Marijuana use and associated health and social consequences
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Getting High

When marijuana is taken into the body, a mental state that most users find pleasant usually emerges. Some confusion occurs, especially about time, which may be disturbing. When asked why they use marijuana, people typically answer, “Because of the feeling.” It is important to note, also, that some people dislike this type of intoxication and will try marijuana only once.

The exact reaction to marijuana depends on the person, the setting, and especially the dose (the amount of the drug’s psychoactive ingredients taken in). Because of its unregulated nature, especially in states where use is illegal, the amount of marijuana used does not necessarily correlate with the level of intoxication. First-time users often notice nothing more than a cough and perhaps a mild headache. Sometimes, however, the experience can go terribly wrong. Fear or panic can occur, even among long-time users, depending upon their state of mind, the surrounding environment, how “strong” the drug is, and how much is used in a given time frame.

For most people, a mild and typically pleasant state of mind for a brief period of time is the common result of use. There are, of course, risks with use, especially among less mature young people.

The Nature of Marijuana

The marijuana plant has been used as a textile and for recreational and pharmaceutical purposes for thousands of years. The present dominant concern is its intoxicating properties.

**Marijuana Plant** - a leafy plant material has differing amounts of THC (tetrahydrocannabinol, a chemical that triggers intoxication). Marijuana plant resin can be extracted giving it a higher THC content and consequent intoxicating impact. Its broken-up leaves can be eaten, the psychoactive ingredient leached out and drunk as tea, or, most commonly, rolled or tapped into a cigarette, pipe, or cigar, and inhaled.
Hashish - a crystallized plant resin with typically much higher levels of THC.

Hash Oil - a resin processed into a liquid extremely high in THC content.

Medical Synthetic Marijuana - marijuana-like compounds lawfully produced by a licensed pharmaceutical house and often referred to as Marinol. This pharmaceutical contains a substance similar to THC that is sometimes prescribed by physicians to mitigate nausea and increase appetite in cancer patients receiving chemotherapy, or for several other conditions. Some states allow natural marijuana to be prescribed for a variety of specific medical conditions. States have highly variable laws and regulations for medical and recreational use.

Recreational Synthetic Marijuana - chemical compounds similar to the psychoactive ingredient in marijuana, but different enough to not technically be considered a “controlled substance” under existing criminal codes. A fast moving paradigm between synthetic marijuana producers and government regulators has created consistently shifting variations of these drugs, typically sold in drug paraphernalia shops or over the Internet. The Internet contains many ads trying to sell “legal” marijuana for personal use or promoting distributorships. Since the chemical constituents are constantly changing, getting a reasonable fix on the characteristics of risk is impossible. Recent model legislation based on changes in federal scheduling of drugs has been adopted in most states, and that, along with public health warnings, caused a decline in sales and use of synthetic marijuana.

Wax Marijuana - The most recent variation of marijuana-based compounds is termed, “wax” or “ear wax.” It is derived through a potentially
dangerous manufacturing process involving heating marijuana with a butane torch, usually in a sealed metal tube, and through heat and pressure, distilling the resulting oily brown wax residue. Beyond the risky manufacturing process, which can involve fire or explosion, dosage of the psychoactive ingredient, THC, is typically high and often variable. Its use has resulted in a number of emergency room admissions for panic and hallucinations. It is reportedly being manufactured and sold in some medical marijuana distribution facilities.

**Intoxication Levels**

There are three general stages of marijuana intoxication, which typically overlap as the dose increases, although the psychological state of the user and the environment in which the intoxication occurs also impact the nature of the experience.

1. **Light Dose.** A detached, relaxed, comfortable feeling, with a sense of security and lowered inhibitions, possibly regarding physical risk, interpersonal actions, or sex. Food may seem more enjoyable, and smells, colors, and sounds more interesting. For some, there may be a feeling of discomfort – the altered state is so unpleasant that marijuana is never used again. For others, especially with a light dose, a change in feeling is insignificant or not noticed.

