HEALTH EFFECTS OF CANNABIS

There are both potential therapeutic uses for and potential health risks of using cannabis (marijuana). A chemical called delta-9-tetrahydrocannabinol (THC) is responsible for the way your brain and body respond to cannabis. While it is used by some for therapeutic purposes, there are short- and long-term physical and mental health effects that can be harmful.

SHORT-TERM HEALTH EFFECTS

While cannabis may make you feel relaxed and happy, you could experience unpleasant, unwanted or negative effects on your brain and body.

EFFECTS ON THE BRAIN

The short-term effects of cannabis on the brain can include:

- confusion
- sleepiness (fatigue)
- impaired ability to:
  - remember
  - concentrate
  - pay attention
- anxiety, fear or panic
- reduced ability to react quickly

Cannabis use can also result in psychotic episodes characterized by:

- paranoia
- delusions
- hallucinations

Emerging evidence suggests that a chemical in cannabis called cannabidiol (CBD) may help dampen some of the psychoactive effects of THC[1] such as:

- disturbances in mood
- psychotic symptoms

There is also evidence to suggest that combining tobacco with cannabis can increase:

- the strength of some psychoactive effects[2]
- the risk of poor mental health outcomes,[3] including dependence

Effects can be felt within seconds to minutes of smoking, vaporizing or dabbing cannabis. These effects can last up to 6 hours or longer.

If you eat or drink cannabis, these effects can occur within 30 minutes to 2 hours and can last up to 12 hours or longer.

EFFECTS ON THE BODY

The short-term effects of cannabis on the body can include:

- damaged blood vessels caused by the smoke[4]
- decreased blood pressure, which can cause people to faint or pass out
- increased heart rate, which can be a danger for people with heart conditions and can lead to an increased risk of heart attack[5]

[1] Bhattacharyya et al. (2010) Opposite effects of delta-9-tetrahydrocannabinol and cannabidiol on human brain function and psychopathology. Neuropsychopharmacology 35(3): 764–74. www.ncbi.nlm.nih.gov/pubmed/23550724

[2] Ramo et al. (2015) Tobacco and marijuana use among adolescents and young adults: a systematic review of their co-use. Clinical Psychology Review 32: 105–121. www.ncbi.nlm.nih.gov/pubmed/22245559

[3] Schauer et al. (2017) Marijuana and tobacco co-administration in blunts, spliffs, and mulled cigarettes: a systematic literature review. Addictive behaviors. 64: 2011–211. www.ncbi.nlm.nih.gov/pubmed/27654966

[4] Wang et al. (2016) One minute of marijuana secondhand smoke exposure substantially impairs vascular endothelial function. Journal of the American Heart Association. 5(8). www.ncbi.nlm.nih.gov/pubmed/?term=27464788

[5] Thomas et al. (2014) Adverse cardiovascular, cerebrovascular, and peripheral vascular effects of marijuana inhalation: what cardiologists need to know. American Journal of Cardiology 113(1): 187–90. www.ncbi.nlm.nih.gov/pubmed/24176069

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IMPAIRMENT

The THC in cannabis can impair your ability to drive safely and operate equipment. It can also increase the risk of falls and other accidents. This is because THC can affect your:

- coordination
- reaction time
- ability to pay attention
- decision-making abilities
- ability to judge distances

Cannabis use can increase the risk of accidents that lead to injury or death during higher-speed activities, such as driving, biking or skiing.

Impairment can last for more than 24 hours after cannabis use,[6] well after other effects have faded.

People who use cannabis regularly may have trouble with certain skills needed to drive safely[7] for weeks after their last use.

Combining alcohol with cannabis greatly increases the level of impairment and the risk of injury or death from accidents.

Combining cannabis with other psychoactive substances, especially ones that have sedative effects, such as opioids and benzodiazepines, can increase the effects of the drugs. This could increase the risk of injury or harm, particularly with activities like driving.

LONG-TERM EFFECTS

Long-term effects develop gradually over time with frequent use (daily or near-daily) that continues over weeks, months or years. These effects can last from several days to months or longer[8] after you stop using cannabis.

EFFECTS ON THE BRAIN

The long-term effects of cannabis on the brain can include an increased risk of addiction and harm to your:

- memory
- concentration
- intelligence (IQ)[9]
- ability to think and make decisions

These effects appear to be worse for youth who start using early, and who use cannabis frequently and over a long period of time. They may not be fully reversible when cannabis use stops.

EFFECTS ON THE BODY

Some of the long-term effects of smoking cannabis on the body are similar to the effects of smoking tobacco and can include risks to lung health, including:

- bronchitis
- lung infections
- chronic (long-term) cough
- increased mucus buildup in the throat

POTENTIAL THERAPEUTIC USES

There is some evidence of potential therapeutic uses of cannabis or its component chemicals (cannabinoids).

Health Canada provides information for health care professionals and for authorized patients on the use of cannabis and cannabinoids for medical purposes. This includes information on dosing, adverse effects, warnings and more.

