

Cannabis: Does it have a medicinal value?

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INTRODUCTION

Cannabis is among the one of the most widely used recreational drugs today. It comes from the genus of flowering plant that includes three species, namely, *Sativa*, *Indica*, and *Ruderalis*. It is indigenous to the Indian subcontinent and Central Asia. The earliest use of cannabis goes back to 3rd century BC. Psychoactive substance in cannabis is tetrahydrocannabinol (THC) which can produce a variety of physical and mental effects including euphoria, change in perception, and changes in appetite and memory. Apart from use as a recreational drug, it is also used in religious ceremonies and more recently has been used to treat variety of different illnesses from chronic pain to epilepsy.^[1] There is ongoing controversy regarding the medicinal benefits of medical cannabis and especially the use of the drug in children. It is currently illegal in most places worldwide. There is growing use of medicinal cannabis, especially in countries such as Belgium, Canada, Australia, Netherlands, and some states within the United States. Legalization of marijuana in Uruguay recently generated great interest.

PREVALENCE AND USE

About 147 million people, 2.5% of the world population, consume cannabis according to data from the World Health Organization. Within the United States, the current prevalence of cannabis is about 9.5% in the general population,^[2] and 40.7% of students have used marijuana one or more times during their life. The prevalence of having ever used marijuana was higher among male (42.1%) than female (39.2%) students (Centers for Disease Control and Prevention). In one study in the UK found that among university students, 60% reported some experience with cannabis and 20% reported regular use.^[3]

In recent nationwide survey in the United States, it was found that 22.2 million American ages 12 and above reported using cannabis in the past 1 month; only 10% reporting use only for medical purposes.^[4]

PHARMACOLOGY

The psychoactive substance in cannabis is THC. Cannabis is

either smoked or ingested. Its effects can be felt within a few minutes. Bioavailability after ingesting is only about 25% as compared to inhaling it. THC is extremely lipid soluble and accumulates fatty tissues with a half-life of about 7 days.^[3]

Within the brain high concentrations are reached in the limbic, neocortical, motor, and sensory areas. Cannabinoids exert their effect in the brain by interacting with the endogenous cannabinoid receptors. THC has been shown to release dopamine in the prefrontal cortex and nucleus accumbens. Cannabis is considered an anxiolytic, sedative, psychedelic, and an analgesic.^[3]

PSYCHOLOGICAL EFFECTS

Use of cannabis can have a variety of psychological effects. It generally causes a sense of heightened mood or "high." This can lead to decreased anxiety and increased social interaction. It can also lead to perceptual changes where sensory stimuli are exaggerated to heightened, such as colors and sound. It also leads to slower reaction times, impaired coordination, and short-term memory. Chronic use can also to "a motivational syndrome" characterized by lack of energy and motivation. Long-term use can also lead to tolerance and withdrawal symptoms.

Some of the systemic effects of cannabis include tachycardia, postural hypotension, and reddening of conjunctivae as a result of vasodilation. It can cause bronchitis and emphysema and the tar from the smoke is considered carcinogenic.^[3]

MEDICINAL USE IN UNITED STATES

California was the first state to legalize the use of cannabis for medicinal purposes in the United States in 1996. More recently in 2012, Colorado and Washington states legalized recreational use of cannabis for adults 21 over. Till date, there are 28 states and District of Columbia that have legalized the use of medicinal cannabis. It is the most frequently used illicit drug in the United States. Since 2007, the use of cannabis among young people has increased.^[5]

Generally speaking, the use of medicinal cannabis requires a diagnosis of a debilitating condition and for minors requires evaluation by two different practitioners in most states. A debilitating diagnosis can include anything from

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posttraumatic stress disorder, cancer, migraines, and Tourette's to dementia.

There has been a recent increase in prescription of medicinal cannabis among minors and more demand by parents seeking an alternative route to allopathic medications. There have been some initial positive results in the use of cannabis in treating different disorders in children including cancer, autism, and attention deficit hyperactivity disorder. Unfortunately, these have been very limited studies with a very small sample size rather than robust and well-formulated controlled trials. In cases where randomized controlled studies have been conducted no conclusive benefits were demonstrated. With limited number of studies, there are limited data on not only the benefits of using medicinal cannabis but also the long-term effects on the developing brain are also unclear.^[5]

At present, there is a little scientific evidence to support the use of medical cannabis. Furthermore, since regulatory standards vary state to state, the composition and concentration also vary. At present, there are no dosing guidelines.^[6] There have also been unfortunate cases of extremely young children being prescribed tincture of marijuana for behavioral issues without getting a successful trial of approved medications.^[7]

RISKS

There is evidence to suggest that chronic cannabis use can hasten the age-related loss of nerve cells and can suppress the neuron in the information processing system in the hippocampus that can in turn lead to deterioration of learned behaviors. Studies have also demonstrated that cannabis use can lead to dysfunction of the prefrontal cortex hence impairing decision-making. A study published in 2012 conducted in New Zealand demonstrated that there was an average drop of 8 points on the intelligence quotient scale over a period among people who met criteria for cannabis dependence and stated using in their teenage years (Hagler, 2017).^[4]

Studies have also shown increased risk for mental illness in chronic users of cannabis. One study showed a 5-fold increase in risk of depression and another study showed a 50% increase in risk of psychosis compared to nonusers of cannabis (Hagler, 2017).^[4]

There is also evidence to suggest that with efforts to legalize cannabis, it has an increased unintended exposure among children by way of accidental overdose. Use among adolescents has also increased. Cannabis is considered as a gateway drug to other more harmful substances that the person may try in the later years (Hagler, 2017).^[4]

DISCUSSION

There has been recent interest in use of medicinal marijuana for various health conditions, especially in children. There is growing

evidence that chronic and persistent use of heavy marijuana can cause long-term sequelae, especially to the developing brain. It predisposes people to anxiety, depression, and even psychosis. More research is needed in the area of medicinal cannabis and its use in vulnerable population such as minors.^[8]

As per the Narcotic Drugs and Psychotropic Substances Act, 1985 in India, cannabis and its various forms – hashish, ganja, charas, bhang – are banned and their possession is deemed to be unlawful.^[9]

It is important to weigh the risks versus benefits of cannabis use, especially in children. Until we have more robust evidence supporting the benefits of medicinal cannabis, it will be difficult and challenging to recommend its use for any therapeutic benefit. We hope in the near future we can come to a definitive conclusion, but till then we need to use caution and apply our sound clinical judgment.

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