

The Implications of Marijuana Policy on Young People

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ABSTRACT: *This technical paper updates the 2004 American Academy of Pediatrics technical report on the legalization of marijuana. Current epidemiology of drug use as well as the significance and biology of marijuana substances, marijuana use side effects and teenage brain development impacts are addressed. Issues specifically linked to medicinal marijuana will also be addressed. There are four different approaches on the legalization of marijuana discussed in the U.S.: legalizing marijuana for medicinal reasons exclusively, decriminalizing leisure use of marijuana, legalizing recreational use of marijuana, and prosecuting marijuana recreational (and medical) usage. These approaches are contrasted and the current available data are given to support public policy development. There is also discussion on the influence of criminal penalties on young people's use and possession of marijuana, and the impacts and potential effects of the other 3 policy measures on teenagers' use of marijuana. The policy statement in question includes guidelines.*

KEYWORD: *Anxiety, Cannabis, Cannabinoid, Marijuana, Psychoactive.*

1. INTRODUCTION

Cannabinoids are physiologically active chemicals that attach to receptors in the human body and exert their effects. Humans are responsible for the development of endocannabinoids such as anandamide and 2-arachidonoylglycerol, which bind to cannabinoid receptors known as CB1 and CB2. These human endocannabinoid receptors have the ability to bind to both naturally occurring and synthesized cannabis molecules and to exert biological activity as a result of these interactions. The biochemistry of cannabinoids is presently poorly understood. The scientific community has identified many areas of therapeutic promise for these compounds, including analgesia in chronic neuropathic pain, stimulation of hunger in debilitating illnesses, and spasticity in multiple sclerosis.

It is possible to have adverse effects ranging from mild (e.g., tachycardia and palpitations) to severe (e.g., convulsions) (eg, mood, anxiety, and thought disorders). There are now two prescription cannabis medicines that have been approved by the Food and Drug Administration of the United States. Studies conducted under controlled conditions have shown that pharmacological formulations containing cannabinoids with varied CB1 and CB2 receptor affinities are capable of providing therapeutic benefits while also minimizing the likelihood of undesirable responses[1].

Marijuana refers to the dried leaves and flowers of the cannabis plant, which contain a high concentration of cannabinoids, which are physiologically active compounds. There are many cannabis species and subspecies to choose from. Various methods of extracting cannabinoids from plants, including smoking, vaporizing, and deep-frying, are used. Cannabinoids are subsequently ingested as a result of their pleasant psychoactive effects. Cannabinoids found in marijuana have the potential to provide therapeutic advantages, which has led to the usage of marijuana as a medication. To the contrary, cannabis is a complex mixture of cannabinoids (more than 200 of which have been discovered) and other compounds, and the risk-benefit ratio of this mixture has not been well investigated[2].

Over the last several decades, selective breeding of marijuana plants has resulted in greater plant cannabinoid concentrations, resulting in a more powerful psychoactive effect as well as a possible rise in the risk of severe side effects. Physicians are unable to prescribe any drug that requires smoking in order to get the intended effects due to the presence of tar and other potentially hazardous substances in smoke. Alternative methods of administering cannabis have been developed that do not involve the use of combustion.

The psychoactive cannabinoid tetrahydrocannabinol (THC) is the primary psychoactive cannabinoid found in the marijuana plant. There is a broad range of variation in the quantity of THC present in a particular plant depending on the type and subspecies of marijuana utilized in the breeding process. It is not necessary to utilize a high-THC strain of *Cannabis sativa*, hemp, in order to get psychoactive effects. As an alternative, hemp is used to produce a

variety of consumer products, including paper, fabrics, clothing, health foods, and biofuel. Products derived from hemp that are readily accessible in the marketplace (e.g., hemp milk) are devoid of cannabinoids. Hemp may be cultivated lawfully in a number of nations, including Spain, China, Japan, Korea, France, and Ireland, among others[3].

1.1 Marijuana's Physiology and Pharmacology:

Even though there are many other types of marijuana available, the species *Cannabis sativa* and *Cannabis indica* are the two most often utilized for "medical marijuana." The psychotropic effects of *cannabis sativa* are often associated with enhanced alertness and a heightened sensation of energy, while the effects of *cannabis indica* are often associated with a greater sense of relaxation and lethargy. Both species, on the other hand, have undergone extensive hybridization, and a typical plant will include varying amounts of *sativa* and *indica* strains of *cannabis*. No matter what species of *cannabis* is used to produce the desired therapeutic effects, the active ingredients THC, cannabidiol (CBD), a nonpsychoactive cannabinoid, and arachidonoyl ethanolamide (anandamide), an endogenous ligand that is involved in the binding of THC and CBD to endocannabinoid receptors, are the most widely recognized active ingredients. These and other cannabinoids combine to create a complex mixture that binds to CB1 and CB2 receptors with different degrees of affinity. These active chemicals bind to the body's endocannabinoid receptors, which are found all throughout the body and are responsible for the effects of *cannabis*. CB1, which is located in the brain and neurological system, and CB2, which is found in the immune system, are the two major endocannabinoid receptors identified in the immune system[4].

