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Impact of Marijuana (Cannabis) on Health, Safety and Economy

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ABSTRACT

This article shows the impact of marijuana (cannabis) on health, safety and economy. Marijuana is a green, brown, or gray mix of dried, crumbled parts from the marijuana plant. The plant contains chemicals which act on your brain and can change your mood or consciousness. Marijuana comes from the dried flowering tops, leaves, stems, and seeds of the Cannabis sativa (hemp) plant. The marijuana plant has chemicals that can help with some health problems. More states are making it legal to use the plant as medicine for certain medical conditions. But there isn't enough research to show that the whole plant works to treat or cure these conditions. Better than expected sales of marijuana in Colorado and Washington over the past several years have resulted in buoyant tax revenues. Setting up marijuana nurseries and dispensaries would be the first step for the states that voted in favor of medical marijuana. These would not only create jobs but also set the ball rolling for economic activity in the pot industry in these areas. Legal marijuana presents the possibility of tremendous benefits to economies on a local and a national scale. It also could help to secure the investment portfolios of investors across the country and further afield as well. Marijuana has many effects on the mind and body. The effects of the 120-plus cannabinoids present in cannabis are mostly unknown, but the most potent psychoactive agent identified to date is THC. When a person smokes cannabis, THC is quickly absorbed into the bloodstream, reaching the brain within minutes. Most individuals with marijuana abuse or dependence are treated on an outpatient basis. Admission to outpatient and inpatient treatment programs for marijuana addiction has increased over the years to the point that the addiction to this substance is nearly as high as dependence on other illegal drugs, like cocaine or heroin. After evaluating the effects, addictiveness and their impacts, marijuana was rated as having a moderate impact on the consumers.
Keywords: Impact, marijuana, cannabis, health, safety, economy.

INTRODUCTION

Marijuana is a green, brown, or gray mix of dried, crumbled parts from the marijuana plant. The plant contains chemicals which act on your brain and can change your mood or consciousness. Marijuana comes from the dried flowering tops, leaves, stems, and seeds of the Cannabis sativa (hemp) plant. Humans have used marijuana for hundreds of years for fiber (hemp), seed oils, seed, medical treatment, and recreationally [1] [2] [3]. There is some evidence that marijuana or some of its components such as CBD (cannabinoids) may be useful for relieving severe pain, inflammation, nausea, and chronic conditions. However, CBD is just one of at least 120 substances found in marijuana. People have many health concerns about the use of the drug. Another primary component of marijuana is delta-9-tetrahydrocannabinol (THC). THC is the key mind-altering (psychoactive) substance in marijuana. It acts on specific brain receptors, causing possible mood changes, depression, suicidal thinking, memory issues, and disruption to normal learning abilities. It may also produce dependency. The compound is also known to stimulate appetite (informally known as "the

munchies") and induce a relaxed state, as well as other effects on sense of smell, hearing, and eyesight. THC can also cause fatigue. In some people, THC may reduce aggression [4].

Cannabis, also known as marijuana among other names, is a psychoactive drug from the Cannabis plant used for medical or recreational purposes. The primary psychoactive component of cannabis is tetrahydrocannabinol (THC), which is one of the 483 known compounds in the plant, including at least 65 other cannabinoids. Cannabis can be used by smoking, vaporizing, within food, or as an extract.

Cannabis has mental and physical effects. It causes a "high", or stoned feeling and other effects, including a general change in perception, difficulty thinking, impaired short-term memory, altered sense of time, impaired body movement, relaxation, and an increase in appetite, otherwise known as "munchies". Onset of effects is felt within minutes when smoked, and about 30 to 60 minutes when cooked and eaten. The effects last for two to six hours, depending on the amount of consumption [5] [6]. At high doses, mental effects sometimes include psychosis, delusions, hallucinations, paranoia, and ideas of reference, sometimes with anxiety and panic [7]. Its physical effects include increased heart rate, difficulty breathing, nausea, and behavioral problems in children whose mothers used cannabis during pregnancy. Short-term side effects may include a dry mouth, red eyes, and feelings of paranoia or anxiety. Long-term adverse effects may include addiction, decreased mental ability in those who started regular use as adolescents, chronic coughing, and susceptibility to respiratory infections. There is a strong relation between cannabis use and the risk of psychosis, though the cause and effect is debated [8].

Cannabis is mostly used for recreationally or as a medicinal drug, although it may also be used for spiritual purposes. In 2013, between 128 and 232 million people used cannabis (2.7% to 4.9% of the global population between the ages of 15 and 65). It is the most commonly used illegal drug both in the world and the United States, though it is also legal in some jurisdictions. The countries with the highest use among adults as of 2018 are Zambia, the United States, Canada, and Nigeria. In 2016, 51% of people in the United States had used cannabis in their lifetimes. About 12% had used it in the past year, and 7.3% had used it in the past month [9].