RISKS OF ILLEGAL CANNABIS

There may be other health and safety risks associated with cannabis obtained illegally. For example, the THC potency of illegal cannabis is often unknown, so you could end up using a stronger product than expected. This could heighten or prolong effects such as confusion or anxiety.

The quality and purity of illegal cannabis cannot be guaranteed and is frequently mixed with or contains:

- pesticides
- other drugs
- heavy metals
- moulds or fungi
- other contaminants

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[6] Leirer, V. O. et al. (1991) Marijuana carry-over effects on aircraft pilot performance. *Aviat. Space Environ. Med.* 62, 221–227. www.ncbi.nlm.nih.gov/pubmed/1849400

[7] Karschner et al. (2016) Extended plasma cannabinoid excretion in chronic frequent cannabis smokers during sustained abstinence and correlation with psychomotor performance. Drug Testing and Analysis 8(7): 682–9. www.ncbi.nlm.nih.gov/pubmed/26097154

[8,9] Meier et al. (2012) Persistent cannabis users show neuropsychological decline from childhood to midlife. Proceedings of the National Academy of Sciences USA 109(40): E2657–64. www.ncbi.nlm.nih.gov/pubmed/22927402

There is also the serious risk of:

- interacting with criminals or criminal organizations
- criminal charge and prosecution

MENTAL HEALTH EFFECTS

In some people, cannabis use increases the risk of developing mental illnesses like psychosis or schizophrenia, especially in those who:

- start using cannabis at a young age
- use cannabis frequently (daily or almost every day)
- have a personal or family history of psychosis and/or schizophrenia

Frequent cannabis use has also been associated with an increased risk of:

- suicide
- depression
- anxiety disorders

HEALTH EFFECTS ON YOUTH

Cannabis use that begins early in adolescence, that is frequent and that continues over time has been associated with increased risk of harms. Some of those harms may not be fully reversible.[10]

Adolescence is a critical time for brain development, as research shows the brain is not fully developed until around age 25.

Youth are especially vulnerable to the effects of cannabis on brain development and function. This is because THC in cannabis affects the same biological system in the brain that directs brain development.

It is important for parents, teachers, coaches and other trusted adults to be ready to talk with youth about drugs.

HEALTH EFFECTS ON PREGNANCY AND CHILDREN

Just like with tobacco, a pregnant woman or new mother's use of cannabis can affect her fetus or newborn child which can lead to health problems.

The toxins in cannabis are carried through the mother's blood to her fetus during pregnancy and in the breast milk following birth.

Heavy cannabis use during pregnancy can lead to lower birth weight of the baby. It has also been associated with longer-term developmental effects in children and adolescents, such as:

- decreases in:
  - memory function
  - the ability to pay attention
  - reasoning and problem-solving skills
- hyperactive behaviour
- increased risk for future substance use

ADDICTION

Contrary to popular belief, people can become addicted to cannabis. Individuals who use cannabis can develop a cannabis use disorder, which at its extreme can result in addiction.

Continued, frequent and heavy cannabis use can cause physical dependency and addiction.

Research has shown that THC in cannabis causes an increase in levels of dopamine, the pleasure chemical, in the brain. This motivates people to keep using it.

Addiction can develop at any age but youth are especially vulnerable[11] as their brains are still developing.

Some people are also more prone to becoming addicted than others. It's estimated that 1 in 11 (9%) cannabis users will develop an addiction[12] to it. This statistic rises to about 1 in 6 (17%) for people who started using cannabis as a teenager. If a person smokes cannabis daily, the risk of addiction is 25% to 50%.

[10] Volkow et al. (2016) Effects of cannabis use on human behavior, including cognition, motivation and psychosis: a review. JAMA Psychiatry 73(3): 292–7. www.ncbi.nlm.nih.gov/pubmed/26842658

[11] Chadwick et al. (2013) Cannabis use during adolescent development: susceptibility to psychiatric illness. Frontiers in Psychiatry. 4: 129. www.ncbi.nlm.nih.gov/pubmed/24133461

[12] Volkow et al. (2014) Adverse health effects of marijuana use. New England Journal of Medicine 370(23): 2219–27. www.ncbi.nlm.nih.gov/pubmed/24897085

Cat.: H129-73/2017E (Print) • H129-73/2017E-PDF | ISBN: 978-0-660-08291-2 (Print) • 978-0-660-08290-5 (PDF) | Pub.: 170012

Problematic cannabis use can include some or all of the following behaviours:

- failing to fulfill major duties at work, school or home
- giving up important social, occupational or recreational activities because of cannabis use
- consuming it often and in larger amounts or over a longer period than they intended
- being unable to cut down on or control cannabis use

People who display most or all of these behaviours over a 12-month period may have cannabis addiction.

Some people can develop a tolerance to the effects of cannabis. Tolerance is characterized by a need for a larger dose of a drug to maintain the original effects. Tolerance to some of the effects of cannabis can develop after a few doses. In some people, tolerance can eventually lead to physical dependence and/or addiction.

ADDICTION HELP

Cannabis addiction can cause serious harm to your health, social life, school, work and financial future.

If you or someone you know is struggling with addiction to cannabis or other drugs, help is available.