1.2 The Negative Effects of Marijuana Consumption:

The most consistently observed physical adverse effects are an increase in heart rate and systolic blood pressure, respectively. Additional adverse effects include conjunctival injection, dry mouth, orthostatic hypotension, increased hunger, increased thirst, sleepiness, sleeplessness, symptoms of anxiety, panic attacks, short-term memory loss, hallucinations, and ataxia. There is currently no known cure for marijuana overdose, although therapy with a benzodiazepine may be effective in instances of severe anxiety or panic attacks, and supportive care can be effective in cases of over sedation from marijuana.

It has also been shown that young individuals may suffer from an ischemic stroke. There have never been any reported fatalities entirely as a consequence of a marijuana overdose; nevertheless, consumption of marijuana by children may cause a variety of symptoms, including sleepiness, ataxia, nystagmus, hypothermia, and hypertonia. The condition of respiratory depression or coma has only been seen in rare instances. Since the legalization of medicinal marijuana in Colorado, there have been a number of instances of youngsters ingesting hazardous substances.

Therapy with activated charcoal to prevent the absorption of marijuana in certain severe instances may be helpful if there is no question regarding the patient's state of awareness and if treatment is initiated well within 2 hours of the commencement of consumption, as is the case in this case. Children do not have access to medicinal marijuana, just as they do not have access to any other prescription medication for adults, with the exception of a few exceptional circumstances that will be discussed later[5].

1.3 The Effects of Marijuana Use on Teenage Brain Development:

According to new study on teenage brain development, brain maturation continues until the mid-20s, with the prefrontal cortex being the most mature. This maturation includes substantial changes in specialization and efficiency that occur as a result of myelination and synaptic pruning, as well as the formation of new neurons. Synaptic pruning, also known as refining, is a process in which grey matter is reduced in the brain, mostly in the prefrontal and temporal cortexes, as well as in the subcortical structures, as a result of the elimination of synaptic connections. It is also possible to see an increase in myelination, which enables white matter fiber tracts to have greater neuronal connection and efficacy as well as improved integrity. The prefrontal lobes of the adolescent brain are the final regions of the brain to undergo these neuro-maturational changes, which, when completed, allow for more efficient communication between the higher-order brain areas and the lower-order sensorimotor areas[6].

It has been hypothesized that the growing teenage brain is especially vulnerable to developing drug use problems, despite a variety of variables such as genetic predisposition, environment, and mental health issues being present. The sooner a teenager begins using substances, the greater the likelihood that he or she may develop a drug use

problem, such as dependency or addiction. Now, with the development of new methods for studying the structure and function of the brain, evidence is accumulating that marijuana use may have an effect on the growing brain, in a manner similar to what has been discovered in studies of teenage neurocognitive performance.

Studies have indicated, for example, that teenagers who claim frequent marijuana use score worse on measures of working memory, visual scanning, cognitive flexibility, and learning than their peers who do not report regular marijuana use. In addition, the number of lifetime marijuana use episodes reported by participants was shown to be associated with poorer overall cognitive performance in the study. Recent research assessing brain anatomy has shown that marijuana usage has an impact on the volume of the hippocampus, prefrontal cortex, and white matter of the brain, among other things. Heavy marijuana users, in particular, have been shown to have a greater amount of grey matter in their brains, particularly in the left hippocampus area, indicating that marijuana may interfere with synaptic pruning.

In addition, excessive marijuana use was shown to be associated with worse verbal and attentional performance in the study. Functional MRI studies examining neural activity in marijuana abstinent users have discovered activation abnormalities during cognitive tasks that are hypothesized to be associated with changes in cognition and attention related to marijuana, such as deficits in spatial working memory, verbal encoding, and inhibition, among other things[7].

Furthermore, drug abuse may affect the development of the brain itself in ways that are not yet completely understood but are different from the normal development of the brain, necessitating the need for further research utilizing multimodal approaches to neuroimaging techniques. It is also unclear if there are crucial times throughout adolescence during which one's sensitivity to drugs increases, and whether these changes may be reversed via abstinence or decreased usage. Adolescent recreational marijuana use should be discouraged based on the known cognitive consequences of marijuana use, as well as growing evidence that these consequences are associated with detrimental impacts on brain structure and function.

1.4 Marijuana for Medical Purposes:

According to state legislation as of December 2014, medicinal marijuana (cannabis) was allowed for individuals 21 years of age and older in 23 states as well as the District of Columbia who were suffering from a medical condition. Cannabis is prohibited under federal law, and it is classified as a schedule I substance under the federal Controlled Substances Act (no legitimate medical use). California was the first state to allow the use of medicinal marijuana, doing so in 1996. The legalization of medicinal marijuana is being pursued in a number of new states, with efforts to do so now underway. The specifics of medical marijuana legislation differ from state to state, but all allow adults to use marijuana for medicinal reasons, typically for specific illnesses that have been prescribed by a doctor, but broad categories such as "pain" are also often included. Minors may acquire medicinal marijuana in most states that have allowed mediation with the written consent of their parents in most states that have approved mediation (and, in some cases, other restrictions).