While cannabis plants have been grown since at least the 3rd millennium BCE, evidence suggests that it was being smoked for psychoactive effects at least 2,500 years ago in the Pamir Mountains. Since the early 20th century, cannabis has been subject to legal restrictions. The possession, use, and cultivation of cannabis is illegal in most countries of the world. In 2013, Uruguay became the first country to legalize recreational use of cannabis. Other countries to do so are Canada, Georgia, and South Africa, along with 11 states and the District of Columbia in the United States (though the drug remains federally illegal). Medical use of cannabis, requiring the approval of a physician, has been legalized in a greater number of countries [10] [11].

Medical use

The marijuana plant has chemicals that can help with some health problems. More states are making it legal to use the plant as medicine for certain medical conditions. But there isn't enough research to show that the whole plant works to treat or cure these conditions. The U.S. Food and Drug Administration (FDA) have not approved the marijuana plant as a medicine. Marijuana is still illegal at the national level. However, there have been scientific studies of cannabinoids, the chemicals in marijuana [12]. The two main cannabinoids that are of medical interest are THC and CBD. The FDA has approved two drugs that contain THC. These drugs treat nausea caused by chemotherapy and increase appetite in patients who have severe weight loss

from AIDS. There is also a liquid drug that contains CBD. It treats two forms of severe childhood epilepsy [13]. Scientists are doing more research with marijuana and its ingredients to treat many diseases and conditions Researchers have been looking into the possible benefits of cannabinoids for treating different health conditions. These include autoimmune disease, inflammation, pain, seizure disorders, psychiatric disorders and substance use disorders, withdrawal, and dependence [14] [15].

- **CBD in medication**

Many researchers are investigating the medicinal potential of cannabidiol (CBD), a cannabinoid found in marijuana that does not have psychoactive effects. In June 2018, following a lengthy process of research and clinical trials, the FDA approved the use of CBD to treat two rare and severe types of epilepsy that do not respond well to other treatments [16].

The drug is called Epidiolex, and it is a medication that derives from marijuana. It is a purified cannabidiol that does not contain THC. Some people believe that CBD might help relieve the pain and inflammation that occurs with fibromyalgia and arthritis, for example, and possibly for treating anxiety and addiction [17].

- **THC in medication**

Some studies have demonstrated that THC shows some promise for the treatment of nausea and vomiting, but its adverse effects may limit its use. It may have antiemetic qualities that make it helpful for people undergoing chemotherapy or other treatment where nausea can be a side effect [18]. THC may also decrease pain, inflammation, nausea, and muscle control problems, but as yet, no medications for these conditions have approval, and more evidence is necessary to confirm their safety and effectiveness. Some clinical trials have shown that THC has mild-to-moderate pain-relieving effects, and might be useful for the treatment of headache pain. Studies suggest that there are specific benefits of certain types of marijuana use, and the FDA will likely approve more types of marijuana for medical applications over time [19] [20].

In addition to Epidiolex, three other drugs have received FDA approval: Marinol, Syndros, and Cesamet. These medications contain synthetic substances with a similar structure to THC. They are treatment options for some kinds of anorexia. Other researchers are looking at the potential for marijuana extracts to target and kill cancer cells, in particular as a treatment alongside radiation therapy. Results of a study published in July 2018 found no evidence that cannabis use can reduce pain or reduce the need for opioids in pain related to cancer. However, the use of cannabis was mostly illicit and did not focus on the use of specific cannabinoids [21].

Economy

- **Impact on Tax Revenue**

Better than expected sales of marijuana in Colorado and Washington over the past several years have resulted in buoyant tax revenues. In 2019, Colorado collected more than $302 million in taxes and fees on medical and recreational marijuana. Sales in the state totaled over $1.7 billion.4 5 Sales in the U.S were $12.2 billion, in 2019, and is projected to increase to $31.1 billion by 2024, according to a report from Arc view Market Research and BDS Analytics.6 Local research supports this view as well; a report from the Colorado State University-Pueblo's Institute of Cannabis Research recently found that the legal cannabis industry has contributed more than $80.8 million to the local economy in 2017, primarily through taxes and other fees.7 Should marijuana become legal on a federal level, the benefits to the economy could be exceptional: a report from cannabis analytics company New Frontier suggests that federally legal pot could generate an additional $105.6 billion in aggregate federal tax revenue by 2025 [22] [23]. That is the carrot that dangled before many states. In December 2019, it was reported that since January 2018, California’s cannabis sales had

generated 411.3 million in excise tax, $98.9 million in cultivation tax, and $335.1 million in sales tax.9 The Massachusetts Cannabis Control Commission reported in November 2019 that in the first year of opening marijuana retailers, $393.7 million was generated in gross sales.10 (See also: What Will Jeff Sessions Mean for the Marijuana Industry [24] [25] [26].

