth	2019	Ongoing	Occasional	Statistics Canada		1 to 17 years of age as of January 31, 2019; living in the provinces and the territories	Living in foster homes or institutions[a]; living on reserve or in settlements (as defined by Statistics Canada).	X	X	X	X	X	X	X	X		

SURVEY	SURVEY TIMELINE		FREQUENCY	SURVEYOR	PUBLIC USE MICRODATA FILE AVAILABLE	TARGET POPULATION	EXCLUDED POPULATION	CANNABIS VARIABLES						MENTAL HEALTH			UNIQUE FEATURES
	FIRST DATE	LAST DATE						EVER USE	PAST YEAR USE	CURRENT USE	FREQUENCY OF USE	AGE FIRST USE	RISK LEVEL OF CONSUMPTION (SELF-RATED)	SELF-RATED MENTAL HEALTH	MENTAL HEALTH DISORDERS	SUBSTANCE USE DISORDERS	
Canadian Students Tobacco Alcohol and Drugs Survey	1994	Ongoing	Every 2 years starting in 2002	A consortium of researchers across Canada, coordinated by the Propel Centre for Population Health Impact University of Waterloo	X	Canadian students enrolled in grades 6-12 in participating provinces	Living in the provinces not participating in the survey; living in the territories; students from virtual schools, special schools (e.g., for special needs, visual/ hearing impaired), or schools located on military bases or in reserves; schools with fewer than 20 students in 1 of the grades selected	X	X	X	X	X					Formerly known as the Youth Smoking Survey; alcohol and drug use; asked to grades 7-12; some cycles ask questions based on self-determination theory; bullying, sleep; school connectedness

a   Institutions include hospitals, nursing homes or prisons[16]

16   Statistics Canada. Dictionary, Census of Population, 2016. Institutional resident. 2019; https://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop053-eng.cfm.

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