1.5 Marijuana Delivery Services:

Medicinal marijuana clinics sell marijuana in a variety of forms that may be smoked or eaten in order to generate the necessary medical benefits via combustion or vaporization, respectively. When marijuana is smoked or vaporized, the intended effects appear quickly (within minutes), while when marijuana is consumed, the desired effects appear more gradually and gradually (half hour to several hours). In comparison to combustion, vaporization is regarded less hazardous to the lungs due to the fact that marijuana is gently heated to the point of vaporization, releasing THC and water vapor, rather than being burnt to the point of combustion, releasing THC and carbon dioxide (as well as tar and other potentially harmful products in smoke). The amount of THC present in marijuana is the same whether it is vaporized or burnt. It should be mentioned that the use of a water pipe to smoke marijuana does not eliminate any of the potentially hazardous substances present in the smoke[8].

1.6 Teens and Medical Marijuana:

Medical marijuana has been successfully used by adolescents to treat a variety of health conditions, including attention-deficit/hyperactivity disorder, anxiety, depression, and autism, as well as anorexia nervosa, chronic pain, and nausea and vomiting after chemotherapy, according to numerous reports in the popular media. There is no information available on the prevalence of teenage usage of medicinal marijuana acquired from a regulated

dispensary. There has also been no published research on the use of marijuana in pediatric or teenage patient groups, with the exception of one study assessing the source of marijuana used by adolescents undergoing treatment in a drug addiction treatment center." According to the findings of this study, 74 percent of the teenagers in the treatment center utilized diverted services "Marijuana for medicinal purposes is legal in certain states.

2. DISCUSSION

Adolescence is characterized by fast physical and psychological development. It is a time in which young people are given greater responsibility as well as more independence and autonomy in making their own decisions. As children and adolescents acquire the ability to think abstractly, they no longer perceive laws as black and white, but rather learn to comprehend limitations and boundaries in a more nuanced manner. Adolescents and young adults are particularly vulnerable to changes in laws and regulations governing cigarettes, alcohol, and other drugs, especially when it comes to tobacco. Consider, for example, the National Minimum Drinking Age Act (1984), which effectively increased the legal drinking age in the United States from 18 to 21 years old. This is just one of many instances of how changing legislation has had an influence on drug use-related health effects. In this particular instance, lower levels of alcohol use among young drivers resulted in a 16 percent reduction in traffic accidents[9].

Marijuana has been accessible in the United States for decades, but it was not until 1996 that it was initially authorized for "medical" use in the state of California that it was included in the category of legal drugs. It is necessary to put quotation marks around the phrase "medical marijuana" since it is a term that was created by the cannabis business and has not been accepted by the medical community. In the two decades that have followed, regulations governing both "medical" and "non-medical" usage have changed quickly, as has the nature of the drug itself and how it is perceived by the general population. While marijuana potency has risen three- to fivefold during the 1970s, the perceived riskiness associated with regular marijuana use has dropped to new lows among teenagers in the last few decades. The availability of marijuana-infused "edibles" has increased dramatically, and newer products, like as highly concentrated oils and resins, have become much more widely accessible.

The long-term health hazards and possible advantages of "medical marijuana" remain little known to this day, and there is an urgent need for longitudinal study to determine the impacts of marijuana usage throughout the course of a person's life in various groups, particularly teenagers. As of December 2017, 29 states and the District of Columbia had passed legislation allowing for the possession, use, and sale of marijuana for medical purposes, despite the fact that marijuana remains a schedule 1 drug under federal law. The shift towards legalization of marijuana for "medical use" at the state level is well underway[10].

3. CONCLUSION

Marijuana use among children and adolescents continues to be a source of worry, and the use of marijuana by adolescents has been linked to a variety of medical, psychological, and cognitive consequences. Marijuana affects brain development in ways that are not completely understood, and it has negative consequences for both the structure and function of the nervous system. Because marijuana smoke includes tar and other potentially hazardous compounds, doctors are unable to suggest it to their patients. It is not known whether marijuana usage provides any advantages for children and adolescents at this time, since no study has been published to far to support this claim. In the setting of limited but obvious evidence of damage or potential harm from teenage marijuana use, official recommendations for adolescent use of "medical marijuana" are in direct conflict with the data at hand.

In certain cases, exceptions may be made based on newly available anecdotal evidence on the medicinal potential of cannabis drugs, which may be a possibility for children suffering from life-threatening or severely debilitating illnesses for whom existing treatments are inadequate. In the United States, criminal prosecution for marijuana possession has a negative impact on hundreds of thousands of young people each year, with a disproportionate impact on minority children. The present body of data does not support an emphasis on punishment for young individuals who engage in marijuana usage. Instead, drug education and treatment programmes for young people who are experimenting with or dependent on marijuana should be promoted in order to better assist these individuals.

Furthermore, the legalization of adult recreational marijuana use has not resulted in an increase in the rates of recreational marijuana use among young people, contrary to popular belief. Decriminalizing mere possession of marijuana for both children and young people, as long as it is done in conjunction with drug education and treatment programmes, may thus be a fair option to outright criminal prosecution. The long-term effect of full legalization of adult marijuana recreational use on adolescent usage is unclear, and thus cannot be advised at this time.

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