2. **Higher Dose.** The sense of relaxation shifts into a feeling of confusion or disorientation. Coordination, speech, and thinking are affected, and “acting normal” becomes difficult. In some cases nausea may occur. Both short-term memory and long-term memory are dulled. Pointless behavior or “acting stupid” may occur at this level of intoxication.

3. **Highest Dose.** Along with memory loss, disorientation and functional impairment, this stage of intoxication can cause aberrant behavior, sometimes (though rarely) involving hallucinations and panic. “Acting crazy” or “freaking out” are typical terms for this reaction to heavy levels of marijuana intoxication.

In summary, a marijuana user’s behavior can run from unchanged to stupid, from relaxed to bizarre, from pleasant to disconcerting.
Just as some people learn how to cope with alcohol intoxication, some learn how to control a high from marijuana; they learn how to mask its effects. Some can teach themselves how much they can use and how to function in seemingly normal ways while high. This is termed, “state dependent learning,” or “coping.” Marijuana intoxication is not usually as apparent to others as alcohol intoxication. A user can learn to cover up use, even heavy use, at least for a while.

There is no question that heavy use of marijuana may become a compulsive behavior best addressed through professional chemical dependency counseling. It is important to remember that the overwhelming majority of young people disapprove of regular, heavy use, and their use never approaches this level. All of the above conditions are reversible, that is, when the drug high stops, even if the drug has not worked its way out of tissue or the blood stream, the user basically returns to normal behavior. Usually, the total experience is over in a few hours. However, unlike alcohol or most drugs that are purged from the body in a matter of hours, marijuana traces will remain in the body for many days. That doesn’t mean that the person stays intoxicated. The level of intoxication is dependent on the dose and manner of administration. The high from inhalation typically lasts less than an hour, with the impact from ingestion continuing longer.

When a long-term, heavy user stops use, there is sometimes a period of discomfort, typically lasting several days. While this physical detoxification is far less intense than withdrawal from opiates, alcohol, or especially tobacco, there is generally a subtle but detectable feeling of agitation. In this sense, marijuana use can become technically “addictive,” although “withdrawal” is not typically physically debilitating. Psychological dependence is another matter and more difficult to quantify. Compulsive use, to the detriment of a quality or healthy lifestyle, can occur. Interestingly, this tragic phenomenon seems to be both understood and disapproved of by most high school and post-secondary students, likely from observation.
Health Risks from Marijuana Use

1. Dangerous Behavior. The essence of the marijuana high involves an inability to judge time, an enhanced sense of well-being and, simply put, an inability to think normally. This state can create risk. From the risk of drowning, to unsafe sex, to hurting the feelings of a friend, being high can put users and those around them in a position of discomfort or jeopardy. Due to a scrambled sense of timing and lack of concentration, driving while high is likely the greatest direct risk to the user and the community.

2. Gateway Drug. Calling marijuana a gateway drug means that its use leads to use of other illegal drugs. This seems a logical outcome because once the underground channels for illegal drug traffic are opened, drugs other than marijuana presumably follow through that same network. This paradigm could change as laws liberalize. Some also believe the stress following cessation of heavy, long-term marijuana use can produce a craving that may drive the user to another, possibly more dangerous, drug. Animal studies seem to show such craving occurs when heavy use suddenly stops.

Statistically, marijuana users don’t move on to more dangerous drugs, but most users of “heavy” drugs typically started with marijuana.

Looking at numeric relationships, the Institute of Medicine found that of the 110 million Americans who have used marijuana, less than 5% have tried heroin. Looking at this and other findings, the Institute concluded that: Marijuana does not appear to be a gateway drug to the extent that it is the cause or even that it is the most significant predictor of serious drug abuse.*

This “which came first, the chicken or the egg” relationship has no absolute resolution. It has always been a major concern among policy makers.

*New York Times, 7/31/14
3. Burnout. With prolonged heavy use, the body builds up and carries what is clinically termed a “burden” of marijuana. Mental and physical changes seem to occur. The result has been described as a sort of “deadened” response to stimulation – to life. This dull inactivity, or “burnout,” can be replicated in laboratory animals. Long-term use is discouraged by societies in areas of the world where marijuana use has been common for generations.