- **Income and Jobs**

Setting up marijuana nurseries and dispensaries would be the first step for the states that voted in favor of medical marijuana. These would not only create jobs but also set the ball rolling for economic activity in the pot industry in these areas [27] [28]. In the case of states like California and Nevada where such infrastructure already exists, the economic impact has become more quantifiable as the sector has matured. A 2016 RCG Economics and Marijuana Policy Group study on Nevada says that legalizing recreational marijuana in the state could support over 41,000 jobs till 2024 and generate over $1.7 billion in labor income.11 The ICF study estimates at least 81,000 additional direct, indirect and induced jobs in California as a result of legalized marijuana sales [29]. It also projects an increase in total labor income by at least $3.5 billion. New Frontier's report predicting the impact of federally legal marijuana suggests that nationwide legalization could generate 1 million jobs by 2025. These jobs would likely come from the quickly growing industry which would spring up across the nation. Workers would be needed to farm, process, distribute, and sell marijuana-based products. Further, there would be ample opportunities for secondary industries which were related to legal cannabis although not directly involved in its production and distribution. These might include software developers, financing services, construction companies, and many others [30].

- **Investment Opportunities**

Legal marijuana presents the possibility of tremendous benefits to economies on a local and a national scale. It also could help to secure the investment portfolios of investors across the country and further afield as well. While marijuana remains illegal on the federal level, it is difficult for investors to capitalize on the growth of the industry [31] [32]. The number of marijuana-related companies trading on public stock exchanges is miniscule, and while investors do have the option of working with over-the-counter exchanges, many of the most successful businesses in the early legal cannabis space have been based in Canada or other countries. Should marijuana become legal on the national level, marijuana companies would be free to list their stocks on all U.S. exchanges, thereby enhancing liquidity and opening up access to many more investors. Should the growth rates for the cannabis space continue as they have in recent years, it's likely that investors would express a keen interest in the industry [33].

Effects

Marijuana has many effects on the mind and body. The effects of the 120-plus cannabinoids present in cannabis are mostly unknown, but the most potent psychoactive agent identified to date is THC. When a person smokes cannabis, THC is quickly absorbed into the bloodstream, reaching the brain within minutes. The body absorbs THC more slowly when it is eaten, delaying the onset of action for up to 2 hours and prolonging the duration of the effect [34]. THC and other cannabinoids in marijuana are similar to cannabinoids produced by the body. These natural cannabinoids act like neurotransmitters that send chemical messages between nerve cells (neurons) throughout the nervous system. These neurotransmitters affect brain areas involved in memory, thinking, concentration, movement, coordination, sensory and time perception, as well as pleasure. The receptors that respond to these cannabinoids also react to THC, which can alter and disrupt normal brain function. Some studies have shown that THC affects areas of the brain that control

memory creation and attention [35]. It also disrupts other parts of the brain, adversely affecting balance, posture, coordination, and reaction time. This can make it unsafe for a person using marijuana to drive a car, operate heavy machinery, or engage in sports or other potentially dangerous physical activities [36].

THC also stimulates specific cannabinoid receptors that increase the release of dopamine, a neurotransmitter related to feelings of pleasure. People use marijuana to achieve a feeling of elation (a high), giddiness, and relaxation. Marijuana also produces sensory perception changes; colors may seem brighter, music more vivid, and emotions more profound. Some people experience feelings of paranoia. When people consume cannabis for recreational purposes, they might experience the following effects:

- Changes in perception, due to a slight hallucinogenic effect that can create a distorted illusion of time and space
- Mood changes, leading to euphoria, feelings of energy, or a state of relaxation
- Higher heart rate
- Reduction in blood pressure
- Impairment of concentration and memory
- Reduced psychomotor coordination
- Nausea, even though some cannabinoids may help reduce nausea
- Increase in appetite
- Faster breathing
- Depending on the length and amount of use, some traces of THC might still be present in a person's urine for several months after they last used marijuana.