Some researchers question the nature and even the existence of burnout or, “amotivational syndrome,” but many researchers, substance abuse counselors and professionals who have been around troubled marijuana users believe it to be a real condition.

While heavy users may be unnoticed in adult circles, they seem to be obvious to students. A student will probably describe a burnout as a nice, dull person who “just takes up space.” Often, but not always, a burnout has trouble with schoolwork and employment, has little interest in social activities, and lives in a state of detachment. Some regular users continue to maintain good grades or responsible employment, but as a young adult in one of our focus groups put it, “They aren’t really living in the same world as the rest of us.”

Research in both Canada and New Zealand (which have higher rates of marijuana use than in the United States) seem to show a relationship to a lower IQ (8 points) among adults identified as smoking “5 joints” a week or more for an extended period of time in adolescence. This would be considered “heavy use.” This causal relationship was challenged by Norwegian research, which asserted that social and family conditions caused both an increase in marijuana use and lower IQ, and concluded that one did not actually “cause” the other. Both heavy use and IQ impact were assumed to be related to compromised social/family support. In other words, the two were “concurrent,” not “causative.”

Most who try marijuana or use occasionally do not become heavy users, but the loss of human potential among heavy users is common enough so high school students describe it as degrading someone they know to the point
of burnout. Human resource professionals have also developed guidelines to identify employees who are lapsing into the amotivational state resulting from heavy use.

Compulsive users sometimes require chemical dependency treatment, but their need for help is not always detected because they are able to pull themselves together enough to temporarily cope with the world around them. Unlike alcoholics, compulsive marijuana users can survive longer among us before having to confront their chemical dependency.

4. Mental Health Issues. Use of marijuana, alcohol, or other drugs sometimes causes troubled thinking and related problems. Marijuana use is probably not so much a cause of mental health issues as it is a component in pushing an already troubled person closer to the edge. Fear becomes panic, hopelessness becomes depression, and depression becomes dangerous. Marijuana intoxication can push a troubled person into crisis.

When a person is troubled, he or she sometimes uses marijuana or other drugs as a way to feel better, to self-medicate a confusing or challenging time in life, or ease depression. Typically, the last thing a person with such problems needs is to move further away from reality.

5. Lung Damage/Cancer. The usual route for getting marijuana into the body is by smoking, i.e. deeply inhaling hot marijuana smoke and holding it in the lungs as long as possible to maximize blood infusion and distribution to the brain, causing intoxication. On a cigarette-to-cigarette basis, lung damage similar to that from tobacco smoke is a concern. While such inhalation may exacerbate pneumonia or aggravate other upper respiratory issues, the amount of marijuana smoke ultimately inhaled is substantially less than that from tobacco. A direct connection to lung cancer
from long-term tobacco inhalation is unquestionable. Marijuana use does not involve inhalation of consistent and large quantities of smoke, thus, an increase in lung or other cancers among marijuana users has understandably not been detected. Throat and lung irritation, with resultant coughing, could occur among those who inhale marijuana, and for those with pre-existing bronchial conditions, use could be harmful.

6. Pregnancy/Breast Feeding. Marijuana can pass through the placenta and has been associated with lower infant birth weight, although this issue has essentially been dropped as a significant health warning by the National Institute on Drug Abuse. Some chemicals in marijuana will also pass through breast milk. Pregnant women and nursing mothers have special reasons not to use marijuana, tobacco, or alcohol. Marijuana, however, has not been shown to cause congenital birth defects, such as those caused by alcohol use during pregnancy (fetal alcohol syndrome or effects).

7. Heart or Blood Pressure Effects. As with many chemicals and activities, marijuana use makes a person’s heart beat faster, so there is an uptick in blood pressure. Unless the user is already at risk from heart disease or has high blood pressure, a consequent health risk is unlikely.

8. Fertility. A number of publications have speculated that there may be some decrease in both sperm and egg production among research animals and humans after heavy exposures over a long period of time. The National Institute on Drug Abuse has limited discussion of fertility impact, but there are a number of researchers and fertility professionals who recommend that women who are trying to become pregnant refrain from marijuana use.

9. Overdose. The amount of marijuana needed to reach what is called, “LD-50” (a point at which 50% of those receiving a specific dose would die), realistically cannot be achieved. There has never been a recorded lethal overdose from marijuana.
10. Complexion Problems. Some anti-marijuana literature has blamed acne or other complexion problems on marijuana use. Bad eating habits and careless hygiene that may go along with heavy use could possibly be associated with complexion problems. Often, marijuana is first tried at about the same time in life that hormones naturally change, so bodily changes, including excessively oily skin, may occur concurrently with marijuana use. Blaming complexion problems on marijuana use is not realistic.

NOTE TO READER: Older published health warnings, including older government documents regarding health risks, may no longer be viable (cancer, birth defects, etc.).

Special Concerns

Purity. Because buyers of illegal drugs are working with criminals – people and organizations that break rules for profit – they cannot trust the purity of what they’re buying. A drug market operating in shadows has no enforceable purity or dose standards. Some marijuana growers inadvertently batch in herbicides, insecticides, or fungicides. Some dealers batch in other drugs to make the marijuana seem to have higher levels of THC. Where the purity of marijuana is uncertain, there is inherent danger. With synthetic recreational marijuana, the usual regulatory safeguards for food and drug safety are typically nonexistent. The impact on the user is largely unknown, but public health officials consider some synthetic marijuana use to be potentially life-threatening.

Potency. There is wide variation in THC amounts in a given unit of marijuana, so how “high” the drug will make a person is variable. The user can be hit with an unexpected high and quickly leap through the stages of intoxication. This surprise high has been seen more often over the past 30 years as widely diverse potency levels of marijuana strains have entered illegal markets. Synthetic marijuana compounds are unknown in terms of potency or nature of pharmaceutical impact. Anecdotally, emergency rooms have reported serious problems for synthetic marijuana users, and are well acquainted with the surprise marijuana high that causes panic among some users. In states that have legalized recreational use, the dose/potency relationship is still poorly described, although controls for other contaminating compounds are in place.


**Mixing Drugs.** Mixing two or more drugs is always risky, and illegal dealers may blend different drugs to increase marijuana intoxication. Since each drug works in different ways in the body, combining them can cause unanticipated feelings and behavior. Unexpected, weird highs or other health risks can occur. Mixing two or more drugs is not necessarily like “adding them together,” but more like shaking dice and “multiplying” the results.

**Legal Problems.** Being labeled a criminal or drug offender carries with it significant and often life-changing consequences. The most common reaction of the apprehended user is fear and shock at the loss of civil liberties. For a time, the drug violator simply won’t be free. Strangers – a police officer, a judge, a jailer – will control his or her life. Freedom is a painfully shocking thing to lose in a free society.

Explaining a drug arrest when applying for a job, trying to get into a union or college, or discussing the arrest with family or friends can be painfully stressful. Stamped as a convicted drug violator can cut deeply into a person’s professional and social life. It will likely have a debilitating effect on self-esteem, which may become the most damaging consequence of all.

**Costs - Personally and to Society.** Even in states that have legalized recreational use for adults, use among young people remains a crime, often a costly crime. Attorney fees and legal penalties if there is an arrest can be especially expensive. From the grower to large, then small, and still smaller distributors, the price rises with each transaction (as does the chance for contamination).

The cost in personal relationships can also be high. Time spent in a detached state of intoxication can cut into other parts of life. Lost time from work or school or the loss of friends, can seriously affect a person’s life. Satisfying personal relationships and achievement may disappear from the life of the heavy user. Loss of respect or trust can also take a tragic toll.
Similar to alcohol abuse, slowly at first, then more swiftly, the costs of heavy marijuana use can cast a shadow over a person's future.

There are also costs to society when someone buys marijuana. A chain of illegal growers, smugglers, and dealers make money outside of our laws, and this harms our national economic and civic fabric.