Risks

Below are some examples of findings that suggest or demonstrate some of the negative consequences of consuming cannabis:

- Impairment of judgment: A study in the BMJ found that a person is significantly more likely to crash their car if they drive within 3 hours of smoking marijuana.
- Reproductive issues: According to a review of animal studies, cannabis use might lead to sexual dysfunction.
- Immune response: According to one study, smoking marijuana could eventually suppress the body's immune system, making the user more susceptible to certain types of cancer and infections.
- Psychosis: Research carried out on siblings suggested that long-term marijuana use could increase the risk of developing psychosis in young adults.
- Gum disease risk: One study indicated that smoking cannabis increases the risk of developing gum disease, regardless of whether the user smokes tobacco.
- Reduced brain function: Researchers found that regular cannabis users who started before they were 15 years old did not score as well on brain tests as their counterparts who began using cannabis later in life.
- Acute memory loss: A British study suggests that smokers of potent cannabis strains (skunk, for instance) may have a higher risk of acute memory loss.
- Changes in human DNA: A British study found compelling evidence that cannabis smoke damages human DNA in such a way that the user could become more susceptible to developing cancer.
- Testicular cancer: A 2015 review and meta-analysis of three earlier studies found that frequent or long-term marijuana use may increase the risk of developing testicular cancer, but more evidence is needed to confirm this.

Treatments for marijuana abuse and addiction

Most individuals with marijuana abuse or dependence are treated on an outpatient basis. Admission to outpatient and inpatient treatment programs for marijuana addiction has increased over the years to the point that the addiction to this substance is nearly as high as dependence on other illegal drugs, like cocaine or heroin [37] [38] [39].

Behavioral treatments, like motivational enhancement therapy (MET), cognitive-behavioral therapy (CBT), and contingency management (CM), as well as family-based treatments have been found to be effective treatments for marijuana abuse and addiction.

- MET is designed to lessen the resistance a person who abuses marijuana may have to abstain from using it. This intervention is also designed to motivate the individual to change.
- CBT teaches people who abuse marijuana skills to help them stop using the drug and to ways to avoid or manage other problems that might prevent them from marijuana use recovery.
- CM usually provides marijuana users with vouchers of increasing value as a reward for repeatedly testing negative for (the absence of) drugs over time. Those vouchers are then exchanged for positive items or services that promote the person's participation in more positive (pro-social) activities, like securing employment or advancing their education or health.

In addition to the individual therapies just described, adolescents who abuse or are addicted to marijuana are often treated using one or more family therapies. These include multidimensional therapy, multisystemic therapy, family support network intervention, and brief strategic family therapy. Each of these interventions uses techniques that are designed to enhance the skills of the addicted individual and his or her family members as a way of discouraging marijuana use [40].

Although there is no medication that has yet been shown to be a clearly effective treatment of marijuana-use disorders, research shows that antidepressant medications like nefazodone (Serzone) and fluoxetine (Prozac) may help some individuals manage marijuana withdrawal and to avoid relapse, respectively. Oral THC (Dronabinol) may also help alleviate symptoms of marijuana withdrawal. Successful psychotherapeutic approaches to the treatment of marijuana abuse or addiction include motivational approaches to coping skills development [41].

CONCLUSION

After evaluating the effects, addictiveness and their impacts, marijuana was rated as having a moderate impact on the consumers. Marijuana is made of dried, shredded leaves, stems, seeds, and flowers of the hemp plant (Cannabis Saliva). It can come in many different forms but the most common one is the dried leaves and its appearance is long green leaves [42] [43]. The short term affects are not great (drowsiness, lack of motor control and decreased level of energy) and they only last for a short amount of time (about two hours after the drug is ingested). Unfortunately if marijuana is taken frequently long term effects begin to appear, they are more severe and they can last a lifetime. Long term, marijuana smoked (the most common method of entrance to the bloodstream) can completely destroy the respiratory system, leading to the individual developing a chronic cough vastly increasing the risk of heart failures and cancer [44]. In fact marijuana smoke has a higher amount of cancer producing agents than tobacco smoke. Marijuana can also cause brain damage if taken regularly. Some symptoms include memory loss, short attention span and perpetual drowsiness leading to loss of jobs and educational failures. Marijuana is

not very addictive (only 9% of users are addicted but that doesn't seem to stop people taking it. Studies show that in 2010 of the estimated 7.1 million Americans classified with dependence on or abuse of illicit drugs, nearly 4.5 million were dependent on or abused marijuana. The withdrawal symptoms of the drug have a moderate impact such as higher craving and sleeplessness. The marijuana consumers have said that they would and could withdraw from the drug any day and the effects are not as strong. If marijuana users were educated on the negative effects of marijuana they might be compelled to stop using it [45].

Overall, the impact of the drug is moderate and it can affect the consumers in many ways but they are not extreme. Marijuana exhibits a mix of all properties including stimulants, depressants and hallucinogens so it can work for any type of pain someone experiences. Because the short term symptoms are not great, marijuana can be used as a medicine, but it is unwise to do so for long periods of time and without a doctor's recommendation. Therefore, for the reasons described above it is believed that Marijuana should be rated as a two [46].

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