When California held its first referendum on legalizing some level of recreational use of purity-controlled marijuana, marijuana producers and distributors worked hard against legalization. They did not want regulated purity controls or taxation. They had good thing going. Patronizing the illicit drug supply system can harm a community.

The damage done within foreign marijuana producing nations by sometimes violent cartels is especially troubling. Using marijuana can promote bad civics. If and how this paradigm may change with legalization is not well understood. It is probable that a “black market” will always be present, especially regarding young people.

**Confusion and Clarity**

Good and caring people on both sides of the marijuana issue have spent the past 40 years emotionally throwing medical marijuana research and conflicting social policy interpretations back and forth. Sometimes it seems that everyone is yelling and no one is listening. Amid this noise, the first casualty is perspective. It’s time we took it back.

Millions of Americans have used marijuana and gone on to live healthy, productive, even model lives, including recent presidents. As of 2014, over 60% of young adult men (19-30), and over 55% of young adult women in this age group report having used marijuana. Although some users have had problems, we have not encountered significant public health or social consequences. Yet, no responsible person can question the reality that marijuana, especially as a black market drug, can create risks for users, especially young users, and can harm our society. So, it becomes important to identify and quantify where there are associated risks, as well as to accept where there are not.
Attachment

In 2017, several leading private research and policy organizations in the United States published a joint report outlining our current best understanding of marijuana use and health consequences. This report was published by the National Academies of Science, Engineering and Medicine.

Their combined organizations analyzed more than 10,000 published studies, often from countries other than the United States, and issued a 337-page analysis.

After lamenting the research restrictions imposed by the United States, Dr. Marie McCormick, Chair of the National Science Committee and Professor of Pediatrics at Harvard Medical School, released the report. Following are their key findings:
A Summary of the 2017 Findings of the National Academies of Science, Engineering and Medicine*

1. Marijuana has medical value in pain reduction involving muscle spasms, especially related to multiple sclerosis and cancer patients experiencing chemotherapy-induced nausea and vomiting.

2. There is no evidence that smoking marijuana increases the risk of cancer, such as consequent to tobacco use.

3. Smoking marijuana on a regular basis may aggravate bronchitis and chronic coughing.

4. Smoking marijuana by individuals with heart disease may increase risk of cardiovascular complications.

5. There is some evidence (conflicting) that smoking marijuana during pregnancy positively correlates with lower birth weight.

6. Some mental health problems such as schizophrenia are concurrent with use of marijuana. Marijuana may or may not “cause” the schizophrenia. Possibly, those with schizophrenic tendencies may seek marijuana intoxication as a form of self-medication. Permitting additional research in this area would be important.

7. Injury or death occurring while a person is intoxicated, particularly operating a motor vehicle, is a risk associated with marijuana use.

8. The use of other more physically dangerous chemicals correlates with marijuana use. This includes alcohol misuse, the use of tobacco products, and the use of other drugs. Whether the marijuana use is causative or statistically concurrent with the use of other drugs is not understood.

9. The use, especially heavy use, by adolescents, is associated with both academic performance problems and socialization problems. Again, both may be concurrent as opposed to causative.

10. Chronic and compulsive use can evolve into dependency problems, with adolescents being especially at risk.

Marijuana and the Responsible Parent

The school district is not the best institution to prevent substance abuse, although it is sometimes held responsible by the community. It is parents who can absolutely make the most difference. This booklet addresses how parents can prevent harm with regard to their children’s potential use of marijuana.

Legalization: How changes in the law might affect marijuana use among our youth

Most Americans today are living under significantly relaxed marijuana possession laws. It is important to ask how these evolving changes might affect young people. This pamphlet suggests ways that young people might be impacted and offers guidelines for results-based drug prevention programming.

Contemporary Drug Education

With changes in attitudes and laws, drug education must be re-evaluated. In addition to drug education approaches and exercises, this booklet includes the 2017 findings regarding marijuana and health from the National Academies of Science, Engineering and Medicine.

Following are other marijuana-related publications that may be of interest and can be downloaded at www.envrc.org.